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December 23, 1998

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Washington, D.C. 20554

Re: CBS Corporation's Comments in Response to Petition for Rulemaking, RM-9395, Released November 6, 1998

Dear Ms. Salas:

On behalf of CBS Corporation, transmitted herewith is an original and nine copies of the Comments of CBS Corporation in the above-referenced docket. Please date-stamp the return copy and return it to the courier delivering this package.

Please contact the undersigned if there are any questions regarding this matter.

Respectfully yours,


Christopher J. Sova

Enclosures

cc: Robert A. Mazer, Esq.
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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of)
)
PETITION FOR RULEMAKING)
)
The Amendment of Part 73 of the Rules)
to Permit the Introduction of Digital Audio)
Broadcasting in the AM and FM Bands by the)
Adoption of an In-Band On-Channel Digital)
Audio Technology)

RM-9395

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

To: The Commission

COMMENTS OF CBS CORPORATION

CBS CORPORATION

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Dated: December 23, 1998

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SUMMARY

CBS Corporation (“*CBS*”) supports the Petition for Rulemaking, RM-9395, filed on October 7, 1998 by USA Digital Radio Partners, L.P. (“*USADR*”), and respectfully requests the Commission to expeditiously initiate a rulemaking proceeding to amend Part 73 of the Commission’s Rules to permit the introduction of AM and FM radio broadcasting using the in-band, on-channel (“*IBOC*”) digital audio broadcasting (“*DAB*”) system developed by USADR.

Because of the intrinsic limitations of existing analog radio broadcast technology, it is not possible to generate further material improvements in the sound quality or reception of analog radio. The implementation of DAB technology will further the public interest by allowing the public to enjoy sound quality on FM radio that is comparable to compact discs, and a sound quality on AM radio that is comparable to existing FM radio transmissions, with enhanced signal robustness and improved signal reception at the outer perimeters of a station’s coverage area.

IBOC DAB technology is the most appropriate means to implement DAB because it is the only proposed DAB technology that integrates digital broadcasting into the existing analog AM and FM radio transmission system, eliminating the need for additional spectrum, and allowing listeners to continue to locate their favorite radio broadcast stations at the same place on the radio dial. CBS agrees with USADR that it is imperative for the Commission to establish and implement a transition plan for the introduction of DAB. Such a plan should minimize interference to existing analog broadcasts, and provide incentives to encourage broadcasters to upgrade their equipment to digital. Use of the 12-year transition plan proposed by USADR will facilitate a smooth transition to IBOC digital technology and cause minimal disruption to station listeners. Under the proposed transition plan, broadcasters would continue to provide analog programming for a number of years, which would allow consumers to continue to use analog receivers for several years, and to gradually

upgrade to digital as part of the normal cycle of equipment replacement. This transition plan is obviously preferable to a sudden forced across-the-board conversion to all-digital broadcasting.

CBS urges that the Commission select USADR's IBOC DAB system as the transmission standard to be utilized in the United States. Because of the ubiquitous nature of radio broadcasts, and the expectation that radio broadcasts can be received without having to change receivers, it is essential to ensure that consumers are able to receive DAB service with one receiver. A single standard based upon USADR's IBOC system will allow for seamless compatibility between transmitters and receivers. If the Commission mandates USADR's IBOC system as the single DAB standard, neither the public nor broadcasters will be required to assume the risk and expense of purchasing equipment in a particular DAB format which later proves to be non-viable. Moreover, lessons learned from the introduction of other technical innovations in the broadcast industry, most recently DTV, underscore the need for the Commission to designate a single IBOC DAB transmission standard. Because a number of different DAB systems have been developed, it is highly unlikely that private industry would itself agree on which one should be selected as the standard.

USADR's IBOC FM/DAB system is unique in that it is ideally matched to the requirements of IBOC, and allows for the smooth transition from the current all-analog radio to a hybrid period during which both analog and DAB radio could co-exist, and from the hybrid period ultimately to an all-digital radio system without the need for additional spectrum and without noticeable interference to existing analog signals.

Further, USADR's IBOC system has been extensively and independently researched and tested. Given the critical role of terrestrial radio broadcasts and the risks posed by a multitude of incompatible digital transmission standards, CBS agrees with USADR in urging the Commission to select USADR's IBOC DAB format as the standard for implementation in the United States as expeditiously as possible.

BEFORE THE

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WASHINGTON, D.C. 20554

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PETITION FOR RULEMAKING) RM-9395
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The Amendment of Part 73 of the Rules)
to Permit the Introduction of Digital Audio)
Broadcasting in the AM and FM Bands by the)
Adoption of an In-Band On-Channel Digital)
Audio Technology)

To: The Commission

COMMENTS OF CBS CORPORATION

I. INTRODUCTION

CBS Corporation (“*CBS*”), by its attorneys, submits these comments in support of the above-captioned Petition for Rulemaking, RM-9395 (the “*Petition*”) filed on October 7, 1998 by USA Digital Radio Partners, L.P. (“*USADR*”). CBS respectfully requests the Commission to expeditiously initiate a rulemaking proceeding to amend Part 73 of the Commission’s Rules to permit the introduction of AM and FM radio broadcasting using the in-band, on-channel (“*IBOC*”) digital audio broadcasting (“*DAB*”) system developed by USADR.

CBS, formerly known as Westinghouse Electric Corporation (“*Westinghouse*”), is one of the largest broadcasting companies in the United States. Westinghouse expanded its broadcast business through the acquisition of CBS Inc. in November, 1995, Infinity Broadcasting Corporation (now known as Infinity Media Corporation) in December, 1996, and American Radio

Systems Corporation in June, 1998.¹ CBS owns 14 television stations that reach approximately 31% of U.S. television households, several cable television networks, the CBS Television Network, and equity interests in various Internet web site providers. CBS also controls Infinity Broadcasting Corporation ("*Infinity*"), one of the largest radio broadcasting companies in the United States, employing approximately 5,900 persons full-time and an additional 2,000 persons part-time. Infinity operates 114 FM stations and 47 AM stations in 34 markets, and serves diverse demographic segments through the provision of a broad range of programming formats. The Commission's determinations in the instant proceeding will therefore have a significant impact upon CBS.

CBS is a longstanding and universally recognized leader in the broadcast industry. CBS has consistently supported initiatives for improving the technical quality of broadcast services, including radio. CBS firmly believes that it is critical for the radio industry to keep pace with technological advancements so that the industry continues to thrive and provide the best possible service to the public. It is for this reason that CBS has made a substantial investment in, and is enthusiastically committed to, the development and implementation of digital radio in the United States.

CBS Radio (prior to its acquisition by Westinghouse) and two other major broadcast companies (one of which was Westinghouse) formed USADR in 1991 for the purpose of developing a viable digital broadcasting system. CBS believed DAB would serve the public interest by providing AM and FM radio listeners with higher quality audio fidelity and enhanced

¹On December 3, 1998, CBS transferred its radio assets to a newly-formed corporation named Infinity Broadcasting Corporation.

signal robustness, new radio features, and enhanced auxiliary services, all at minimal cost. CBS remains the general partner of USADR, and its subsidiary, Westinghouse Wireless Solutions Company, coordinates the overall technical development work and system design for USADR.

II. IMPLEMENTATION OF DAB WILL SERVE THE PUBLIC INTEREST

Digital technology possesses significant advantages over analog technology.

Digital CDs and tapes, for example, offer superior audio quality when compared to analog vinyl records, cassettes, and analog AM and FM radio, and digital wireless phones tend to offer a stronger, clearer signal than analog cellular. The public is now able to obtain cable or broadcast satellite delivery of music to their homes, download music from the Internet, and soon will be able to receive high quality digital audio from satellite providers. Due to the technical advantages inherent in digital technology, digital products have tended to become the preferred consumer choice rapidly after their introduction. Indeed, as exemplified by the recent digital television proceedings, the Commission has consistently supported the upgrade of analog systems to digital as such technology has become available. As noted in the Petition, in its rulemaking regarding digital radio, the Commission has stated that existing radio broadcasters can and should have an opportunity to take advantage of and profit from new digital radio technologies. Petition at 16. Since it first began deliberating the regulatory parameters of digital audio radio, the Commission has supported developments that would permit digital broadcasting within the existing AM and FM bands. *Report and Order* in Gen. Docket No. 90-357, 10 FCC Rcd 2310, 2314 (1995).

Although analog radio has proven to be remarkably durable and adaptable over the

years, it is inherently limited in the quality and fidelity of its sound. As noted in the Petition, the intrinsic limitations of analog radio broadcast technology do not allow for further material improvements in quality. Petition at 14. Although current analog radio technology is unable to adapt further to keep pace with the public's evolving expectations for digital-quality sound, existing DAB technology, if implemented, will enhance sound quality and fidelity in both the FM and AM bands. DAB will enable the public to enjoy sound quality on FM radio that is comparable to compact discs, which have become the standard dictated by the marketplace, and a sound quality on AM radio that is comparable to existing FM radio transmissions. In addition, DAB will enhance signal robustness, which will reduce impairments to radio signals such as multipathing and noise, increase the signal's resistance to natural and man-made obstructions, and improve signal reception at the outer perimeters of a station's coverage area. In short, DAB will serve the public interest by permitting broadcasters to provide the best possible technical service.

As the Commission has recognized in a host of contexts, the radio industry is highly competitive. CBS's radio stations compete for audience and advertising revenues not only with other radio stations, but also with other media, including broadcast television, cable television, the Internet, newspapers and billboards. Through an auction conducted on April 1, 1997, the Commission awarded licenses to two entities to provide subscription satellite digital audio radio services ("*DARS*"). These entities are moving forward with plans to initiate service and anticipate commencing operations within the next one to two years. Clearly, to remain competitive, existing terrestrial broadcasters need the ability to offer equivalent quality and service to the public. Accordingly, the Commission should act expeditiously to permit terrestrial broadcasters to utilize DAB so that they can compete on a level playing field with respect to

signal quality as against alternative providers of audio programming.

The continued vitality of terrestrial radio broadcasting is clearly valuable to the public. Radio functions as a key source of local news, information, public affairs programming and public service announcements, and Emergency Alert System broadcasts. Because coverage is limited, terrestrial radio is unique among media for its strong ties, and service to, local communities, and for reflecting the tastes, values, and interests of these local communities.

The CBS radio stations maintain extremely strong ties to their local communities which are evidenced by programming that responds to local needs and interests, as well as by the substantial and impressive assistance the stations provide to many worthwhile local charitable and educational organizations. A few brief examples of the innumerable contributions CBS radio stations make to their local communities follows. Station WWJ(AM) is the only major station in the Detroit region that delivers business news throughout the day, and that provides comprehensive emergency weather coverage. Since 1983, station WOMC(FM), Ferndale, Michigan, has raised over \$1.2 million to fund lifesaving research at Children's Hospital of Michigan. Station WWMX(FM), Baltimore, Maryland, airs the weekly program "Baltimore Perspectives" which focuses on issues of local interest, and also sponsors public service programs that support the Maryland Food Bank, Johns Hopkins Children's Center, and the Baltimore Zoo. In Boston, Station WBZ(AM) has helped to raise funds for Children's Hospital for many years, and its regularly-scheduled issue-responsive programs such as "WBZ NewsRadio" and "Medical Minute" address local and national news, stories of community interest, and reports on medical advances and conditions. Station WBCN(FM) airs "The Boston Sunday Review", a 2-hour weekly series focusing on issues of concern to people in the Boston area, and sponsors an AIDS

Walk-A-Thon event in Boston that raises funds for AIDS research and patient assistance, and Station WBMX(FM) sponsors a Walk for Science to raise money for the Muscular Dystrophy Association, Walk America to raise funds for the March of Dimes, MS Walk to support the MS Society in helping to fight Multiple Sclerosis, and the One-on-One Mentoring Walk to support mentoring programs between school age children and business professionals. In Pittsburgh, Station KDKA-AM sponsors a “Free Care Friends” campaign to raise money for families in the area with children in need of medical attention, and has run public service campaigns and events for Head Start, the Washington Women’s Shelter, the Alzheimer’s Center of Pittsburgh, and the Greater Pittsburgh Community Food Bank. Station WDSY-FM conducts an annual radiothon for St. Jude’s Children’s Research Hospital and a “Line Up for Life” blood drive. These are but a few examples that illustrate the significant extent to which CBS radio stations become directly and actively involved in providing service to their local communities. Contributions such as these that CBS and other radio stations provide to their local communities exemplify the unique role of terrestrial radio, and convincingly demonstrate that the implementation of terrestrial DAB and the continued viability of terrestrial radio will advance the public interest.

III. IBOC TECHNOLOGY IS THE BEST MEANS TO IMPLEMENT DAB

IBOC technology is the only proposed DAB technology that integrates digital broadcasting into the existing analog AM and FM radio transmission system, eliminating the need for additional spectrum, and allowing listeners to continue to locate their favorite radio broadcast stations at the same place on the radio dial. Further, because there is no need to allocate new

spectrum for DAB, essentially no new licensing will be required, and, unlike the conversion to DTV, the regulatory burden on the Commission with respect to the transition to IBOC DAB will be relatively small.

The transition to IBOC digital technology would also be relatively smooth and cause minimal disruption to station listeners. The Petition proposes a 12-year transition period during which broadcasters would continue to provide analog programming. This lengthy transition would allow consumers to continue to use analog receivers for several years, and gradually upgrade to digital as part of the normal cycle of equipment replacement. Such a phased-in transition to IBOC will allow broadcasters to upgrade to digital based on local listener demand, and in parallel with market demand, without mandating a forced, immediate, across-the-board conversion to digital technology.

Further, with the IBOC format, both the public and broadcasters will endure minimal costs to upgrade to digital. Most of the equipment currently used by broadcasters, including studios, towers, and antennas, will continue to be useable. New digital receivers using the IBOC format will not be significantly more expensive than current analog equipment. Thus, the proposal set forth in the Petition minimizes disruptions and dislocations, including disruptions to the Emergency Alert System that could result if a less gradual transition to digital were pursued. CBS therefore supports the adoption by the Commission of IBOC as the DAB standard, as set forth in the Petition.

IV. THE COMMISSION SHOULD DESIGNATE USADR'S IBOC SYSTEM AS THE SOLE TRANSMISSION STANDARD FOR DAB

CBS urges that the Commission select USADR's IBOC DAB system as the transmission standard to be utilized in the United States. As discussed previously, the Petition clearly sets forth the myriad advantages of the IBOC approach to DAB, and also provides substantial engineering support showing the viability of USADR's IBOC system. As noted in the Petition, Telecommunications Associates, Inc. ("TAI"), a research and consulting firm specializing in communication system disciplines, independently concluded that USADR's IBOC FM/DAB system is "ideally matched to the requirements of IBOC". TAI also concluded that the USADR IBOC DAB system is unique because it allows for the smooth transition from the current all-analog radio to a hybrid period during which both analog and DAB radio could co-exist, and from the hybrid period ultimately to an all-digital radio system without the need for additional spectrum and without noticeable interference to existing analog signals. TAI found that the DAB signal broadcast by the USADR system will provide a marked improvement in listening quality to the public, and expedite the provision of auxiliary multicast and broadcast data services as well.²

In order to provide sufficient incentives to broadcasters, manufacturers and consumers to convert to DAB, it is necessary for the Commission to designate a single IBOC system as the sole terrestrial DAB transmission system. Because of the ubiquitous nature of radio broadcasts, and the expectation that radio broadcasts can be received without having to change receivers, it is essential to ensure that consumers are able to receive DAB service with one

²Appendix I of the Petition, "Report of Telecommunications Associates, Inc., Modeling and Performance of the IBOC FM/DAB System", October 6, 1998 at 1.

receiver. As USADR explains, because the majority of radio listening occurs in automobiles, the overall compatibility of receivers and transmitters over wide geographic areas is essential to the overall acceptance and enjoyment by the public of DAB. *See* Petition at 96-98. A single standard based upon USADR's IBOC system will allow for seamless compatibility between transmitters and receivers.

Lessons learned from the introduction of other types of technical innovations and advances related to broadcasting illustrate the importance of designating a single standard for IBOC DAB. For example, in 1982 when the Commission authorized AM stereo broadcasting, the Commission did not mandate a standard, opting instead to allow the marketplace to determine which AM stereo system or systems would win favor with the public. *See* Report and Order, FCC 82-111, 51 RR 2d 1 (1982). Ten years later, only approximately 660 out of the 5,147 authorized AM stations had converted to AM stereo³, and Congress enacted the Telecommunications Authorization Act of 1992 that required the Commission to initiate a rulemaking to adopt a single AM stereo standard. Pub. L. No. 102-538, §214 (1992). Undoubtedly, a significant factor in the unwillingness of the broadcast industry and the public to embrace the use of AM stereo is the uncertainty and unpredictability resulting from the Commission's early failure to mandate a standard, which led to a lack of universal reception of

³*See* R. R. Bowker, Broadcasting & Cable Yearbook 1993, Vol. 1 at B-590, which provides that as of January 1, 1993, there were 5,147 authorized AM stations in the United States, and *see* Notice of Proposed Rule Making in ET Docket No. 92-298, 8 FCC Rcd 688 (1992) which noted that approximately 660 U.S. AM broadcasting stations had converted to AM stereo.

AM stereo broadcasts.⁴

In contrast, during the 1940's and 1950's, as manufacturers were developing the technology for color television, the Commission was concerned that color television receivers be capable of receiving both the black-and-white and color transmissions, and that the public be protected from purchasing color televisions in multiple incompatible formats. Thus, in 1950, the Commission determined that it was in the public interest to mandate a single color television standard by selecting from among the three primary competing color television standards at the time. The Commission noted that a postponement of such a decision could result in a greater number of incompatible television receivers in the hands of the public that would later have to be adopted or converted in order to be made compatible. *Second Report of the Commission*, 41 FCC 111, 1950 FCC Lexis 8, 6. Color television, unlike AM stereo, was thereafter relatively quickly and universally accepted by broadcasters and the public.

During the recent digital television (“DTV”) proceeding, the Commission recognized that a single DTV standard is important because it provides a level of certainty to broadcasters, equipment manufacturers and consumers, and thereby allows the benefits of digital broadcasting to be realized more rapidly, *Fourth Report and Order* in MM Docket No. 87-268, 11 FCC Rcd 17771, 17772 (1996), and that a vast number of Americans rely upon television as their primary source of news and information, *Fourth Report and Order* in MM Docket No. 87-268, 11 FCC Rcd 17771, 17778 (1996). Similarly, because radio is a portable medium and the public spends increasing amounts of time in automobiles and away from their homes, Americans

⁴Appendix B of the Petition, “Standard Setting for Digital Radio”, Report of Charles River Associates Incorporated, October 7, 1998, at 12, 13.

utilize their radios as a primary source of news and information while in the car, at work, and at other remote locations. Unless the Commission mandates a standard IBOC DAB format, a listener traveling in his or her automobile could be unexpectedly denied digital radio reception because the radio receiver is not compatible with the DAB format of a local broadcaster.

If the Commission mandates USADR's IBOC system as the single DAB standard, neither the public nor broadcasters will be required to assume the risk and expense of purchasing equipment in a particular DAB format which later proves to be non-viable. An obvious analogy can be drawn to the early introduction of video cassette recorders ("VCR") to the public. Initially, consumers were required to choose between Beta or VHS formats. There was substantial uncertainty among the public as to whether both formats would remain viable, or whether one would eventually prevail, although early on, consumers purchased both formats. Ultimately, only the VHS format remained viable, and consumers and retailers that had invested in Beta format were required to replace these VCRs when tapes and parts became obsolete.

Unless the Commission specifies one standard for IBOC DAB, broadcasters will be hesitant to make the required monetary investment in digital transmitters because they will be uncertain of whether there will be a sufficient number of listeners in a particular DAB format to justify the investment. Similarly, consumers will not invest in DAB receivers unless there is sufficient programming in the particular DAB format. The Commission noted in the DTV proceedings that a DTV standard would serve the Commission's goal of ensuring that all affected parties have sufficient confidence and certainty in order to promote the smooth introduction of a free and universally available digital broadcast service, and that more than one transmission standard could cause some consumers and licensees to postpone purchasing DTV equipment

because of the risk of investing in what might become obsolete technology. *Fourth Report and Order* in MM Docket No. 87-268, 11 FCC Rcd 17771, 17788 (1996). Accordingly, unless the Commission designates a particular IBOC system as the DAB standard, it is unclear whether broadcasters and manufacturers will have the incentive to expend the resources necessary to transition to DAB. As the Commission noted in its DTV proceedings, a single standard increases competition in price, service, and product features. If the Commission mandates a single DAB format, manufacturers will not have to design and produce DAB transmitters and receivers in multiple formats, and repair and maintenance of such DAB equipment will be confined to a single format.

Finally, because a number of different DAB systems have been developed, it is highly unlikely that private industry would agree on which one should be selected as the standard. USADR's IBOC system has been extensively and independently researched and tested. TAI has concluded that USADR's IBOC system provides FM and AM digital service with significantly enhanced performance without the need for new spectrum, and that USADR's "hybrid" approach will provide a smooth transition to an all-digital system in the future.⁵ Given the critical role of radio and the risks posed by a multitude of incompatible digital transmission standards, CBS agrees with USADR that the Commission, as promptly as possible, should select a single DAB format as the standard for implementation in the United States, and because of the demonstrated performance and viability of the USADR system, that such standard should be USADR's IBOC

⁵See Appendix I of the Petition, "Report of Telecommunications Associates, Inc., Modeling and Performance of the IBOC FM/DAB System", October 6, 1998 at 1, and "Report of Telecommunications Associates, Inc., Modeling and Performance of the IBOC AM/DAB System", October 6, 1998 at 1.

DAB system.

V. THE COMMISSION SHOULD IMPLEMENT A TRANSITION PLAN THAT WILL ESTABLISH INTERFERENCE PROTECTION FOR BROADCASTERS AND PROMOTE THE EFFICIENT INTRODUCTION OF DAB

CBS agrees with USADR that it is imperative for the Commission to establish and implement a transition plan for the introduction of DAB. Such a plan should minimize interference to existing analog broadcasts, and provide incentives to encourage broadcasters to upgrade their equipment to digital.

The current AM and FM broadcast environment inherently involves very complex interference issues. In order to minimize additional interference issues associated with the introduction of DAB, the Commission should develop interference criteria for both the interim “hybrid” period during which both analog and digital signals will co-exist, as well as the eventual all-digital period. Broadcasters that decide to commence digital broadcasts during the hybrid period will need assurance that their listeners will also be able to continue to receive a clear analog signal. Unless the Commission establishes adequate standards of interference protection, no such assurances can be provided, and broadcasters will therefore have less incentive to upgrade their equipment to provide DAB to the public.

CBS supports the use of emission masks as recommended by USADR in order to control undesirable interference. *See* Petition at 86. Emission masks will protect analog signals during the hybrid period, and allow for the realization of DAB’s full potential once the conversion to digital is complete by enabling broadcasters, at that time, to increase the power and bandwidth of their digital signal.

A transition plan for the introduction of DAB must also protect the ability of the public to continue to receive analog radio broadcasts during the hybrid period, while at the same time providing incentives for manufacturers to produce new digital receivers and transmitters, and for consumers and broadcasters to purchase this equipment. The flexible transition plan described in the Petition provides all of these incentives. *See* Petition at 87 to 92. This plan allows for the necessary coordination among broadcasters, equipment manufacturers, retailers and listeners regarding the timing of the design, production, and sale of equipment needed for DAB. Under the plan described in the Petition, stations would have the incentive to upgrade their equipment immediately to provide analog and digital broadcasts, which provides maximum flexibility for manufacturers and consumers. The use of hybrid emission masks as recommended in the Petition will help ensure that the public's ability to receive analog broadcast signals during the transition period is not disrupted. Moreover, the recommended 12-year transitional period corresponds to the typical replacement cycles for automobile receivers and personal stereos, and provides the public, broadcasters, manufacturers, and retailers with more than adequate time to orchestrate a smooth transition to DAB.

VI. CONCLUSION

The introduction of DAB is required in order to satisfy the public's demand for higher-quality digital modulation in radio broadcasts, and in order to allow radio broadcasters to remain competitive with other technologically-advanced services such as DARS and digital cable radio. The introduction of DAB will unquestionably further the public interest. To enable the public promptly to begin enjoying the benefits of this superior new technology, the Commission should expeditiously adopt a Notice of Proposed Rulemaking setting forth the proposals contained in the Petition.

Respectfully submitted,

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Dated: December 23, 1998

CERTIFICATE OF SERVICE

I hereby certify on this 23rd day of December, 1998, that I caused copies of the foregoing Comments to be mailed via first-class mail, postage prepaid, to the following:

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