

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C., 20554**

In the Matter:)
 Digital Audio Broadcasting Systems) MM Docket No. 99-325
 And Their Impact on the Terrestrial)
 Radio Broadcasting Service)

INTRODUCTION AND BACKGROUND

**The following Responds to the Subject Further Notice of Proposed Rulemaking
And Notice of Inquiry, Docket No. 99-325 as Released on April 20, 2004.**

It is the opinion of the undersigned¹ that this decade long Rulemaking as it pertains to AM Broadcasting, should be expeditiously terminated and the Commission should permit the awesome power of free competition to complete the job. Now that the Commission has galvanized every AM station in America into recognizing the need to modernize, not only in order to compete with FM, but with satellite radio, the Web, DVDs, etc., etc., the FCC has set in motion competitive forces, that if permitted to function without interference, will quickly complete the job, the American way, by the power of intense competition. AM Stations know how to compete, by giving their listeners what they want, and for music stations it includes quality stereophonic music. It is noteworthy that in this era of powerful integrated circuits, if more than one system survives the competition, it is simple to make multi-system radios. KCI built such radios way back in the 1980's.

¹These Comments reflect the engineering views of the undersigned and are the result of analysis and also tests that he personally performed or that were performed under his supervision. He is a PE, a former Adjunct Prof. of Electrical Engineering and for purposes of full disclosure it is necessary to state that he is President of Kahn Communications, Inc. (KCI) a firm that has recently developed a new type of IBOC system, the Cam-D™ System.

Furthermore, in these dire days since 9/11, AM Radio is THE natural mass media system to spread the word of attacks as well as provide the Public storm warnings, tidal waves, etc., whenever and wherever such warnings are required. The warning system cannot be inoperable at night, nor can the protected areas be limited to a few miles from New York or LA, the system must cover all of America.

Restricting such a vital modernization program to the efforts of just one commercial firm, especially one with an 11 year record of failure to demonstrate nighttime service, is clearly not in the Public Interest as lives are literally at stake.

Now that the FCC has rekindled efforts to bring Stereo to AM Radio, the Commission has done a most important job...but now is the time for it to return to it's most important function, the strict enforcement of such Rules as 47 CFR 73.44 that protects licensed services from interference.²

The basic conclusion of this submission is that the FCC should immediately issue an Order permitting all AM stations to implement any form of improvement they believe will permit them to better compete with FM, with a single limitation, that said improvements do not create additional interference to other licensees.

²Just last Friday, 6/11/04 the WSJ reported in a story (Pg. B4) "FCC Clears Plan For Reconfiguring Airway Spectrum," in which it is stated "Commercial use of the airwaves has been hampered because educational video and commercial uses were adjacent to each other in the spectrum band, requiring the Commission to impose rigid rules on users to guard against interference. FCC Chairman Powell said he hopes that will change with reconfiguration." This was only one of at least three WSJ stories just last week underscoring the FCC's duty to insure that new services do not interfere with existing services. There was also published last week by WSJ an Op-Ed Statement by three Legal Scholars that (successfully) urged Solicitor General Olson to support the basic tenants of free, unfettered competition without "interference" from the FCC. But, of course, the Commission fully recognizes its raison d'etre is to guard the airwaves from interference.

LARGEST GIVEAWAY OF SPECTRUM IN THE HISTORY OF AM RADIO BROADCASTING TO A SINGLE COMMERCIAL FIRM

Without the Commission seriously considering a single competitive IBOC system, the Commission has encouraged AM broadcasters and radio receiver manufacturers to adopt the patented IBOC System "under investigation" (IBOC-ui)³, that has only been tested on a handful of stations, (only 30 AM stations and some of which have turned the system off after a few days of operation), all of these stations cannot work after sundown and all of them create ENORMOUS co-and adjacent channel interference during the day. And even more astonishing, the Commission is now being asked to award this commercial firm the entire AM Band to the IN compatible version of IBOC-ui, destroying the American Public's multi-BILLION dollar investment in AM radios. How the supporters of the IBOC-ui think that they can succeed in our Government granting them such a gift is hard to conceive. Beyond such an act of hubris these IBOC-ui supporters make the clearly inconsistent demands:

On-the-one-hand these proponents demand Unprecedented FCC Controls such as:

**** Broadcasters wishing to make use of Digital Technology must only instal equipment using their Patents, forcing broadcasters, broadcast equipment manufactures and radio receiver manufacturers and, of course, ultimately the Public to pay for these royalties...all this is happening without competition, by Governmental edict.***

**** Ignore interference that any person with normal hearing would find totally unacceptable and that should have been instantly ordered off-the-air by the FCC under its existing Rules.***

³In the following the term IBOC-ui, which stands for the IBOC system "under investigation," is used to distinguish it from other competitive systems, such as KCI's newly developed Cam-D™ IBOC System..

** For the first time in FCC history issue AM & FM radio receiver specifications that force radio manufacturers to honor the patents of a specific commercial firm. Clearly this is not in the Public's best interests, as it will certainly end up paying the bill.*

** Specifically plan for a day in the not distant future when all AM band stations will operate with an INcompatible version of the IBOC-ui System so that every one of the almost BILLION radios the Public bought with almost a TRILLION DOLLARS of their hard earned money become useless. All in the Public Interest. (Also consider that radios are essentially made of plastic an oil product, another little problem.)*

** Shift the burden of proving an IBOC-ui station is interfering from the station causing the interference to the victim. Never in FCC history was the victim required to start a lengthy, expensive formal proceedings to get relief. All a station had to do was call his local FCC Inspector and ask him to check an interference problem and he would ORDER the station to turn the equipment off, even if it meant going "dark" until an emergency replacement was delivered. Somehow IBOC-ui proponents think they can put the FCC Inspectors out of work.*

But In other situations these IBOCers believe in a really free market. For example:

** Ignore FCC basic rules regarding occupied bandwidth and permit their stations to transmit a wave that creates wideband co- and adjacent channel interference... "BUZZ" +/- 30 kHz from the assigned channel. And they call this an In Band On Channel System.*

** Permission to operate at nighttime even though every test of the system proves that IBOC-ui will destroy skywave reception and limit clear channels to some 25 miles of useful service.*

** Ignore the rule that has controlled the introduction of every new development of AM radio since its inception over 80 years ago, full compatibility with existing radios, now approaching a BILLION radios that almost every American uses every day of the year.*

** Charge everyone, broadcasters, radio manufactures, and the Public, royalties at whatever rate they want as long as THEY decide the royalty is "reasonable."⁴*

'A RHETORICAL QUESTION MUST NOW BE RAISED: IF WOR'S SIGNAL IS SO BAD, HOW COME WOR HASN'T BEEN PUNISHED IN THE MARKETPLACE?

1. WOR is a personalty driven "all talk" station whose listeners would listen through a tin can and a string. Thus, WOR never tested the Public's response to IBOC-ui putative main advantage, FM quality, with a MUSICAL format.

2. The only station who did a serious test of daytime interference was WLW which reported loss of its local ratings due to buzz in OHIO. WLW 50 kw, is assigned to 700 kHz. (WOR is authorized for 710 kHz, but its IBOC authorization should be 690 to 740 kHz!)

It is stressed herein that it is imperative that AM Radio must be immediately updated so that it can better serve the American Public in these strange and dangerous Post 9/11 times. Accordingly, KCI has commitments with a number of public-spirited broadcasters to accept Cam-D equipment temporarily absent the high fidelity (8 to 15 kHz extended audio response) so that they and the listeners they serve do not have to wait for the development of a new integrated circuit which at best will take 8 to 10 months to get into full production.

This will permit the mass production of 8 kHz limited radios with ten data channels, (three of the channels will be devoted to Homeland Security service) and the remaining 7 channels for scrolling news, road conditions, identification of the station and the name of the music being played, etc. Also the system will provide a Visual Alarm so that hearing disabled individuals can be alerted to storms, attacks and any other emergency situations they have to "read" about.

All of this service will be confined to LESS than the present bandwidth allocated to AM stations, as is true of the fully implemented high fidelity Cam-D System. The name of this new AM System will be PTA-Cam-D™ System which stands (optimistically) for Pre-

3. WOR goes back to full AM fidelity the minute it gets dark, so except for a few hours when it and WLW tested in the dark and destroyed both of their coverages, (there are recordings of the disaster), WOR and WLW never tested the IBOC-*u* System at night. Nighttime music operation would permit their listeners to vote with their radio dials and their telephone dials to the FCC and their Congressmen.

I have struggled to find words that fully express my opinion of the hubris, nerve, audacity, etc., and even if I could expand my vocabulary to vulgarities I learned in Army barracks, it does not suffice...maybe rude physical gestures? But no...lets just say hubris.

Type Approved Cam-D™ System.

THE INHERENT FLAW OF THE IBOC-ui SYSTEM

The inherent flaw of the IBOC-ui System is that its design is based upon meeting the Rule, (47 CFR 73.44), limiting interference⁵ which was developed for testing Analog signals and never was expected to be used to test Digital signals.⁶

The following simplified analysis is based upon the modulation characteristics of the IBOC-ui System.

⁵Reunion Broadcasting's comments as authored by its Manager, D. Stanley Tacker, Esq., who is also a well respected Communications Attorney, describes in detail why the IBOC-ui System would violate current allocation standards if permitted to operate at night. His analysis is based upon the published figures issued by the Proponents of this System. What makes this argument even more compelling is that the engineering figures used are orders of magnitude too conservative. Reunion concludes that the proper legal approach would be permit free competition between spectrum efficient, truly compatible AM Digital Hybrid Systems to be rapidly introduced whether these techniques be "developed by Ibiquity or are developed by any other party."

⁶Mr. T.C. Cutforth, President of Vir James, an engineering firm that has prepared some 1000 applications over its 50 year history treats the IBOC-ui nighttime interference problem from an engineering standpoint stressing that not only is its interference a fatal flaw, but also the system is not really compatible with the 800 million radios Americans own, and that IBOC-ui severely reduces the coverage of AM stations diminishing their service to the Public. Mr. Cutforth also reports that a Denver station that was one of the few (30) AM stations that put the IBOC-ui system on the air, turned it off after only 2 weeks of operation. (I believe the record speed of turn-off is one (1) day by a major station in Philadelphia.) Mr. Cutforth makes the engineering point that the Rule the IBOC-ui System claims to meet was based on testing Analog, not Digital waves, and is clearly inappropriate for testing Digital signals. Mr. Cutforth, as did Mr. Tacker, concludes the Public will be best served by the free marketplace stating: "I request that the minimum federal limitations be applied to the exact technologies of digital broadcasting technology so that broadcasters and the public can benefit from incremental changes in digital broadcasting technology in a timely fashion."

In other words, let the free market function ASAP.

Present Commission Rules limit "splatter" from stations to maximum power levels below the operating power (as defined by a set of numbers) to no more than a single occurrence over a period of 10 minutes of normal operation. This specification, 47 CFR 73.44, is extremely easy to meet and it was adopted by the FCC to permit the Motorola AM Stereo System to remain in the marketplace when it was proven that it could not pass the rules in place even prior to 1934, when the FCC initiated control of radio interference. The following basic analysis permits one to see the seriousness of the problem.⁷

As one will recall it takes energy to perform work...even if your work is interfering with other radio stations. Energy bears a simple relationship to power.

Energy = Power*Time Thus, if the power is constant you just multiply it by time and that is your answer. (If power varies with time you have to integrate and dust off your knowledge of calculus. Fortunately, the power of the IBOC-ui wave is constant even for very short periods of time.)

Thus, the IBOC-ui energy is orders of magnitude greater than permitted by the present rules and assuredly violates the rules in force ever since the start of AM radio broadcasting. The actual number is so large that, as an engineer, I am unwilling to publish such figures absent confirming laboratory measurements.⁸ Obviously, I am not in a

⁷This analysis cannot be precise, as the developers will not disclose the exact parameters of their signal, even to the FCC, and even after a decade of development. Thus, the only practical way one can make an accurate determination of the magnitude of this all important problem is to make a measurement which requires access and control of the station's transmitter. Not very practical.

⁸I did perform, along with my colleagues at KCI, tests on our Cam-D System to see how far down our noise-like data signals had to be to render them inaudible so as to avoid interfering with other stations. The numbers are in the same order of energy content as my analysis shows is required for the IBOC-ui System.

position to make such measurements as they require the tapping of a station's antenna network to obtain a sample free of interference from other stations.

Accordingly, it is most important that stations using the IBOC-ui System perform very detailed tests to check compliance with Section 73.44 because, in my opinion, based on a detailed study of the problem and discussions with numerous reputable engineers all over the United States, some of whom have had hands-on experience with the IBOC-ui system, that stations using that System are apparently violating FCC Rules and their continued reliance on old erroneous measurements would render their actions wilful violations of FCC Regulations.

Hopefully, the developers of the IBOC-ui system will also, in their Reply briefs, state how they could have claimed, in prior submissions to the Commission, that their system complied with Section 73.44, thus entitling them to put their signal on-the-air.

(It should be stressed that KCI's Cam-D™ System fully complies with 47 CFR 73.44.)

**AND NOW LET US CONSIDER THE TRULY MOMENTOUS
ISSUES RAISED BY THIS UNFORTUNATE RULE MAKING**

The fact that America is at War makes anything that damages AM Radio, that is the most effective means for alerting the Public of manmade and natural disasters, totally unacceptable. The proof of this claim of AM superiority follows:

During national emergencies Americans instinctively tune to AM stations to seek information that permits them to determine how they and their families should best react to the emergency. For example consider New York City, which is the World's most media saturated City, and how important AM Radio is to the City whenever a disaster strikes. Consider 9/11/01 and the Blackout of 2003, that non-New Yorkers may not be so familiar

with when not a single life was lost due to panic or crime related to the power failure. We all were listening to our battery operated radios tuned to AM stations, such as WABC, where top City officials kept us free of fear and informed...where we could get water, food, flashlights, candles, how to handle toilets, which busses were running, which hospitals had emergency power, that all the police were on patrol and every other bit of information we needed to keep us safe and avoid panic.

Nothing has demonstrated to New Yorkers that AM radio is not obsolete in the face of the WEB, Cable, Satellite and any the other digital age miracles. The Public will only accept "improvements" that are fully compatible with AM Radio, nothing that compromises their most important information resource in the face of serious disasters.

Let us now compare AM Radio with alternative means for alerting Americans of disasters:

1. The existing AM System is obviously superior for alerting the Public of dangerous conditions than is the Cell Phone system which immediately overloads whenever the Public becomes aware of serious danger.⁹

2. Furthermore, during dangerous times it is imperative that the message the Public receives is properly worded and not distorted by being repeated over and over again (high order "hearsay" chain) no matter how careful the "sayers" are in repeating the message. Such distortion can mislead the Public and even cause panic.

3. Use of the WEB to alert Americans of an attack is even more dangerous as it is subject to Cyber attack by enemies who may include false messages as part of their attack. Capturing significant AM stations would require an enormous effort and imitating the voices of local on-the-air talent would be almost impossible. In comparison, teenagers with a minimum amount of equipment have often taken over Web systems without leaving their bedrooms all over the

⁹Witness the 9/11 Twin Towers disaster where fire and police officers could not communicate. As further proof of the vulnerability of Cell Phones to overload, consider the plane that was brought down in Pennsylvania frustrating the attack on Washington. Mrs. Olson could only reach her Husband (now the Solicitor General) via the Airphone System as her Cell Phone was always busy.

world. Can you imagine how easy it would be for a trained Cyber-War expert to do the job?

Thus, nothing can compete with AM Radio in alerting the Public to danger, especially if AM is updated with a modern IBOC system, such as the Cam-D™ System, that supplies scrolling data that can be read over a 1000 miles from key stations at night and supplementing the coverage of these key stations with numerous Local stations during the daytime to provide 24 hour service throughout America.

Accordingly, it is clear that no Agency of Government can seriously consider destruction of this vital service, AM Radio, especially for the purpose of providing work relief to manufacturers and for the benefit of a single firm that is demanding a government enforced monopoly at the expense of broadcasters and the Public. It will never happen.

As if the defense of our Country was not important enough to stop this nightmare, the FCC is mandated by Law to provide assistance to the Hearing Disabled, 29 million Americans...some 10% of our population. These Americans are to be found all over America and they, like any American, MUST, if such a service is available, be provided protection from disasters and homeland attacks. KCI has been made aware of this FCC requirement some time ago but just in recent weeks had the good fortune to have what we consider to be a break-through in finding a way to substantially improve the reliability of visual alarms, so that the group that most needs visual alerts will be better served.

Conversely, the IBOC-ui advocates, by their own statements admit they cannot serve Americans, disadvantaged or not, more than a few miles from stations day or night. Thus, this is the CONTROLLING issue. By Law this means that the Commission is under mandate not to select the IBOC-ui System as the standard nor even permit it to be used by

AM broadcasters.

It should be noted that KCI has vowed to include in every radio it markets a Visual Alarm circuit, so that the economic advantages of mass production will be enjoyed by those that most need the price advantages. (These price reductions are most substantial because there is a 10/1 quantity factor.)

PLANS RE THE PTA-Cam-D™ DEVELOPMENT

As discussed above, the only way KCI can expeditiously, hopefully before the end of 2004, initiate the mass production of receivers that will provide 24 hour alarms of Homeland Attacks and natural disasters, is for it to immediately complete our development of PTA-Cam-D™ radio receivers.

It is important to disclose another advantage for the PTA version of the Cam-D™ System. By temporarily eliminating the 15 kHz fidelity requirement, we will avoid any non-frivolous challenge by IBOC-ui supporters that it is impossible to cram the full 15 kHz fidelity into the normal bandwidth allotted to AM channels. After all, it alluded them after 11 years of trying. They would be wrong, but in view of this national emergency it would be unconscionable to delay our work for a single day, just for an ego trip.

Thus, since the PTA-Cam-D™ System does not violate any existing FCC Rule or Regulation we plan to attempt to complete this most challenging project, ASAP.

CONCLUSION AND FINAL REQUEST

In conclusion: It is respectfully requested that the Commission:

Tear down this Wall that has protected the IBOC-ui developers from meaningful competition, thus blocking over a decade of real AM Improvements, so we can all help in the defense of our Country and allow AM broadcasters to provide music as good as the Public has ever heard on FM.

Accordingly, it is formally and Respectfully Requested that the Commission immediately terminate these Proposed Rulemaking Proceedings, at least as they relate to AM Broadcasting, and permit the free unfettered marketplace to function, except for the strict enforcement of existing FCC Rules and Regulations protecting licensees from interference.

Respectfully Submitted,


Leonard R. Kahn, P.E., FIEEE

Sworn and Dated 6/14/04

cc: Ibiquity and WOR