| No. | Date | Item |
|---|---|---|
| 1 | 2001 | Comments of Dispatch Broadcasting Group, 93-177, RM-7594 |
| 2 | 8/13/01 | Jeff Timmons re KM's South Hill, NY AM App Proposal |
| 3 | 6/6/01 | WTOP, Bonneville Holding Co, CP |
| 4 | 5/31/01 | Final FCC letter re WTOP, KSTP and WLQV |
| 5 | 5/9/01 | Makaha Section 307(b) Decision and Form 301 Long Form Application |
| 6 | 5/7/01 | NAB TechCheck, New Phasor for AM Directional Antennas Proposed |
| 7 | 3/8/01 | memo re AM RM 93-177 w/attachment |
| 8 | 3/5/01 | memo re possible revision in FCC policy |

AM !

COHEN, DIPPELL AND EVERIST, P. C.
Before the
**FEDERAL COMMUNICATIONS COMMISSION**
Washington, D.C.

(DGE/WBNS Filing)

| | | |
|---|---|---|
| In the Matter of<br>An Inquiry into The Commission's<br>Policies and Rules Regarding AM<br>Radio Service Directional Antenna<br>Performance Verification | )<br>)<br>)<br>)<br>) | MM Docket No. 93-177<br>RM-7594 |

***Comments of Dispatch Broadcasting Group***

The following comments in response to the *Further Notice of Proposed Rule Making* ("Further Notice") are submitted on behalf of RadiOhio Incorporated, licensee of Radio Station WBNS, Columbus, Ohio ("WBNS"). WBNS operates on an assigned frequency of 1460 KHz with a power of 1/5 kW DA-N. WBNS applauds and supports the Federal Communications Commission's ("Commission") effort to reduce the burden on stations that operate directional antenna systems while, at the same time, maintaining the integrity of the allocation scheme. The Further Notice proposes to accomplish these goals by permitting a prediction and measurement methodology to ensure the integrity of the authorized pattern which is designed to protect allocationally significant stations.

WBNS submits that based on the record to date that there may be a family of directional arrays that can be faithfully modeled and that additional aspects and measures to the current antenna modeling proposal should be visited and considered. WBNS submits integrating other techniques with the antenna modeling proposal could provide additional benefits to the Commission and the industry. As discussed further in these comments, implementing additional measures could significantly increase the potential to include many directional stations in differing

environments in the modeling program. WBNS has reviewed the extensive filing made previously by the National Association of Broadcasters ("NAB") that formed the basis of the Further Notice.

Initially, NAB hosted four ad-hoc meetings on AM directional systems. These meetings spanned from October 1999 through June 2000. From these meetings, a joint-written *ex parte* filing was prepared and filed with the Commission.[1] WBNS submits that the August 2000 NAB filing is an important first step in identifying and quantifying a coherent procedure for both the Commission and the broadcast industry to improve directional antenna modeling.

WBNS will focus on two general areas--historical need of deep-null patterns and technical assignment criteria; and Method of Moments program in relation to Regulatory and Processing issues.

Historical Need of Deep Null Patterns and Technical Assignment Criteria

In the Notice of Proposed Rule Making, the Commission estimated that there are approximately 4800 radio stations licensed in the United States. [2] Further, the Commission estimated that 40% of these stations operate directionally during daytime or nighttime hours. Directional antenna systems are typically employed to control interference between allocationally significant stations and assure adequate community coverage.

These technical and coverage concepts are at the heart of WBNS' comments. The WBNS comments are submitted to propose reasonable methods to analyze directional antenna arrays in a uniform and comprehensive manner. These methods would include utilizing Method of

---

[1]See Joint-Written ExParte Filing–Supplemental Comments of Broadcasters, Broadcast Engineering Consultants and Equipment Manufacturers, filed August 3, 2000.

[2]See "In the Matter of an Inquiry into the Commission's Policies and Rules Regarding AM Radio Service Directional Antenna Performance Verification,"14 FCC Rcd 9275 (1999).

Moments analysis constructed in such a way that universal industry and Commission acceptance and use can occur. Within this framework, it is believed that the Commission can not only reduce its regulatory burden but serve the industry with an important analysis model that enhances the ability of these stations to realize greater coverage potential.

The August 2000 NAB filing specified 18 criteria in which to evaluate whether or not computer modeling could replace a field proof of a directional antenna system as defined by the Commission's Rules. These criteria are extensive and make a valiant attempt to identify which arrays are candidates for Method of Moments evaluation. Several questions emerge with reference to some of the criteria formulated. For example with respect to Criterion 4, it is unclear whether

- the entire ground system is to have a difference of no greater than six electrical degrees or just that area near the tower base;
- directional antenna systems with abbreviated ground systems are candidates for evaluation;
- for towers outside the licensee's property, ie., beyond the control of licensee, are the heights to be determined assuming the same ground level as the transmitter site? What if the subject tower is located on substantially different terrain?
- the condition of the ground system, is some minimum criteria to be met?

Thus far, the physical criteria in the NAB submission deals only with items of the directional system located above ground.

With reference to Criteria 13 through 17,

- what if the criteria used in the evaluation fails to identify potential reradiation conditions? ✓
- What responsibility do PCS operators have if these rules are changed? ✓

- What constitutes a directional pattern? Some non-directional pattern proofs show pattern undulations. Is this criteria also to be used on non-directional operations (see Section 73.1692)?

WBNS submits that a key limitation of the proposed Method of Moments analysis and the number of candidate arrays to be included is the depth of the directional antenna pattern null(s). The null can be considered as the point of the pattern in which radiation depth and position is established. That control is developed by the antenna pattern parameters. The null depth and position not only can be altered by varying the antenna pattern parameters, but also by environmental factors. The less constrained the null of a pattern, the greater the change in antenna parameters that is necessary to modify this signal in a given direction or the greater the change in the external environmental factor required before a detrimental effect occurs.

Therefore, the industry and the Commission should review allocation criteria which result in directional patterns which may never be candidates for Method of Moments analysis as currently envisioned. WBNS, which is a Class B station (formerly a regional station), submits that a fundamental review of the technical allocation criteria for formerly regional stations would yield several improvements in the public interest. These improvements include enlarged nighttime service areas; potential reductions in the number of towers required to produce a directional pattern; increases in the number of stations that potentially could fit the Method of Moments footprint criteria; and yield directional patterns less subject to effects of pattern parameter deviation and outside environmental effects. These improvements will not only benefit the industry, but also reduce the Commission's burden to continually devote time and effort to evaluating special temporary authority and other operational changes. This proposal could potentially permit nighttime operation for number of Class B daytime-only stations.

Stations such as WBNS whose nighttime facilities were designed, authorized, and commissioned in the 1940s find their service area reduced not by technical difficulties but the migration and growth over the last 50 years of the metropolitan area to include the suburbs. It is that suburban area growth which has diminished the ability of these stations like WBNS to effectively serve its nighttime audience.

Nighttime

For the Class B stations operating on the old regional channels, Dispatch proposes that the propagation curves other than the 10% (See Figure 2, Section 73.190 of the Rules) should be used for co-channel interference determinations (during nighttime operation, sunset plus two hours). As shown below, WBNS submits that nighttime interference is overstated for Class B channels. In any filing for a station is demonstrating compliance with Method of Moments methodology, Section 73.182(q) Note 1 should be waived.

At present, the Commission's interference criteria assumes that all interfering skywave signals arrive at the same time as though there is 100% correlation in their propagation relationship.[3]

Statistically, it is found that the number of interfering skywave signals at any one time is less than the total number of stations on the channel. For example, in the case of eight total possible events with a single probability of 0.1, the probability is:

---

[3]This approach gives signals the same weight as interfering groundwave signals. Moreover, it ignores the fact for 90% of the time interference from any particular station is less than that depicted by the Commission's skywave propagation criteria. This leads to inaccuracies in the estimate of service and distorts the true interference picture.

| Number of Events | Probability of Exactly X Events Occurring Simultaneously | Probability of 1 to X or Less Events Occurring Simultaneously |
|---|---|---|
| 0 | 0.430 | – |
| 1 | 0.382 | 0.382 |
| 2 | 0.148 | 0.530 |
| 3 | 0.03 | 0.562 |
| 4 | 0.004 | 0.567 |
| 5 | 0.0004 | 0.567 |
| 6 | 0.00002 | 0.567 |
| 7 | 0.0000007 | 0.567 |
| 8 | 0.000000009 | 0.567 |

As seen from the above, the probability of eight events occurring simultaneously is far less than one.

For eight total possible events with a single probability of 0.5, the probability is:

| Number of Events | Probability of Exactly X Events Occurring Simultaneously | Probability of 1 to X or Less Events Occurring Simultaneously |
|---|---|---|
| 0 | 0.004 | – |
| 1 | 0.031 | 0.031 |
| 2 | 0.110 | 0.141 |
| 3 | 0.219 | 0.360 |
| 4 | 0.273 | 0.633 |
| 5 | 0.219 | 0.852 |
| 6 | 0.109 | 0.961 |
| 7 | 0.031 | 0.992 |
| 8 | 0.003 | 0.995 |

As this mathematical representation indicates a single probability of 0.5 is required in order to achieve a probability that approaches 1.0 requires a minimum of eight events.

The above is based upon information published by the Radio Advisory Committee, which attempted to estimate the probability of co-channel skywave signals arriving at the same time.[4] Thus, it is concluded that calculation of interference using the Commission's procedures continues to result in a distorted depiction of service for Class B stations. This results in an inefficient use of the spectrum.

WBNS submits that the current Rules place too great an emphasis and reliance on the hypothetical occurrence of all skywave signals on a Class B channel manifesting themselves at any location at any moment in time. WBNS does not believe that sufficient correlation exists to warrant the current inclusion of skywave signals in a station's RSS predicted by using the current 10% propagation curves.

WBNS submits that the above statistical relationship which uses skywave field strength values 50% of the time computed for the second hour after sunset more accurately portrays the behavior of skywave signals.[5] WBNS submits that the current rules tend to overprotect groundwave contours or, conversely, over-estimate the potential for interference. This fact results in more complicated arrays for nighttime patterns requiring deeper suppression to be generated and maintained by a station's directional array.

---

[4]"Mathematical Representation of Probability of 10% Skywave Signals Appearing at a Location Simultaneously", provided in summary and conclusions of the Proceedings of the Technical Subgroup of the FCC's Radio Advisory Committee with respect to MM Docket No. 87-267 in the *Matter of Review of Technical Assignment Criteria for AM Broadcast Service*.

[5]Alternatively other percentages could be considered. For example, if skywave field strength value of 25% would result in approximately 4 dB increase in actual radiated signal.

Class B (old regional) stations have the preponderance of directional antenna systems. Simplifying directional arrays and improving groundwave service during nighttime hours will permit more directional antennas to fit within any Method of Moments model.

Computer modeling for the vertical radiation elevation pattern of vertical wire antennas[6] such as used by Class B broadcast stations should be made as described by various sources.[7,8] Both of these sources provide insight as to the characteristics of the radiation pattern in the elevation plane assuming sinusoidal current distribution. Successful implementation of more accurate vertical radiation pattern prediction methods will allow for a more accurate determination of nighttime interference levels and thereby enhance the ability of a station to design and to deliver a signal while protecting those allocationally significant stations.

The above two steps will permit an increase in service and facilitate simpler directional antenna design, and thereby, qualify more stations to meet the Method of Moments computational profile.

Method of Moments Program and Regulatory and Processing

WBNS submits that the Method of Moments methodology warrants consideration if a simple, well understood comprehensive program can be implemented which allows a number of stations to be candidates for the Method of Moments program. As proposed by the NAB

---

[6]Section 73.190 Figure 5

[7] Edward C. Jordan/Keith G. Balmain, Electromagnetic Waves and Radiating Systems, Second Edition, pp. 640-644.

[8] IEEE Antennas and Propagation Society Newsletter, December 1996 Article, Electromagnetic Surface Waves, by Ronold W. P. King, Gordon McKay Laboratory, Harvard University, Cambridge, MA 02138.

submission, it is uncertain how many stations can comply with the 18 criteria. WBNS submits that unless the Method of Moments methodology can be used universally by a number of stations and consultants, then it will not be an efficient use of Commission's valuable resources. Class B stations have been authorized over eight decades under varying Commission Rules. From the period up to the Year 2000, there are two distinct discernible periods in the life of the Class B station. The first period of the greatest station growth occurred up to approximately 1960. The second and the current period is the period of the greatest urban and suburban growth. This urban and suburban growth have contributed to the dilemma described in the NAB's criteria 13 through 17. NAB criteria quite properly identifies office buildings, water towers, power lines, communications towers, smoke stacks, elevated highway and railway bridges, etc. NAB has identified the dilemma but not the long term solution needed, if sufficient benefits to the Commission and industry are to be achieved.

The NAB submission which offers a path to more comprehensive directional modeling is a very narrow path. Unless supported by industry to allow for more extensive and universal use, it will not provide the Commission the relief it seeks in administration of the AM broadcast band. That relief will occur only if an alternative to proposed criteria 13 through 17 is approved where station nulls that exceed a certain threshold value are also permitted to be considered. Directional patterns which do not have deep-nulls are less susceptible to radiation deviations described by criteria 13 through 17. WBNS submits that the end result for the majority of deep-null patterns in which the proposed relief by Method of Moments methodology sought will be minimal for nighttime patterns as currently licensed. Therefore, it is vital if Method of Moments modeling and Commission processing objects are to be achieved, to examine all aspects of the criteria that

fosters deep-null patterns. WBNS submits that two areas which contribute most to the deep-null pattern is the vertical radiation pattern in the elevation angles above the horizon and the use of the nighttime protection criteria using the 10% propagation curve. These two areas are dominant and central to the necessity of deep-null directional patterns.

The period of greatest station growth finds almost 75% of the Class B stations were established before 1960. After being established, the advent of urban and suburban growth saw many of these stations slowly being not able to serve their community during nighttime hours. It is to be noted Class B stations comprise 40% of the U.S. AM broadcast inventory.[9]

With reference to NAB criteria 18, much effort needs to be directed so that for the Method of Moments model, the procedure and the input parameters used to run the program are well-documented, well-established and well-understood by both the industry and the Commission. Without such an effort, this process will lead to frustration, confusion and needless waste of the Commission's resources in the administration and regulation of this part of the spectrum.

Summary

WBNS submits that Class B stations have the preponderance of directional antenna systems. Moreover, those Class B stations operating nighttime hours, nearly all are directional. These Class B stations nighttime directional antenna systems are most likely to have pattern nulls which will contribute and require a high level of effort by the Commission to administer. This is evident as the FCC Form 301 for AM has been the most difficult of the FCC 301 form series to

---

[9]Over 20% of the U.S. stations inventory are Class C stations. Little relief is forseen by this Further Notice for Class C stations.

bring on line for electronic filing. The reduction of the need to have deep-null patterns by the avenue as proposed by WBNS here will result in the following:

- Reduce the need to maintain costly, complex directional arrays by allowing a relaxation in radiated signal strength in null directions and therefore provide a more inclusive field of candidates to fit within the Method of Moments criteria.
- A nighttime signal limitation closer to reality than prescribed by the current rules thereby opening up the prospect of Class B daytime stations opportunities for nighttime operation.
- Afford real improvement in nighttime service by increasing the groundwave signal
- Introduce the ability to design a nighttime antenna system that will have better operating characteristics and be less subject to change due to outside environmental factors.

The ability to foster and use the above suggestions will yield less administrative burden not only to the Commission but to the industry and correspondingly improve the nighttime service to the community.

# FEDERAL COMMUNICATIONS COMMISSION

**445 12th STREET, S.W.**
**WASHINGTON, DC 20554**
**August 7, 2001**

*In Reply Refer to:*
1800B3-MFW

Mr. Robert L. Vinikoor
Manchester Radio Partners
P.O. Box 2295
New London, NH 03257

In re: NEW(AM), Manchester, NH
File No. BNP-20000201AGZ
Facility ID No. 122547

Dear Applicant:

This letter refers to the captioned application of Manchester Radio Partners ("MRP") for a new AM station at 750 KHz in Manchester, New Hampshire.

MRP did not file a Section 307(b) submission pursuant to the Commission's October 27, 2000 *Public Notice* announcing mutually exclusive applications subject to Auction.[1] Accordingly, pursuant to the terms of that *Public Notice*, its application HEREBY IS DISMISSED.

Sincerely,

Peter Doyle, Chief
Audio Services Division
Mass Media Bureau

cc: KM Communictions, Inc.
Romar Communications

[1] *Public Notice*, "Am Auction No. 32 Mutually Exclusive Applicants Subject to Auction," Report No. AUC-00-323-E, DA 00-2416 (released October 27, 2000), as extended by *Public Notice*, "AM Auction No. 32 Mutually Exclusive Applicants – Settlement Period and Section 307(b) Filing Period Extended to February 28, 2001," DA 00-2892 (released December 13, 2000).

**FEDERAL COMMUNICATIONS COMMISSION**
**445 12th Street, S.W.**
**Washington, D.C. 20554**
**August 7, 2001**

**In Reply Refer to:**
1800B3-JWR

KM Communications, Inc.
c/o Jeffrey L. Timmons, Esq.
3235 Satellite Blvd.
Building 400, Suite 300
Atlanta, Georgia 30096-8688

Romar Communications, Inc.
c/o A. Wray Fitch III, Esq.
Gammon & Grange, P.C.
7th Floor, 8280 Greensboro Drive
McLean, Virginia 22102-3807

In re: NEW(AM), South Hill, NY
File No. BNP-2000201AEY
Facility ID No. 122482

NEW(AM), Lansing, NY
File No. BNP-19971126AH
Facility ID No. 89232

Dear Counsel:

We have before us two mutually exclusive applications for new AM broadcast stations. KM Communications, Inc. ("KMC") proposes a new AM station at South Hill, New York[1] and Romar Communications, Inc. ("RCI") proposes a new AM station at Lansing, New York.[2] As discussed below, both proposals will proceed to auction.

**Background/Applicable Law:** In situations such as the one before us, mutually exclusive applicants would be subject to a competitive bidding process. *See Implementation of Section 309(j) of the Communications Act-Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Services Licenses* ("*Broadcast First Report and Order*"), 13 FCC Rcd 15,920 (1998); *recon. denied*, 14 FCC Rcd 8724 (1999); *modified*, 14 FCC Rcd 12,541

[1] File No. BNP-2000201AEY.

[2] File No. BNP-971126AH.

(1999). However, in the *Broadcast First Report and Order*, the Commission determined that the competitive bidding procedure should be consistent with its statutory mandate under Section 307(b) of the Communications Act to provide a "fair, efficient, and equitable" distribution of radio services across the nation. To this end, the Commission determined that the staff would undertake a traditional Section 307(b) analysis prior to conducting an auction for mutually exclusive applications. 13 FCC Rcd at 15,964-65, ¶ 120.[3] The Commission also noted that the FM allotment priorities fulfill its obligation under Section 307(b), and would apply in making a Section 307(b) determination regarding mutually exclusive AM applications before auction.[4]

**Discussion:** After careful consideration of both applications, we have determined that neither the KMC application for a new AM station at South Hill nor the RCI application for a new AM station at Lansing is entitled to a dispositive Section 307(b) preference. As such, these applications will proceed to auction.

At the outset, we note that both applicants propose a first local service to their respective communities. We also note that both communities are located within the Ithaca Urbanized Area. In this regard, we will not blindly award a first local service preference in situations where the community is in a well-served Urbanized Area or may lead to an anomalous result. In evaluating such proposals, we apply the guidelines set forth in *Faye and Richard Tuck*, 3 FCC Rcd 5374 (1988) ("*Tuck*"). In doing so, we consider the signal population coverage, the size and proximity of the proposed community to the urban center, and the interdependence of the proposed community to the urban center utilizing the eight *Tuck* factors.[5] For the reasons discussed below, we cannot find that either proposal is entitled to a preference as a first local service.

---

[3] We note that RCI's May 15, 2001 informal objection to KMI's application is premature and will not be considered in the context of this Section 307(b) determination. *See Broadcast First Report and Order*, 13 FCC Rcd at 15,986 ¶ 165.

[4] *See Revision of FM Assignment Policies and Procedures*, 90 FCC 2d 88 (1982) ("*FM Assignment Policies*"). The FM allotment priorities are as follows: (1) First fulltime aural service, (2) Second fulltime aural service, (3) First local service, and (4) Other public interest matters. Co-equal weight is given to Priorities (2) and (3). The FM allotment priorities were first applied to Section 307(b) determinations in mutually exclusive AM proceedings in *Alessandro Broadcasting Co.*, 56 RR 2d 1568 (Rev. Bd. 1984).

[5] In *Tuck*, the Commission forth eight factors in assessing he interdependence of a specified community: (1) the extent to which the community residents work in the larger metropolitan area, rather than the specified community; (2) whether the smaller community has its own newspaper or other media that covers the community's needs and interests; (3) whether community leaders and residents perceive the specified community as being an integral part of, or separate from, the metropolitan area; (4) whether the specified community has its own local government and elected officials (5) whether the smaller community has its own local telephone book provided by the local phone company or zip code; (6) whether the community has its own commercial establishments, health facilities, and transportation systems; (7) the extent to which the specified community and the central city are part of the same advertising market; and (8) the extent to which the specified community relies on the larger metropolitan area for various municipal services such as police, fire protection, schools and libraries. We have considered a community as independent when a majority of these factors demonstrate that the community is separate and distinct from the urbanized area. *Jupiter and Hobe Sound, Florida*, 12 FCC Rcd 3570 (1997); *Parker and St. Joe, Florida*, 11 FCC Rcd 1095 (1996).

The first area of inquiry concerns the extent these stations will provide service to the entire Ithaca Urbanized Area. Both stations will provide a 5 mV/m service to the entire Ithaca Urbanized Area. Second, we note that both South Hill and Lansing, with respective populations of 5,423 and 3,281 persons, are located within the Ithaca Urbanized Area which has an overall population of 50,132 persons. These factors -- the provision of service to the entire urbanized area and the small size of the two communities relative to the Ithaca urbanized area -- do not support a conclusion that either community is entitled to consideration for an independent first local service. *See Tuck, supra,* 3 FCC Rcd at 5377-78, *citing Huntington Broadcasting Co. v. FCC*, 192 F.2d 33,35 (D.C. Cir. 1951). The third, and most important, inquiry is the independence of these suburban communities. Neither of the applicants has demonstrated that a majority of the *Tuck* factors supports a finding that either community is independent of the Ithaca Urbanized Area. In regard to this proceeding, factors 2, 5, 7 and 8, strongly suggest that neither community is independent of the Ithaca Urbanized Area. Specifically, neither community has its own local newspaper, local telephone book provided by a local telephone company, zip code. Both communities are part of the Ithaca advertising market and rely upon either Ithaca or Tompkins County for municipal services. With respect to factor 1, neither applicant has demonstrated that the residents actually work within the specified community. South Hill, the larger of the two communities, does not have any local government or elected officials under factor 4.

Under these circumstances, our determination in this proceeding would normally be made under Priority (4) in which we have favored the proposal providing service to the greatest number of persons. *See Okmulgee, Nowata, Pawhuska, Bartlesville, Bixby, Oklahoma, and Rogers, Arkansas*, 10 FCC Rcd 12014 (1995); *Ashland, California, Rolla and Monroe City, Missouri*, 8 FCC Rcd 1799 (1993); *Bowling Green and Elizabethtown, Kentucky, and Ferdinand, Indiana*, 8 FCC Rcd 2097 (1993). However, in this instance, neither applicant is entitled to a dispositive Section 307(b) preference. The Lansing applicant proposes to serve 199,847 persons within its 2 mV/m contour and 926,444 persons within its 0.5 mV/m contour. The South Hill applicant proposes to serve 183,907 persons within its 2 mV/m contour and 953,139 persons within its 0.5 mV/m contour. The population differences are neither sufficiently significant nor dispositive to warrant a Section 307(b) preference. Cf. *Seabrook, Huntsville, Bryan, Victoria, Kennedy and George West, Texas*, 10 FCC Rcd 9360 (1995).

**Conclusion/Action**: Accordingly, IT IS ORDERED that the K.M. Communications, Inc. application (File No. BNP-2000201AEY) and the Romar Communications, Inc. application (File No. BNP-19971126AH) SHALL PROCEED TO AUCTION, the date of which will be announced by a subsequent *Public Notice*.

Sincerely,

Edward P. DeLaHunt
Assistant Chief
Audio Services Division
Mass Media Bureau

# United States of America
## FEDERAL COMMUNICATIONS COMMISSION
## AM BROADCAST STATION CONSTRUCTION PERMIT

Authorizing Official:

Edward P. De La Hunt
Assistant Chief
Audio Services Division
Mass Media Bureau

Official Mailing Address:

BONNEVILLE HOLDING COMPANY
P.O. BOX 1160
SALT LAKE CITY UT 84110

Grant Date: MAY 30 2001

This permit expires 3:00 a.m. local time, 36 months after the grant date specified above.

Facility ID: 74120
Call Sign: WTOP
Permit File Number: BP-19900328AG

Subject to the provisions of the Communications Act of 1934, as amended, subsequent acts and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions set forth in this permit, the permittee is hereby authorized to construct the radio transmitting apparatus herein described. Installation and adjustment of equipment not specifically set forth herein shall be in accordance with representations contained in the permittee's application for construction permit except for such modifications as are presently permitted, without application, by the Commission's Rules.

Commission rules which became effective on February 16, 1999, have a bearing on this construction permit. See Report & Order, Streamlining of Mass Media Applications, MM Docket No. 98-43, 13 FCC RCD 23056, Para. 77-90 (November 25, 1998); 63 Fed. Reg. 70039 (December 18, 1998). Pursuant to these rules, this construction permit will be subject to automatic forfeiture unless construction is complete and an application for license to cover is filed prior to expiration. See Section 73.3598.

Equipment and program tests shall be conducted only pursuant to Sections 73.1610 and 73.1620 of the Commission's Rules.

Hours of Operation: Unlimited

Average hours of sunrise and sunset:
Local Standard Time (Non-Advanced)

| | | | | | |
|---|---|---|---|---|---|
| Jan. | 7:30 AM | 5:15 PM | Jul. | 5:00 AM | 7:30 PM |
| Feb. | 7:00 AM | 5:45 PM | Aug. | 5:15 AM | 7:00 PM |
| Mar. | 6:15 AM | 6:15 PM | Sep. | 5:45 AM | 6:15 PM |
| Apr. | 5:30 AM | 6:45 PM | Oct. | 6:15 AM | 5:30 PM |
| May | 5:00 AM | 7:15 PM | Nov. | 6:45 AM | 5:00 PM |
| Jun. | 4:45 AM | 7:30 PM | Dec. | 7:15 AM | 4:45 PM |

Callsign: WTOP

Permit No.: BP-19900328AG

DESCRIPTION OF DIRECTIONAL ANTENNA SYSTEM

Theoretical RMS (mV/m/km): Day: 2655.42 Night: 2719.36

Standard RMS (mV/m/km): Night: 2856.29

Augmented RMS (mV/m/km): Day: 2809.4

Q Factor: Day: 70.71 Night: 70.71

Theoretical Parameters:

Day Directional Antenna:

| Tower No. | Field Ratio | Phasing (Deg.) | Spacing (Deg.) | Orientation (Deg.) | Tower Ref Switch * | Height (Deg.) |
|---|---|---|---|---|---|---|
| 1 | 1.0000 | 0.000 | 0.0000 | 0.000 | 0 | 185.0 |
| 2 | 0.5650 | -67.000 | 87.3000 | 114.500 | 0 | 185.0 |
| 3 | 0.4190 | -139.000 | 87.3000 | 114.500 | 1 | 185.0 |

* Tower Reference Switch"

0 = Spacing and orientation from reference tower

1 = Spacing and orientation from previous tower

Augmentation Parameters:

| Aug No. | Central Azimuth (Deg. T) | Span (Deg.) | Radiation at Central Azimuth (mV/m @ 1 km) |
|---|---|---|---|
| 1 | 0.0 | 51.0 | 1287.48 |
| 2 | 37.5 | 25.0 | 3250.87 |
| 3 | 190.0 | 20.0 | 3339.39 |
| 4 | 242.0 | 24.0 | 1287.48 |
| 5 | 254.5 | 20.0 | 1287.48 |
| 6 | 334.5 | 20.0 | 1287.48 |
| 7 | 347.0 | 26.0 | 1287.48 |

Theoretical Parameters:

Night Directional Antenna:

| Tower No. | Field Ratio | Phasing (Deg.) | Spacing (Deg.) | Orientation (Deg.) | Tower Ref Switch * | Height (Deg.) |
|---|---|---|---|---|---|---|
| 1 | 1.0000 | -65.000 | 0.0000 | 0.000 | 0 | 185.0 |
| 2 | 1.7000 | 13.000 | 87.3000 | 294.500 | 0 | 185.0 |
| 3 | 1.0000 | 65.000 | 174.6000 | 294.500 | 0 | 185.0 |

* Tower Reference Switch"

0 = Spacing and orientation from reference tower

1 = Spacing and orientation from previous tower

Callsign: WTOP Permit No.: BP-19900328AG

Inverse Distance Field Strength:

The inverse distance field strength at a distance of one kilometer from the above antenna in the directions specified shall not exceed the following values:

Night:

| Azimuth: | Radiation: | |
|---|---|---|
| 114.5 | 3909.5 | mV/m |
| 272.5 | 430.2 | mV/m |
| 294.5 | 448.5 | mV/m |
| 316.5 | 430.2 | mV/m |

Special operating conditions or restrictions:

1 A complete nondirectional proof of performance, in addition to a complete proof on the nighttime directional antenna system, shall be submitted before program tests are authorized. The nondirectional and directional field strength measurements must be made under similar environmental conditions.

2 The permittee must accept skywave interference to the nighttime facilities authorized herein from the operation of Station KSTP, as authorized by Construction Permit BP-19900329AF. The nighttime 0.5 mV/m, 50% skywave secondary service contour will be protected from objectionable interference from other stations on a single-limit basis as provided in Section 73.182, except that such protection will not be provided within the areas where interference to WTOP from Station KSTP is predicted to occur. The nighttime groundwave primary service contour will be protected on a root-sum-square (RSS) basis, 25% exclusion method, from interference caused by other stations above the single limit imposed by Station KSTP, which is assumed to be 2.5 mV/m. See letter from Acting Chief, Audio Services Division to Thomas J. Hutton, Esq. et al, May 30, 2001.

*** END OF AUTHORIZATION ***

# FEDERAL COMMUNICATIONS COMMISSION
## 445 TWELFTH STREET SW
## WASHINGTON DC 20554

MASS MEDIA BUREAU
AUDIO SERVICES DIVISION
TECHNICAL PROCESSING GROUP
APPLICATION STATUS: (202) 418-2730
HOME PAGE: www.fcc.gov/mmb/asd/

PROCESSING ENGINEER: CHARLES N. (NORM) MILLER
TELEPHONE: (202) 418-2767
FACSIMILE: (202) 418-1410
MAIL STOP: 1800B2
INTERNET ADDRESS: cnmiller@fcc.gov

May 30, 2001

Thomas J. Hutton, Esq.
Holland & Knight
2099 Pennsylvania Avenue NW, Suite 100
Washington, DC 20006

Kenneth E. Satten, Esq.
Wilkinson Barker Knauer LLP
2300 N Street NW, Suite 700
Washington, DC 20037-1128

Matthew H. McCormick, Esq.
Reddy, Begley & McCormick
2175 K Street, Northwest, Suite 350
Washington, D.C. 20037-1845

In re: KSTP (AM), St. Paul, Minnesota
Facility Identification Number 35641
KSTP-AM, LLC
Application for Construction Permit
File No. BP-900329AF

WTOP(AM), Washington, DC
Facility Identification Number 74120
Bonneville Holding Company
Application for Construction Permit
File No. BP-900328AG

WLQV(AM), Detroit, Michigan
Facility Identification Number 42081
Midwest Broadcast Corporation Too
Application for Construction Permit
File No. BP-881031AE

Dear Counsel:

The staff has under consideration: (i) the above-captioned applications for construction permits, (ii) a Joint Request for Approval of Settlement Agreement, filed December 10, 1998, by KSTP-

AM, LLC, licensee of KSTP (AM), St. Paul, Minnesota ("KSTP"); Bonneville Holding Company, licensee of WTOP(AM), Washington, DC ("WTOP"); and Midwest Broadcast Corporation Too, licensee of WLQV(AM), Detroit, Michigan ("WLQV")(collectively, the "Parties"), and (iii) various amendments and supplements to the filings.[1] Grant of the proposed settlement would permanently authorize the current STA operations of KSTP and WTOP and would permit nighttime service improvements by WLQV. The applications and the Request for Approval of Settlement Agreement are unopposed.

## Background

KSTP and WTOP are licensed as Class A (formerly Class IB) AM stations on 1500 kHz. Each operates with 50 kilowatts, unlimited hours, and employs a directional antenna during nighttime hours in order to protect the nighttime primary groundwave and secondary skywave[2] service areas of the other. WLQV is a Class B (formerly Class II) AM station, also operating on 1500 kHz. WLQV is licensed for operation with 50 kilowatts during daytime hours, employing a nine-tower directional array, and 5 kilowatts during nighttime, employing a 12-tower array. By means of their respective applications, KSTP and WTOP propose to increase the radiation in the null areas of their nighttime directional patterns; KSTP would achieve this result through augmentation of the existing nighttime pattern, and WTOP through modification of the electrical parameters of the authorized nighttime standard pattern. These proposals would formalize the nighttime operations which Stations KSTP and WTOP have been employing since April 12, 1984.[3]

The settlement agreement filed jointly by the Parties requests that the Commission grant each of the referenced applications. Grant of the KSTP and WTOP applications would result in increased levels of interference to all three stations. The WLQV nighttime power increase is designed to offset increased interference received, but not to raise the level of interference to either Class A station above that caused by the other. All three applications were initially

[1] KSTP filed amendments on December 10, 1998 and June 24, 1999; WTOP filed amendments on May 21, 1997; December 10, 1998 and July 2, 1999; WLQV filed amendments on May 18, 1989; November 6, 1992; August 8, 1996; May 21, 1997; December 10, 1998; February 2, 2001 and March 27, 2001. Also on file are *Comments of Detroit SRN, Inc.*, filed October 11, 1990; and the Parties' amendment to the Settlement Agreement filed on February 2, 2001.

[2] Skywave service results from AM signals which have been reflected from electrically charged layers in the upper atmosphere (ionosphere) during nighttime hours, and which can be received at great distances from the transmitter, typically up to several hundred miles. Because skywave signals are subject to fading, such service is considered as secondary, and is defined in terms of the percentage of time the signal exceeds a specified value. Class A AM stations are protected from interference to their nighttime secondary 0.5 mV/m, 50% skywave service contours. *See* 47 CFR §§ 7.21(a)(1), 73.182(g).

[3] On April 12, 1984, in response to a joint request filed on February 28, 1984, the staff granted special temporary authority (STA) to Stations KSTP and WTOP for operation with substantially the same modified facilities proposed in the pending applications, in order to permit the stations to conduct tests of the coverage and interference effects.

filed prior to the Commission's adoption of *Review of the Technical Assignment Criteria for the AM Broadcast Service*, 6 FCC Rcd 6273 (1991) (the "AM improvement Order") (subsequent history omitted). Thus, these applications are subject to processing under the rules which were in place at that time. KSTP and WTOP request waiver of the pre-AM Improvement Order rules to allow grant of the respective applications with regard to the increases in mutual nighttime interference. WLQV requests waiver of Section 73.182 in order to permit overlap of the KSTP and WTOP 0.5 mV/m, 50 percent skywave contours by the proposed WLQV 0.025 mV/m, 10 percent skywave interfering contour. Aside from the increases in overlap among the three stations for which waivers are requested, the three proposals are in compliance with the Commission's technical rules.

**Discussion**

This proceeding involves proposals by Stations KSTP and WTOP to increase radiation in the null areas of their respective nighttime directional patterns, in order to provide improved nighttime service to significant suburban population centers which have developed since the initial authorizations were issued for the two Class A stations. KSTP and WTOP argue that, on balance, the public interest would be served by increased interference-free nighttime groundwave service to 130,000 persons within the null areas of their respective nighttime patterns.[4] The stations cite several cases where similar mutual increases in radiation between class A stations have been permitted. These include the grant in 1984 of the facility modification applications of co-channel Class A Stations WBAL, Baltimore, Maryland, and KAAY, Little Rock, Arkansas, which permitted each station to relax its respective nighttime pattern toward the other.[5]

WLQV is located between KSTP and WTOP. Consequently the proposed increases in radiation by KSTP and WTOP will result in increased interference to WLQV. However, WLQV has proposed a 10-kilowatt nighttime operation which would, to a large extent, mitigate the effect of increased interference from KSTP and WTOP while not increasing the level of interference to either of those stations beyond that created by the proposed modifications.

We recognize that grant of the proposed agreement would result in KSTP's and WLQV's nighttime interfering skywave contours substantially overlapping WTOP's nighttime protected skywave contour, and WTOP's and WLQV's nighttime interfering skywave contours substantially overlapping KSTP's nighttime protected skywave contour. Theoretically, implementation of the agreement would result in over 9 million people losing predicted nighttime skywave service. In addition, approximately one million people theoretically would lose nighttime primary groundwave service. Nevertheless, we believe that a grant of the requested waivers is warranted in the instant circumstances.

---

[4] The stations also argue that the effect of the proposed changes would be even greater than predicted by standard methods, due to the elimination of "null distortion" within the suppressed areas of the respective licensed standard patterns.

[5] *See* BP-19810213AF, BP-19821117AW.

Significantly, these theoretical nighttime service losses are calculated on a licensed-to-proposed basis. However, since KSTP and WTOP seek permanent authorizations for facilities substantially identical to those with which they have been operating for 17 years, grant of the instant proposals will result in no loss of current skywave or groundwave service. Rather, it will preserve existing service and therefore established listener patterns in the greater Minneapolis-St. Paul and Washington, DC, metropolitan areas.

However, as a result of the proposed modifications to their nighttime directional patterns, KSTP and WTOP no longer will provide interference-free nighttime secondary service to all of the areas within their respective 0.5 mV/m, 50 percent skywave contours, nor nighttime primary interference-free service to all of the areas within their respective 0.5 mV/m groundwave contours. In these circumstances, it is no longer appropriate to require other co-channel and first-adjacent channel stations to continue to provide full protection to the predicted 0.5 mV/m, 50 percent skywave contours of KSTP and WTOP, notwithstanding their Class A status. For the same reasons, KSTP's and WTOP's nighttime primary interference-free groundwave contours also must be modified to take into account these stations' mutual interference. Accordingly, the KSTP and WTOP construction permits will be conditioned to provide for acceptance of the increased mutual interference.

Consequently, in recognition of the increased interference which will result from the proposed modifications, we are implementing modified protection requirements to these two Class A stations. In particular, applications for new or modified facilities on 1500 and 1510 kHz[6] which are filed after the issue of licenses to cover the KSTP and WTOP facilities authorized herein will be required only to protect the interference-free areas of the 0.5 mV/m, 50 percent skywave contours of Stations KSTP and WTOP, as limited by the operation of the other Class A station. In addition, protection to the respective nighttime primary service areas of KSTP and WTOP will be calculated on a 25 percent RSS basis, considering only the single-limit contribution of the other Class A station (assumed to be 2.5 mV/m) and that of the proposal. Details of the required protection criteria are set forth in the Attachment.

**Conclusion**

Having thoroughly reviewed the filings before us, and in recognition of the unique circumstances and facts presented in these cases, we are persuaded that the public interest would be served by approving the proposals. First, this will bring to a close the long-standing STA operations of KSTP and WTOP, and will result in improved nighttime service within the metropolitan areas served by these two stations. Second, the proposed improvements to the facilities of Station WLQV will substantially offset the increased interference received from the two Class A stations. WLQV also will benefit from a reduction in the nighttime tower count from 12 to 9, which will permit the use of the same towers daytime and nighttime, result in a

[6] The lower adjacent channel, 1490 kHz, is a Class C (local) channel, on which different allocation standards are employed. *See* 47 CFR §§ 73.37, 73.182.

more stable nighttime directional pattern and simplify the required proof of performance. Finally, as a result of modified protection standards adopted herein for Stations KSTP and WTOP and which are discussed in detail below, a number of other stations operating on 1500 and 1510 kHz will be afforded an opportunity to file applications for improved nighttime facilities.

For the reasons stated above, The Joint Request for Approval of Settlement Agreement IS HEREBY GRANTED, waivers of Sections 73.37 and 73.182 ARE GRANTED to Stations KSTP, WTOP and WLQV to the extent indicated herein, and Applications BP-900329AF, BP-900328AG and BP-881031AE ARE HEREBY GRANTED, with conditions as discussed above. The authorizations will follow under separate cover. In light of the action taken herein, applications filed after the date of this letter for new and/or modified facilities on 1500 and 1510 kHz must provide protection to Stations KSTP and WTOP according to the procedures and criteria set forth in the Attachment.[7]

Sincerely,

Peter H. Doyle, Acting Chief
Audio Services Division
Mass Media Bureau

Attachment

cc: KSTP-AM, LLC
Bonneville Holding Company
Midwest Broadcast Corporation Too

[7] Note that, pursuant to long-standing Commission procedure, any application filed prior to the grant of licenses to cover the modifications granted to KSTP, WLQV and WTOP must provide protection to the currently licensed facilities of each station as well as to the modified facilities authorized herein. Any application filed prior to the grant of such license which fails to provide the required protection to any or all of these stations, (or to any other station), will be returned as unacceptable for filing. *See Memorandum Opinion and Order, In Re Application of Southern Oregon University for a New AM Radio Station, Mountain Gate, California*, File No. BP-971212AB, FCC 99-31, adopted October 25, 1999; released October 28, 1999.

## ATTACHMENT

**Protection Criteria applicable to Stations KSTP and WTOP**

***Skywave service area:*** KSTP and WTOP will be protected from skywave interference to the respective 0.5 mV/m, 50 percent skywave service contours according to the procedures set forth in Section 73.182, except in areas where mutual interference occurs. In particular, no other co-channel station may produce an interfering 0.025 mV/m or greater, 10 percent skywave contour, within the *interference-free* portion of the KSTP or WTOP 0.5 mV/m, 50 percent skywave service contour, as limited by interference to/from the facilities of KSTP and WTOP, as authorized by Construction Permits BP-900329AF and BP-19900328AG, respectively. The interference-free contour shall be determined by the intersection points of a series of 50 percent skywave contours from the protected station with a series of 10 percent interfering skywave contours from the interfering station, employing a desired-to-undesired (D/U) signal strength ratio of 20:1. Regardless of the value of the protected signal strength contour at the perimeter of the interference-free area, it shall be considered to be 0.5 mV/m for the purpose of protection from interference caused by proposed new or modified Class B stations.

***Nighttime groundwave service area:*** The proposed facilities of Stations KSTP and WTOP are assumed to mutually limit each others' nighttime groundwave service to the 2.5 mV/m contour, on a single-limit basis. No other co-channel station will be permitted to enter the 25 percent RSS limit at any point on or within the KSTP or WTOP nighttime 2.5 mV/m groundwave contour, assuming a single-limit contribution of 2.5 mV/m from the other Class A station at each such point. In practice, this means that no other co-channel station may overlap the nighttime 2.5 mV/m groundwave contour of either KSTP or WTOP with an interfering 0.03125 mV/m or greater, 10 percent skywave contour, and no first-adjacent channel station may overlap the nighttime 2.5 mV/m groundwave contour of either KSTP or WTOP with an interfering 0.3125 mV/m or greater, 10 percent skywave contour.

DRAFT

# FEDERAL COMMUNICATIONS COMMISSION
## 445 TWELFTH STREET SW
## WASHINGTON DC 20554

MASS MEDIA BUREAU
AUDIO SERVICES DIVISION
TECHNICAL PROCESSING GROUP
APPLICATION STATUS: (202) 418-2730
HOME PAGE: www.fcc.gov/mmb/asd/

PROCESSING ENGINEER: CHARLES N. (NORM) MILLER
TELEPHONE: (202) 418-2787
FACSIMILE: (202) 418-1410
MAIL STOP: 1800B2
INTERNET ADDRESS: cnmiller@fcc.gov

Thomas J. Hutton, Esq.
Holland & Knight
2099 Pennsylvania Avenue NW, Suite 100
Washington, DC 20006

Kenneth E. Satten, Esq.
Wilkinson Barker Knauer LLP
2300 N Street NW, Suite 700
Washington, DC 20037-1128

Matthew H. McCormick, Esq.
Reddy, Begley & McCormick
2175 K Street, Northwest, Suite 350
Washington, D.C. 20037-1845

In re: KSTP (AM), St. Paul, Minnesota
Facility Identification Number 35641
KSTP-AM, LLC
Application for Construction Permit
File No. BP-900329AF

WTOP(AM), Washington, DC
Facility Identification Number 74120
Bonneville Holding Company
Application for Construction Permit
File No. BP-900328AG

WLQV(AM), Detroit, Michigan
Facility Identification Number 42081
Midwest Broadcast Corporation Too
Application for Construction Permit
File No. BP-881031AE

Dear Counsel:

The staff has under consideration: (i) the above-captioned applications for construction permits, (ii) a Joint Request for Approval of Settlement Agreement, filed December 10, 1998, by KSTP-

AM, LLC, licensee of KSTP (AM), St. Paul, Minnesota ("KSTP"); Bonneville Holding Company, licensee of WTOP(AM), Washington, DC ("WTOP"); and Midwest Broadcast Corporation Too, licensee of WLQV(AM), Detroit, Michigan ("WLQV") (collectively, the "Parties"), and (iii) various amendments and supplements to the filings.[1] Grant of the proposed settlement would permanently authorize the current STA operations of KSTP and WTOP and would permit nighttime service improvements by WLQV. The applications and the Request for Approval of Settlement Agreement are unopposed.

**Background**

KSTP and WTOP are licensed as Class A (formerly Class IB) AM stations on 1500 kHz. Each operates with 50 kilowatts, unlimited hours, and employs a directional antenna during nighttime hours in order to protect the nighttime primary groundwave and secondary skywave[2] service areas of the other. WLQV is a Class B (formerly Class II) AM station, also operating on 1500 kHz. WLQV is licensed for operation with 50 kilowatts during daytime hours, employing a nine-tower directional array, and 5 kilowatts during nighttime, employing a 12-tower array. By means of their respective applications, KSTP and WTOP propose to increase the radiation in the null areas of their nighttime directional patterns; KSTP would achieve this result through augmentation of the existing nighttime pattern, and WTOP through modification of the electrical parameters of the authorized nighttime standard pattern. These proposals would formalize the nighttime operations which Stations KSTP and WTOP have been employing since April 12, 1984.[3]

The settlement agreement filed jointly by the Parties requests that the Commission grant each of the referenced applications. Grant of the KSTP and WTOP applications would result in increased levels of interference to all three stations. The WLQV nighttime power increase is designed to offset increased interference received, but not to raise the level of interference to either Class A station above that caused by the other. All three applications were initially

[1] KSTP filed amendments on December 10, 1998 and June 24, 1999; WTOP filed amendments on May 21, 1997; October 1, 1998 and July 2, 1999; WLQV filed amendments on May 18, 1989; November 6, 1992; August 8, 1996; May 21, 1997; December 10, 1998; February 2, 2001 and March 27, 2001. Also on file are *Comments of Detroit SRN, Inc.*, filed October 11, 1990; and the Parties' amendment to the Settlement Agreement filed on February 2, 2001.

[2] Skywave service results from AM signals which have been reflected from electrically charged layers in the upper atmosphere (ionosphere) during nighttime hours, and which can be received at great distances from the transmitter, typically up to several hundred miles. Because skywave signals are subject to fading, such service is considered as secondary, and is defined in terms of the percentage of time the signal exceeds a specified value. Class A AM stations are protected from interference to their nighttime secondary 0.5 mV/m, 50% skywave service contours. *See* 47 CFR §§ 7.21(a)(1), 73.182(g).

[3] On April 12, 1984, in response to a joint request filed on February 28, 1984, the staff granted special temporary authority (STA) to Stations KSTP and WTOP for operation with substantially the same modified facilities proposed in the pending applications, in order to permit the stations to conduct tests of the coverage and interference effects.

filed prior to the Commission's adoption of *Review of the Technical Assignment Criteria for the AM Broadcast Service*, 6 FCC Rcd 6273 (1991) (the "AM improvement Order") (subsequent history omitted). Thus, these applications are subject to processing under the rules which were in place at that time. KSTP and WTOP request waiver of the pre-AM Improvement Order rules to allow grant of the respective applications with regard to the increases in mutual nighttime interference. WLQV requests waiver of Section 73.182 in order to permit overlap of the KSTP and WTOP 0.5 mV/m, 50 percent skywave contours by the proposed WLQV 0.025 mV/m, 10 percent skywave interfering contour. Aside from the increases in overlap among the three stations for which waivers are requested, the three proposals are in compliance with the Commission's technical rules.

**Discussion**

This proceeding involves proposals by Stations KSTP and WTOP to increase radiation in the null areas of their respective nighttime directional patterns, in order to provide improved nighttime service to significant suburban population centers which have developed since the initial authorizations were issued for the two Class A stations. KSTP and WTOP argue that, on balance, the public interest would be served by increased interference-free nighttime groundwave service to 130,000 persons within the null areas of their respective nighttime patterns.[4] The stations cite several cases where similar mutual increases in radiation between class A stations have been permitted. These include the grant in 1984 of the facility modification applications of co-channel Class A Stations WBAL, Baltimore, Maryland, and KAAY, Little Rock, Arkansas, which permitted each station to relax its respective nighttime pattern toward the other.[5]

WLQV is located between KSTP and WTOP. Consequently the proposed increases in radiation by KSTP and WTOP will result in increased interference to WLQV. However, WLQV has proposed a 10-kilowatt nighttime operation which would, to a large extent, mitigate the effect of increased interference from KSTP and WTOP while not increasing the level of interference to either of those stations beyond that created by the proposed modifications.

We recognize that grant of the proposed agreement would result in KSTP's and WLQV's nighttime interfering skywave contours substantially overlapping WTOP's nighttime protected skywave contour, and WTOP's and WLQV's nighttime interfering skywave contours substantially overlapping KSTP's nighttime protected skywave contour. Theoretically, implementation of the agreement would result in over 9 million people losing predicted nighttime skywave service. In addition, approximately one million people theoretically would lose nighttime primary groundwave service. Nevertheless, we believe that a grant of the requested waivers is warranted in the instant circumstances.

---

[4] The stations also argue that the effect of the proposed changes would be even greater than predicted by standard methods, due to the elimination of "null distortion" within the suppressed areas of the respective licensed standard patterns.

[5] *See* BP-19810213AF, BP-19821117AW.

Significantly, these theoretical nighttime service losses are calculated on a licensed-to-proposed basis. However, since KSTP and WTOP seek permanent authorizations for facilities substantially identical to those with which they have been operating for 17 years, grant of the instant proposals will result in no loss of current skywave or groundwave service. Rather, it will preserve existing service and therefore established listener patterns in the greater Minneapolis-St. Paul and Washington, DC, metropolitan areas.

However, as a result of the proposed modifications to their nighttime directional patterns, KSTP and WTOP no longer will provide interference-free nighttime secondary service to all of the areas within their respective 0.5 mV/m, 50 percent skywave contours, nor nighttime primary interference-free service to all of the areas within their respective 0.5 mV/m groundwave contours. In these circumstances, it is no longer appropriate to require other co-channel and first-adjacent channel stations to continue to provide full protection to the predicted 0.5 mV/m, 50 percent skywave contours of KSTP and WTOP, notwithstanding their Class A status. For the same reasons, KSTP's and WTOP's nighttime primary interference-free groundwave contours also must be modified to take into account these stations' mutual interference. Accordingly, the KSTP and WTOP construction permits will be conditioned to provide for acceptance of the increased mutual interference.

Consequently, in recognition of the increased interference which will result from the proposed modifications, we are implementing modified protection requirements to these two Class A stations. In particular, applications for new or modified facilities on 1500 and 1510 kHz[6] which are filed after the issue of licenses to cover the KSTP and WTOP facilities authorized herein will be required only to protect the interference-free areas of the 0.5 mV/m, 50 percent skywave contours of Stations KSTP and WTOP, as limited by the operation of the other Class A station. In addition, protection to the respective nighttime primary service areas of KSTP and WTOP will be calculated on a 25 percent RSS basis, considering only the single-limit contribution of the other Class A station (assumed to be 2.5 mV/m) and that of the proposal. Details of the required protection criteria are set forth in the Attachment.

**Conclusion**

Having thoroughly reviewed the filings before us, and in recognition of the unique circumstances and facts presented in these cases, we are persuaded that the public interest would be served by approving the proposals. First, this will bring to a close the long-standing STA operations of KSTP and WTOP, and will result in improved nighttime service within the metropolitan areas served by these two stations. Second, the proposed improvements to the facilities of Station WLQV will substantially offset the increased interference received from the two Class A stations. WLQV also will benefit from a reduction in the nighttime tower count from 12 to 9, which will permit the use of the same towers daytime and nighttime, result in a

[6] The lower adjacent channel, 1490 kHz, is a Class C (local) channel, on which different allocation standards are employed. *See* 47 CFR §§ 73.37, 73.182.

more stable nighttime directional pattern and simplify the required proof of performance. Finally, as a result of modified protection standards adopted herein for Stations KSTP and WTOP and which are discussed in detail below, a number of other stations operating on 1500 and 1510 kHz will be afforded an opportunity to file applications for improved nighttime facilities.

For the reasons stated above, The Joint Request for Approval of Settlement Agreement IS HEREBY GRANTED, waivers of Sections 73.37 and 73.182 ARE GRANTED to Stations KSTP, WTOP and WLQV to the extent indicated herein, and Applications BP-900329AF, BP-900328AG and BP-881031AE ARE HEREBY GRANTED, with conditions as discussed above. The authorizations will follow under separate cover. In light of the action taken herein, applications filed after the date of this letter for new and/or modified facilities on 1500 and 1510 kHz must provide protection to Stations KSTP and WTOP according to the procedures and criteria set forth in the Attachment.[7]

Sincerely,

Peter H. Doyle, Acting Chief
Audio Services Division
Mass Media Bureau

Attachment

cc; KSTP-AM, LLC
Bonneville Holding Company
Midwest Broadcast Corporation Too

[7] Note that, pursuant to long-standing Commission procedure, any application filed prior to the grant of licenses to cover the modifications granted to KSTP, WLQV and WTOP must provide protection to the currently licensed facilities of each station as well as to the modified facilities authorized herein. Any application filed prior to the grant of such license which fails to provide the required protection to any or all of these stations, (or to any other station), will be returned as unacceptable for filing. *See Memorandum Opinion and Order, In Re Application of Southern Oregon University for a New AM Radio Station, Mountain Gate, California*, File No. BP-971212AB, FCC 99-31, adopted October 25, 1999; released October 28, 1999.

## ATTACHMENT

### Protection Criteria applicable to Stations KSTP and WTOP

*Skywave service area:* KSTP and WTOP will be protected from skywave interference to the respective 0.5 mV/m, 50 percent skywave service contours according to the procedures set forth in Section 73.182, except in areas where mutual interference occurs. In particular, no other co-channel station may produce an interfering 0.025 mV/m or greater, 10 percent skywave contour, within the *interference-free* portion of the KSTP or WTOP 0.5 mV/m, 50 percent skywave service contour, as limited by interference to/from the facilities of KSTP and WTOP, as authorized by Construction Permits BP-900329AF and BP-19900328AG, respectively. The interference-free contour shall be determined by the intersection points of a series of 50 percent skywave contours from the protected station with a series of 10 percent interfering skywave contours from the interfering station, employing a desired-to-undesired (D/U) signal strength ratio of 20:1. Regardless of the value of the protected signal strength contour at the perimeter of the interference-free area, it shall be considered to be 0.5 mV/m for the purpose of protection from interference caused by proposed new or modified Class B stations.

*Nighttime groundwave service area:* The proposed facilities of Stations KSTP and WTOP are assumed to mutually limit each others' nighttime groundwave service to the 2.5 mV/m contour, on a single-limit basis. No other co-channel station will be permitted to enter the 25 percent RSS limit at any point on or within the KSTP or WTOP nighttime 2.5 mV/m groundwave contour, assuming a single-limit contribution of 2.5 mV/m from the other Class A station at each such point. In practice, this means that no other co-channel station may overlap the nighttime 2.5 mV/m groundwave contour of either KSTP or WTOP with an interfering 0.03125 mV/m or greater, 10 percent skywave contour, and no first-adjacent channel station may overlap the nighttime 2.5 mV/m groundwave contour of either KSTP or WTOP with an interfering 0.3125 mV/m or greater, 10 percent skywave contour.

**FEDERAL COMMUNICATIONS COMMISSION**
**445 12th Street, S.W.**
**Washington, D.C. 20554**

*In Reply Refer to:*
1800B3-TSN

**MAY 0 4 2001**

KM Communications, Inc.
c/o Jeffrey L. Timmons, P.C.
3235 Satellite Boulevard
Building 400, Suite 300
Atlanta, GA 30096-8688

Mr. Dave Garey, Secretary
Alvin Lou Media, Inc.
701 Renner Road
Wilmington, DE 19810

In re: NEW(AM), Makaha, Hawaii
File No. BNP-20000201AFD
Facility ID No. 122491

NEW(AM), Waipahu, Hawaii
File No. BNP-20000201ADT
Facility ID No. 122420

Dear Messrs. Timmons and Garey:

We have before us two mutually exclusive AM applications. KM Communications, Inc. ("KM Communications") proposes a new AM station at Makaha, Hawaii,[1] and Alvin Lou Media, Inc ("AL Media") proposes a new AM station at Waipahu, Hawaii.[2] As discussed below, we direct KM Communications to file its long-form application for Makaha, Hawaii within 30 days of the date of this letter, and will dismiss the AL Media application upon grant of the construction permit to KM Communications.

**Background / Applicable Law:** In situations such as the one before us, the grant of an application would normally be determined by a competitive bidding process. *See*

[1] File No. BNP-20000201AFD.

[2] File No. BNP-20000201ADT.

*Implementation of Section 309(j) of the Communications Act-Competitive Bidding for Commercial Broadcast and Instructional Television Fixed Services Licenses* ("*Broadcast First Report and Order*"), 13 FCC Rcd 15920 (1998); *recon denied*, 14 FCC Rcd 8724 (1999); *modified*, 14 FCC Rcd 12541 (1999). However, in the *Broadcast First Report and Order*, the Commission determined that the competitive bidding procedure should be consistent with its statutory mandate under Section 307(b) of the Communications Act to provide a "fair, efficient, and equitable" distribution of radio services across the nation. To this end, the Commission determined that the staff would undertake a traditional Section 307(b) analysis prior to conducting an auction for mutually exclusive applications. 13 FCC Rcd at 15964-65, ¶ 120. The Commission also noted that the FM allotment priorities fulfill its obligation under Section 307(b), and would apply in making a Section 307(b) determination regarding mutually exclusive AM applications before auction.[3]

**Discussion:** After careful consideration of both applications, we have determined that the KM Communications application is entitled to a dispositive Section 307(b) preference as proposing a first local service to Makaha, Hawaii (with a 1990 U.S. Census of 7,990 persons). There are currently three radio stations licensed to Waipahu, Hawaii, AL Media's proposed community of license. For this reason, KM Communications will continue in the application process by filing a Form 301 application.[4]

In addition to being a first local service to Makaha, KM Communications proposes to serve 233,017 persons within its 2 mV/m contour and 769,272 persons within it 0.5 mV/m contour, as well as 250,350 persons within its nighttime interference-free contour. We recognize that due to its proximity to Honolulu, AL Media proposes to serve more persons with its new station at Waipahu. However, this entire service area already receives at least five reception services and is considered to be well-served.[5] A first local service to Makaha under Priority (3) prevails against additional service to Waipahu and an overall service advantage that could only be considered under Priority (4). *See Palmetto Communications Company*, 6 FCC Rcd 1527 (Rev. Bd. 1991); *Pasadena Broadcasting Co. v. FCC*, 555 F. 2d 1046, 1050-51 (D.C. Cir. 1977).

**Conclusion / Action:** Because we find that the KM Communications application is entitled to a dispositive Section 307(b) preference, IT IS ORDERED that KM Communications, Inc., within 30 days of the date of this letter, is to file Form 301 in

---

[3] *See Revision of FM Assignment Policies and Procedures*, 90 FCC 2d 88 (1982). The FM allotment priorities are as follows: (1) First fulltime aural service, (2) Second fulltime aural service, (3) First local service, and (4) Other public interest matters. Co-equal weight is given to Priorities (2) and (3).

[4] After the FCC Form 301 is filed, the staff will conduct a complete legal and technical analysis. We will issue Public Notices entitled "Broadcast Applications," announcing AM auction applications determined to be acceptable for filing. These notices will be generated by the Consolidated Database System ("CDBS"). Petitions to deny a FCC Form 301 application, including any challenges to our determination under §307(b), must be filed within 10 days following release of the Broadcast Applications Public Notice announcing acceptance of the application at issue. *Broadcast First Report and Order*, 13 FCC Rcd at 15985 ¶ 165.

[5] The Commission has considered five or more reception services to be "abundant." *Family Broadcasting Group*, 53 RR2d 662 (Rev. Bd. 1983), *rev. denied*, FCC 83-559 (Comm'n Nov. 29, 1983); *see also LaGrange and Rollingwood, Texas*, 10 FCC Rcd 3337 (1995).

connection with its application for a new AM broadcast station at Makaha, Hawaii (File No. BNP-20000201AFD), pursuant to the procedures set forth in the Commission's rules.[6] With its application, KM Communications must simultaneously submit the required filing fee for a new commercial AM radio station and an FCC Form 159, Remittance Advice. Failure timely to file the long-form application will result in dismissal of the application for failure to prosecute, pursuant to 47 C.F.R. §73.3568. Upon grant of a construction permit to KM Communications, the staff will dismiss the application filed by Alvin Lou Media, Inc., File No. BNP-20000201ADT.

Sincerely,

Edward P. De La Hunt
Assistant Chief
Audio Services Division
Mass Media Bureau

[6] *See* 47 C.F.R. §§ 0.401(b), 1.1104, 1.1109, 73.5005(d), and 73.3512.

PLEASE FORWARD TO THE ENGINEERING DEPARTMENT

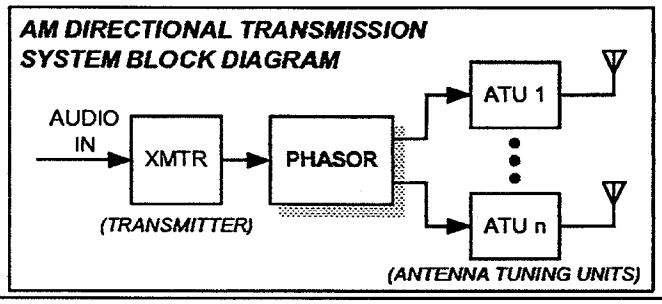
National Association of NAB BROADCASTERS

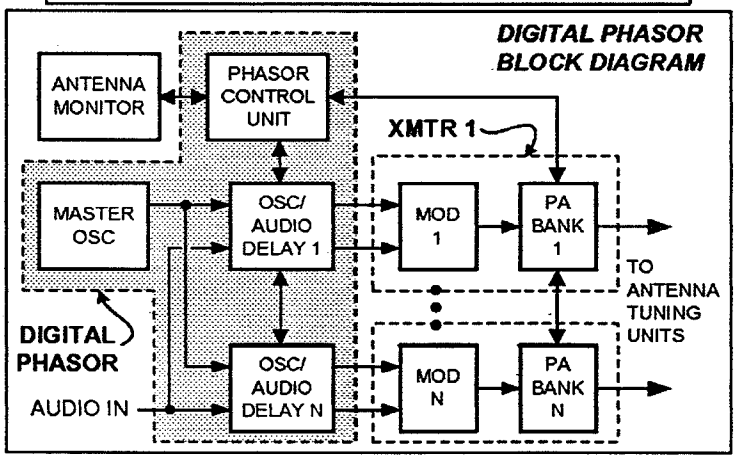
# Radio TechCheck ✓

*The weekly newsfax for **Radio** broadcast engineers* May 7, 2001

## NEW PHASOR FOR AM DIRECTIONAL ANTENNAS PROPOSED

One of the primary components in a directional AM antenna array is the *phasor*, a device that resides between the transmitter and the antenna tuning units (see first diagram) which divides the transmitter output power and shift carrier phase to realize the desired radiation pattern. At the NAB2001 Broadcast Engineering Conference, Mr. Mario Heib made a presentation as part of the *Radio Engineering Professionals Forum* on the "digital phasor" which he believes can eliminate some of the disadvantages associated with traditional phasors.




A traditional phasor uses a network of passive, reactive components to create phase shift and envelope delay on the transmitter output, which is at a high power level. Adjustments are made by setting variable inductors through a system of mechanical linkages. According to Mr. Heib, some of the disadvantages of this traditional approach include the following:

- Phasors use large, expensive reactive and mechanical components; higher power levels requires even larger and more expensive components;
- Additional patterns require more components; each pattern requires its own phasor, and often, ATU network;
- Tuning is difficult due to numerous variable components;
- Susceptible to failure due to high power levels and from lightning;
- Subject to arcing; requires periodic maintenance to keep components free from dust, which can facilitate arcing;
- Prone to drift due to environmental factors, i.e. wet ground, dry ground, etc.;
- Must be custom designed and custom built.

The digital phasor would execute the required functions in a completely different fashion (see second diagram), creating RF envelope delay by digitally delaying the carrier signal and program audio at very low power levels, prior to modulation within the transmitter. When using a digital phasor, each antenna would be fed by a separate transmitter. Note that in the first block diagram, the transmitters are represented as two basic parts – a modulator and a power amplifier – to illustrate the interaction between the transmitter and the digital phasor.

A digital signal processor in the phasor control unit (PCU) is used to calculate the delays required for the desired radiation pattern. Since the PCU makes adjustments of phase and power levels based on an internal table of system parameters, it can keep directional antenna power ratios and phase parameters within tight specifications. When the array drifts out of tolerance, the PCU adjusts envelope delay and power output to bring it back. The benefits of this approach when compared to a traditional phasor are:

- Better impedance, pattern bandwidth;
- Fewer variable components and mechanical parts; components operate at lower power levels which are less prone to arcing;
- Active power control; self-adjusting with feedback link to antenna monitor;
- Multiple patterns possible with marginal increase in cost;
- No audible glitch when patterns are switched;
- High-power RF transmission line is optional – PA banks could be located at each tower;
- System can be periodically upgraded with software revisions.

Mr. Heib's paper is published in the *NAB2001 Broadcast Engineering Conference Proceedings*, available as a volume and CD-ROM for $99.95 (or CD-ROM alone for $69.95) from the NAB online store at www.nab.org.

**Courtenay S. Brown, Editor** **Tel: +1 (202) 429-5341** **Fax: +1 (202) 775-4981**

AM 2001 7

COHEN, DIPPELL AND EVERIST, P. C.
*OFFICE MEMORANDUM*

**TO:** All Engineers

**FROM:** Don Everist

**TOPIC:** AM Rule Making MM Docket 93-177

**DATE:** March 8, 2001

---

See the attached–also contains, "Further Notice of Proposed Rule Making".

Partial P. 30/31 73.154

AM



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

| | | |
|---|---|---|
| In the Matter of | ) | |
| | ) | |
| An Inquiry Into the Commission's | ) | |
| Policies and Rules Regarding AM | ) | MM Docket No. 93-177 |
| Radio Service Directional Antenna | ) | RM-7594 |
| Performance Verification | ) | |

# REPORT AND ORDER
# AND
# FURTHER NOTICE OF PROPOSED RULEMAKING

**Adopted:** February 14, 2001 **Released:** March 7, 2001

**Comment Date:** 75 days after publication in the Federal Register
**Reply Comment Date:** 135 days after publication in the Federal Register

**By the Commission:**

## Table of Contents

verifying AM directional antenna patterns. This *Report and Order* adopts most of the streamlining initiatives proposed in the NPRM. We are confident that relaxing our proof requirements will provide meaningful relief to many AM broadcasters without jeopardizing technical standards or service to the public. However, we believe it is premature to take any action on the use of certain computer modeling methods to verify directional stations' operating parameters. We also seek additional comments on these methods.

## II. Directional Antenna Proofs of Performance

3. An antenna proof of performance establishes whether the radiation pattern of an AM station is in compliance with the station's authorization. An AM station must perform a full proof to verify the pattern shape when a new directional antenna system is authorized. Partial proofs, which require fewer measurements, are occasionally necessary to show that an array continues to operate properly. For both full and partial proofs, we proposed to reduce both the number of radials and the number of measurements per radial. Nearly all commenters agreed that proof requirements could be relaxed without compromising the technical integrity of the AM service.

### A. Full Proof of Performance

#### 1. Number of Radials

4. *Background.* Under the Commission's rules, a permittee must measure a minimum of eight radials in a proof of performance.[6] For complex patterns, measurements are required on a sufficient number of radials to define the pattern shape completely, i.e., three radials in the main lobe, and one in each null and minor lobe. In the NPRM, we proposed to reduce the minimum number of radials required from eight to six for simple directional antenna patterns and, generally, to require no more than 12 radials to define complex patterns. The radials would be distributed as follows:

(a) One radial in the major lobe, at the pattern maximum.

(b) Five additional radials, and others as necessary to establish the pattern clearly. These radials will be generally at the peaks of minor lobes and at pattern nulls. This may include radials specified on the station's authorization. However, no two radials may be more than 90° azimuth apart. If two radials would be more than 90° apart, then an additional radial must be specified within that arc.

(c) Any radials specified on the construction permit or license.

5. Nondirectional antenna measurements would be taken along the radials used for directional measurements. In addition, we proposed that those few nondirectional stations which are required to conduct a full proof (due to the proximity of reradiating structures, or other atypical circumstances) should also be permitted to employ six evenly spaced radials, in lieu of eight.

6. Most commenters support a reduction in the number of measured radials. Some suggest that the number of required radials could be reduced even further than we proposed. Hatfield & Dawson, DLR, and Sellmeyer Engineering (Sellmeyer) argue that marketplace considerations will ensure adequate

[6] See 47 C.F.R. § 73.151.

9. *Discussion.* Commenters unanimously support a reduction in the required number of points and the length of the radials. We agree with Carl T. Jones Corporation, which notes that nondirectional measurements begin closer to the antenna site than directional measurements; consequently, a proof includes more nondirectional points.[8] These additional nondirectional measurements are used to determine the inverse distance field (IDF), which is the basis for determining directional field strength. Although the NPRM tentatively rejected a reduction in the required number of close-in measurement points, we recognize that, in many cases, it is not possible for the permittee to take measurements at every specified interval within 3 kilometers of the antenna site. It has been our policy to accept fewer close-in measurements in these circumstances, provided the inverse distance field can be determined with reasonable certainty. We therefore add the stipulation that the close-in measurements include at least seven points to formalize our policy while providing some relief to the broadcaster.

10. DLR, Clear Channel, and Hatfield & Dawson favor a reduction in the number of measured points to ten and the elimination of close-in nondirectional measurements.[9] Instead of determining the nondirectional inverse distance field by graphical analysis, DLR proposes using the theoretical nondirectional field. In support of the proposal, DLR supplies a tabulation of results from 57 proofs accepted by the Commission.[10] We decline to adopt further measurement reductions. While we recognize the merit of this suggestion, our experience has shown that proper detuning of unused towers in an array may be difficult, and that unused towers can significantly distort nondirectional patterns. We continue to believe, along with the majority of commenters, that our proposed reduction in the number of required measurements will provide a sufficient basis for graphical analysis of field strength measurements. We will adopt the proposal to shorten the minimum radial length to 15 kilometers and to require a minimum of 15 points, distributed as set forth above, for full proofs.

11. Many commenters state that the distribution of measurement points should be flexible, so that the engineer may avoid areas where field strength cannot be measured reliably. NAB requests "that broadcasters be given some discretion in designating far-point measurements." In fact, 47 C.F.R. § 73.186(a)(1) already provides this discretion, requiring licensees to exercise good engineering judgment in selecting locations for field measurements based on the approximate intervals we establish in this *Report and Order*.

### 3. Standard Format for Reporting Measurements

12. We also sought comment on a standard format for reporting field strength measurements. Most applicants already submit field strength measurements in table format using commercial spreadsheet or database software. We proposed to adopt a standardized format for the submission of the data in order to facilitate electronic filing and processing. Electronic storage of this data could also facilitate easy retrieval by any interested party. Nearly all commenters agree that a standard data format would be useful. Potomac Instruments, Inc. presents a sample format which would be compatible with GPS receiver output. In addition, Hammett & Edison suggests that we include a field for measured ground conductivity, since

---

[8] In a typical case, nondirectional measurements might begin at 0.4 kilometer. Taking points at the specified intervals would give 13 close-in points, three points between three and five kilometers, and five points between five and 15 kilometers, for a total of 21 nondirectional points. If directional points are measured beyond 15 kilometers, then additional nondirectional measurements would be made at those same points.

[9] DLR, Clear Channel, and Hatfield & Dawson all suggest making the graphical analysis now used optional.

[10] The tabulation shows that most measured values of nondirectional radiation differ from the theoretical value by less than two dB.

16. Several commenters note that many partial proofs rely on full proof measurements which may be decades old.[15] Even when a full proof is relatively recent, changes to the area surrounding the AM station may alter propagation characteristics, or may make it impossible to locate points identified in the full proof. In such circumstances the comparison of recent directional measurements with old readings may be invalid. We agree that an alternate approach is warranted. In cases where the engineer cannot identify points from the last full proof with reasonably certainty, or where the environment around the AM station has changed, we will allow the station to select eight suitable points on each radial at which to measure both directional and nondirectional fields. The average ratio of directional to nondirectional field strength may then be used in conjunction with the measured nondirectional field to determine the directional field.[16] Occasionally, licensees performing a partial proof discover that radiation on one or more bearings exceeds the standard pattern, often from changes in the vicinity of the directional antenna which are beyond the licensee's control. In these circumstances, we will permit the licensee to augment the standard radiation pattern based on the results of full directional and nondirectional measurements on the affected radial, including close-in points in accordance with §73.186. The inverse distance field should be determined graphically, as required in a full proof of performance.[17]

### 2. When Required

17. *Background.* A licensee is required to conduct a partial proof of performance when there is some indication that the antenna system may not be operating as authorized, *e.g.*, when monitoring point readings or antenna monitor readings exceed the limits specified on the station's license.[18] The NPRM did not propose to relax this requirement. Currently, 47 C.F.R. § 73.68 also requires a partial proof when sampling system components mounted on the tower are replaced or modified. We proposed to eliminate the latter requirement *provided* the new components are mounted in the same location and, where appropriate, with the same orientation, as the old components and: (1) measurements made at the monitoring points before and after installation establish that the substitution had no effect; and (2) antenna monitor values remain within the tolerances specified in the rules or on the station's authorization. If the monitoring point readings or antenna monitor values exceed authorized limits, then a partial proof would be required.

18. *Discussion.* All commenters who address this issue agree that a partial proof should not be mandatory when sampling system components are replaced or modified. With the provisions noted, we will delete the requirement for a partial proof in 47 C.F.R. § 73.68.

## C. Monitoring Points

---

[15] A query of our Consolidated Data Base System (CDBS) shows that approximately 80 percent of full proofs are more than ten years old.

[16] This is consistent with our present policy of allowing a licensee to use the ratio of directional to nondirectional field strengths when selecting a new monitoring point. We will codify the policy in a revised rule.

[17] Licensees who wish to request augmentation should file concurrently Forms 301-AM and 302-AM. Form 301-AM should include an allocation study demonstrating that no interference would result. Form 302-AM should include the results of the partial proof, along with full directional and nondirectional measurements and graphical analysis of the radial(s) to be augmented. Both forms require a filing fee.

[18] See 47 C.F.R. § 73.61. Other circumstances which necessitate a partial proof of performance include alterations to or near the AM tower (such as adding transmission lines, isocouplers or communications antennas); replacing guy wires; or changing isolation chokes for tower obstruction lighting. A partial proof is also required to verify proper adjustment of an antenna system when operation is resumed following a period of silence exceeding six months.

23. Other commenters disagree with the proposal to delete the partial proof requirement when a new monitor point is selected. Carl T. Jones, D.L. Markley & Associates, and Lawrence Behr Associates contend that it is good engineering practice to measure the entire radial when monitor point readings have changed. According to Clear Channel Communications, "the Commission should establish (or reestablish) point limits solely on the basis of full directional and nondirectional measurements along the radial." Clear Channel also proposes a uniform 10 percent tolerance on monitor point readings.

24. *Discussion.* We acknowledge the concerns of commenters who note that a change at a monitoring point may reflect significant changes on the entire radial. We agree that without a partial proof, it may not be possible to distinguish local effects from changes in the radiation pattern. In view of these concerns, we are persuaded to modify our proposal. We will continue to require a partial proof on the affected radial when a monitoring point must be changed as a result of changes in field strength readings. We will allow licensees to designate a new monitor point from those points measured in the last full proof, without a partial proof on the monitored radial, when a monitoring point has become inaccessible or unsuitable for reasons unrelated to the electromagnetic environment. Licensees submitting a partial proof may refer to the last full proof of performance, or, alternatively, may measure directional and nondirectional field strengths at eight points to establish the directional field. When a directional-to-nondirectional comparison is used, the points need not be the same as those measured in the full proof. A suitable new monitor point may be chosen from the new partial proof points. Licensees may also use a partial proof based on the ratio of directional to nondirectional field strength to change the field strength limits for existing monitoring points. Any request for a change in a monitoring point location or field strength limit should be submitted to the Commission along with Form 302-AM. As AFCCE points out, our present method of determining field strength limits at monitoring points affords very little tolerance when the measured radiation is just within the standard pattern value. Present rules do not allow permittees to augment the standard pattern unless the measured radiation exceeds the standard pattern.[23] In order to allow sufficient tolerance for monitoring point limits, we will allow augmentation to 20 percent more than the measured radiation on monitored radials, regardless of whether the measured radiation exceeds the standard pattern value. We will require permittees who wish to augment to demonstrate that no interference would result.

25. Concerning identification of monitor points, most commenters favor eliminating the driving directions and the accompanying map. Few agree that coordinates determined by differential GPS alone would identify a monitoring point with sufficient accuracy on a station's license. Hammett & Edison reports "we have often noted, during the implementation of the FCC's tower registration program, towers with incorrect GPS-determined coordinates." Instead of identifying the monitor point solely by GPS coordinates, Hammett & Edison suggests that we retain a brief description of the monitoring point on the AM license. Coordinates determined using differential GPS could be provided as part of the description, at the licensee's discretion. In view of the consensus among the commenters, we will continue to require the monitor point description, and will include the description on the license. We will require licensees to provide a brief description of each monitoring point in all applications for license or for modification or re-issuance of license. Licensees may supplement this description with geographic coordinates determined by differential GPS. We will also continue to require a photograph of the monitoring point. We will delete the requirement for driving directions to monitoring points, and for maps showing the monitoring points.

---

[23] See §73.152. Augmentation expands the standard pattern radiation envelope, normally over a limited span, to encompass anomalies in a measured pattern.

as transmitters and metering equipment, and we tentatively concluded that the elimination of these requirements would encourage the development of more dependable and less expensive antenna monitor units.

30. *Discussion.* In the NPRM, we cited 1993 comments by Potomac Instruments, Inc., a manufacturer of antenna monitor systems, claiming that the present specifications in 47 C.F.R. § 73.53 impede the development of antenna monitor systems using advanced technology and that elimination of these requirements would result in a new generation of monitor equipment. We note that a number of years have passed since this proceeding was initiated, and that further development of new instrumentation technology for AM stations may be unlikely. In its recent comments, Potomac Instruments states that it "*does not believe* that the elimination of 47 C.F.R. § 73.53 would enhance the development of new and less expensive antenna monitor systems." The manufacturer explains that the economics of the directional AM market simply do not support research and development. In view of this comment, we are persuaded not to adopt this proposal in the near term. We will leave the provisions of 47 C.F.R. § 73.53 unchanged.

31. We also sought comment on whether to permit licensees to use *voltage* sampling devices to feed antenna monitors in lieu of current sampling devices such as sampling transformers and pick-up loops. We asked for comments as to the accuracy and reliability of voltage sampling devices for assessing array performance, and as to whether we should modify the rules to permit their use. Most commenters favored this proposal, but felt that it was more appropriately addressed in the context of a further NPRM, along with the issue of computer modeling and its related sampling system requirements. We will therefore seek additional comments on base voltage sampling, particularly as it relates to sampling system specifications necessary for accurate computer modeling.[27]

### C. Impedance Measurements Across a Range of Frequencies

32. *Background.* All AM stations are required to measure impedance (resistance and reactance) across the range of frequencies within 25 kHz of the carrier frequency.[28] This procedure, known as an impedance sweep, is intended to ensure adequate audio quality across the station's operating bandwidth. In keeping with the deletion of various performance measurements for FM and TV, we proposed to delete the requirement for AM stations to perform an impedance sweep. We tentatively concluded that retention of 47 C.F.R. § 73.54(c) is not necessary because market forces will provide sufficient incentive for stations to maintain quality technical operations.

33. *Discussion.* Commenters express unanimous support for eliminating the requirement to measure impedance at a range of frequencies. We will delete the requirement as proposed.

### D. Common Point Impedance Measurements

34. *Background.* Present rules require directional AM stations to take impedance measurements at the common radiofrequency input location. The rule[29] now specifies that licensees maintain a reactance of zero ohms at this point. We proposed to delete this requirement. The reactance does not affect the station's output power, and we tentatively concluded that practical considerations should dictate the optimum common point reactance. We also sought comment as to whether a limit should be set for the maximum amount of reactance permitted.

---

27 See paragraphs 42 to 46, below.

28 *See* 47 C.F.R. § 73.54(c)(1) and (2).

29 47 C.F.R. § 73.54(b).

designation.[30] Many commenters, including Hatfield & Dawson, DLR, Clear Channel, and Donald G. Everist, support this approach which is consistent with our general intent to relax AM technical requirements. We agree with several commenters, including Hatfield & Dawson and DLR, that noted that the degree of precision inherent in both our predictions of pattern shape and in our nighttime propagation model is inconsistent with the close tolerances required of critical arrays.[31] Moreover, we recognize a lack of uniformity in the Commission's historic application of stability requirements. As Hatfield & Dawson notes, imposing stability standards on new station proposals would simply carry forward an inequity in the way we have treated potentially critical arrays in the past. To rectify this problem, we will also delete the critical array designation in all outstanding authorizations.[32]

## V. Conclusion

41. In this *Report & Order*, we have adopted substantial reductions in our proof of performance requirements for AM directional antenna systems. For both full and partial proofs of performance, we have reduced the number of measurement radials required and have cut the minimum number of measurement points required per radial. We believe these provisions will substantially reduce the time and cost burdens associated with verifying proper operation of AM directional arrays. We have removed unnecessary operating requirements in regard to base current ammeters and common point reactance. With the removal of the critical array designation, we provide substantial relief to the minority of AM stations burdened with the tight tolerances and expensive antenna monitors that this designation imposed. Although these provisions are designed to provide substantial savings for licensees of directional AM antennas, we believe that none of them jeopardize the technical integrity of the AM broadcast service.

## VI. Further Notice of Proposed Rulemaking on the Use of Computer Modeling to Predict Antenna Performance

42. The Joint Petitioners who initiated this proceeding in 1991 suggested that the Commission consider incorporating the use of computer modeling techniques into the proof of performance process.[33] According to the Joint Petitioners, computer modeling does not rely on the simplifying assumptions contained in our present rules, and therefore can accurately predict the relationship between pattern shape and "internal" array parameters such as impedances, currents and voltages at locations within the power

---

[30] We believe that economic considerations in the mature AM service will discourage construction of certain types of arrays that tend to be unstable. In the event that an applicant proposes a directional antenna system which may be characterized as potentially unstable based on factors such as predicted operating impedances, RSS/RMS ratio, or null depth, the staff may designate additional monitoring points to insure that the radiation remains within standard pattern limits.

[31] AM field strength at night is subject to significant short- and long-term variation. A recent comparison of predicted and measured skywave field strengths shows that the root-mean-square error is 5.4 dB. *See* Wang, J.C.H., An Objective Evaluation of Available LF/MF Sky-wave Propagation Models, *Radio Science, Vol. 34, No. 3, pp. 703-713, May-June 1999.*

[32] In the NPRM we proposed to discontinue requiring the use of expensive, specially designed precision antenna monitors for critical arrays. We tentatively concluded that critical arrays could use off-the-shelf equipment without adverse impact. Eliminating the critical array designation also eliminates the need for additional performance standards for antenna monitors used by critical arrays. Accordingly, the relevant provisions of 47 C.F.R. § 73.69 will be deleted.

[33] Such computer models are generically referred to as "method of moments" programs, "matrix" programs, or "NEC" programs. NEC programs are based on the Numerical Electromagnetics Code moment method of analysis developed at the Lawrence Livermore Laboratory, Livermore, California.

system requirements. NAB proposes use of voltage sampling instead of current sampling for towers within certain height limits. As discussed in paragraph 31 above, we request comments on the use of voltage sampling, both in conjunction with computer modeling and in arrays for which conventional proofs are done. In items 13 through 17, NAB describes structures near the directional antenna, such as towers, buildings, and power lines, which could distort the directional pattern. NAB suggests that the presence of potential reradiating structures should initially disqualify an array from proof by computer modeling. Finally, in item 18, NAB proposes acceptable ranges for the data used in the computer model. We request comments on these criteria, and on any other limitations which may be appropriate. We also seek comment on the following topics: what data should constitute a proof of performance for an array adjusted pursuant to computer modeling; what type of external monitoring may be appropriate for arrays adjusted using computer modeling; the suitability of various types of commercially available software for antenna modeling. We note that the industry committee also expected to consider software for antenna modeling, and to compare results predicted by computer modeling to actual field strength measurements. We look forward to the completion of these studies and their submission to the Commission in this proceeding.

## VII. Administrative Matters

47. *Filing of Comments and Reply Comments.* Pursuant to Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415 and 1.419, interested parties may file comments within seventy-five (75) days of the date of publication of this Notice in the Federal Register and reply comments within one hundred and thirty-five (135) days of the date of publication of this Notice in the Federal Register. Comments filed through the ECFS can be sent as an electronic file via the Internet to <http://www.fcc.gov/e-file/ecfs.html>. In completing the transmittal screen, commenters should include their full name, postal service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message, "get form <your e-mail address." A sample form and directions will be sent in reply. Parties who choose to file by paper must file an original and four copies of each filing. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus eleven copies. All filings must be sent to the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, TW-A306, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554. The Mass Media Bureau contacts for this proceeding are Edward De La Hunt, Son Nguyen, or Ann Gallagher at (202) 418-2700 or edelahun@fcc.gov, snguyen@fcc.gov, or agallagh@fcc.gov.

48. Parties who choose to file by paper should also submit their comments on diskette. These diskettes should be submitted to: Edward De La Hunt, Federal Communications Commission, 445 12th Street, S.W., Room 2-B450, Washington, DC 20554. Such a submission should be on a 3.5 inch diskette formatted in an IBM compatible format using Microsoft Word 97 or compatible software. The diskette should be accompanied by a cover letter and should be submitted in "read only" mode. The diskette should be clearly labeled with the commenter's name, proceeding (including the docket number in this case -- MM Docket No. 93-177), type of pleading (comment or reply comment), date of submission, and the name of the electronic file on the diskette. The label should also include the following phrase "Disk Copy - Not an Original." Each diskette should contain only one party's pleadings, preferably in a single electronic file. In addition, commenters must send diskette copies to the Commission's copy contractor, International Transcription Service, Inc., 1231 20th Street, N.W., Washington, D.C. 20036.

49. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center, 445 12$^{th}$ Street S.W., Washington, D.C. 20554. Written comments by the public on the proposed and/or modified information collections are due on or before 60

by the Regulatory Flexibility Act,[40] the Commission has prepared an IRFA of the possible significant economic impact on small entities by the policies and rules in this *Further Notice of Proposed Rulemaking*. We request written public comments on the IRFA.

54. Accordingly, IT IS ORDERED, That pursuant to the authority contained in Sections 4(i), 4(j), 303, 308, 309 and 310 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303, 308, 309, 310, and 319 this Notice of Proposed Rule Making IS ADOPTED.

55. IT IS FURTHER ORDERED, That the Commission's Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this Notice, including both the Initial and Final Regulatory Flexibility Analyses, to the Chief Counsel for Advocacy of the Small Business Administration

56. Additional Information. For additional information on this proceeding, please contact Edward De La Hunt, Son Nguyen, or Ann Gallagher, Audio Services Division, Mass Media Bureau at (202) 418-2700.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas
Secretary

40 *Id.*

## Appendix B

## FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act ("RFA"),[41] the Commission has prepared this present Final Flexibility Analysis ("FRFA") of the possible significant economic impact on small entities by the policies and rules adopted in this *Report and Order and Further Notice of Proposed Rule Making ("Report and Order")*. Written and electronically filed public comments were requested in our Initial Regulatory Flexibility Analysis (IRFA). None were received. The Commission will send a copy of the *Report and Order,* including this FRFA, to the Chief Counsel for Advocacy of the Small Business AdministrationIn addition, the *Report and Order* and FRFA (or summaries thereof) will be published in the Federal Register. *See* 5 U.S.C. § 604(a).

### I. Need For and Objectives of the Rules:

2. This *Report and Order* eliminates some of Commission's technical rules and relaxes others to materially reduce the regulatory and compliance burdens on AM broadcasters using directional antennas. For instance, in order to control interference between stations and assure adequate community coverage, directional AM stations currently must undergo extensive "proofs of performance" to demonstrate that the antenna system operates as authorized. The field strength measurements and technical exhibits which our current rules require as part of a "proof" impose a substantial financial burden upon these AM broadcasters, a burden not incurred by licensees in the other broadcast services.[42] This *Report and Order* reduces this particular burden, and generally reduces the Commission's regulatory requirements to the minimum necessary to achieve our policy objectives of controlling interference and assuring adequate community coverage.

### II. Legal Basis:

3. Authority for the actions proposed in this *Report and Order* may be found in Sections 4(i), 4(j), 303, 308, 309, 310 and 319 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303, 308, 309, 310 and 319.

### III. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply:

4. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[43] The RFA generally defines the term "small entity " as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[44] In addition, the term "small business" has the same

---

41 See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 et. seq., has been amended by the Contract with America Advancement Act of 1996, Pub. L. No. 194-12, 110 Stat. 848 (1996) ("CWAA"). Title II of the CWAA is the Small Business Regulatory Enforcement Fairness Act of 1996 ("SBREFA").

42 Directional FM licensees incur substantially lesser incremental expenses in constructing, licensing, and maintaining their facilities.

43 5 U.S.C. § 603(b)(3).

44 *Id.* § 601(6).

number of small entities since the revenue figures on which they are based do not include or aggregate revenues from non-radio affiliated companies.

7. In addition to owners of operating radio stations, any entity that seeks or desires to obtain a radio broadcast license may be affected by rule changes adopted in this *Report and Order*. The number of entities that may seek to obtain a radio broadcast license is unknown.

**IV. Description of Projected Recording, Recordkeeping, and Other Compliance Requirements:**

8. A number of rule changes adopted in this *Report and Order* reduce the reporting requirements of prospective and current AM licensees. In order to control interference between stations and assure adequate community coverage, directional AM stations must undergo extensive "proofs of performance" when initially constructed, and from time to time thereafter, to verify conformance with authorized operating parameters. AM licensees incur substantial costs in performing the measurements and preparing the required technical exhibits for a proof of performance. This *Report and Order* reduces the number of measurement radials required and shortens the length of measured radials. We have deleted the requirement to include maps showing each field measurement location with a license application. In addition, we have eliminated the requirement for a proof of performance in certain circumstances. Taken together, these changes reduce the cost of a proof of performance for all AM licensees and for prospective new applicants. We also delete the requirement for base current ammeters, and eliminate the designation of some directional antenna systems as critical arrays. These measures reduce operating costs for directional AM stations. None of the rule changes adopted here impose new recording, record keeping, or other compliance requirements on prospective or current AM licensees. Overall, the changes we are adopting are designed to reduce the overall administrative burdens of the Commission's rules on both regulatees and the Commission staff.

**V. Steps Taken to Minimize Significant Economic Impact on Small Entities and Significant Alternatives Considered:**

9. This *Report and Order* enhances opportunities for improvement of technical facilities and service and minimizes the administrative burdens and delays associated with our radio broadcast licensing processes. The changes adopted in this *Report and Order* will reduce the costs of operating a directional AM station, of modifying the station's facilities, and of constructing a new AM station. While we expect that the changes adopted here will benefit directional AM stations regardless of size, we note that the cost reductions may be of particular value to small entities.

10. All significant alternatives presented in the comments were considered. In particular, several commenters dissented from our proposal to relax the criteria for designating critical arrays, and to apply the new criteria to all applications for new or modified directional AM facilities. After considering this alternative suggested by the commenters, we were persuaded that we could eliminate the critical array designation entirely without compromising the integrity of the AM service. This rule change eases operating requirements for those AM stations which might have been designated as critical arrays, a benefit which is irrespective of the station's size or ownership, but which may be a boon to a small business.

**VI. Report to Congress**

11. The Commission will send a copy of An Inquiry Into the Commission's Policies and Rules Regarding AM Radio Service Directional Antenna Performance Verification, including this FRFA, in a report to be sent to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of

## Appendix C

## INITIAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act ("RFA"),[59] the Commission has prepared this Initial Flexibility Analysis ("IRFA") of the possible significant economic impact on small entities by the policies and rules proposed in this *Further Notice of Proposed Rule Making ("Notice")*. Written and electronically filed public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments of the *Notice* provided above in paragraphs 47 and 48. The Commission will send a copy of the *Further Notice*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration. *See* 5 U.S.C. § 603(a). In addition, the *Further Notice* and IRFA (or summaries thereof) will be published in the Federal Register. *See id.* Since there is no significant economic effect on small entities, we considered issuing a certification. However, we decided, in order to compile an optimally complete record, to go forward with this IRFA.

### I. Need For and Objectives of the Proposed Rules:

2. This *Further Notice* seeks comment on the use of computer modeling techniques based on moment method analysis to verify AM directional antenna performance.[60] Adoption of such techniques would reduce further the substantial costs associated with licensing for directional AM stations. These measures would also advance the goal of reducing the Commission's regulatory requirements to the minimum necessary to achieve our policy objectives of controlling interference and assuring adequate community coverage.

### II. Legal Basis:

3. Authority for the actions proposed in this *Further Notice* may be found in Sections 4(i), 4(j), 303, 308, 309, 310 and 319 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 303, 308, 309, 310 and 319.

### III. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply:

4. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[61] The RFA generally defines the term "small entity " as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[62] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[63] A small business concern is

---

59 *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract with America Advancement Act of 1996, Pub. L. No. 194-12, 110 Stat. 848 (1996) ("CWAA"). Title II of the CWAA is the Small Business Regulatory Enforcement Fairness Act of 1996 ("SBREFA").

60 See paragraph 46, *supra.*

61 5 U.S.C. § 603(b)(3).

62 Id. § 601(6).

63 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and

7. In addition to owners of operating radio stations, any entity that seeks or desires to obtain a radio broadcast license may be affected by the proposals contained in this item. The number of entities that may seek to obtain a radio broadcast license is unknown. We invite comment as to such number.

**IV. Description of Projected Recording, Recordkeeping, and Other Compliance Requirements:**

8. Previous comments in this proceeding showed broad support for further consideration of the topic of computer modeling. In order to control interference between stations and assure adequate community coverage, directional AM stations must undergo extensive "proofs of performance" when initially constructed, and from time to time thereafter, to verify conformance with authorized operating parameters. This *Further Notice* proposes to consider the incorporation into the proof process of computer modeling techniques known as "method of moments."[78] Use of computer modeling offers the potential of a new proof of performance process which is substantially more efficient for both directional AM stations and the Commission staff. Although we anticipate that adoption of the proposed rule changes would reduce the engineering costs borne by new or modified directional AM facilities, it is premature to assess the extent of the reduction. We do expect that the optional use of computer modeling would introduce new compliance requirements, but these would be less onerous than our existing proof of performance requirements. The adoption of computer modeling techniques is not likely to introduce new record keeping or recording requirements.

**V. Steps Taken to Minimize Significant Economic Impact on Small Entities and Significant Alternatives Considered:**

9. The RFA requires an agency to describe any significant alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) an exemption from coverage of the rule, or any part thereof, for small entities. 5 U.S.C. § 603(c). This *Further Notice* solicits comment on the use of computer modeling in an AM proof of performance. Incorporation of these methods into the Commission's rules has the potential to reduce the burdens and delays associated with our radio broadcast licensing processes. We have proposed adopting computer modeling techniques as an optional alternative to the conventional proof of performance process. We do not anticipate requiring directional AM stations to use computer modeling when filing an application for license. Consequently, none of the four alternative approaches is applicable in this case. Nevertheless, any significant alternatives presented in the comments will be considered.

**VI. Federal Rules that Overlap, Duplicate, or Conflict with the Proposed Rules:**

10. None.

---

[78] See paragraph 46, *supra.*

Section 73.58 is amended by deleting subsections (b) and (d)(1) and by renumbering the remaining subsections to read as follows:

Sec. 73.58 Indicating instruments.

*****

(b) Since it is usually impractical to measure the actual antenna current of a shunt excited antenna system, the current measured at the input of the excitation circuit feed line is accepted as the antenna current.
(c) The function of each instrument shall be clearly and permanently shown on the instrument itself or on the panel immediately adjacent thereto.
(d) In the event that any one of these indicating instruments becomes defective when no substitute which conforms with the required specifications is available, the station may be operated without the defective instrument pending its repair or replacement for a period not in excess of 60 days without further authority of the Commission. If the defective instrument is the antenna current meter of a nondirectional station which does not employ a remote antenna ammeter, or if the defective instrument is the common point meter of a station which employs a directional antenna and does not employ a remote common point meter, the operating power shall be determined by a method described in Sec. 73.51(a)(1) or (d) during the entire time the station is operated without the antenna current meter or common point meter. However, if a remote meter is employed and the antenna current ammeter or common point meter becomes defective, the remote meter can be used to determine operating power pending the return to service of the regular meter.
(e) If conditions beyond the control of the licensee prevent the restoration of the meter to service within the above allowed period, information requested in accordance with Sec. 73.3549 may be filed by letter with the FCC in Washington, DC, Attention: Audio Services Division, Mass Media Bureau, to request additional time as may be required to complete repairs of the defective instrument.

Section 73.62 is amended by revising subsection (a) to read as follows:

§73.62 Directional antenna system tolerances.

(a) Each AM station operating a directional antenna must maintain the indicated relative amplitudes of the antenna monitor currents within 5% of the values specified therein. Directional antenna relative phase currents must be maintained to within ±3 deg. of the values specified on the instrument of authorization.

Section 73.68 is amended by revising subsections (a)(2), (d)(2) and (d)(3) to read as follows:

§ 73.68 Sampling systems for antenna monitors.

*****

(a)(2) Sampling lines for directional antennas may be of different lengths provided the phase difference of signals at the monitor are less than 0.5 degree between the shortest and longest cable lengths due to temperature variations to which the system is exposed.

*****

(d)(2) Immediately prior to modification or replacement of components of the sampling system, and after a verification that all monitoring point values and operating parameters are within the limits or tolerances specified in the rules, the following indications must be recorded for each radiation pattern: Final plate current and plate voltage, common point current, antenna monitor phase and current indications, and the

measurements taken and analyzed in accordance with Sec. 73.186, and a statement of the effective measured field strength (RMS). Measurements shall be made in the following directions:
(i)Those specified in the instrument of authorization.
(ii) In major lobes. Generally, one radial is sufficient to establish a major lobe; however, additional radials may be required.
(iii) Along additional radials to establish the shape of the pattern. In the case of a relatively simple directional antenna pattern, a total of six radials is sufficient. If two radials would be more than 90° apart, then an additional radial must be specified within that arc. When more complicated patterns are involved, that is, patterns having several or sharp lobes or nulls, measurements shall be taken along as many as 12 radials to definitely establish the pattern(s). Pattern symmetry may be assumed for complex patterns which might otherwise require measurements on more than 12 radials.
(2) A tabulation of:
(i) The phase difference of the current in each other element with respect to the reference element, and whether the current leads (+) or lags (-) the current in the reference element, as indicated by the station's antenna monitor.
(ii) The ratio of the amplitude of the radio frequency current in each other element to the current in the reference element, as indicated on the station's antenna monitor.
(3) The actual field strength measured at each monitoring point established in the various directions for which a limiting field was specified in the instrument of authorization together with an accurate and detailed description of each monitoring point together with ordinary snapshots, clear and sharp, taken with the field strength meter in its measuring position and with the camera so located that its field of view takes in as many pertinent landmarks as possible.

*****

Section 73.152 is amended to read as follows:

§ 73.152 Modification of directional antenna data.

(a) If, after construction and final adjustment of a directional antenna, a measured inverse distance field in any direction exceeds the field shown on the standard radiation pattern for the pertinent mode of directional operation, an application shall be filed, specifying a modified standard radiation pattern and/or such changes as may be required in operating parameters so that all measured effective fields will be contained within the modified standard radiation pattern. Permittees may also file an application specifying a modified standard radiation pattern, even when measured radiation has not exceeded the standard pattern, in order to allow additional tolerance for monitoring point limits.
(b) If, following a partial proof of performance, a licensee discovers that radiation exceeds the standard pattern on one or more radials because of circumstances beyond the licensee's control, a modified standard pattern may be requested. The licensee shall submit, concurrently, Forms 301-AM and 302-AM. Form 301-AM shall include an exhibit demonstrating that no interference would result from the augmentation. Form 302-AM shall include the results of the partial proof, along with full directional and nondirectional measurements on the radial(s) to be augmented, including close-in points and a determination of the inverse distance field accordance with §73.186.
(c) Normally, a modified standard pattern is not acceptable at the initial construction permit stage, before a proof-of-performance has been completed. However, in certain cases, where it can be shown that modification is necessary, a modified standard pattern will be acceptable at the initial construction permit stage. Following is a non-inclusive list of items to be considered in determining whether a modification is acceptable at the initial construction permit stage:
(1) When the proposed pattern is essentially the same as an existing pattern at the same antenna site.

factors have not significantly altered propagation characteristics since the last full proof. At each point, the licensee shall measure directional field strength for comparison to either the directional or the nondirectional field strength measured at that point in the last full proof.
(2) In the event that a meaningful comparison to full proof measurements cannot be made, the licensee shall measure both directional and nondirectional field strength at eight points on each radial. The points need not be limited to those measured in the last full proof of performance.
(c) The results of the measurements are to be analyzed as follows. Either the arithmetic average or the logarithmic average of the ratios of the field strength at each measurement point to the corresponding field strength in the most recent complete proof of performance shall be used to establish the inverse distance fields. (The logarithmic average for each radial is the antilogarithm of the mean of the logarithms of the ratios of field strength (new to old) for each measurement location along a given radial). When new nondirectional measurements are used as the reference, as described in paragraph (b)(2) of this section, either the arithmetic or logarithmic averages of directional to nondirectional field strength on each radial shall be used in conjunction with the measured nondirectional field from the last proof to establish the inverse distance field.
(d) The result of the most recent partial proof of performance measurements and analysis is to be retained in the station records available to the FCC upon request. Maps showing new measurement points, i. e., points not measured in the last full proof, shall be associated with the partial proof in the station's records, and shall be provided to the FCC upon request.

Section 73.158 is amended to read as follows:

§73.158 Directional antenna monitoring points.

(a) When a licensee of a station using a directional antenna system finds that a field monitoring point, as specified on the station authorization, is no longer accessible for use or is unsuitable because of nearby construction or other disturbances to the measured field, an application to change the monitoring point location, including FCC Form 302-AM, is to be promptly submitted to the FCC in Washington, DC.
(1) If the monitoring point has become inaccessible or otherwise unsuitable, but there has been no significant construction or other change in the vicinity of the monitoring point which may affect field strength readings, the licensee shall select a new monitoring point from the points measured in the last full proof of performance. A recent field strength measurement at the new monitoring point shall also be provided.
(2) Alternatively, if changes in the electromagnetic environment have affected field strength readings at the monitoring point, the licensee shall submit the results of a partial proof of performance, analyzed in accordance with §73.154, on the affected radial.
(3) The licensee shall submit an accurate, written description of the new monitoring point in relation to nearby permanent landmarks.
(4) The licensee shall submit a photograph showing the new monitoring point in relation to nearby permanent landmarks that can be used in locating the point accurately at all times throughout the year. Do not use seasonal or temporary features in either the written descriptions or photographs as landmarks for locating field points.
(b) When the description of the monitoring point as shown on the station license is no longer correct due to road or building construction or other changes, the licensee must prepare and file with the FCC, in Washington, DC, a request for a corrected station license showing the new monitoring point description. The request shall include the information specified in paragraphs (a) (3) and (4) of this section, and a copy of the station's current license. A copy of the description is to be posted with the existing station license.

(2) Relocation of a main studio outside the principal community contour may require the filing and approval of a letter request for authority to make this change prior to implementation. See Sec. 73.1125.

AM 8

*OFFICE MEMORANDUM*

(Auction Policy)

**TO:** All Engineers

**FROM:** Don Everist

**TOPIC:** Possible Revision in FCC Policy

**DATE:** March 5, 2001

---

With the advent of auction procedures, it can be anticipated that some policy issues may result. This one may be of interest.

Attachment

**FEDERAL COMMUNICATIONS COMMISSION**
**WASHINGTON, D.C. 20554**

DA 01-539

March 1, 2001

Christopher D. Imlay, Esq.
Booth, Freret, Imlay & Tepper, P.C.
5101 Wisconsin Avenue, N.W., Suite 307
Washington, D.C. 20016

In re: Application to Participate in an FCC Auction
New AM Station, Johnstown, Colorado,
1250 kHz (Auction No. 32, MX Group AM28)
File No. BNP-2000127ACD
Fac. ID No. 122512

Dear Mr. Imlay:

We have under consideration: (1) an October 10, 2000, amendment to the above-referenced January 2000, FCC Form 175, Application to Participate in an FCC Auction and the associated technical information[1] for a new AM broadcast station construction permit in Johnstown, Colorado ("Johnstown application") filed by Jeffrey N. Eustis ("Eustis"); and (2) a November 17, 2000, petition for partial reconsideration of the public notice which listed Eustis's Johnstown application as mutually exclusive with another application in AM Auction No. 32, MX Group AM28.[2] For the reasons set forth below, we dismiss the amendment and deny the petition for partial reconsideration.

*Background.* Eustis timely filed the Johnstown application during the AM auction filing window.[3] The Johnstown application was not identified as a singleton application in the September 22,

---

[1] The technical information consists of Section I and the Section III-A Tech Box of FCC Form 301, Application for Construction Permit. The technical information permits the staff to determine mutual exclusivities between applicants. *See* 47 U.S.C. § 309(j); 47 C.F.R. §§ 1.2105, 73.3571, 73.5002(a); *AM Auction Filing Window and Application Freeze; Notice and Filing Requirements Regarding January 24 – 28, 2000 Window for Certain AM Construction Permits; Notice Regarding Freeze on the Acceptance of AM Minor Change Construction Permits from December 24, 1999 to January 21, 2000*, *Public Notice*, 14 FCC Rcd 19490 (1999) ("*AM Filing Window Public Notice*").

[2] *AM Auction No. 32 Mutually Exclusive Applicants Subject to Auction; Settlement Period for Groups which Include Major Modification Applicant; Filing period for Section 307(b) Submissions, Public Notice*, DA 00-2416 (October 27,2000) ("*MX Public Notice*"). The other application in Auction No. 32, MX Group AM28, was filed by Jeffrey B. Bate for a construction permit in Mesquite, Nevada on 1250 kHz (File No. BNP-20000128ACL) ("Mesquite application").

[3] *See AM Filing Window Public Notice*, 14 FCC Rcd 19490 (1999); *AM Auction Filing Window and Application Freeze Extended to February 1, 2000, Public Notice*, 15 FCC Rcd 1910 (2000); *AM Auction Remedial Filing*

2000, public notice which listed the singleton applications filed during the AM auction filing window.[4] On October 10, 2000, Eustis filed a technical amendment to his Johnstown application, proposing to reduce nighttime power from 0.5 kilowatt to 0.35 kilowatt. On October 27, 2000, the *MX Public Notice* identified the mutually exclusive applications filed during the AM auction filing window and announced that Eustis's Johnstown application was mutually exclusive with the Mesquite application. In his November 17, 2000, petition for partial reconsideration of the *MX Public Notice* Eustis asserts that his Johnstown application is not mutually exclusive with any other application and should be considered as a singleton. Eustis contends that the *MX Public Notice* should be amended to delete MX Group AM28 which lists the Johnstown and Mesquite applications as mutually exclusive and that those applications should be identified as singletons and granted.

*Discussion.* Application Amendment. After the initial application filing deadline, applicants are not permitted to make any major changes to their engineering proposals.[5] Therefore, Eustis's October 10, 2000, technical amendment, which proposes a major change to his Johnstown application, must be dismissed.[6]

Mutual Exclusivity. Eustis asserts that the staff has changed the procedures for evaluating mutual exclusivity between AM applications and that the new, unpublished procedures were implemented without prior public notice, public comment, and formal adoption in violation of the Administrative Procedure Act, 5 U.S.C. § 553. Eustis argues that the rules do not prohibit the grant of the Johnstown and Mesquite applications, and therefore, that the staff erroneously determined that the two proposals are mutually exclusive. However, we find that the staff properly determined that the Johnstown and Mesquite applications are mutually exclusive.[7] In this case, grant of either application would preclude the grant of the other, since impermissible nighttime interference would result.[8]

---

*Window, Notice and Filing Requirements Regarding July 31-August 4, 2000 Remedial Filing Window for AM Auction, Public Notice*, 15 FCC Rcd 12,766 (2000).

[4] *AM Auction No. 32 Non-Mutually Exclusive Applications; Mass Media Bureau Announces Form 301 Application Deadline and Ten-Day Petition to Deny Period, Public Notice*, 15 FCC Rcd 18004 (2000).

[5] *See Implementation of Section 309(j) of the Communications Act -- Competitive bidding for Commercial Broadcast and Instructional Television Fixed Service Licenses; Reexamination of the Policy Statement on Comparative Broadcast Hearings; Proposals to Reform the Commission's Comparative Hearing Process to Expedite the Resolution of Cases, First Report and Order*, 13 FCC Rcd 15920, 15976 ("*Broadcast Auction First Report and Order*"); *see also AM Filing Window Public Notice*, 14 FCC Rcd at 19497; 47 C.F.R. §§ 1.2105, 73.3571(h)(1)(iii), 73.5002.

[6] *See, infra*, footnotes 3 and 5. Additionally, settlement or technical resolution between mutually exclusive applicants in MX Groups that include only applications for construction permits for new stations, such as Auction No. 32, MX Group AM28, is not permitted. *See MX Public Notice*, DA 00-2416 (October 27, 2000); *see also* 47 C.F.R. §§ 1.2105(c), 73.5002; *Orion Communications Limited v. FCC*, 213 F.3d 761 (D.C. Cir. 2000).

[7] *Amendment of the Commission's Rules to Allow the Selection from Among Competing Applicants for New AM, FM, and Television Stations by Random Selection (Lottery), Notice of Proposed Rulemaking*; 4 FCC Rcd 2256, 2265, fn 4 (1989).

[8] *See* 47 C.F.R. § 73.182.

The Commission adopted new AM interference standards, which became effective April 19, 1992, in full compliance with the Administrative Procedure Act.[9] Currently, an application for a new AM broadcast station or for a major change in an authorized AM broadcast station must show that objectionable interference will not result to an authorized station. 47 C.F.R. §§ 73.37, 73.182. Nighttime interference is considered objectionable if it would increase the 25 percent root-sum-square (RSS) night limit of another station. *Id.* The *AM Improvement Report and Order* classifies a station whose interference contribution is below the 25 percent RSS limit as a low interferer, and states in pertinent part that "a new station may be authorized only if it qualifies as a low interferer with respect to any other station on the same or first adjacent channel." *AM Improvement Report and Order*, 6 FCC Rcd at 6295-6296.

Eustis argues that the new AM nighttime interference rules only protect the 25 percent RSS night limit of existing stations, construction permits, and applications past cutoff and do not protect concurrently-filed applications for new stations.[10] Eustis confuses acceptability and mutual exclusivity. An "acceptable" application provides required protection to all existing authorizations and cut-off applications. Thus, any application filed in a window is "acceptable" with regard to all other applications filed in a window. Under long-established precedent,[11] mutual exclusivity considers applications sequentially to determine whether grant of one would preclude grant of the second.[12] Therefore, two applications for new AM stations are considered mutually exclusive if either enters the 25 percent exclusion RSS limit of the other. If we did not apply the 25 percent RSS standard to AM auction applicants as Eustis proposes, the resulting interference would be contrary to the Commission's goal of "improving the AM service by reducing or restricting increased interference." *AM Improvement Report and Order*, 6 FCC Rcd at 6295. In essence, it would permit two new AM stations to cause unacceptable interference to each other, and prohibit the exact same interference in any other application context. We reject this approach as contrary to fundamental processing rules and to the goals set forth in the *AM Improvement Report and Order*.

---

[9] *See In the Matter of Review of Technical Assignment Criteria for the AM Broadcast Service, Notice of Inquiry*, 2 FCC Rcd 5014 (1987); *Notice of Proposed Rulemaking*, 5 FCC Rcd 4381 (1990); *Order Extending Comment and Reply Comment Period*, 5 FCC Rcd 5897 (1990); *Order Extending Time for Filing Reply Comments*, 5 FCC Rcd 7726 (1990); *Report and Order*, 6 FCC Rcd 6273 (1991) ("*AM Improvement Report and Order*"), *recon granted in part and denied in part*, 8 FCC Rcd 3250 (1993); 56 Fed. Reg. 64862 (Dec. 12, 1991); 57 Fed. Reg. 11689 (April 7, 1992).

[10] Prior to April 19, 1992, we considered two AM proposals to be mutually exclusive if the first station entered and raised the 50 percent nighttime RSS limit of the other to the extent that the second station could not comply with the city coverage requirement of 47 C.F.R. § 73.24(i).

[11] See, e.g., Ashbacker v. FCC, 326 U.S. 327, 328, 330 (1945); In the Matter of Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from Mediaone Group, Inc., Transferor, to AT&T Corp. Transferee, Memorandum Opinion and Order, 15 FCC Rcd 9816, 9893 (2000); Brainerd Broadcasting Co., 38 FCC 1195, 1197 (1965); Empire State Broadcasting Corporation, et. al., 2 FCC Rcd 2793 (Chief, Audio Services Division, Mass Media Bureau 1987); United Educational Broadcasting, Inc., et. al., 7 FCC Rcd 6210, fn1 (Chief, Audio Services Division, Mass Media Bureau 1992). See also 47 C.F.R. §§ 21.31, 22.131, 24.431, 90.7, 101.45.

[12] We have applied the interference standards set forth in 47 C.F.R. §§ 73.37, 73.182 only to determine which applications are mutually exclusive. Determinations regarding the acceptability and grantability of these applications will not be made prior to auction. *See* 47 C.F.R. §§ 73.3571(h)(1)(ii); *see also Broadcast Auction First Report and Order*, 13 FCC Rcd at 15978-15979; *AM Filing Window Public Notice*, 14 FCC Rcd at 19494.

*Conclusion*. For the foregoing reasons, the October 10, 2000, amendment to the Johnstown application filed by Jeffrey N. Eustis IS DISMISSED. Additionally, the November 17, 2000, petition for partial reconsideration of the October 27, 2000, public notice which identified the Johnstown application filed by Jeffrey N. Eustis as mutually exclusive with another application IS DENIED.

Sincerely,

Roy J. Stewart, Chief
Mass Media Bureau

cc: Jeffrey B. Bate