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

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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

COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

The National Association of Broadcasters[1] hereby submits brief comments responding to the Commission's Notice of Proposed Rulemaking[2] in the above-referenced docket. For the reasons stated below, NAB applauds the Commission's proposals to relax its proof of performance ("proof") standards for AM directional antenna systems. We also request that the Commission bifurcate this proceeding and allow an additional six-month period for filing comments on the issue of computer modeling in order to allow the industry sufficient time for meaningful examination and submission of its findings.

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[1] NAB is a nonprofit, incorporated association which serves and represents America's radio and television broadcast stations and networks.

[2] *Notice of Proposed Rule Making* (hereinafter "*NPRM*"), MM Docket No. 93-177, RM-7594 (1999).

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I. BIFURCATION OF RULEMAKING PROCEEDING

On October 13, 1999, NAB hosted an *ad hoc* forum on AM directional antennas. Many of the participants were also attendees of NAB's 1994 *ad hoc* forum which convened shortly after the initial *Notice of Inquiry*[3] in this proceeding. The purpose of these meetings was to provide an opportunity for experts in the science of AM directional antenna design and maintenance to share their ideas, experiences and concerns. The present AM directional antenna rules, adopted by the Commission in 1939, have served broadcasters well. Since that time, however, there have been great technological advancements in measuring and monitoring directional pattern stability factors. Modern computerized antenna pattern prediction methods have come into existence and, in the past six years since the *Notice of Inquiry*, software programs such as MININEC and NEC3 have been further developed. The industry has also gained considerable experience in employing these sophisticated tools for determining directional pattern stability.

At the October 13, 1999 meeting, there was consensus among the participants that computer modeling for method of moment analysis has advanced to the point of warranting the reduction in field measurements now being proposed by the Commission. However, the *ad hoc* forum did not reach a consensus on the specific measurements that can now be replaced by computer modeling data. It may be that the complexity of some antenna array systems may not allow for field measurement reductions beyond those

[3] *Notice of Inquiry*, MM Docket No. 93-177 (1993).

proposed by the Commission. Also, there was no consensus among the *ad hoc* forum participants as to whether computer modeling is accurate enough to render field measurements unnecessary, or whether software programs such as MININEC and NEC3 currently predict "real world" events. Also, there was no consensus as to whether a uniform software program should be developed and adopted, or whether the Commission should set the standard for such software. Finally, because the participants had varying degrees of expertise with computer software modeling, there was no consensus as to the successes and shortcomings of existing computer modeling technology. However, there was overwhelming consensus among the participants that further investigation on an industry-wide level on these issues would prove valuable in determining which types of antenna arrays can be accurately modeled on computers.

NAB proposes that during the six months following today's date, a voluntary committee comprised of industry representatives, engineers and consulting engineers examine these issues in depth. Specifically, the voluntary committee (which was formed at the *ad hoc* meeting) would investigate whether the software used in computer modeling has advanced to the point of allowing further reduction in field measurements. Second, the committee would explore those configurations (i.e., simple arrays versus complex arrays) for which computer modeling can accurately depict signal patterns. Third, the committee would investigate whether the industry should adopt a uniform software modeling system. In addition, the industry requests time to evaluate emerging software programs. Finally, the committee hopes to provide the Commission with side-by-side comparisons of computer modeling to actual field measurements.

Both the NAB and the *ad hoc* participants make specific note that it is in the industry's self-interest to ensure that any computer modeling which may lead to a scaling back of field measurements be accurate in order to avoid station interference. Simply put, marketplace competition drives the need for signal integrity.

Moreover, a gradual shift from field measurements to computer modeling may be useful in making AM radio maintenance cost efficient. Computer modeling could potentially reduce the cost of each proof by thousands of dollars. Were the Commission to establish software standards, computer modeling has the potential to be cost effective not only to the industry, but to the Commission as well. Uniform standards of modeling could drastically reduce the paperwork involved in performing and filing a proof. While NAB recognizes that the Commission is hesitant to "regulate the methodology employed in the adjustment of antenna systems," (*NPRM* at ¶ 6) such guidelines may streamline proofs and ease the substantial burden for FCC staff and broadcasters alike.

Therefore, because several years have lapsed since the initial *Notice of Inquiry,* and in that time computer technology has greatly evolved, we ask the Commission to hold open the issue of computer modeling to allow time for substantive and meaningful comment. In the meantime, the Commission can proceed to deal with other issues raised in the *NPRM*.

II. THE COMMISSION SHOULD RELAX ITS RULES CONCERNING AM DIRECTIONAL ANTENNA PROOFS OF PERFORMANCE.

A. Full Proof Of Performance – Number of Radials

NAB supports the Commission's proposal (*NPRM* at ¶ 11) to reduce from eight to six the minimum number of radials required for measuring the performance of simple directional antenna patterns, and to generally require no more than 12 radials to define complex patterns. This number of radials should be sufficient to ensure that the stations being protected from interference by the directional pattern are, in fact, protected.

B. Full Proof of Performance - Number of Points per Radial

NAB supports the Commission's proposal (*NPRM* at ¶ 15) to reduce from 30 to 15 the minimum number of measurement points per radial, and we believe the proposed intervals between measurement points are appropriate. We also note, however, that certain circumstances may require the Commission to allow some flexibility in the specific location of measurement points. For example, arrays located near large bodies of water may have radials that cross the water, and strict adherence to the proposed measurement intervals may not be possible. In those circumstances, broadcasters may have to conduct field measurements beyond the Commission's proposed outer measurement of 15 kilometers. We ask that broadcasters be given some discretion in designating far-point measurements.

III. THE COMMISSION SHOULD RELAX ITS RULES CONCERNING AM DIRECTIONAL ANTENNA PARTIAL PROOFS OF PERFORMANCE

In addition to the Commission's proposals, at the 1999 *ad hoc* meeting there was discussion about the possibility of eliminating the concept of "partial proofs of performance" (*see NPRM* at ¶ 19) from the Commission's rules, scaling back the requirement for full proofs of performance and requiring all proofs to be full proofs. NAB agrees with this suggestion. We believe that scaled-back full proofs of performance can be made no more burdensome on AM licensees than the existing partial proof requirements, and that when used in conjunction with modern computer modeling techniques, these scaled-back full proofs would be at least as effective as the current methods for ensuring that no interference is caused among AM stations. We note that a singular standard could streamline the proofing process without compromising AM signal integrity.

IV. THE COMMISSION SHOULD RELAX ITS RULES CONCERNING CHANGES TO MONITORING POINTS

NAB supports the Commission's proposal (*NPRM* at ¶ 27) to eliminate the requirement that a partial proof of performance be conducted along the radial of a monitoring point to be changed. A Commission-assigned radiation limit for the new monitoring point based upon the latest full proof of performance measurements along its radial would be appropriate.

We also support the Commission's proposal to eliminate the requirement that licensees supply maps and directions illustrating how to reach monitoring points in cases where differential GPS-determined coordinates are used to identify the monitoring points.

We believe that it is important that a description of the monitoring point locations be maintained on file at the AM station, regardless of whether the description is in the form of maps, text, or GPS coordinates. It is important that station engineers, consulting engineers, and FCC staff be able to readily access the information necessary to locate the monitoring points when they visit a station, but it is not necessary that this information also be filed with the Commission.

V. THE COMMISSION SHOULD RELAX ITS RULES CONCERNING AM TRANSMISSION SYSTEM EQUIPMENT AND MEASUREMENTS

A. Base Current Ammeters

We support the Commission's proposal (*NPRM* at ¶ 30) to delete the requirement that base current ammeters or toroidal transformers be employed by directional AM stations that have Commission-approved antenna sampling systems. We also agree that directional stations without Commission-approved sampling systems should still be required to employ base current ammeters or toroidal transformers because they have no other reliable on-site means of assessing antenna performance.

B. Antenna Monitors

We agree that most of the antenna monitor construction and operational requirements can be deleted (*NPRM* at ¶ 32). It is important, however, that antenna monitor manufacturers be required to design their products to meet minimum accuracy standards, and to ensure that their products meet these accuracy specifications within the typical range of environmental conditions to which antenna monitors are normally exposed. We note that the antenna monitors currently on the market and employed at AM stations appear to be more than adequate in both of these respects.

C. Impedance Measurements across a Range of Frequencies

We concur with the Commission's conclusion (*NPRM* at ¶ 35) that marketplace competition is a sufficient incentive for AM stations to ensure adequate audio quality at all audio frequencies. Therefore, we believe that measuring impedance across a range of frequencies should no longer be required.

D. Common Point Impedance Measurements

We agree with the Commission's proposal (*NPRM* at ¶ 37) to delete the requirement that the common point reactance be adjusted to zero ohms. It does not appear necessary for the Commission to establish a maximum amount of permitted reactance because licensees will be inclined to provide the best match possible between their transmitters and antennas in order to operate their transmitters most efficiently.

VI. SPECIALLY DESIGNED PRECISION ANTENNA MONITORS SHOULD NO LONGER BE REQUIRED FOR AM STATIONS WITH CRITICAL ARRAYS

Modern antenna monitors are generally capable of meeting the performance requirements that specially designed critical array monitors were required to meet in the past. Thus, we agree with the Commission (*NPRM* at ¶45) that it would be appropriate to eliminate the requirement that AM stations with "critical directional antennas" employ specially designed antenna monitors, provided that the monitors they do employ meet the performance criteria of the previously required specially designed monitors.

VII. CONCLUSION

For all these reasons, NAB lends its support to the proposed rulemaking. Again, because computer technology and engineering experience with computer modeling has advanced since the *Notice of Inquiry*, we ask the Commission to bifurcate the proceeding and allow an additional six months for comments on the issue of computer modeling in order to allow the industry to examine both existing and emerging technology and report its findings.

Respectfully submitted,

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