

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

In the Matter of )  
 )  
Revitalization of the AM Radio Service ) MB Docket No. 13-249

**THIRD REPORT AND ORDER**

**Adopted: September 22, 2017**

**Released: September 25, 2017**

By the Commission:

**I. INTRODUCTION**

1. This *Third Report and Order* is the latest in a series of orders designed to further the Commission's efforts to assist AM broadcasters in providing vital radio service to consumers throughout the country. By identifying ways to streamline the technical requirements imposed upon AM broadcasters, we free up resources to allow those broadcasters better to serve the public. In the *Further Notice of Proposed Rule Making* in this proceeding,<sup>1</sup> the Commission sought comment on technical proposals directed toward reducing certain regulatory burdens on AM broadcasters operating directional antenna arrays. One proposal sought to reduce the number of radials on which field strength measurements must be taken when conducting a partial proof of performance on an AM directional array. The other consisted of a series of proposals aimed at reducing the expenses associated with computer modeling of directional AM antenna performance, known as Method of Moments (MoM) modeling, as well as improving the quality of MoM modeling and maintaining the proper performance and adjustment of directional AM antenna arrays verified by MoM modeling.

2. In this *Third Report and Order*, we adopt many of the proposals the Commission set forth in the *AMR FNPRM*.<sup>2</sup> Specifically, we modify the partial proof of performance rules to reduce the expense and burden of such proofs, and make a number of changes to the rules and policies surrounding MoM modeling, also to reduce burdens on broadcasters using AM directional antenna arrays.

**II. DISCUSSION**

**A. Modify Partial Proof of Performance Rules**

3. *Background.* As explained in the *AMR FNPRM*, partial proof of performance measurements are required for AM stations using directional antennas whenever the licensee has reason to believe that the radiated fields may be exceeding the limits for which the station is authorized. Such

<sup>1</sup> *Revitalization of the AM Radio Service*, First Report and Order, Further Notice of Proposed Rule Making, and Notice of Inquiry, 30 FCC Rcd 12145 (2015) (*AMR FNPRM*).

<sup>2</sup> We note that this item does not address all of the proposals discussed in the *AMR FNPRM*. Still before us are (1) a proposal to reduce daytime and nighttime protection to Class A AM stations, eliminate nighttime skywave protection of these stations, and eliminate critical hours (two hours pre-sunset/post-sunrise) protection of these stations; (2) a proposal to reduce co-, first-, and second-adjacent channel protections to Class B, C and D AM stations, and to eliminate third-adjacent channel protection to those stations; (3) a proposal to modify nighttime root-sum-square (RSS) calculations, which values quantify the skywave interference contributions of AM stations to other AM stations and help to calculate nighttime interference-free service, by returning to the pre-1991 method of calculating such values; and (4) a proposal to require surrender of one of the authorizations from each of the 25 stations that did not surrender one of its dual standard band-expanded band AM authorizations after the five-year dual-operation period specified by the Commission and the terms of their authorizations. We continue to evaluate those proposals, and we may consider those issues, or provide alternative proposals, in future proceedings.

measurements are also required whenever minor directional antenna system repairs are made that result in certain changes to the station's licensed operating parameters. Some commenters, in response to the original *AMR NPRM*,<sup>3</sup> requested that the current rule governing partial proof of performance field strength measurements for AM directional antenna arrays<sup>4</sup> be modified to require measurements only on radials containing a monitoring point.<sup>5</sup> Currently, the rule requires field strength measurements on all radials with a monitoring point,<sup>6</sup> as well as on radials from the latest complete field strength proof of performance that are adjacent to the monitored radials, if the array has fewer than four monitored radials.<sup>7</sup> Commenters in response to the *AMR NPRM* claimed that eliminating the requirement to take measurements on non-monitored radials will reduce the cost to maintain AM directional antenna systems in working order, without affecting authorized service.<sup>8</sup> In light of these comments, the Commission proposed in the *AMR FNPRM* to require measurements only on radials containing a monitoring point.<sup>9</sup>

4. *Discussion.* We adopt this rule change as proposed in the *AMR FNPRM*. Many commenters agree with this proposal. Crawford Broadcasting Co., citing its experience in performing partial proofs, questions the need to make measurements on unmonitored radials.<sup>10</sup> Crawford believes that a partial proof of performance measuring only the monitored radials will adequately demonstrate that the directional pattern is properly adjusted, and moreover can result in cost savings to AM broadcasters, especially those in smaller markets, to whom even relatively minor cost savings can be significant.<sup>11</sup> Carl T. Jones Corp. agrees that measurements can be limited to radials that contain a monitor point because these radials provide the best indication of a station's directional pattern condition. It notes that these radials correspond to the directions of the pattern minima and that the field strengths along these radials are the most sensitive to parameter changes or other changes at the antenna site that may affect the directional pattern.<sup>12</sup> Several other commenters concur that adopting the proposal will provide sufficient data to confirm that an AM directional antenna system is properly adjusted.<sup>13</sup> We agree with Crawford and CTJ that measurements of the field strengths only along radials that contain a monitor point are

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<sup>3</sup> *Revitalization of the AM Radio Service*, Notice of Proposed Rule Making, 28 FCC Rcd 15221 (2013) (*AMR NPRM*).

<sup>4</sup> 47 CFR § 73.154.

<sup>5</sup> See, e.g., du Treil, Lundin & Rackley, Inc. (dLR) Comments, filed Jan. 13, 2014 (dLR 2014 Comments), at 16-17; National Alliance of AM Broadcasters (NAAMB) Comments, filed Jan. 22, 2014 (NAAMB 2014 Comments), at 9 (concurring in dLR proposal). When referencing comments filed in response to the *AMR FNPRM*, they shall be labeled only as "Comments." Comments filed in response to the *AMR NPRM* will contain the filing date.

<sup>6</sup> Monitoring points are specific locations on selected proof radials where licensees regularly take field strength measurements. The measured field strength at each monitoring point may not exceed a maximum value specified on the station's license. *An Inquiry Into the Commission's Policies and Rules Regarding AM Radio Service Directional Antenna Performance Verification*, Report and Order and Further Notice of Proposed Rule Making, 16 FCC Rcd 5635, 5642, para. 19 (2001).

<sup>7</sup> 47 CFR § 73.154(a).

<sup>8</sup> See, e.g., dLR 2014 Comments at 16-17; NAAMB 2014 Comments at 9.

<sup>9</sup> *AMR FNPRM*, 30 FCC Rcd at 12174, para. 70.

<sup>10</sup> Crawford Broadcasting Co. (Crawford) Comments at 5 (finding that problems with a directional pattern will appear in the monitored radials, as those are usually the deepest nulls with the vectors stacked nearly equally in amplitude and opposite in phase).

<sup>11</sup> *Id.*

<sup>12</sup> Carl T. Jones Corp. (CTJ) Comments at 8.

<sup>13</sup> See, e.g., Mt. Wilson FM Broadcasters, Inc. (Mt. Wilson) Comments at 5; Radio Vision Cristiana Management (RVC) Comments at 6; Sunrise Broad. Corp. (Sunrise) Comments at 6; AM Broadcast Licensees Comments at 6.

sufficient to verify pattern compliance when performing a partial proof of performance.<sup>14</sup> The primary concern with regard to directional AM antenna arrays is whether the station's radiation pattern is actually suppressed in accordance with its license, thereby reducing potential interference. Given this, we believe that adding the requirement of measuring the main lobe or lobes as requested by some commenters is unnecessary, because the main signal lobe will be within its authorized pattern in most cases if the pattern nulls—the points of least radiation where the signal is suppressed to protect other stations—can be verified as being within limits.<sup>15</sup>

5. Currently, the rules require that a partial proof of performance consists of at least eight field strength measurements made on each of the radials that includes a monitoring point.<sup>16</sup> In 2001, this requirement was reduced from the prior requirement of 10 field strength measurements, as a means of reducing the cost to broadcasters of performing partial proofs.<sup>17</sup> Despite this decreased burden, some commenters appear not only to reject our proposal to eliminate certain measurements but would have us add measurement points to the analysis. R. Morgan Burrow, Jr., PE, urges that we “retain” the requirement to measure eight to 10 points specified in the “full” station proof on each bearing where a monitor point is specified, along with other measurements.<sup>18</sup> McCarthy Radio Enterprises, Inc., while first stating that it concurs with reducing the minimum number of monitored radials and measured points along those radials, then argues that the “as proposed 8 point partial proof minimum should not be adopted,”<sup>19</sup> contending that the prior 10-point minimum provided more granular detail at greater distances from the array.<sup>20</sup> While commenters McCarthy and Burrow appear to desire a return to a 10-point minimum, our experience shows that the eight-point partial proof minimum is sufficient to evaluate antenna system performance, and that returning to the 10-point minimum would only increase the burden

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<sup>14</sup> CTJ Comments at 8; Crawford Comments at 5.

<sup>15</sup> Certain commenters generally support the proposal in the *AMR FNPRM* to require measurements only on radials containing a monitoring point, but with slight modifications. We decline to adopt the modifications. Cohen, Dippell and Everist, P.C. (CDE) support the modification to Section 73.154 but with the exception that one radial be established that defines the major lobe as established in the recent referenced full proof-of-performance. CDE Reply at 4. As discussed in the text, we believe that defining and measuring a main lobe is unnecessary as long as the pattern nulls are verified as being within limits, and so we reject this proposal. Kintronic Laboratories, Inc. (Kintronic) states that for those patterns with large major lobes, an additional measurement of these major-lobe signal strengths at several points along the associated radial should also be included in the partial proof to assure compliance with the pattern maximum(s). However, Kintronic generally agrees with CTJ and Crawford regarding the sufficiency of measuring only monitored radials, at least for verifying pattern minima. Kintronic Reply at 18. Edward A. Schober, PE (Schober) supports the proposal but would slightly change the language of Section 73.154(a) to read that a partial proof of performance should consist of at least eight field strength measurements, including the monitor point, on each radial on which there is a monitor point. Schober Comments at 4. We note, however, that 47 CFR § 73.154(b) already requires that when a monitoring point as designated on the station authorization lies on a particular radial, one of the measurements must be made at that point.

<sup>16</sup> 47 CFR § 73.154(a).

<sup>17</sup> *An Inquiry into the Commission's Policies and Rules Regarding AM Radio Service Directional Antenna Performance Verification*, Report and Order and Further Notice of Proposed Rule Making, 16 FCC Rcd 5635, 5640, para. 15 (2001).

<sup>18</sup> R. Morgan Burrow, PE (Burrow) Comments at 4 (arguing further that at least one bearing in the major lobe should be measured to guarantee that null suppression is working, and that measurements on two major lobe bearings should be made where the authorized pattern specifies multiple major lobes).

<sup>19</sup> McCarthy Radio Enterprises, Inc. (McCarthy) Comments at 16.

<sup>20</sup> *Id.* McCarthy further contends that the minimum and maximum distances should be increased from the present three to 15 kilometers to six to 24 kilometers, where it says re-radiation is less of a factor in the overall pattern field, thus allowing stations more flexibility in proving their pattern is truly performing as designed. *Id.*

on AM broadcasters in exchange for little more in the way of useful data. We therefore reject the suggestion that we return to the 10-point measurement standard, and adopt this rule change as proposed.

## **B. Modify Rules for Method of Moments Proofs**

6. Since the Commission first adopted rules in 2008 permitting MoM computer modeling to verify AM directional antenna performance, over 220 MoM directional antenna proofs of performance have been prepared by AM station licensees and their engineers and submitted to the Commission in support of AM station applications for license. This analysis technique has proven to be a reliable means of verifying directional antenna system performance at a much lower cost to AM broadcasters. Based on this positive experience, in the *AMR FNPRM* the Commission proposed several modifications or eliminations of rules pertaining to AM directional arrays using MoM proofs, intended to improve the quality of the MoM proofs and eliminate expenses for directional antenna array maintenance by AM station licensees.<sup>21</sup>

### **1. Modify recertification measurements requirements and procedures**

7. *Background.* Currently, Section 73.155 of the rules requires that an AM station licensed with a directional antenna pattern pursuant to an MoM proof of performance be re-certified at least once within every 24-month period, including disconnection and calibration of base sampling devices.<sup>22</sup> When MoM modeling was first introduced, it was reasonable to require periodic “reality checks” of sampling system performance. Now that we have sufficient experience with MoM proofs, the reliability of MoM models has been demonstrated, at least as to standard directional antenna installations, and accordingly the Commission proposed in the *AMR FNPRM* to eliminate this requirement in its entirety or modify it.<sup>23</sup>

8. *Discussion.* Our review of the comments leads us to adopt the proposal to eliminate the recertification requirement, with one exception discussed below. Some commenters concur with the proposal to eliminate the recertification rule. dLR states that the very thorough internal system measurements required initially with an MoM proof of performance can later be used for troubleshooting and restoring the system to its initial condition, providing for continuing maintenance of directional antenna systems without the need for periodic recertification.<sup>24</sup> Additionally, dLR and Crawford express concern about the need, during recertification, to disconnect and reconnect sampling system components that could be damaged in the process.<sup>25</sup> CTJ and Joint Radio Commenters concur that disconnecting and reconnecting these components should not be required. CTJ states that this is the most labor-intensive part of the recertification process,<sup>26</sup> noting that, of three recertifications it has performed in which the system was non-compliant,<sup>27</sup> components that are not required to be checked during recertification, such as antenna monitors, were found to be out of calibration rather than the base sampling devices.<sup>28</sup> Joint Radio Commenters echo the observations regarding the expense and burden of performing biennial recertifications, stating that such procedures require a station “to shut down its station’s operations for several nights, incur the expense of hiring a consulting engineer, and take apart portions of its directional

<sup>21</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 73.

<sup>22</sup> 47 CFR § 73.155.

<sup>23</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 72.

<sup>24</sup> dLR Comments at 8.

<sup>25</sup> Crawford Comments at 5. Crawford adds that base sampling current transformers tend to be very stable unless damaged by lightning or the elements, but that typically such damage will become evident when measuring the terminated impedance of the sample transmission line.

<sup>26</sup> CTJ Comments at 10.

<sup>27</sup> *Id.* at 9. CTJ found two of 18 sample systems out of compliance after the first 24-month interval, and one of 12 such systems out of compliance after the second 24-month interval.

<sup>28</sup> *Id.* at 9 and nn.2-3.

antenna array sampling system—all at a cost of tens of thousands of dollars per recertification,<sup>29</sup> noting further that AM stations employing conventional methods of proof are not subject to such burden and expense.<sup>30</sup>

9. Many of the commenters that agree that the Commission should not require stations to disconnect and reconnect base current and voltage sampling devices as part of recertification, however, also recommend increasing the interval between recertifications, rather than eliminating the requirement entirely.<sup>31</sup> We find that system recertification becomes less valuable when the removal of base sampling devices is no longer required. Therefore, given the consensus against putting AM stations to the burden and expense of such device removal, without commensurate benefit, we agree with those commenters who support our proposal to eliminate the recertification requirement altogether. We do, however, make one change to the original proposal to eliminate the recertification requirement, based on comments submitted by Schober, who points out that a station should be required to certify any replaced components, such as sampling transformers and sample lines, in order to establish baseline values with the replaced components in place.<sup>32</sup> Schober recommends, and we agree, that Section 73.155 be retained but that, rather than prescribing a set recertification interval, we require recertification only in the case of repair to or replacement of affected system components, and then only as to the repaired or replaced components.<sup>33</sup> In such cases, because the affected system component(s) would essentially be new additions to the system, we believe the recertification should be conducted on such component(s) in the same manner as an initial certification of the component(s), and accordingly modify Section 73.155 to refer to the initial certification standards set forth in Section 73.151(c)(2)(i) of the rules.<sup>34</sup>

## 2. Modify the requirement for reference field strength measurements

10. *Background.* In the *AMR FNPRM*, the Commission proposed to modify the requirement for reference field strength measurements set forth in Section 73.151(c)(3) of the rules.<sup>35</sup> Currently, when an initial license application is submitted for a directional antenna system based on computer modeling and sample system verification, reference field strength measurements are required. The proposed rule change would specify that subsequent license applications for the same directional antenna system and physical facilities would not require submission of new reference field strength measurements.<sup>36</sup> In the *AMR FNPRM*, the Commission observed that such measurements provide the only external verification that the array is operating properly, and for this reason proposed retaining the requirement of initial reference field strength measurements, notwithstanding commenter suggestions in response to the *AM NPRM* that this requirement be eliminated in its entirety.<sup>37</sup>

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<sup>29</sup> Joint Radio Commenters (JRC) *Ex Parte* Comments at 7-8 (filed July 5, 2017, in MB Dockets 17-105 and 13-249).

<sup>30</sup> *Id.*

<sup>31</sup> *See, e.g.*, CTJ Comments at 10 (48-month interval); Communications Technologies, Inc. (CTI) Comments at 6, TZ Sawyer Consulting Technical Consultants, LLC (TZS) Reply at 4, Metro Radio, Inc. (Metro) Comments at 6, Mt. Wilson Comments at 6, RVC Comments at 6, Sunrise Comments at 6 (all recommending a five-year interval); McCarthy Comments at 17 (recertification at time of license renewal). *See also* JRC *Ex Parte* Comments at 8-9 (believes recertification requirement should be eliminated, but should the Commission retain the requirement, recertification should only be required within 24 months prior to the date for filing renewal application).

<sup>32</sup> Schober Comments at 5.

<sup>33</sup> *Id.*

<sup>34</sup> 47 CFR § 73.151(c)(2)(i).

<sup>35</sup> *Id.* § 73.151(c)(3). *See AMR FNPRM*, 30 FCC Rcd at 12175, paras. 72, 74.

<sup>36</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 74.

<sup>37</sup> *Id.*, para. 72.

11. *Discussion.* We adopt the *AMR FNPRM* proposal not to require submission of new reference field strength measurements for subsequent AM licenses submitted for directional antenna systems using MoM proofs, as set forth below. The set of field strength measurements submitted with the initial proof, a requirement we retain as proposed, provides a real-world verification of the MoM model, and can serve as the basis for comparison of future measurements of the antenna pattern should the need arise. Although commenters were roughly evenly divided between those supporting the proposal and those favoring elimination of the requirement for reference field strength measurements in its entirety, we find on balance that the original proposal should be adopted. Some commenters support requiring reference field strength measurements when the initial license application is submitted.<sup>38</sup> McCarthy states that such reference points serve specific technical purposes such as aiding station, maintenance, or repair engineers in determining whether an out-of-license parameter indicated on the antenna monitor is a sample system problem or a real pattern problem.<sup>39</sup> Eliminating reference field strength measurements would, McCarthy argues, place a significant burden on engineering personnel charged with maintaining and/or repairing those facilities, and could ultimately cost the licensee more in diagnostic time than if the measurements had simply been made when the array(s) and pattern(s) were first licensed.<sup>40</sup>

12. Several commenters favoring elimination of the requirement believe that experienced engineers can, through internal system measurements, maintain a directional antenna system in a manner superior to the methods based on field strength measurements.<sup>41</sup> TZS argues that, because new reference points can be established during the current recertification process, initial reference point measurements are of little value.<sup>42</sup> As we have eliminated most recertifications, above, this argument accordingly has less validity. Moreover, while we acknowledge that there is merit to opponents' claims that eliminating field strength measurements would save time and money, we continue to believe that at least one, initial set of reference measurements has utility in providing external verification that an AM directional array is operating properly. But we agree that the expense of further reference field strength measurements should not be required on subsequent license applications when the antenna pattern and physical facilities are unchanged. Accordingly, we adopt this proposal as set forth in the *AMR FNPRM*.

### 3. Modify the requirement for surveying existing directional antenna arrays

13. *Background.* Section 73.151(c)(1)(ix) of the rules requires that a station applying for a directional antenna array using MoM modeling to confirm the antenna pattern must obtain a post-construction certificate from a licensed surveyor, verifying that the towers in the array have the proper spacing and orientation.<sup>43</sup> In a Public Notice released October 29, 2009, after the MoM rules had been adopted, the Media Bureau clarified that a licensed station applying to be re-licensed under the MoM rules was exempt from the requirement to submit a surveyor's certification, provided that there was no change in the authorized theoretical pattern or patterns.<sup>44</sup>

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<sup>38</sup> CTJ Comments at 9; CTI Comments at 6; Timothy C. Cutforth, P.E. (Cutforth) Comments at 4; Crawford Comments at 6.

<sup>39</sup> McCarthy Comments at 17 (noting that reference points are not regulatory monitor points and do not contain a specific limit as would a conventional pattern monitor point).

<sup>40</sup> *Id.* (stating also that when a station licensee believes it is being interfered with, the reference points enable a field inspector or engineer to determine with some level of accuracy whether the station is operating at its licensed power and pattern).

<sup>41</sup> Hatfield & Dawson Consulting Engineers, LLC (Hatfield) Comments at 4; dLR Comments at 8; Kintronic Reply at 19.

<sup>42</sup> TZS Reply at 3.

<sup>43</sup> 47 CFR § 73.151(c)(1)(ix).

<sup>44</sup> *Media Bureau Clarifies Procedures for AM Directional Antenna Performance Verification Using Moment Method Modeling*, Public Notice, 24 FCC Rcd 13398, 13399 (MB 2009) (2009 Public Notice).

14. In its comments filed in response to the *AMR NPRM*, dLR suggested that the Commission exempt from the requirement to obtain a surveyor's certification any directional antenna pattern on any frequency using towers that are part of an authorized AM array, as long as the tower geometry is not altered and no towers are added to the array. dLR contended that such an exemption would encourage stations to co-locate on existing arrays, using different frequencies and/or antenna patterns, and thus would provide relief to broadcasters that would otherwise have difficulty locating sufficient land for their own directional arrays.<sup>45</sup> The Commission proposed to adopt this exemption.<sup>46</sup>

15. *Discussion.* We adopt the exemption from the survey requirement as proposed. A majority of commenters support relaxing the rule.<sup>47</sup> CTJ in particular notes that, to its knowledge, there have been no complaints of additional interference resulting from the relicensing of stations exempt from the survey requirement under the Bureau's current policy, even though the vast majority of the almost-250 stations licensed under the MoM rules were so exempt. In light of the lack of reported interference to date from the large number of stations that have relicensed under the MoM Rules, CTJ opines that expanding the surveyor's certification exemption as proposed in the *AMR FNPRM* presents a low risk of creating any "material harmful interference."<sup>48</sup> We agree with CTJ that we have seen no evidence of additional interference being created from relicensing stations that are exempt from the survey certification requirement under the Bureau's current policy. Additionally, we find persuasive dLR's contention that, given the scarcity of land for AM directional arrays, elimination of the surveyor certification would eliminate obstacles to co-location that would enable certain AM stations to remain in operation.

16. In the current round of comments, only McCarthy objects to the proposal. It states that many directional arrays were built without the benefit of surveyor placement, observing that matching MoM calculations to reality relies on accurate placement and data.<sup>49</sup> McCarthy also notes that the use of a surveyor will insure the data used in Federal Aviation Administration airspace studies and the Antenna Structure Registration database are accurate.<sup>50</sup> As noted above, we have seen no evidence that relicensing stations exempt from the survey certification requirement creates new interference, and this experience tends to contradict McCarthy's anecdotal assertions regarding inaccurately located towers. Accordingly, we adopt the proposal set forth in the *FNPRM* to exempt from the survey requirement any directional antenna pattern on any frequency using towers that are part of an authorized AM array, as long as the tower geometry is not altered and no new towers are being added to the array. We will modify Section 73.151(c)(1)(ix) of the rules by codifying this exemption.

#### 4. Clarify Section 73.151(c)(1)(viii) of the rules

17. *Background.* Section 73.151(c)(1)(viii) of the rules provides as follows:

The shunt capacitance used to model base region effects shall be no greater than 250 pF unless the measured or manufacturer's stated capacitance for each device other than the base insulator is used. The total capacitance of such devices shall be limited such that in

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<sup>45</sup> dLR 2014 Comments at 21.

<sup>46</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 72 and n.189 (noting the concurrence of Hatfield and Sellmeyer Engineering, and the objection of NAAMB).

<sup>47</sup> dLR Comments at 8; Kintronic Reply at 19; Crawford Comments at 6; CTJ Comments at 10-11.

<sup>48</sup> *Id.* at 11.

<sup>49</sup> McCarthy Comments at 18. We also note that in its original comments to the *AMR NPRM*, NAAMB stated generally that members of its organization "have found several stations where the directional antenna element relative locations did not conform to the license and the conventional proof was 'jimmied' to work." NAAMB 2014 Comments at 10.

<sup>50</sup> *Id.*

no case will their total capacitive reactance be less than five times the magnitude of the tower base operating impedance without their effects being considered.<sup>51</sup>

18. In its 2014 comments, dLR opined that the rule as presently written is unclear.<sup>52</sup> It concluded that a rule change is important to enable evaluation of directional antennas for MoM proofing potential, and sampling device selection, based on what can be known before beginning the proofing process.<sup>53</sup> The Commission agreed and proposed in the *AMR FNPRM* to clarify that Section 73.151(c)(1)(viii) of the Rules applies only when total capacitance used to model base region effects exceeds 250 pF and should apply only when base current sampling is used.<sup>54</sup>

19. *Discussion.* Commenters supported the Commission's proposal to clarify this rule,<sup>55</sup> with no commenters opposing. For the reasons stated in the *AMR FNPRM*,<sup>56</sup> we will adopt the proposal to modify Section 73.151(c)(1)(viii).

## 5. Permit use of MoM modeling for skirt-fed towers

20. *Background.* Another proposal in the *AMR FNPRM* concerned whether to permit use of MoM modeling for skirt-fed towers.<sup>57</sup> A skirt-fed tower employs a design different from that of the more typical AM tower. A typical AM tower is mounted on a base insulator, with the transmission line connected to the tower at this point. A skirt-fed tower is not insulated at its base, but rather is surrounded by a "skirt" of vertical wires electrically attached at the top of the tower, with the transmission line attached between the bottom of the skirt wires and the ground. Because the skirt-fed tower does not require a base insulator, it is easier to add antennas to the tower. However, because the physical characteristics of a skirt-fed tower vary from those of a traditional monopole, and are much more difficult to model, skirt-fed towers were initially excluded from computer modeling. Now that the Commission has gained experience and confidence with MoM computer modeling of standard AM towers, the Commission posed a number of specific inquiries with regard to MoM modeling of skirt-fed towers.<sup>58</sup>

21. *Discussion.* Upon consideration of the comments on this issue, we conclude that there is not yet a sufficient body of experience to specify the standards for MoM modeling of directional antenna systems with skirt-fed towers. Several commenters state that it is too early to allow MoM modeling of antenna systems with skirt-fed towers,<sup>59</sup> with some believing that this issue should be considered in a

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<sup>51</sup> 47 CFR § 73.151(c)(1)(viii).

<sup>52</sup> dLR 2014 Comments at 21-22 (asserting that the rule should clearly apply only when the total capacitance used to model base region effects exceeds 250 pF, further stating that the "five times" requirement should only apply when base current sampling is used, and that no such limitation should apply when loop sampling or base voltage sampling is used).

<sup>53</sup> *Id.* The rule's requirement, according to dLR, is to limit imprecision in sampled base current for pattern maintenance due to current division at the base node between the antenna element and shunt currents, which does not affect base voltage or sampled loop currents.

<sup>54</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 72.

<sup>55</sup> CTJ Comments at 11; Crawford Comments at 6; dLR Comments at 8; Kintronic Reply at 19.

<sup>56</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 73.

<sup>57</sup> *Id.* at 12175, para. 72.

<sup>58</sup> *Id.* at 12176-76, para. 74 ("What constraints should we impose on the physical model of a skirt-fed antenna element in the MoM computer program? Due to the complexity of modeling a skirt-fed tower, should we require use of specific MoM software to model them? What requirements should we specify for sampling systems for skirt-fed antenna elements?").

<sup>59</sup> *See, e.g.*, CTJ Comments at 11 (has "reservations" about use of MoM to model skirt-fed towers, believing that an expanded set of procedures and limitations would have to be developed and applied when modeling such antennas); Crawford Comments at 6; Hatfield Comments at 4 (stating there are sufficient ambiguities in the process of moment

(continued....)

further proceeding.<sup>60</sup> Some commenters offer specific ideas regarding this proposal. For example, dLR observes that, given a certain configuration and spacing of the skirt wires, a skirt-fed tower in a directional antenna system could be analyzed in a manner similar to that in which simple tower currents are analyzed for an MoM proof of performance. Despite this, dLR does not believe that there is yet a sufficient body of experience to specify the standards to be used for such an analysis.<sup>61</sup> Crawford likewise concludes that until the engineering community has more experience with such models, it would not be wise to permit use of MoM modeling for skirt-fed towers in AM directional arrays.<sup>62</sup>

22. On the other side, some commenters believe that MoM modeling of skirt-fed towers is appropriate, along with four commenters who only oppose requiring specific software to model skirt-fed towers.<sup>63</sup> CTI states simply its belief that the use of MoM has progressed to the point that including skirt feeds is appropriate, further agreeing that specific software should not be required.<sup>64</sup> The comments in favor of allowing MoM modeling of skirt-fed towers, however, tend to be non-detailed and conclusory. On balance, we agree with those commenters who opine that there is not yet sufficient experience with MoM modeling to allow us to accept MoM proofs of directional antenna systems including skirt-fed towers. These commenters raise valid points regarding the complexity of such models. Accordingly, we do not adopt the proposal to allow such modeling at the present time. We will retain the present limitation on the use of MoM modeling to those arrays using simple, series-fed towers with standard ground systems.<sup>65</sup> As the Media Bureau noted in its *2009 Public Notice*, this limitation excludes antenna systems with skirt-fed or sectionalized towers, and arrays that use non-standard ground systems such as those consisting of short, elevated radials.<sup>66</sup> We may revisit this conclusion at a later date and propose specific standards for use in more complex analyses, as the engineering community gains more experience with MoM modeling of such systems.

#### **6. Change MoM rules with regard to re-proofing when antennas are added to towers**

23. *Background.* The Commission additionally proposed to clarify when new MoM proofs must be submitted after antennas are added to towers.<sup>67</sup> This was based on a suggestion from the original

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method modeling of skirt-fed antennas to make proper administrative review of them burdensome and impractical); dLR Comments at 8-9; Kintronic Reply at 19.

<sup>60</sup> dLR Comments at 9; Kintronic Reply at 19.

<sup>61</sup> dLR Comments at 8-9.

<sup>62</sup> Crawford Comments at 6. Crawford objects that, in addition to issues with the modeled skirt wires producing incomplete shielding of the tower wire, driving a skirted tower from a single point using a commoning ring, as is the common feed method in practice, presents a particular problem for the modeler. Such models, in Crawford's view, tend to produce highly imbalanced currents in the skirt wires, resulting in very inaccurate modeled drive point impedances. While Crawford notes that there are workarounds for these issues, its experience shows that it is difficult to apply those workarounds to a directional model.

<sup>63</sup> Metro Comments at 6, Mt. Wilson Comments at 6, RVC Comments at 6, Sunrise Comments at 6 (all filing substantially similar comments objecting to the requirement of specific software for modeling skirt-fed towers, and stating that as long as model data is calibrated against measured impedance and the current distribution is shown to be reasonable, there should be no reason to question the software used; commenters also believe that limiting software would prevent introduction of newer, perhaps more accurate software).

<sup>64</sup> CTI Comments at 6. *See also* McCarthy Comments at 18.

<sup>65</sup> 47 CFR § 73.151(c).

<sup>66</sup> *2009 Public Notice*, 24 FCC Rcd at 13398. We further note that arrays in which transmission line is isolated from an AM tower via a quarter-wave section, commonly known as a "bazooka" line, are also ineligible for MoM modeling.

<sup>67</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 72.

*AMR NPRM* that the Commission codify the standards for when re-proofing was needed in the event that changes were made above the base of a tower in an array, such as adding a new antenna or changing guy wire insulators.<sup>68</sup>

24. *Discussion.* We adopt this *AMR FNPRM* proposal. Subpart BB of our Part 1 rules sets forth procedures to be followed when Commission authorization holders or applicants propose to construct new towers, make changes to existing antenna towers or support structures in the vicinity of an AM antenna, or add an antenna to an AM tower.<sup>69</sup> These rules were added to protect AM broadcast station operators from changes that might distort an AM station's antenna pattern(s).<sup>70</sup> Section 1.30003(b)(2) of the rules dictates the procedures to be followed when adding an antenna to a tower in an AM directional array when the station is licensed via an MoM proof of performance, requiring a base impedance measurement on the tower being modified, and submission of a new license application only if the base resistance and reactance values exceed a specified deviation from those values as contained in the last MoM proof.<sup>71</sup> Although that rule refers specifically to the addition of antennas, commenters would clarify that the rule applies to any modification to tower or system components above the tower base, and state that re-proofing should not be needed if a change is made that does not affect the modeled values used in the license proof.<sup>72</sup> We agree, as there is no reason to treat other above-the-base tower components differently from antennas for purposes of the rules. We therefore modify Section 73.151(c)(1) to reflect the applicability of the Section 1.30003(b)(2) procedures in such instances.<sup>73</sup>

**7. Eliminate requirement for current distribution measurements for certain antenna configurations when MoM is used**

25. *Background.* Currently, in the conditions attached to a construction permit for an AM station, the staff requires current distribution measurements to be made when the applicant employs a top-loaded antenna. Based on a suggestion from the original *AMR NPRM*, the Commission proposed to eliminate this requirement and to permit use of MoM to determine antenna characteristics.<sup>74</sup>

26. *Discussion.* We adopt the proposal to eliminate this requirement. We received no objection to this proposal, which will eliminate an unnecessary regulatory burden. The only commenters to address this issue support it.<sup>75</sup> CTJ explains that, in its experience, current distribution measurements

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<sup>68</sup> dLR 2014 Comments at 22. dLR suggested that, if the tower base impedance after such a change, re-measured under the same conditions as the measurement in the most recently filed MoM proof, is within the required tolerance of the modeled value of the MoM proof, the newly measured value and a statement of its comparison to the proof-modeled value should be placed in the station's public file with no further requirement for measurements or filing with the Commission. If the measured value after a change above the tower base falls outside the required tolerance of the value modeled in the MoM proof, then a new proof would have to be run and filed with the Commission. *Id.*

<sup>69</sup> 47 CFR §§ 1.30000-1.30004.

<sup>70</sup> *See id.* § 1.30000.

<sup>71</sup> *Id.* § 1.30003(b)(2) (requiring a station licensed under an MoM proof to make a base impedance measurement after effecting an installation on an AM antenna. The results are to be retained in the station's records and, if they differ by more than  $\pm 2$  ohms and  $\pm 4$  percent from modeled values, the licensee must file FCC Form 302-AM, accompanied by the new impedance measurements and a new MoM model for each pattern in which the tower is a radiating element).

<sup>72</sup> TZS Reply at 4; dLR Comments at 9. *See also* Crawford Comments at 6 (stating that if the tower impedance after modification is within the tolerance provided in the MoM rule— $\pm 2$  ohms for impedance and  $\pm 4$  percent for resistance and reactance, per 47 CFR § 73.151(c)(2)(ii)—a new proof should not be required).

<sup>73</sup> 47 CFR § 73.151(c)(2)(ii).

<sup>74</sup> *AMR FNPRM*, 30 FCC Rcd at 12175, para. 72. *See also* Hatfield Comments, filed Jan. 15, 2014, at 8.

<sup>75</sup> dLR Comments at 9; CTJ Comments at 12.

are unreliable and are difficult to analyze.<sup>76</sup> MoM analysis of the current distribution prior to construction of the tower, in CTJ's view, provides an accurate means to determine the required physical length of the top loading wires, eliminating the requirement to modify the length after the tower has been erected.<sup>77</sup> The staff is therefore directed to modify the conditions attached to AM construction permits accordingly.

### C. RELAXED MAIN STUDIO REQUIREMENTS

27. The Commission, in conjunction with the *AMR FNPRM*, initiated a Notice of Inquiry that, among other things, requested comment as to whether the main studio requirements, contained in Section 73.1125 of the rules and in Commission precedent,<sup>78</sup> should be relaxed in order to offer relief to AM broadcasters.<sup>79</sup> This aspect of the Notice of Inquiry, however, has been superseded by the new proceeding, initiated in May 2017, in which the Commission proposed to eliminate the main studio requirements for all broadcasters.<sup>80</sup> Accordingly, we will not further consider issues pertaining to main studio requirements for AM stations in this proceeding, but will rather consider those issues in the broader context of the *Elimination of Main Studio Rule* proceeding.

## III. PROCEDURAL MATTERS

### A. Final Regulatory Flexibility Analysis

28. Pursuant to the Regulatory Flexibility Act of 1980 (RFA), as amended,<sup>81</sup> the Commission's Final Regulatory Flexibility Analysis (FRFA) relating to this *Third Report and Order* is attached as Appendix B.

### B. Final Paperwork Reduction Act Analysis

29. This document contains new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new or modified information collection requirements contained in this proceeding. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4), the Commission previously sought specific comment on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees.

30. We have assessed the effects of the policies adopted in this *Third Report and Order* with regard to information collection burdens on small business concerns, and find that these policies will benefit many companies with fewer than 25 employees by reducing certain regulatory burdens on AM broadcasters operating directional antenna arrays. In addition, we have described impacts that might affect small businesses, which includes most businesses with fewer than 25 employees, in the FRFA in Appendix B.

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<sup>76</sup> *Id.* CTJ attributes this to the influence from fields generated from current flowing in nearby structural guy wires, and the even greater influence from fields generated from current flowing in the top loading guy wires for measurements performed near the top of the tower.

<sup>77</sup> *Id.*

<sup>78</sup> 47 CFR § 73.1125; *see, e.g., Jones Eastern of the Outer Banks, Inc.*, Memorandum Opinion and Order, 6 FCC Rcd 3615, 3616 (1991).

<sup>79</sup> *AMR FNPRM*, 30 FCC Rcd at 12179-81, paras. 85-88.

<sup>80</sup> *Elimination of Main Studio Rule*, Notice of Proposed Rule Making, MB Docket No. 17-106, 32 FCC Rcd 4415 (2017).

<sup>81</sup> 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. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

**C. Congressional Review Act**

31. The Commission will send a copy of this *Third Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act.

**IV. ORDERING CLAUSES**

32. Accordingly, **IT IS ORDERED** that, pursuant to the authority contained in Sections 1, 2, 4(i), 303, and 307 of the Communications Act of 1934, 47 U.S.C. §§ 151, 152, 154(i), 303, and 307, this *Third Report and Order* **IS ADOPTED**.

33. **IT IS FURTHER ORDERED** that, pursuant to the authority found in Sections 1, 2, 4(i), 303, and 307 of the Communications Act of 1934, 47 U.S.C. §§ 151, 152, 154(i), 303, and 307, the Commission's rules **ARE HEREBY AMENDED** as set forth in Appendix A.

34. **IT IS FURTHER ORDERED** that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, **SHALL SEND** a copy of this *Third Report and Order*, including the Final Regulatory Flexibility Act Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

35. **IT IS FURTHER ORDERED** that the Commission **SHALL SEND** a copy of this *Third Report and Order* in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

36. **IT IS FURTHER ORDERED** that the rule change to Section 73.151(c)(1)(viii) adopted herein **WILL BECOME EFFECTIVE** 30 days after the date of publication in the *Federal Register*.

37. **IT IS FURTHER ORDERED** that the rule changes to Sections 73.151(c)(1)(ix), 73.151(c)(1)(x), 73.151(c)(3), 73.154(a), and 73.155, all of which contain new or modified information collection requirements that require approval by the Office of Management and Budget (OMB) under the PRA, **WILL BECOME EFFECTIVE** after the Commission publishes a notice in the *Federal Register* announcing such approval and the relevant effective date.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

**APPENDIX A**  
**Final Rule Change**

**Part 73 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:**

1. The authority citation for part 73 continues to read as follows:

Authority: 47 U.S.C. 154, 303, 334, 336, and 339.

2. Revise paragraph (c) of Section 73.151 to read as follows:

**§ 73.151 Field strength measurements to establish performance of directional antennas.**

\* \* \* \* \*

(c) \* \* \*

(1) \* \* \*

(viii) The shunt capacitance used to model the base region effects shall be no greater than 250 pF unless the measured or manufacturer's stated capacitance for each device other than the base insulator is used. The total capacitance of such devices shall be limited such that in no case will their total capacitive reactance be less than five times the magnitude of the tower base operating impedance without their effects being considered. This "five times" requirement only applies when the total capacitance used to model base region effects exceeds 250 pF and when base current sampling is used.

(ix) The orientation and distances among the individual antenna towers in the array shall be confirmed by a post-construction certification by a land surveyor (or, where permitted by local regulation, by an engineer) licensed or registered in the state or territory where the antenna system is located. Stations submitting a moment method proof for a pattern using towers that are part of an authorized AM array are exempt from the requirement to submit a surveyor's certification, provided that the tower geometry of the array is not being modified and that no new towers are being added to the array.

(x) An AM station that verified the performance of its directional antenna system using computer modeling and sampling system verification under this rule section, that makes modifications to tower or system components above the base insulator, shall follow the procedures set forth in section 1.30003(b)(2) of this chapter.

(2) \* \* \*

(3) When the application for an initial license for a directional antenna system is submitted that is based on computer modeling and sample system verification, reference field strength measurement locations shall be established in the directions of pattern minima and maxima. On each radial corresponding to a pattern minimum or maximum, there shall be at least three measurement locations. The field strength shall be measured at each reference location at the time of the proof of performance. The license application shall include the measured field strength values at each reference point, along with a description of each measurement location, including GPS coordinates and datum reference. New reference field strength measurements are not required for subsequent license applications for the same directional antenna pattern and physical facilities.

3. Revise paragraph (a) of Section 73.154 to read as follows:

**§ 73.154 AM directional antenna partial proof of performance measurements.**

(a) A partial proof of performance consists of at least 8 field strength measurements made on each of the radials that includes a monitoring point.

\* \* \* \* \*

4. Revise Section 73.155 to read as follows:

**§ 73.155 Directional antenna performance recertification.**

A station licensed with a directional antenna pattern pursuant to a proof of performance using moment method modeling and internal array parameters as described in §73.151(c) shall recertify the performance of the antenna monitor sampling system only in the case of repair to or replacement of affected system components, and then only as to the repaired or replaced system components. Any recertification of repaired or replaced system components shall be performed in the same manner as an original certification of the affected system components under § 73.151(c)(2)(i) of this part. The results of the recertification measurements shall be retained in the station's public inspection file.

## APPENDIX B

## Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA)<sup>1</sup> an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Further Notice of Proposed Rule Making (FNPRM)* to this proceeding.<sup>2</sup> The Commission sought written public comment on the proposals in the *FNPRM*, including comment on the IRFA. The Commission received no comments on the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.<sup>3</sup>

**A. Need For, and Objectives of, the Third Report and Order**

2. This *Third Report and Order (Third R&O)* adopts several changes to the rules, many of which were first suggested by commenters in the initial round of commenting in this proceeding. First, the Commission proposed to modify the rules on submission of partial proofs of performance of directional AM antenna arrays. The current rules require that field strength measurements be taken on all radials containing a monitoring point (a specific location at which regular measurements are taken), as well as on radials adjacent to monitored radials if the array has fewer than four monitored radials. The Commission proposed to eliminate the second requirement, of taking measurements on non-monitored radials, in order to ease regulatory burdens on and expense to AM broadcasters using directional antenna arrays. Most commenters concurred with the proposal or with slight variations to it, with two commenters suggesting more stringent analyses of such directional antenna arrays. Overall, the Commission agreed with most commenters that measurement of monitored radials is sufficient to verify the integrity of the antenna pattern, and that dropping the adjacent-radials requirement would save broadcasters time and expense. The Commission therefore adopted the rule change as proposed.

3. The next set of proposed changes concerned modifications of rules pertaining to Method of Moments (MoM) proofs of directional AM antenna system performance. The rules provide for two methods of verifying the performance of a directional AM array. The traditional method is by taking field strength measurements of the antenna pattern. In 2008, the Commission promulgated rules for verifying directional array performance through MoM proofs. An MoM proof allows an AM licensee to verify antenna performance with MoM software, which uses measurements of internal parameters in conjunction with a physical model of the antenna to compute the contribution of each antenna element to the directional pattern. MoM proofs are thus a less expensive alternative to taking field strength measurements of the directional pattern. In the years since the Commission first allowed submission of MoM proofs, over 220 such proofs have been submitted. Based on that experience, the Commission took note of commenter requests to modify some of the rules pertaining to MoM analyses in order to make them even less burdensome.

4. The Commission proposed and, based on comments, adopted the following rule changes: (1) eliminating the requirement for biennial recertification of the performance of a directional pattern licensed pursuant to an MoM proof, except as to any system components that have been repaired or replaced, under 47 CFR § 73.155; (2) retaining the requirement for an initial set of reference field strength measurements, but eliminating the requirement to submit further reference field strength measurements on relicensing, under 47 CFR § 73.151(c)(3); (3) eliminating the requirement of a licensed surveyor's certification under 47 CFR § 73.151(c)(1)(ix) for relicensing of any existing AM station directional array,

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<sup>1</sup> See 5 U.S.C. § 603. The RFA, see 5 U.S.C. §§ 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 847 (1996). The SBREFA was enacted as Title II of the Contract With America Advancement Act of 1996 (CWAAA).

<sup>2</sup> 30 FCC Rcd 12145, 12202-05 (2015).

<sup>3</sup> See 5 U.S.C. § 604.

provided that the tower geometry is not being modified and no new towers are being added to the array; and (4) clarifying that the provisions of 47 CFR § 73.151(c)(1)(viii) apply only when total capacitance used to model base region effects exceeds 250 pF and should apply only when base current sampling is used. All of these changes received support in the record, sometimes with variations suggested, and were adopted in order to lessen the burdens and expense to licensees.

5. Additionally, the Commission proposed in the *AMR FNPRM* to allow MoM modeling of skirt-fed towers, but based on comments it concluded that more experience with modeling such towers is needed before allowing and promulgating standards for such analyses. It did not adopt any new rules in this regard. Finally, the Commission proposed to codify the standards under which a new proof of performance was to be filed when adding antennas or adding or modifying other system components above the base insulator of a tower in an AM array. The rules (47 CFR § 1.30003(b)(2)) already provide such standards in reference to adding antennas to towers. The *Third R&O* adopts a rule section codifying the same procedures already set forth in 47 CFR § 1.30003(b)(2) with regard to the addition or modification of any system components above the base insulator, not limited to antennas. This clears up any ambiguity regarding whether addition or modification of such components requires filing new proofs of performance with the Commission.

6. The Commission also released a Notice of Inquiry along with the *AMR FNPRM*, in which among other things it asked whether its rules for siting and staffing an AM station main studio should be relaxed. Since release of the Notice of Inquiry, however, the Commission released a Notice of Proposed Rule Making in a new proceeding, in which it proposes to eliminate main studio rules for all broadcast services.<sup>4</sup> Accordingly, in the *Third R&O* the Commission stated that it would no longer consider this issue in the *AM Revitalization* proceeding.

**B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA**

7. There were no comments to the IRFA filed.

**C. Response to comments by the Chief Counsel for Advocacy of the Small Business Administration**

8. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.<sup>5</sup> The Chief Counsel did not file any comments in response to the proposed rule in this proceeding.

**D. Description and Estimate of the Number of Small Entities to Which the Rules Apply**

9. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the rules adopted herein.<sup>6</sup> The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small government jurisdiction.”<sup>7</sup> In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.<sup>8</sup> A small business concern

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<sup>4</sup> *Elimination of Main Studio Rule*, Notice of Proposed Rule Making, MB Docket No. 17-106, 32 FCC Rcd 4415 (2017).

<sup>5</sup> 5 U.S.C. § 604(a)(3).

<sup>6</sup> *Id.* § 603(b)(3).

<sup>7</sup> *Id.* § 601(6).

<sup>8</sup> *Id.* § 601(3) (incorporating by reference the definition of “small business concern” in 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), 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

(continued...)

is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).<sup>9</sup>

10. The subject rules and policies will apply to those AM radio broadcasting licensees and potential licensees employing directional antenna arrays. A radio broadcasting station is an establishment primarily engaged in broadcasting aural programs by radio to the public.<sup>10</sup> Included in this industry are commercial, religious, educational, and other radio stations.<sup>11</sup> Radio broadcasting stations which primarily are engaged in radio broadcasting and which produce radio program materials are similarly included.<sup>12</sup> However, radio stations that are separate establishments and are primarily engaged in producing radio program material are classified under another NAICS number.<sup>13</sup> The SBA has established a small business size standard for this category, which is: firms having \$38.5 million or less in annual receipts.<sup>14</sup> According to the BIA/Kelsey, MEDIA Access Pro Database on July 27, 2017, 4,644 (99.94%) of 4,647 AM radio stations have revenue of \$38.5 million or less. Therefore, the majority of such entities are small entities. We note, however, that, in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations<sup>15</sup> must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action, because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies.

**E. Description of Projected Reporting, Record Keeping and Other Compliance Requirements**

11. As described, the rule changes will not result in substantial increases in burdens on applicants, and in fact will decrease burdens on many applicants. The rule changes adopted in the *Third R&O* do not involve application changes, and to the extent they affect reporting or record-keeping requirements they reduce those burdens by exempting AM broadcasters with directional antenna arrays from certain field strength measurements; from biennial recertification of antenna arrays; from filing new proofs of performance or surveyor's reports in many cases; and from making current distribution measurements. Thus, the rule changes adopted in the *Third R&O*, at most, do not change reporting requirements, or record-keeping requirements beyond what is already required, and in many cases reduce reporting and record-keeping requirements for AM broadcasters operating with directional antenna arrays. The elimination of main studio rules for AM stations will also eliminate certain reporting requirements, but the Commission has indicated that it will not consider the elimination of such rules further in this proceeding.

**F. Steps Taken to Minimize Significant Impact on Small Entities, and Significant Alternatives Considered**

12. 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

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one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).

<sup>9</sup> 15 U.S.C. § 632.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> 13 CFR § 121.201, NAICS code 515112 (updated for inflation in 2008).

<sup>15</sup> "[Business concerns] are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has the power to control both." 13 CFR § 121.103(a)(1).

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.<sup>16</sup>

13. The majority of commenters who commented on the proposals adopted in the *Third R&O* supported the proposals. Some suggested variations on the rule changes as proposed; a few rejected the proposed changes, some with little comment other than to voice their opposition. Based on the comments, the Commission adopted the proposed change to the partial proof of performance rules, and six out of seven discrete proposals with regard to MoM proofs. The Commission concurred with those commenters that stated, at some length, that the Commission and the engineering community did not yet have sufficient experience with MoM modeling of skirt-fed towers to allow the Commission to set forth rules regarding such analyses. The Commission also changed the proposal regarding recertification of an AM station licensed with a directional antenna pattern pursuant to an MoM proof from that originally proposed. While the Commission proposed in the *AMR FNPRM* to delete the recertification requirement entirely for an AM station licensed with a directional antenna pattern pursuant to an MoM proof, the Commission based on a commenter suggestion decided to retain the recertification requirement only in the case of repair to or replacement of affected system components, and then only as to those components. In general, the Commission favored those comments that resulted in relaxed regulatory burdens on AM broadcasters, to the extent this could be accomplished without compromising the technical integrity of the AM broadcast service.

14. Report to Congress: The Commission will send a copy of the *Third R&O*, including this FRFA, in a report to Congress and the Government Accountability Office pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996.<sup>17</sup> In addition, the Commission will send a copy of the *Third R&O*, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of the *Third R&O* and FRFA (or summaries thereof) will also be published in the *Federal Register*.<sup>18</sup>

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<sup>16</sup> 5 U.S.C. § 603(c)(1)-(c)(4)

<sup>17</sup> See *id.* § 801(a)(1)(A).

<sup>18</sup> See *id.* § 604(b).