

FCC 62-866

BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D.C. 20554

<p style="text-align: center;">In the Matter of REVISION OF FM BROADCAST RULES, PARTICULARLY AS TO ALLOCATION AND TECHNICAL STANDARDS Petition of FM UNLIMITED, INC. For changes in FM Station Assignment Rules</p>	}	<p style="text-align: center;">Docket No. 14185  RM-94</p>
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FIRST REPORT AND ORDER

BY THE COMMISSION: COMMISSIONER FORD CONCURRING AND ISSUING  
A STATEMENT IN WHICH CHAIRMAN MINOW CONCURS.

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*I. Introduction*

1. The Commission has under consideration its Notice of Inquiry, Notice of Proposed Rule Making, and Memorandum Opinion and Order in the above-entitled matters (FCC 61-833, issued July 5, 1961), and the comments and reply comments submitted in the proceeding by interested persons. This proceeding was instituted for the purpose of determining what changes in the FM rules and technical standards are necessary for the optimum development of this broadcast service, and how the expansion of the service can be achieved with the least amount of delay and burden on the Commission, applicants, and other parties. Some tentative conclusions were drawn from our preliminary studies and experience and set forth in the Notice, especially with regard to the need for a fixed "go-no go" type of processing procedure, new FM propagation curves, and for an over-all plan designed to make the best possible use of the respective channels in the FM band (a table of fixed minimum mileage separations between co-channel and adjacent channel stations was proposed). Specific proposals, in some instances in the alternative, were advanced and outlined in the Appendix to the Notice. In addition, questions were asked about specific matters such as antenna and receiver performance, and the matter of the extent of AM-FM program duplication to be allowed was raised.

2. A number of parties submitted comments. These ranged from views on one or two specific topics, such as duplication of AM programs on FM stations, to opinions on many of the subjects covered in the Notice. The parties included such varied segments of the industry as networks, broadcasters, educational organizations, and equipment manufacturers.<sup>1</sup> Unfortunately, very little supporting data was

<sup>1</sup> Parties filing comments in Docket 14185: Gainsville Broadcasting Co., Inc., Gainsville, Texas; Radio Station WFAH, Alliance, Ohio; KXTR-FM, Kansas City, Mo.; WOHI and WOHI-FM, East Liverpool, Ohio; WPBC, Minneapolis, Minn.; University of Connecticut, Storrs, Conn.; KAMA-FM, Dallas, Tex.; WKFM, Chicago, Ill.; High Fidelity Broadcasters, Inc., Bethesda, Md.; Rutgers University, New Brunswick, N. J.; Jampro Antenna Co., Sacramento, Calif.; Western Slope Broadcasting Co., Inc.

submitted by most of the parties. In the important area of station assignment principles, for example, while some parties made specific suggestions as to re-shuffling of channels among certain large cities, no one submitted any specific data, even on a sample basis, showing possible allocations over an area as a whole. However, the comments and replies were helpful to the Commission, and have been given careful consideration in connection with all of the decisions reached.

3. The present document represents the Commission's conclusions as to many of the matters raised in the earlier Notice, including adoption of minimum mileage separations between co-channel and adjacent channel stations, which will be strictly adhered to as in the television service, classification of stations and maximum and minimum facilities for each class, division of the country into Zones different from the present Area 1 and Area 2, and similar matters. However, further consideration of this matter has led us to the belief that the long-term optimum use of this band of frequencies may well be best insured by a Table of Assignments, assigning particular channels to individual communities, similar to that in television (see §3.606 of our Rules).

4. We are issuing simultaneously herewith a Further Notice of Proposed Rule Making with respect to the concept of such a Table and the principles and priorities to be used in working it out. Work on a tentative table has been begun, and it is expected that a tentative Table will be released shortly. The Further Notice also relates to other subjects set forth therein.

## *II. Over-all Objectives*

5. While differing in their recommendations, the commenting parties in general agreed that there is need to examine the FM situation, with a view to providing for the orderly and efficient development of that service. No one quarreled with the over-all objectives set forth in the Notice as those to be pursued in this development, as in the standard broadcast service—(1) provision of some service to all of the nation, or as much as possible; (2) provision of as many program choices to as many listeners as possible; and (3) service of local origin to as many communities as possible (see the earlier Notice, para-

KREX-FM, Grand Junction, Colo.; Bruce F. Elving, Duluth, Minn.; KFML-AM and FM, Denver, Colo.; Burden Associates, Mount Kisco, N. Y.; Intercollegiate Broadcasting System, Washington, D.C.; Association of Federal Communications Consulting Engineers, Washington, D.C.; Donald J. Lewis, New York, N. Y.; Meredith Broadcasting Co., KCMO-FM, Kansas City, Mo.; National Association of Broadcasters, Washington, D.C.; WIBF, Jenkintown, Pa.; KMLA Broadcasting Corp., Los Angeles, Calif.; WTAX, Inc., Springfield, Ill.; American Broadcasting Company; WKRQ-TV, Inc., Mobile, Ala.; Washington Post Company; Southern Broadcasting Corp.; (KTOD-FM), Sinton, Tex.; Havens and Martin, Inc. (WCOD), Richmond, Va.; KCBH (FM), Los Angeles, Calif.; Columbia Broadcasting System, Inc.; A. Earl Cullum, Jr., Dallas, Tex.; National Broadcasting Company, Inc.; Radio Corporation of America, New York, N. Y.; Zenith Radio Corp., Chicago, Ill.; FM Unlimited, Inc., Chicago, Ill.; Storer Broadcasting Co., Bulletin Co. (WPBS), Philadelphia, Pa.; Lohnes and Culver, Washington, D.C.; Time-Life Broadcast, Inc. (WFBS-TV), Indianapolis, Ind.; WOOD-FM, Grand Rapids, Mich.; KLZ-FM, Denver, Colo.; Department of Education, Puerto Rico; Group of Licensees of FM stations (FM broadcasters); WBEN, Inc., Buffalo, N. Y.; Capitol Broadcasting Co., Inc. (WRAL-FM), Raleigh, N. C.; Concert Network, Inc. (WBCN), Boston, Mass.; National Association of Broadcasters; King Broadcasting Co., (KING-FM), Seattle, Wash.; WYZZ, Wilkes-Barre, Pa.; WUOM, Ann Arbor, Mich. (noncom); R. A. Isberg, San Francisco, Calif.

graphs 6 and 7). As we pointed out in the earlier Notice, these objectives are in part in conflict with each other, as is true with any broadcast service where the number of channels is insufficient to meet the possible demands of all communities. This problem is most sharply focused by the situation prevailing in the northeast section of the country. Most of this area, and probably all of it which is heavily populated, receives at least one usable FM service, and to this extent our first objective has been achieved. But FM assignments have been concentrated to a great extent in the larger cities and surrounding metropolitan areas, precluding in many instances the making of Class B assignments, or even lower-power Class A assignments, in other communities in the same area. While this assignment process up to now has provided the residents of many of the larger cities and metropolitan areas with a plenitude of service to choose from, and thus worked toward achievement of the second objective mentioned, at the same time it has worked to prevent achievement of the third objective, provision of local outlets for as many communities as possible. At present it is not possible to provide a first FM station to some sizable communities in this region, to serve as an outlet for local expression, although service is available to these communities from stations in other places. Some larger cities are limited to fewer channels than their population warrants. Likewise, it appears that achievement of the second objective—plentiful choice of services—has been hindered as far as area and populations outside of the immediate vicinity of the larger population centers is concerned.

### III. Fundamental Considerations and Basic Assignment Tools

6. In the earlier Notice herein (paragraph 20) we set forth tentative conclusions as to two basic concepts which, we believed, might well be those which should govern future FM station assignments. The first of these was that any future assignments should be based on an *over-all plan*, designed to achieve maximum and optimum use of each channel and take into account total effect on over-all service, rather than the present system under which an applicant selects a particular frequency and (absent conflicting applications or basic qualification questions) generally the only consideration is a case-to-case weighing of service gains against whatever interference the proposed station would cause, individually, to existing stations. The second was that applications should be considered strictly on a "go-no go" basis, by which an application will either be granted or rejected depending on its compliance with fixed rules, without elaborate case-to-case weighing of various factors as at present.

7. Our earlier Notice (paragraphs 26 to 29) also set forth specific proposals with respect to two fundamental tools to be used in future FM station assignments—the propagation curves to be used, and signal ratios to be employed for determination of objectionable interference, co-channel and up to three channels (600 kc) removed.

8. The concept of an *over-all plan* is discussed later in connection with the more specific question of the type of plan to be adopted. As

to the three other basic matters just mentioned, after consideration of the views expressed we are of the opinion that our earlier proposals are correct. The reasons for these conclusions are set forth in the following paragraphs.

*Need for a "go-no go" approach; undesirability of using measurements*

9. In our earlier Notice (paragraphs 9, 18, 19) we set forth at length the reasons leading to our tentative conclusion that future FM assignments, like television assignments, should be on a "go-no go" basis, with both potential applicants and the Commission being in a position to predict, through use of criteria and procedures set forth in our Rules, whether a particular proposed operation will be granted or must be denied. The absence of such a concept in the AM service necessitates, in many cases, the elaborate consideration of various factors on a case-to-case basis in connection with each application. Service gains must be weighed against losses in each case; populations must be counted; field strength measurements and often counter-measurements are submitted to attempt to determine the exact location of contours; extent of other service available must be considered. The controversies over all of these matters often result in long, involved, and costly hearings. The whole process has led to the great delays and burdens, on the Commission, on private parties, and on the public, all too familiar in the standard broadcast service. Moreover, the absence of the fixed standards leads to the generation and filing of marginal applications.

10. Most of the parties commenting on this question agreed with this basic "go-no go" concept (although some parties also favored use of assignment tools, such as field-strength measurements, which would be difficult to fit into such a system). However, some parties believed that the Commission should retain "flexibility" even in consideration of individual cases, e.g., making grants where warranted even though the proposed operation would cause interference to existing stations within their "normally protected" contours (on the theory that the gains in service would exceed the losses from such interference). This argument must be rejected. Nearly a generation of experience with such "flexibility" in the AM field (a concept embodied in §3.24(b) of the Rules) demonstrates that, whatever advantages may accrue therefrom in some individual cases, these are outweighed by drawbacks, burdens, and delays involved, discussed in the earlier Notice and summarized in the previous paragraph. Moreover, as a practical matter such "flexibility," permitting case-to-case weighing of gains and losses in connection with each proposed operation, is incompatible with consideration of other, broader factors which should be taken into account if the FM service is to experience optimum development—the cumulative effect of a series of new operations on the service of an existing station or stations, possible later expansion of the facilities of existing stations, possible other uses of the channel sought more consistent with our general objectives, the efficiency of the proposed assignment, and, in sum, the general relation-

ship of the proposed grant to the present and future over-all situation of the medium. These matters, it appears, must be resolved on the basis of fixed rules, generally applicable, which can be used by the Commission, its staff, and by private parties, to determine the disposition to be made of an application or potential proposal.

11. As to use of field strength measurements, the rules presently provide for their use in FM assignments (though they are seldom if ever used), but in the earlier Notice (footnote 9) we proposed to delete all reference to measurements in the Rules so that assignments would be made entirely on the basis of propagation curves or data derived therefrom. The Association of Federal Communications Consulting Engineers (AFCCE) and some other parties urged that measurements should be used as an FM assignment tool, to make allowance for terrain variations. The subject of terrain considerations is discussed later; however, as far as use of measurements is concerned we must reject the AFCCE's suggestion and adhere to our earlier proposal. This is because field strength measurements are not an exact tool. It must be borne in mind that the results obtained by measurements, in a particular situation, will vary with locations chosen, time of day, season, and method of taking. Even in a particular situation, involving the same small area and period of time, measurements taken by one party often indicate that interference would exist, while measurements taken by another party indicate absence of interference—a phenomenon all too familiar in AM hearings. Consideration of conflicting measurements would obviously be completely incompatible with a “go-no go” approach. Where a complete set of measurements is properly made, it may give a fairly good idea of a station's coverage area in the absence of interference. But, since the extent of a station's actual service area is usually limited by interference, service measurements are of relatively little value in the absence of interference measurements, and the latter are extremely difficult and complicated to make to an extent sufficient to be useful. Therefore—as in television—it is preferable to use the propagation curves adopted here, based on analysis of a large number of measurements.

12. *Propagation curves to be adopted.* In the earlier Notice (paragraphs 26 and 27) we proposed to replace the present FM propagation curves used for determining interference (Figure 1 of § 3.333, based on groundwave propagation only), with more up-to-date curves, which among other things take into account tropospheric propagation—using for service and interference respectively the F(50,50) and F(50,10) curves proposed for low band VHF television (Channels 2 to 6) in Docket 13340. No party disagreed with the decision to adopt new curves, and most comments on this matter favored those proposed. However, the AFCCE suggested that (1) service should be determined on the basis of an F(50,90) curve, in order to guarantee a higher quality of service; and (2) for adjacent channel assignments, that interference should be determined on the basis of the F(50,50) curve, on the ground that at the shorter distances involved nearly “steady state” propagation conditions prevail.

13. In our view, our original proposal in this respect (which was earlier supported by the Radio Propagation Advisory Committee (RPAC), a government-industry group) is correct. As to AFCCE's suggestion concerning use of the F(50,90) curve for service, the distinction between this and our proposal amounts to a difference in the area to be protected, AFCCE's proposal amounting to protection of a smaller area, thus permitting somewhat closer assignments. Imposition of this unduly high standard as to what constitutes adequate reception would mean loss, through non-protection, of generally useful service outside of the protected contour, and would unduly limit stations' service areas.<sup>2</sup> TV service is evaluated on the F(50,50) basis, and the same should apply here. In the absence of any good basis therefor, there is no reason to complicate our rules by addition of a third curve.

14. As to the idea of evaluating first adjacent channel interference on an F(50,50) basis, at close-in distances there is relatively little difference between fields at a particular location as shown by this and by the F(50,10) curve, and therefore it makes relatively little difference which is used. At larger distances from the transmitter, there is a greater difference between the curves, as signal variations create more of a time factor.<sup>3</sup> At these distances the conditions urged by AFCCE in support of this proposal cease to exist, and, in order to afford adequate protection from occasional interference it is necessary to employ an F(50,10) curve. Therefore, use of the F(50,50) curve would be inappropriate. It should be added as a general observation, that both of these AFCCE suggestions would result in minimizing the extent of protection to be afforded existing stations, so that more and closer assignments may be made. Adoption of these suggestions would be inconsistent with our basic decision herein, that (except for certain stations now operating with great height and power, discussed below) stations are entitled to a greater degree of protection than that afforded by present rules, in order to avoid destruction of useful service. AFCCE's suggestions must be rejected.

*Signal ratios for determining interference*

15. Under the present FM rules (§3.313(b)), objectionable interference exists where: (1) for co-channel stations, the undesired signal exceeds 1/10 of the desired signal; (2) for first adjacent channel stations (200 kc removed), the undesired signal exceeds 1/2 of the desired signal; (3) for stations two channels (400 kc) removed, the undesired signal is more than 10 times the desired signal; and (4) for stations three channels (600 kc) removed, the undesired signal is more than 100 times the desired signal. In the July Notice (para-

<sup>2</sup> AFCCE's proposal is for protection of existing stations to the 1 mv/m contour as determined by the F(50,90) curve. With respect to adjacent channel assignments this would mean substantially less protection than that provided either under our present basic assignment system, or the interim procedure based on the F(50,50) curve.

<sup>3</sup> Under present protection principles (based on the 1 mv/m contour) and signal ratios, for first adjacent channel stations the interfering contour is the 0.5 mv/m (54 dbu) contour. For a station operating with 1 kw E.R.P. and effective antenna height of 500 feet, this contour lies 20 miles from the transmitter under the F(50,50) curve and 21.5 miles under the F(50,10) curve. For a station operating with 20 kw and 2,000 feet antenna height, contour lies 62.5 miles or 71.5 miles from the transmitter, respectively.

graphs 28 and 29) we invited comments upon the question of whether these or some other interference ratios should be adopted as the basis for FM assignments; we did not propose any specific changes.

16. Most of the commenting parties favored maintenance of the present ratios, in the absence of persuasive data to the contrary. Those changes suggested were generally in the direction of higher ratios—i.e., more protection—especially as to first adjacent channel interference. Zenith and RCA submitted data based on measurements of their receivers' performances. Otherwise, relatively little specific information was furnished. Some parties urged that the present adjacent channel ratio, while perhaps satisfactory for regular FM broadcast operations, is not enough to protect multiplexed operations—stereophonic broadcasting and subsidiary communications operation—which involve use of more of each FM channel. Zenith, pointing out that the signal-to-noise ratio for stereophonic broadcasting is about 23 db poorer than for monophonic broadcasting, on the basis of measurements on its receivers, urges that the desired to undesired co-channel ratio be raised to 100 to one (40 db), and first adjacent channel ratio to 20 to one (26 db). Zenith does not recommend any change in second or third adjacent channel ratios.

17. The limited information submitted, plus data gathered and prepared by the Commission's staff, persuades us that the present ratios should not be changed. They are sufficiently accurate for the system of minimum mileage separations which we adopt herein. As for stereo and SCA multiplex operations, as Zenith concedes, the higher protection ratios necessary for such operations are balanced by the fact that the service range thereof is less than that of regular FM service. Therefore, a series of ratios (or spacings based thereon) affording adequate protection to regular service will also afford appropriate protection to these other types of service.<sup>4</sup> The spacings we adopt herein, substantially wider than required under present practice, will achieve this result.

18. It should be noted that, since we are herein adopting a table of minimum spacings between stations, there is no longer any need for interference ratios in the rules. The rules set forth in the Appendix hereto do not contain such provisions.

#### *Channels*

19. In the July Notice, we did not propose any change in the basic FM channel structure—100 channels of 200 kc width each, with the lower 20 reserved for educational use. We did propose as possibilities: (1) using a group of 20 contiguous channels for use by low power Class A stations, instead of the 20 Class A channels now interspersed throughout the commercial portion of the band; and (2) reserving

<sup>4</sup>As to the first adjacent channel ratio (which was the one most commented on) one of the problems in making FM assignments, on the basis adopted herein or any other basis, is that the two-to-one ratio is a positive one, meaning that first adjacent channel spacing necessary between stations tends to approach the required co-channel spacing—a situation substantially limiting the number of FM assignments which can be made. Raising the ratio above what it is now would make provision of an adequate number of assignments even more difficult than it is at present, and therefore should not be done unless a really persuasive showing—much more than anything presented here—is made.

a group of 20 contiguous channels for use by high power "Class C" stations, designed for wide area coverage and protected out to a considerable distance.

20. One party (High Fidelity Broadcasters, Inc.) advanced a rather elaborate system by which Class A stations would be accommodated, not in the regular 100 FM channels at all, but in "interleaved" channels to be located 100 kc from the present frequencies (i.e., 92.2 mc, 92.4 mc, etc.). Interference ratios to be applied to these odd channels were specified, and it was proposed that these stations operate with vertical polarization. This proposal, as advanced here, has several deficiencies, and must be rejected. First, we have little information as to how such a plan would operate, what the correct ratios should be, and what benefits would be derived from it. No sample allocation plan was submitted, nor was any showing made as to the impact of a large number of these stations on Class B and other assignments. The requirement that vertical polarization be used would place a severe burden of incompatibility on these stations, and might well defeat the objective sought. The matter of 100 kc channeling will be further considered by the Commission.

21. The matter of use of the 20 channels now reserved for education is discussed below; for reasons stated we retain the present reservation.

*Channels for use by low power Class A stations*

22. Comments expressed both support for and opposition to the idea of making Class A assignments on 20 channels at one end of the commercial band, instead of on the 20 channels now assigned for Class A use, interspersed throughout the commercial band. No specific showings or analyses were presented on either side. The chief arguments advanced in favor were: (1) as pointed out in the Notice (paragraph 33), the making of a large number of Class A assignments would be facilitated if, in general, the only adjacent channel problems involved were other Class A assignments rather than higher power Class B stations; and (2) there would be less interference problems with Class B stations. One argument advanced against the idea was that, if all Class A stations were together at one end of the band, listeners would tend to ignore them and concentrate on the Class B stations in the remainder of the band, which, with their greater facilities and resources, tend to offer more attractive programming.

23. Since the Notice was issued, the Commission's staff has made studies on this question, with respect to the crowded Northeastern section of the country, the area constituting television Zone I. These studies indicate that, for that area, such a shift is not desirable. The chief problem is the number of Class B stations now assigned on the 20 channels at either end of the commercial band, which are so numerous that, for the shift to have any significance, these Class B's would have to be shifted to the remaining 60 Class B channels. The staff's study indicated that this cannot be done, consistent with any

sort of appropriate spacings between co-channel and adjacent channel stations such as those set forth in the Notice.<sup>5</sup> Of 112 Class B stations in this area on the lower 20 channels, only 46 could be thus accommodated on the remaining 60 channels; 66 could not. For the most part, the ones which could not be reassigned are those in and around the large cities of this region. The problem is that these areas in and around the large cities have more than 15 Class B assignments each, which has been possible under the present system (which can yield 20 Class B assignments even in the city itself), but would not be possible with the shift of Class A channels to a contiguous band. Under that system, if proper spacings are to be maintained, no city and its surrounding area could have more than 15 Class B assignments. The proximity of this area to the Canadian border also presented some problems.

24. With this number of Class B stations which would have to be left in the contiguous band, it would be possible to reassign only 43 of the 71 Class A stations in television Zone I which operate on Class A channels above Channel 240, consistent with proper spacings. Thus, it appears that the idea of a contiguous band is neither feasible nor desirable in this portion of the country, which is herein designated FM Zone I, co-extensive with television Zone I. Likewise, for the same reasons, it appears inappropriate with respect to that portion of California (south of the 40th parallel) where present assignment conditions are generally similar, and which is herein designated Zone I-A.

25. With respect to the rest of the country, herein designated Zone II, by and large the FM band therein is presently less occupied, and there would not to the same extent be the question of either superimposing the new channel structure on existing stations or moving the latter. However, even so, it does not appear that there is anything to be gained from creating a contiguous Class A band. Conceivably, it could result in more Class A assignments over-all, and probably would if towns were distributed in a more or less geometric pattern across the country. But, even in Zone II, there is often need for numerous assignments in a particular relatively small area. In these situations, the potential Class A assignments under the contiguous band approach is substantially less than where the A channels are interspersed. Moreover, removing the Class A channels from their present interspersed positions throughout the commercial portion of the band would complicate the making of Class C assignments (which in the staff's work so far has proved more difficult than making Class A assignments), since all of the Class C first adjacent channel problems would involve other Class C's, with the greater adjacent channel spacing requirement involved.

25a. Two parties (Earl Cullum and High Fidelity Broadcasters, Inc.) urged that all commercial channels should be used without

<sup>5</sup> The separations used in the studies were somewhat shorter than those proposed in the Notice. For co-channel, first adjacent channel, and second and third adjacent channel, they were, respectively: between Class B stations, 150, 90, and 40 miles; between Class A stations, 70, 35, and 15 miles; and between Class A and Class B stations, 115, 70, and 40 miles.

distinction as to classes of stations—i.e., low power Class A stations and higher power Class B or C stations would use the same channel. This concept we must reject, because it represents an inefficient use of channels. This is true because unduly wide spacings are necessary in order to protect the lower power stations from co-channel interference caused by the higher power operations.

#### *IV. Type of Assignment Plan To Be Adopted for Commercial Channels*

26. As mentioned, we have concluded that whatever plan is adopted herein as a basis for FM assignments, it must be of a "go-no go" character, as is the television assignment plan. This does not of itself determine what kind of plan should be adopted, since an assignment system might be very simple, or it might involve relatively complex computations and formulas, and still, as long as the end result is certain, it would meet this test. There are discussed later herein certain rather radical plans proposed by some of the parties, which we must reject for reasons stated. The principal alternatives, meriting serious consideration, are three: (1) protection of existing stations to a particular field strength contour, such as 1 mv/m; (2) the type of plan proposed in the Notice, a set of minimum co-channel and adjacent channel mileage separations between existing and proposed stations (which would almost necessarily have to be based on assumed maximum facilities for both); and (3) a Table of Assignments, similar to that formerly used in FM and now used in television, based on minimum separations but involving the assignment of particular channels to particular communities.

27. *Protection to a particular contour.* Several commenting parties argued against the Notice proposal and in favor of simply a "go-no go" principle by which an application would be considered on the basis of whether or not the operation proposed objectionable interference (according to the new curves and present ratios) to existing facilities. Perhaps the most vigorous proponent of this idea was the *AFCCE*, whose proposal is for assignments essentially on the same basis now obtaining under our interim processing procedure—protection of existing stations to their 1.0 mv/m contours on the basis of their existing facilities and those proposed in the application, using the curves and signal ratios adopted herein. *AFCCE* proposes to retain essentially the present rules relating to maximum facilities—20 kw E.R.P. and 500 feet effective antenna height in "Zone I," and no maximum elsewhere—and no minima other than those now in the rules. Other parties supporting this general concept proposed other protected contours—e.g., 1 mv/m for Class A, 0.5 mv/v for Class B, and 0.1 mv/m for Class C stations—and maximum and minimum facilities along the lines proposed in the Notice.

28. The proponents of this plan, vis-a-vis the mileage separation concept as proposed in the Notice, argue that this is the way by which the maximum number of new assignments can be made, whereas, at least with the fairly wide spacings proposed in the

Notice, under a mileage separation scheme relatively few new stations could be assigned in areas where there is present or likely future demand therefor. It is argued that a mileage separation system, based on maximum facilities, is wasteful of spectrum space and amounts to protection of often non-existent "service", since many stations do not now and likely, for economic reasons, never will operate with anything approaching maximum facilities. It is also urged that such a system must necessarily be based on assumed uniform terrain conditions and more or less uniform distribution of cities and population—neither of which conditions in fact exists. Therefore, it is urged, applications should be evaluated individually, on a simple "protected contour" standard, such as the 1 mv/m. Those parties favoring mileage separations as opposed to the "protected contour" concept (which included the N.A.B. and the networks) referred to the pressures for non-complying grants which, it is believed, a "protected contour" concept would always entail; to the possibility of conflict between parties as to the exact location of any given service or interference contour (even using the curves); to the desirability of giving existing stations leeway to increase their facilities; and to the general consideration of over-all efficiency.

29. The AFCCE proposal obviously would permit a greater number of assignments; in fact it may properly be termed a "squeeze-in" proposal, under which any combination of facilities (no matter how small), and directional antenna suppressing radiation in particular directions, would be permitted as long as existing 1 mv/m contours are protected. It must be rejected, for a number of reasons. First, there is the consideration of over-all efficiency of channel use. As far as co-channel and first adjacent channel operations are concerned, any new assignment creates interfering signals over much greater distances than the extent of its service area—thus creating islands of service in the midst of seas of interference. If protection is only to the 1 mv/m contour of existing stations, service outside that contour (which many stations render) will be destroyed. There comes a point of diminishing returns beyond which additional assignments on a channel, even though nominally protecting the 1 mv/m contour of existing stations, result in over-all inefficiency of use. Second, this plan would merely tend to perpetuate an already undesirable situation, by encouraging the "squeezing in" of numerous assignments operating with near-minimum facilities—an inefficient use of channels, especially those designed for use by medium or higher power stations. Third, existing stations (both those now in existence, and those which might be authorized from now on under such a system) would be forever limited to their existing facilities—often the small and (from an assignment standpoint) inefficient facilities referred to above. Especially now that FM shows signs of developing an economic base sufficient to support relatively large scale operations, we do not believe the public interest would be served by such a limitation.

30. To a certain extent, these objections would be met by adoption of some of the variations of this concept urged by others—