Federal Communications Commission

Report on the Status of the AM Broadcast Rules

Submitted to
The Federal Communications Commission
Prepared by
The Staff of the Mass Media Bureau

April 3, 1986

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EXECUTIVE SUMMARY

The Goal, Implementing Objectives, and the Essential Problem

The goal is a more dynamic and robust AM service responsive to the needs of the listening public. (Section I of this Report) The objective of this Report is the creation, to the maximum degree possible, of a competitive and unregulated marketplace in AM radio broadcasting. (Section II) This can best be achieved through changes to the AM rules designed to bring them into conformity with the Commission's publicly stated objectives:

1. To create, to the maximum extent possible, an unregulated, competitive marketplace environment for the development of telecommunications.

2. To eliminate unnecessary regulations and policies.

3. To provide service to the public in the most efficient, expeditious manner possible.

4. To promote the coordination and planning of international communications which assures the vital interests of the American public in commerce, defense and foreign policy.

5. To eliminate government action that infringes the freedom of speech and the press.

Relieving AM broadcasters from outdated licensing and regulatory constraints in the ways discussed in this Report would help them to better serve their listening audience by improving signal quality, and by being allowed to conform the range, patterns and scheduling of their programming services more closely to market demand. (Section II) This would free them from unnecessary constraints on their ability to cope with the competitive challenges facing them. (Section III and Appendix 1)

Basic Guides to AM Rules Revision

Two needs are crucial to fruitful AM rules revision. One is to give due recognition to the nature, extent and effect of far-reaching changes in the conditions of the AM service since the essential features of the present regulatory and licensing scheme were developed. (Section IV-A) The other is to unshackle the entrepreneurial ingenuity of AM broadcasters to meet today's challenges, by freeing them from outdated regulatory constraints that, under changed conditions, no longer benefit the public, but constrict the play of market forces. (Section IV-B)

Revision of Assignment Principles

Channel and Station Classifications. The longstanding system of classifying the 107 AM channels as Clear, Regional and Local, and of confining the use of each to rigidly defined classes and subclasses of stations resulted partly from the need at earlier stages of AM development to designate different portions of the AM band to achieve conflicting allocations objectives, ranging from wide area service to multiple local outlets. Those classifications also conformed United States practice with international prescriptions that have since been dissolved. It now may be appropriate to consider freeing AM station assignments from such strictures, which are better suited to a newly developing service than to responding to changes in a heavily populated spectrum band. (Section V-A)

Station Location. One of the bedrock principles that have governed the assignment of AM stations for over fifty years derives from the mandate of Section 307(b) of the Communications Act to effect "fair, efficient, and equitable distribution of radio service" among the several "States and communities." A large body of Commission and judicial case law hinges on the assignment of broadcast stations to "communities." But broadcast programming serves people, not places. Taking into account that AM stations have been assigned to over four thousand communities, large and small, in all parts of the country, it is timely to consider authorizing stations to serve less rigorously defined population aggregates. Examples include counties, metropolitan areas, rural areas, or even travelers on designated sectors of major highways. (Section V-B)

Service: Skywave. The widespread growth of FM service and the continued assignment of additional AM stations have substantially reduced the numbers of persons dependent at night upon secondary (skywave) AM service. This makes it appropriate to consider whether, particularly east of the Mississippi River, it is justifiable to protect skywave service areas of Class I clear channel stations at distances from their transmitters where they are able to provide only intermittent, widely fluctuating service. The price of such protection is to curtail the possibilities for improving AM primary (groundwave) service. (Section V-C-1)

Service: Groundwave. Related questions concern the continued justification for limiting the radiation of co-channel AM stations to the degree necessary to protect the daytime 0.1 mV/m contours of over fifty clear channel stations. Even in rural areas where man-made noise interferes less than in cities, it is generally considered necessary to provide a signal with a field strength of at least 0.5 mV/m in order to obtain reasonably interference-free AM primary service. (Section V-C-2)

Interference. It is timely to consider whether it would now be preferable to loosen the rigid, arbitrary limitations against the overlap of signals of stated field strengths, depart from the practice of protection to stated service contours, or modify the prescriptions of what contours must be protected by other stations. (Section V-D)

Station Power. Consideration should be given to changing the present scheme of associating specified power levels with prescribed classes of AM stations on designated channels. Both maximum and minimum power levels could be advantageously modified under suitable conditions. (Section V-E)

Protection Ratios. Several factors, including the trend toward less music and more talk shows on AM stations, the poor selectivity of AM receivers, and differing international standards bear on the suitability of retaining the ratios between desired and undesired signals provided for in the AM rules. Studies so far do not point conclusively toward specific revisions of the established protection ratios. It will be appropriate to consider this in the context of studies that may be made of usable signal values. (Section V-F)

Antenna Systems. The obvious attractions of potential cost reductions and improved signal quality of received signals make it important that industry continue efforts to improve antenna design and performance and replace old, degraded antenna systems. The industry is invited to provide information about its experience with antenna operations that should be taken into account in revising the Commission's rules. (Section V-G)

Engineering Standards

Receiver Standards The technical disparity in the qualify of AM and FM reception can be overcome to a substantial degree. Am stereo (discussed in the next section), synchronous detectors, improved design of RF, IF and audio stages of AM receivers could help. The Commission could usefully consider additional emission limitations concerning AM broadcast transmissions, as well as possible limitations on some forms of audio processing that conflict with the emission requirements of AM stations broadcasting higher fidelity signals than in the past. (Section VI-A)

AM Stereo. A review of Commission and industry actions with respect to AM Stereo and of developments on its standardization by the industry indicate that marketplace progress toward such standardization is proceeding at a slow pace. Only 10% of currently licensed AM stations broadcast in stereo, compared with over 90% of the FM stations, but over 2.5 million new automobiles have AM stereo receivers. The present competition between the two leading stereo proponents to establish their respective AM stereo systems as standard throughout the industry might lead to a mutually agreed resolution. (Section VI B)

Groundwave Propagation. Inadequacies in the soil conductivity estimates taken from unavoidably imprecise conductivity maps continue, after many years, to limit the accuracy of calculations of AM ground wave propagation. Regrettably it has not yet been feasible to improve the data base used for computer calculations of groundwave signal propagation by introducing into the data base the results of reliably measured ground conductivities available in licensee files. (Section VI-C-1)

Skywave Propagation. The availability of computers that perform calculations easily, rapidly and accurately may make it practicable to discontinue the 50% exclusion practice in calculating the aggregate interfering effects of multiple interfering skywave signals. There are additional alternatives that could provide increased accuracy and flexibility. It is further believed that studies are desirable concerning continued use of interfering signals with a 10%-of-the-time incidence in order to assess its appropriateness. (Section VI-C-2)

Man-made Interference to AM Broadcasting. Notwithstanding remedial efforts by the Commission, man-made interference to AM signals at burdensome levels is received in the form of transmissions from other stations, from restricted radiation devices (e.g. cordless telephones, computers, video cassette recorders, and microwave ovens) and from incidental ratiation devices such as light dimmers and electric motors. Public comment should be sought on possible imposition of specific emission limitations on incidental radiation devices and to the possible adoption of minimum performance standards for AM broadcast receivers. (Section VI-D)

Trade-Offs and Alternatives

In considering regulatory options, careful consideration should be given to trade-offs, alternatives, and "gains and losses." The bearing of this on receiver standards (Section VI-C), AM stereo (Section VI-B), signal propagation (Section VI-C), and assignment principles (Section V) is noted. Commenters on this Report are encouraged to address trade-offs and options, and to suggest the order in which the different areas covered by the Rules should be given consideration. (Section VI-E)

Past Deregulatory Actions

Section VII-A introduces Appendix 3, which lists the numerous deregulatory actions taken by the Commission in each of the years 1972 through 1985 that have decreased the regulatory burdens on AM broadcasters.

Remote Control and Automatic Transmission Systems

Historical developments in the introduction of remote control and automatic transmission systems that have reduced operator requirements are reviewed. A reexamination of the Emergency Broadcasting System may be necessary to overcome difficulties experienced by stations with control or ATS points elsewhere than at the studio. Reliable broadcast service with stations under automatic control is feasible but requires amendment of the operator requirements in Sec. 318 of the Communications Act. (Section VII-B)

Non-Technical Operating Requirements

Program Scheduling. It appears desirable to consider removing the requirement that AM stations broadcast during stated minimum portions of every broadcast day, leaving this instead to the licensee's discretion, thus permitting him to adapt to changing market conditions, costs, and listener interest. (Section VIII-A-1)

Local Program Origination. It is questionable whether current conditions justify the retention of requirements for originating stated portions of an AM station's non-network programming locally, from the main studio. (Section VIII-C-2)

Foreign Language Programming. Interesting possibilities for providing useful services lie in the potential use of AM stations to carry foreign language translations of the aural portion of television broadcasts simultaneously with the transmission of the visual portion. (Section VIII-C 3)

Ancillary Services. Present rules permit the transmission of AM signals conveying non-broadcast matter provided they are not audible on ordinary receivers. It appears desirable to consider permitting AM stations to employ the main AM carrier for non-broadcast transmissions during periods when the station is not broadcasting. At such times it would not be necessary that the auxillary service be inaudible on conventional receivers. (Section VIII-B)

Restrictions on Multiple Station Ownership and Market Entry

Duopoly Prohibitions. A review of the origin and development of the present prohibition against common ownership of stations that have stated degrees of signal overlap and observations concerning resulting adverse effects on AM broadcasters indicate the desirability of considering either the relaxation of the prohibition for AM radio or the conformance of the AM rule to the FM and TV rule. (Section IX-A)

One-to-a-Market Rule. Although the Bureau foresees no changes at this time to the rule prohibiting newly acquired combinations of co-owned VHF-TV and AM (or FM) stations in the same market, the Commission may wish to invite comments on the effect of relaxing the duopoly prohibition, and on the possible desirability of permitting common ownership in the same market of newly acquired VHF-TV and AM stations. (Section IX-B)

Newspaper Cross-Ownership Restrictions. It is not proposed to end the restriction against newspaper-broadcast combinations in the same market, but proposals by interested persons to modify the rule could be considered. (Section IX-C)

The Cross-Interest Policy. This policy bars cross-interests (other than common ownership) in stations in the same service in the same market in individual cases where such cross interests are considered to derogate from the objectives of the duopoly (cross ownership) prohibition. A review of the purposes and applications of the policy in practice suggests the desirability of removing the constraint it imposes on AM broadcasters. (Section IX-D)

National Restrictions on Station Ownership. The only modification of the present "12-12-12" limitation on the aggregate common ownership of broadcast stations, including AM, that is proposed for consideration is a clarifying provision that--consistently with the treatment of terrestrial "satellite" television stations--multiple transmitters that simultaneously broadcast the programs of a single AM station not be counted for the purposes of the rules limiting the maximum numbers of commonly owned stations. (Section IX-E)

New Concepts

Negotiated Acceptance of Interference. It may be timely to consider inviting comments on rule amendments that would empower AM station licensees to enter into agreements with each other under which, for a valuable consideration, they could accept interference at a level generally prohibited under the present inflexible rules. This would relieve radiation restrictions calculated under national formulas that do not take into account whether, in individual cases, the service so protected falls entirely within or partly outside of areas that are populated or in which a significant audience of the protected station is found. Marketplace considerations could permit a redistribution of protected service that more realistically corresponds with local realities. (Section X-A)

Fulltime Operation by Daytime Stations. Studies of two possible ways to reduce barriers to the operation of daytime stations during nighttime hours appear to be warranted. One is the possible curtailment of nighttime protection afforded to the secondary (skywave) service areas of Class I AM stations by cochannel Class II stations. Another would be removal of the present minimum power restrictions, which would permit daytime stations, including those on Class III channels, to make such nighttime use of available spectrum space in the AM band as would afford due protection to other stations. Because difficulties with daytime-only station operation may be expected to be compounded by adding to their number, there appears to be little reason to foster the creation of new ones. (Section X-B)

Use of Multiple Transmitters. In the areas most needing it, crowded conditions in the AM band limit opportunities for improving AM service by the traditional means of increasing power, utilizing directional antennas, or relocating transmitters. It is desirable to consider permitting AM stations to use multiple transmitters for simultanous broadcast of a station's programs. Several possibilities that merit consideration include the use of additional transmitters operating synchronously, AM "satellite" stations operating on several frequencies, and the possible use of AM or FM translators. (Sections X-C-1, X-C-2, nd X-C-3).

Summary of Recommendations

The AM rules reforms that are believed to merit consideration are summarized in Section XI.

The Bureau believes that the most productive way to proceed would be to conduct individual rule making proceedings on separate parts of the AM rules that the Commission may find it appropriate to revise.

Finally, the Bureau acknowledges that some of the topics discussed herein could lead to rule makings which would be appropriate for both of the nation's aural broadcast services, AM and FM. While the staff has necessarily restricted this review to AM, it is not our intention to limit worthwhile future rule makings to that service alone. If a policy review indicates positive reasons for changes to the Rules pertaining to both AM and FM, the staff would recommend that both be revised. These considerations are particularly appropriate in relation to Sections VIII and IX of this Report.

REPORT

ON THE

STATUS OF THE AM BROADCAST RULES

I. THE GOAL

The goal of the rule and policy changes discussed in this Report is to make possible a more dynamic and robust AM service, fully responsive to the forces of the broadcast marketplace, so as to make available to all the people of the United States an efficient radio broadcasting service.

II. BASIC OBJECTIVES

The Bureau believes that it would be in the best interest of both the listening public and the broadcast industry to help AM broadcasters to advance toward the realization of this goal by revising the AM rules in some of the ways discussed in this Report. This would bring them into closer conformity with the Commission's stated objectives, which are:

1. To create, to the maximum extent possible, an unregulated, competitive marketplace environment for the development of telecommunications.

2. To eliminate unnecessary regulations and policies.

3. To provide service to the public in the most efficient, expeditious manner possible.

4. To promote the coordination and planning of international communications which assures the vital interests of the American public in commerce, defense and foreign policy.

5. To eliminate government action that infringes the freedom of speech and the press.

The steps proposed in this Report seek to achieve these basic objectives by enabling AM broadcasters to improve the quality of their broadcast signals, extend the range of interference-free AM service, adjust their service patterns more responsively to modern-day needs, and exercise

freer discretion in providing and scheduling their broadcast and non-broadcast services to the public.

The primary objective is to provide for a more competitive marketplace in AM radio and a less regulated environment in which the service to the public could thrive.

III. THE ESSENTIAL PROBLEM

AM radio, the original broadcasting service in this country, is in its "sixties." Once known as "standard broadcasting"--which distinguished it from a fledgling FM radio service--AM radio has undergone many changes over the years. Even so, there has never been a systematic, overall review of the AM service, particularly of the factors that may interfere with AM's ability to be fully competitive with the other aural broadcast medium. This Report discusses ways in which the Mass Media Bureau believes that the Commission's licensing and regulatory framework might be advantageously reformed so as to open opportunities to AM broadcasters and, thus, improved service to the public. The Report seeks to identify opportunities to change or remove existing rules in order to allow AM broadcasters to meet the competitive challenges facing them and thereby to enhance their service to the public. See Appendix 1 for a review of present-day conditions in AM radio broadcasting.

IV. BASIC GUIDES TO AM RULES REVISION

In determining how the Commission could foster the attainment of the above noted objectives, the Bureau has recognized, first, the very considerable changes that have overtaken AM broadcasting since the present regulatory scheme was developed. Second, the Bureau has been guided by the belief that, given those changes, greater reliance on marketplace forces would offer more promise of public benefit than inflexible adherence to the existing modes of AM spectrum allocation, station licensing and operational regulation.

A. Due Recognition of Significantly Changed Conditions.

When the essential features of the existing AM licensing scheme were created, AM was the only national broadcast service. By the mid 1920's, the rapidly growing number of stations were afflicting each other--and the public--with mounting interference. Although this interference rose to levels that threatened the overall viability of radio broadcasting, the licensing authority (Secretary of Commerce) was powerless to control it. Then, by statute enacted in 1927, the Federal Radio Commission (FRC) was charged with the regulatory responsibility of creating and maintaining a

nationwide framework for the AM broadcast service. In 1934, this authority was transferred to the successor Federal Communications Commission (FCC). The new Commission was charged by Congress with the responsibility to ensure an equitable distribution of service among the several states and communities, insofar as demand permitted. 1

The licensing and regulatory regime begun by the FRC and continued by the FCC, was thus designed to provide a rational framework within which the new AM broadcast service could achieve orderly development in providing service to the public. This required recognition of the special characteristics of AM signal propagation. Of particular importance was the fact that AM signals cause interference far beyond the areas they serve. This effect is greatly enhanced during nighttime because of skywave propagation which causes signals to be reflected from the ionosphere and therefore to travel many hundreds of miles.

Differences in soil conductivity in different areas and the wide frequency range of stations operating in the lower and upper portions of the AM band greatly affect groundwave service and interference. 2 Additionally, the potential for mutual interference among AM stations affects not only co-channel stations but also those operating on the first, second and third channels removed, i.e., the three immediate adjacent channels in each direction. Little wonder that, in those circumstances, when the AM service was at its beginning, it was determined that a totally unregulated marketplace was not the best mechanism to correct the interference problem and promote the availability of interference-free service.

At these earlier stages there was thus thought to be a need for a system of governmentally mandated and generally applicable spectrum usage requirements that could cope effectively with the enormous complications engendered by AM's propagational peculiarities. But the need for an ordered, nationwide framework developed when the AM service was new should not obscure the possibilities for gains achievable today by giving broadcasters greater freedom to respond to marketplace incentives and to bring their ingenuity to bear on the problems now confronting AM radio.

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1 Section 307(b) of the Communications Act of 1934, as amended, sets forth this requirement. It is discussed in Section V B of this Report.

2 This report focuses on the 107 channels in the frequency band 535 through 1605 kHz to which, at present, the assignment of AM stations is confined. We note the steps under way internationally to extend the AM band by an additional 100 kHz (from 1605 through 1705 kHz). Changes in allocations, licensing and operational requirements that meanwhile become applicable to the present AM band would be taken into account in developing requirements for the later use of the extended portion of the band.

Today, nearly 5,000 AM stations occupy essentially the same band that accommodated only a few hundred mutually interfering stations in the late 1920's before a federally prescribed allocations scheme was adopted. We are now faced with the markedly different task of making optimal use of the limited residual portions of the AM band for new stations or for improved service to the public from existing stations. This calls less for adherence in all individual cases to generally applicable rules and standards, than for ad hoc adaptations and tailoring by licensees that take the pecularities of particular local marketplace conditions into account. Some of the current requirements are ill-adapted to fulfillment of present needs arising from the almost infinite variety of individual situations.

Nor is ad hoc adjudication of individual cases by a regulatory agency the desirable solution. The administrative process, with its numerous procedural burdens, is often ill equipped to solve individual situations presented. This was amply demonstrated by the Commission's experience with the system that preceded the "go-no go" limitations now imposed on signal contour overlap as a means of restricting interference among AM stations. Long, expensive, complicated hearings were the result of the Commission's former practices in determining the amount of permissible interference in this area. Because that approach proved unduly cumbersome and burdensome, the Commission substituted the present fixed limits on permissible signal overlap. Now, it is possible to shift attention from the broad development of AM broadcasting and toward the present-day needs for ameliorating adapatations and refinements to the existing regulatory scheme. This does not call for a return to the previous process of individual adjudication. Rather, deregulatory steps can be taken to free stations to resolve these matters on their own without undermining interference protection.

B. The Need to Unshackle Entrepreneurial Ingenuity

Given the changed conditions under which the AM service operates today--a mature and densely occupied band and strongly felt competition from over five thousand FM stations, twelve hundred TV stations, as well as other media--a new approach is required. The Bureau believes that entrepreneurial ingenuity, freed to operate in conformity with marketplace forces rather than regulatory strictures, can in many circumstances offer practical and timely reponses to many of the AM service's current needs and problems. Market solutions are certainly to be preferred to rigid federal prescriptions developed long ago to meet quite different problems.

Specific possibilities for benefiting the public by permitting more play for marketplace forces are discussed later in this Report. We note preliminarily, however, that the broadcaster's rock-bottom need is to attract listeners. Audiences, in turn, are crucial to advertiser support which pays for the service. Service to the public and the opportunity to obtain economic benefits for those who build and operate stations are thus inseparable elements of the broadcasting system. In these circumstances, the Bureau, in considering the proposals in this Report, has been guided by the belief that the public is best served when marketplace forces are given freer play in the planning and provision of AM broadcast service. This can clearly be accomplished consistently with statutory mandates, while duly safeguarding against practices that might affect the public interest in a negative way.

V. ASSIGNMENT PRINCIPLES

The technical and non-technical assignment principles currently set out in the FCC rules evolved over an extended period during which AM broadcasting was undergoing considerable growth. Moreover, these assignment priciples were required to develop in a manner consistent with international agreements to which the United States was party. Section 307(b) of the Communications Act of 1934 has provided a foundation for development of these principles, by requiring that there be a fair and equitable distribution of radio services to the States and communities. Today, the AM broadcasting service is a mature service. Opportunities for new stations as well as modifications to existing stations are limited, except in the more remote areas of the United States. For this reason, it is now appropriate to review the Commission's assignment principles, both technical and non-technical, in order to remove impediments preventing the AM service from being fully responsive to the public's needs. Such changes should also seek to ensure the most efficient use of spectrum opportunities that still remain in the AM broadcasting band.

A. Classes of AM Broadcast Channels and Stations

The present system set out in the FCC rules for classification of AM broadcast stations within the United States was developed in conformity with earlier international agreements signed by United States. The FCC rules classify channels either as Clear, Regional or Local channels, and prescribe the classes of stations that may be assigned on each class of channel. U.S. stations are generally classed either as Class I, II, III or IV, with

certain sub-classifications. 3 The Final Acts of the AM Radio Administrative Conference (Rio de Janeiro, 1981), the 1984 AM Agreement between Canada and the United States and the draft AM Agreement currently under negotiation between the United States and Mexico all contain new AM station classifications that differ from those used heretofore by the United States and neighboring countries. The new international classification system prescribes three classes of AM stations: Class A, Class B, and Class C. Moreover, under the new multilateral and bilateral international agreements, Class A, B and C stations are not limited to channels prescribed for each, as was the case internationally and still applies under the FCC rules. Rather, any of these classes of stations are permitted internationally to be placed on any of the 107 channels allocated for AM broadcasting, so long as they provide requisite protection to other co-channel and adjacent channel assignments.

Clear Channels. The FCC rules designate 47 channels as "clear" channels. Each of these channels contains one or more Class I stations that operate fulltime with 10 kW to 50 kW of power. Class I stations are designed to render service over wide areas which are cleared of objectionable interference within their primary (groundwave) service areas and over all or a substantial portion of their secondary (skywave) service areas. An additional 13 channels are used by neighboring countries for wide area service. The U.S. does not have Class I stations on those 13 channels. Class II stations are permitted on all of these clear channels wherever they can operate without causing objectionable interference to the Class I stations. Class II stations, operate with 250 watts to 50 kW of power and broadcast fulltime, limited time or daytime-only, as circumstances permit. These stations render primary service over areas which vary greatly in size depending on power, frequency and ground conductivity. The fulltime Class II stations are also limited at night in the service they provide by the skywave interference received from each other and the Class I station(s) operating on their channels.

Regional Channels. There are 41 regional channels on which Class III stations are assigned. Class III stations operate with 500 watts to 5 kW and are designed to render primary service to principal centers of population and the rural areas contiguous thereto. Class III stations broadcast fulltime, limited time or daytime-only, as circumstances permit. As is the case with Class II stations, the actual service areas of Class III stations vary in size as a result of co-channel interference received from other Class III stations.

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3 E.g., Class II stations are subclassified as Class II-A, II-B, II-C or II-D stations.

Local Channels. The remaining 6 channels are called local channels. Class IV stations which operate fulltime with a maximum power of 1 kW are assigned on these channels. Class IV stations serve communities and the suburban and rural areas contiguous thereto. Their service areas are relatively small as a result of significant skywave interference received at night from other Class IV stations.

Discussion

A domestic classification system which generally parallels the international system could be desirable because of the increased flexibility it would permit in tailoring station power and other characteristics to specific needs. All Class I stations would become Class A, Class II and Class III stations would become Class B, and Class IV stations would become Class C. The channel classifications would be dropped entirely.

As a practical matter, the Class C (IV) stations would retain the existing protection criteria and would be restricted to the existing 6 channels. They do not have specific nighttime protection criteria, so their intermixture with other classes would lead to impractical coordination Orocedures.

The Class A (Class I) stations could, in theory, be allowed on any of the remaining channels. But, because of their high power and protection requirements and the number and distribution of existing stations, it is unlikely that there are locations (among the coterminous 48 states, at least) where a new Class A station can fit properly.

Treating the Class II and III stations as a single class and applying uniform assignment criteria may produce worthwhile gains. Currently, Class II stations compute skywave interference using rule Section 73.190, Figure 1a, whereas, Class III stations use Figure 2 of the same section. There is no technical reason why the determination of skywave signals should not be the same for all stations.

If these two classes are merged, consideration should also be given to reducing or eliminating the existing sub-classes and to modifying the permissible power limits. A general range of 250 watts to 50 kW might be feasible if combined with suitable provisions to protect existing operations.

B. Station Location ("Community of License")

Permanent locations. Section 307(b) of the Communication Act requires that all station assignments be made so as to effect fair and equitable distribution of radio service among the several States and "communities". 4 Every station has been assigned to a community of license with a primary obligation to serve the needs of that community. The Commission has repeatedly addressed the issue of whether a proposed service area contains a geographically identifiable population grouping and is therefore a "community" for licensing purposes. Mighty-Mac Broadcasting Co., 101 FCC 2d 303 (1985); FM Channel Policies and Procedures, 90 FCC 2d 88 (1982); Seven Locks Broadcasting Co., 37 FCC 82 (1964). Customarily, the Commission has considered whether the proposed location has sufficient attributes or indicia of a "community", such as political, commercial, social and religious organizations. We have also examined such nebulous considerations as whether there is a sense of unity and involvement in community concerns as shown by evidence that "the residents function as and conceive of themselves as a community around which their interests coalesce" Vimville, Mississippi, 55 RR 2d 256 (MMB 1983); North Naples, Florida, 41 RR 2d 1549 (BB 1977).

Applying these criteria to individual cases burdens Commission resources in both processing the application and litigating the issue in an administrative hearing. More important, if an AM applicant were unable to establish sufficient community indicia, the application has been denied. 5 Highway travelers and the public at ski slopes are examples of populations needing broadcast services that do not consititute "communities." Often, the application would not even be filed. In any case, the result is no service to a population owing to lack of "community" status. The Bureau believes that such an outcome could be, in fact, a disservice to the residents of the area. This concern would also be applicable in both the context of a new AM station or an existing AM station wishing to change its service area from a "community" to an area which would benefit from an AM service and have the economic base to support the operation.

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4 The provision reads: "(b) In considering applications for licenses, and modifications and renewals therefore, when and insofar as there is demand for the same, the Commission shall make such distribution of licenses, frequencies, hours of operation, and of power among the several States and communities as to provide a fair, efficient, and equitable distribution of radio service in each of the same."

5 In FM, and TV, the question of whether a place for which a channel assignment sought qualifies as a "community" is decided in rule making proceding on amendments to the FM and TV Assignment Tables.

Section 307(b) was adopted in its existing form in 1936, when there were far fewer broadcast stations (fewer then 1,000) and many areas of the country had no service. With over 10,000 broadcast stations now in operation, the Bureau believes that the basic purpose of this provision has been met with respect to an allotment principle premised upon specific communities. In this regard, we are contemplating recommending to Congress that the phrase "to each of the several States and communities" be deleted from Section 307(b) and the phrase "throughout the United States" be substituted in its place. Section 307(b) would continue to require the Commission "to provide a fair, efficient, and equitable distribution of radio service". While we do not envision changes at this time to the "community" allotment concept for the FM and Television Tables of Allotments, we do feel that the modified Section 307(b) would expressly permit us to address the geographical, technical and programming service realities which currently exist in AM broadcasting.

Alternatively, it may be useful to consider whether, at this advanced stage of the assignment of both AM and FM radio broadcast stations, and with the continual assignment of additional radio stations and communities as such, a relaxation of the "community" precondition as hitherto applied to AM assignments may be regarded as within the meaning of Section 307(b) as it stands. If so, its amendment would not be necessary to broadening the basis of making AM station assignments. Radio broadcasting stations (AM, FM or both) are now assigned to over four thousand communities in the United States. Taking into account the economic conditions reflected in Appendix 1, it may be expected that the further spread of AM service - and indeed the continuation of services now provided - will depend on projections for adequate economic support. Support for this thesis is found in the opinion of the Court of Appeals in National Association of Broadcasters v. FCC, 740 F. 2d 1190 (D.C. Cir. 1984) which, at 1198, observed, in upholding interim regulations relating to Direct Broadcast Satellites: "not every communications service approved by the Commission need be tied to local community". The court there further observed that "the constituency to be served is people, not municipalities". Whether amendment of the Act is found to be necessary or desirable for the purpose, the object of the contemplated rule change is to enable AM broadcasters to identify more directly and more naturally with the areas and populations to which their services are directed. It may be that a county or a metropolitan area would more realistically define the scope of service rendered. It is even possible to visualize the focusing of a station's service primarily toward travelers on a given section of a major highway. The use of multiple transmitters, as discussed in Section X-C of this Report, could facilitate such a service focus and help to meet a broadcast need that cannot be satisfied in the context of a "community".

Temporary Operations. In a related vein, the Bureau believes that it would be desirable to consider affording AM licensees the discretion to limit their programming schedule to certain months of the year. This would be within the scope of our authority under Sections 303(b) and (c) of the Act.

Currently, Sections 73.1715 and 73.1730 of the Rules address share-time and specified hours licenses. These sections refer to hours in the broadcast day. Our proposal would broaden the scope to provide for an AM license the opportunity to specify the months that it would operate during its seven year-license term. It could, in some situations, preclude service to the public from an AM station during certain months of the year merely because in the judgment of the AM licensee there is not a sufficient economic base or incentive to make such an AM operation viable. On balance, we believe that such a license would be in the public interest for two reasons. First, it would allow other parties to become AM licensees for relatively extended periods of time as opposed to sharing individual broadcast days pursuant to a share-time agreement or specified hours license. We feel that this could be attractive to an institution wishing to provide a noncommercial educational service and to other entities wishing to provide alternative programming. Second, the marketplace provides sufficient incentive for any broadcaster to operate if it is to its best interest to do so. It is our experience that some of the economic difficulties confronting AM broadcasters can be traced to Commission rules that require service at certain times of the day and the year which are not economically justifiable for a particular station. In turn, this adversely affects the overall economic health of the AM station and thereby its ability to serve its listening public.

It is feasible for parties other than a station licensee to provide programming on a particular AM station that would serve unmet programming needs in a service area and be economically viable. However, an AM licensee may not wish to "surrender" part of its license pursuant to a share-time agreement or specified hours license. One possibility is for a licensee to enter into a time brokerage agreement. In essence, a timebroker buys time from the station and resells it to others. While the broker is responsible for the payment to the station and the collection of money from advertisers, the ultimate responsibility for the programming broadcast over a station remains with the licensee. Cosmopolitan Broadcasting Corporation, 59 FCC 2d 558 (1976).

In Part-time Programming 82 FCC 2d 107 (1980), we released a Policy Statement discussing, in detail, time brokerage agreements. The Policy Statement encouraged time brokerage as a means of increasing program alternatives. Time brokerage also represents a source of revenue for the station. Because time brokerage can serve to maintain the viability of an AM station, we are of the view that the brokerage agreement is in the public interest. Notwithstanding these public interest benefits and our own

encouragement of time brokerage agreements, stations appear reticent about entering into such agreements involving large blocks of air time. Even though we have not set forth specific maximums with respect to the permissible amount of air time which may be brokered, some stations may be concerned that brokering significant amounts of time may raise Commission concern about abdication of control over station operation or station programming. However, in Cosmopolitan, supra, the amount of time brokerage was not the issue. Rather, it was the abdication by the licensee of its responsibility to maintain control over such programming. Although extensive time brokerage can lead to relinquished or diminished control over programming, a time brokerage agreement, standing alone, does not result in an abdication of programming control or responsibility. See also clarifying Paragraph (c) of Section 1.613, concerning the Filing of Agreements Involving the Sale of Broadcast Time of Resale, 33 FCC 2d 653 (1972).

Our failure to establish any specific guidelines may have contributed to uncertainty in this area. While we are not prepared to announce guidelines, it may be well to clarify that the obligation of a licensee to its service area is not based on specific quantitative standards. See Deregulation of Radio, 84 FCC 2d 968 (1981). Inasmuch as we believe that a licensee can meet this obligation, broker significant amounts of air time, and maintain control over all programming being broadcast, the concern of many licensees regarding the amount of brokered time is unfounded. It is for this reason that time brokerage agreements could conceivably involve daily and weekly operating schedules. In this connection, time brokerage agreements are analogous to network affiliation agreements, where, especially in television, the network supplies significant portions of the station's overall broadcasting schedule. In any event, guidelines could be developed on a case-by-case basis either in the context of individual cases or requests for declaratory rulings.

C. Service

This part of the report addresses two aspects of AM service. First, the modes of AM signal transmission (groundwave and skywave) are discussed in the section entitled "Types of AM Signals". The subsequent section entitled "Usable Signal Values" discusses the interference-free signal field strengths at the receiver that are considered as providing satisfactory reception of AM radio broadcast programs.

1. Types of AM Signals

Much in the scheme of AM allocations stems from the fact that AM broadcast signals are propagated simultaneously in two quite different ways--both due to immutable laws of physics. "Groundwave" signals travel horizontally along the surface of the earth, where they are affected by the characteristics of the ground over which they pass. Variations in "soil conductivity" account for substantial differences in the distances at which transmitters with a given power can place signals strong enough to render satisfactory service. Similarly, differences in soil conductivity cause substantial variations in the distances from the transmitter at which AM signals cause interference to other stations. Groundwave propagation is relatively steady day and night. "Primary" AM service is rendered by groundwave signals that have sufficient field strength to overcome manmade and atmospheric noise, and are sufficiently free from objectionable interference from other stations.

Those AM signals which are transmitted at an upward angle, rather than horizontally, have different effects during daytime and nighttime hours. During the daytime these signals are absorbed in the ionosphere to such a degree that they deliver no usable signals to receivers anywhere. At night, however, the reflective layer in the ionosphere acts as an electronic "mirror" reflecting these "skywave" signals back to the earth where they can be picked up at far greater distances than the groundwave signals propagated by the same transmitters. However, skywave signals are much less constant than groundwave signals. They are subject to intermittent fading that can vary from minute-to-minute, hour-to-hour, night-to-night, season-to-season, and even year-to-year. This last phenomenon occurs because skywaves are affected, among other things, by the phase of the eleven-year sunspot cycle. Because of these characteristics, AM service provided by skywave is called "secondary" service. It is measured not only by the predicted value of the field strength of the skywave signals but also by the incidence of the periods during which that field strength is sufficient to be usable.

Notwithstanding that skywave service is less satisfactory than groundwave, it has in the past been relied upon to provide nighttime aural broadcast service to places beyond those provided with groundwave service. This has been made possible by designating 47 of the 107 AM channels as "Clear Channels," on which, under present rules, Class I stations in the United States receive nighttime interference protection out to their service contour at which their skywave signals have a field strength of 0.5 mV/m for at least 50% of the time. That contour is approximately 750 miles from an omnidirectional transmitter operating with a power of 50 kW. Thus, Class I-A clear channel stations that operate omnidirectionally each provide interference-free service to vast circular areas in the United States with diameters of approximately 1,500 miles. Most Class I-B stations are paired on a clear channel, and since each co-channel pair is directionalized to

protect the other, they do not have interference-free service radii of 750 miles in all directions. They nevertheless provide a protected skywave service over very extensive areas.

Years ago, when over half the land area of the conterminous 48 states lacked nighttime primary aural broadcasting service (AM or FM), there was a much greater justification for providing sweeping protection to the clear channel stations to help serve the 25 million persons living there. In 1980, when the Commission adopted major revisions to the clear channel allocations rules, it noted that, while nighttime primary aural broadcast service was still unavailable in about a third of the same area, the underserved population had dwindled to an estimated 4 million. The advent of numerous additional FM stations since 1980 has further reduced the populations dependent at night upon skywave service, and, east of the Mississippi River, has left virtually no populated areas unserved.

In these circumstances it is pertinent to inquire whether, especially east of the Mississippi River, it is justifiable to continue to protect the very extensive secondary service areas of the clear channel stations. Removing that protection would free very substantial amounts of spectrum space that could be used to provide primary service by new or expanded AM stations, and by AM satellite stations, synchronous transmitters or AM translators. 6 Such stations could respond much more directly to local needs through the provision of the much more reliable primary groundwave service.

In these circumstances, the Bureau believes that it would be desirable to invite comments on the appropriateness of removing or deminishing protection to the skywave signals of clear channel stations nationwide or only east of the Mississippi River, where there is far less dependence on skywave serve than in the west.

2. Usable Signal Values

Class I-A and I-B clear channel AM stations are protected during the daytime to their 0.1 mV/m groundwave contours rather than the 0.5 mV/m groundwave contour as is the case with other classes of AM stations. This situations dates back to the early days of AM broadcasting when there were few stations and many listeners had to rely on service from distant stations. In the years since, the availability of local AM and FM radio service has increased dramatically. The continuing need for this level of protection was raised on reconsideration in the earlier omnibus clear channel proceeding in Docket No. 20642. The subject of that proceeding,

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6 See Section X-C of this Report for a discussion of the use of multiple transmitters by AM stations.

however, was the nighttime use of the Class I-A clear channels. As a result, this matter was deferred for consideration in a separate proceeding which could focus directly on the matter of daytime protection.

The question is whether the daytime interference protection for Class I AM stations should be changed from their 0.1 mV/m contour to some less restrictive level such as their 0.5 mV/m contour. In the early days of AM broadcasting, Class I stations were afforded extensive daytime and nighttime protection to ensure their ability to provide service to remote areas which would not otherwise be able to get radio service. In recognition of this situation, Class I-A stations were given exclusive nighttime use of their frequencies . However, in the omnibus clear channel proceeding in Docket No. 20642, the Commission took note of the changes which had taken place over the years and concluded that there was a lessened need to rely on clear channels to provide nighttime service to remote areas. 7 Moreover, it noted that offering protection to signals of lower field strengths precluded the establishment of other services. As a result, the Commission made provision for additional nighttime operations on these channels. On reconsideration, several parties raised the matter of the daytime protection of clear channel stations. However, because that proceeding was limited to the Class I-A clear channel frequencies, the issue of the daytime protection standards was deferred until Class I-B stations could be included.

Important changes have taken place in regard to daytime listening patterns. Several thousand additional AM and FM stations have been licensed since the protection standards were established. Most listeners now have a choice of nearby radio signals available to them, and they are less likely to rely on the 0.1 mV/m signals from clear channel stations as much as two to three hundred miles away. This is especially true, given that signals of this low field strength can be subject to serious fading. Under these circumstances, there is reason to question the continuing need for the current level of daytime protection, particularly since this level of protection has an impact on otherwise possible uses of these frequencies to accomodate new daytime service or to permit the improvement in the daytime facilities of existing stations.

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7 The special conditions obtaining in Alaska indicate a basis for continuing the current level of protection to Class I stations there.

D. Interference

Any transmitted signal is capable of providing both service and interference to other stations seeking to provide service. The distinguishing feature is the standard that sets out the value of the service to be protected and the value of the interfering signal. The protection so established is based on a number of factors including the nature of the service to be provided and the equipment to be used. For example, if it is desired to provide service at long distances, high-powered stations could be used and protected to high field strength contours. Alternatively, lower-powered stations could be used with protection being offered to contours with lower field strengths. In either event, receiver characteristics concerned would necessarily need to be taken into account. In the case of AM broadcasting, the signal levels to be protected as well as the level of acceptable interference have been generally unchanged for approximately a half century.

Stated in broad terms, prior to 1964 AM assignments were generally made on a basis that any interference between stations, was weighed against the service to be rendered. If the need for the service was strong enough the balance tipped in favor of authorization of the service. Thus, many stations were established with a severely limited service area because it was shown that the need for the service outweighed the interference which would occur. Since 1964 the AM assignment criteria consisted of describing a pair of contours that were not permitted to overlap. No consideration is given to balancing service needs against the interference that would be caused. It seems appropriate that the question of protection from interference be investigated with a view to eliminating restrictions which work against the ability of AM broadcasters to provide service that would benefit the public and attract advertiser support.

Effort should be made to improve existing service as much as possible. As far as the interference criteria that apply to the exisiting service are concerned, we believe that they are too restrictive. For instance, as noted previously, many of the stations were assigned with service greatly limited by interference. At present, that interference is not considered when evaluating a proposal by a station to make improvements in the station's facilities. If the proposal of a station is found to involve "overlap" of pertinent contours in areas where interference already exists, the application is rejected by the FCC. However, if a station were permitted to make changes in its operation which would result in interference only to areas which already receive interference, no one currently receiving service would suffer the lost of service which they had become accustomed to, notwithstanding the fact that prohibited "overlap" of signals would occur.

We believe there is strong support for a review of the interference concepts with the goal of linking the service/interference relationship more closely with the "real world". Accordingly, the following issues should be considered:

1. Interference received:

   Consider whether the FCC should continue to limit interference received under signal strength overlap prohibitions as now provided in 73.37(a) and (b) of the Rules. Eliminating or modifying such restrictions would free licensees to apply economic factors in determining acceptability of received interference.

2. Interference caused:

   a. Consider whether the concept of normally protected contours should continue to apply to AM licensees.

   b. If so, consider whether the current values and other pertinent provisions should be continued or changed.

3. Consider private agreements to depart from generally applicable interference norms. 8

E. Station Power

Background For decades the AM broadcast service developed on the basis that frequencies and stations were each classified according to perceived usage - e.g., stations designed to provide wide-area service were assigned to channels designed for that use. As part of that philosophy, particular power levels were associated with specified classes of stations. Accordingly, the AM frequency band was divided into three general classes of channels on which four classes of stations operated. The maximum power permitted depended on the class of stations as follows:

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8 See Section X-A for a discussion of this topic.

Class of station	Maximum power permitted
I, II	50 kW
III	5 kW
IV	1 kW

Discussion Until recent years, this system of station assignments had not suffered from any apparent major drawbacks. This was true primarily for two reasons. First, the vast majority of AM stations in the Western Hemisphere were U.S. stations and were therefore assigned on a common basis. Except for Canada and Mexico, the number of stations in other countries was sufficiently small as to have minimal impact upon the U.S. Second, the countries which posed the greatest potential impact on the U.S. (i.e. Canada, Mexico and Cuba) were, along with the United States, parties to international agreements that generally reflected technical criteria consistent with our domestic rules.

Recently, it has become evident that these power limitations may be a handicap to U.S. broadcasters. For example, a U.S. station identified as a Regional station and limited to 5 kW of power under FCC rules is classified as a "Class B" station under the Region 2 Agreement (Rio de Janeiro, 1981) Under the Rio Agreement a Class B station may operate with up to 50 kW. Thus, our domestic rules provide less flexibility than more recent international agreements. This can result in a significant disparity when a U.S. station receives extensive interference from a foreign station which operates at much greater power, and which has not agreed to reduce interference caused to the U.S. station. In MM 84-752 Docket the FCC recently increased the maximum power ceiling to 50 kW for Class III stations in Alaska, Hawaii, Puerto Rico andthe Virgin Islands primarily for this reason. On the other hand, if a U.S. station in the conterminous 48 states could regain some of its lost service by increasing power, FCC rules currently would prohibit any increase above 5 kW even if no interference would be caused to any other stations, foreign or domestic.

In addition to "station-to-station" interference, AM service has been limited by the presence of atmospheric and man-made noise. The ability to use higher power when and where possible may provide a broadcaster the avenue for overcoming these inherent limitations on AM service. As a result, a broadcaster could increase the extent of a station's service area as well as increase the strength of the signal in areas already receiving service. The realization of these benefits would improve the AM broadcaster's ability to compete in the radio "marketplace" and to improve service to the public.

In light of the foregoing, it seems appropriate to review our rules regarding station power with a view toward providing increased flexibility for U.S. broadcasters. This will enable them to adapt their operations better to their specific needs without being arbitrarily restricted by the current power ceiling, which may no longer be meaningful, and which other countries need not respect. At the same time and for the same reasons, we believe the specification of a minimum power may also be contrary to the interests of the AM broadcaster. The need for and interest in operations with power below the present minimum of 250 watts can be established from the number of broadcasters taking advantage of recent FCC actions regarding extended hours of operation. Many of those broadcasters now operate with powers well below 250 watts.

Options/Remedies For many years the FCC has encouraged the development of local AM broadcast service and to that end has provided significantly differing assignment standards for Local channel stations. As a result, the Local channels have become nearly saturated with relatively low-powered stations closely spaced throughout the country with nighttime service significantly limited by co-channel interference from other domestic stations. For channel-wide uniformity of interference levels, the use of directional antennas has been restricted to a limited number of special cases. By contrast, the remaining stations, on Clear channels and Regional channels, are for the most part higher-powered and more elaborately engineered in order to provide, generally, significantly greater wide area service. With this distinction it is obvious that there is very little similarity between stations on Local channels and the others. Consequently, it would be inappropriate to consider them in the same context.

The Bureau believes it would be desirable to consider rule changes of the following nature and to invite comments that would help the Commission to evaluate their pros and cons:

1. Stations on Local channels (Class IV stations)

    a. Consider whether the present power maximum should be maintained or changed.

    b. Consider whether the present scheme of uniform power for all stations on Local channels should be continued.

    c. Consider whether routine use of directional antennas should be permitted, both day and night.

2. Stations on other channels

    a. Consider whether a general power maximum of 50 kW should be allowed consistent with international and domestic interference protection.

b. Consider whether the maximum power of Class I stations (I-A, I-B or both) should be increased daytime.

c. Consider whether AM stations should generally be permitted to operate at powers less than the 0.25 kW minimum now applicable to Class II stations or the 0.5 kW minimum for Class III stations, (perhaps as low as one watt) so as to permit nighttime service in cases where the current minimum power cannot be obtained.

F. Protection Ratios

Background Objectionable interference can be generally defined as interference caused by another radio signal which exceeds the maximum permissible field strength at or within a service contours of a protected station that has a predefined field strength value. Ratios of such desired field strength values (D) to the maximum permissible undesired interfering field strength values (U) comprise what are generally called radio interference protection ratios. These ratios are typically expressed as a D/U ratio.

Protection ratios have been variously set out in international agreements to which the United States is signatory, the FCC Standards of Good Engineering Practice in the 1930's and 1940's, and the current FCC rules. Through the years these protection ratios have evolved into the values that are still being applied today. Ratios that are currently applicable are as follows:

CURRENT PROTECTION RATIOS (D/U)
GROUNDWAVE TO GROUNDWAVE *1

SOURCE	CO-CHANNEL	1ST ADJ CHANNEL	2ND ADJ CHANNEL
NARBA	20/1	2/1	1/30
REGION 2	20/1	1/1	1/30
U.S./CAN	20/1	1/1	1/30
U.S./MEX	20/1	2/1	1/30
FCC RULES	20/1	1/1	---- *2

*1 During nighttime, only a co-channel protection ratio of 20/1 is applied.
*2 Current FCC rules do not specify a protection ratio for 2nd adjacent channels.

Discussion. Protection ratios in use are based in large part upon subjective tests that have been performed with large groups of listeners. Several factors can affect the determination of what constitutes objectionable interference between the signals of radio stations. These are the frequency channel relationship, the selectivity characteristics of the receiver being employed, the nature of programming on each signal (e.g., voice to voice, music to music, etc.), and the number of interfering sources.

Some of the most definitive subjective information that has been collected in the United States regarding the relationship between desired to undesired signals was that developed during the 1940's (FCC Docket No. 6741). During these hearings, listener tests were conducted using program formats of music and voice in order to determine the relationship between interference perceived to be objectionable and the type of program material being broadcast. These tests showed, for example, that for a variety of programs (both voice and music) a cochannel protection ration of 20/1 (D/U) (the protection ratio used today) satisfied approximately 67% of the listeners participating in the tests, 27/1 satisfied 75%, and 15/1 satisfied 40%.

It is instructive to note, however, that some types of programming require higher protection ratios than do other types in order to provide the same degree of listener satisfaction. For example, it was seen that when speech is broadcast on both the desired and undesired stations a protection ratio of 37/1 is needed to satisfy 67% of listeners, whereas, where music is employed, a cochannel protection ratio of 15/1 satisfied 67% of the listeners. This means that stations that have talk formats may be more susceptible to interference than stations with music formats.

There are indications that programming formats on AM stations have undergone change over the past few years in response to the changing marketplace conditions affecting AM stations in general. There appears to be a greater percentage of talk shows and news and information formats being broadcast today on AM broadcast stations. In view of the information discussed in the preceding paragraph, it would appear that if this trend continues, AM stations no longer may be receiving the degree of protection at their normally protected contours that once was considered satisfactory.

Protection ratios needed for adjacent channel protection is influenced by the selectivity characteristics of receivers, i.e. the ability to filter out adjacent channel signals. Selectivity of receivers varies not only among manufacturers and models, but also within the same groups. In order to determine adjacent channel protection ratios, the practice has been to identify the average selectivity of a typical group of receivers for reference purposes. With such information, curves were developed which depict adjacent channel protection ratios relative to the selected cochannel protection ratio for the case of average receivers. Adjacent channel protection ratios are also affected by audio processing used at stations, a

common practice today. 9 It should be noted, however, that much of the information upon which studies for adjacent channel protection ratios is based is a number of years old. The design of receivers has undergone rapid change within the past few years in response to technology changes. There is no current information readily available to indicate whether the adjacent protection ratios depicted in the curves in Appendix 2 are still valid today.

As shown in the above table, the FCC does not specify a protection ratio for second adjacent channels. The FCC rules prohibit overlap of the 2 mV/m and 25 mV/m contours of stations on adjacent channels. These overlap restrictions are not directly related to a specifically identified second adjacent channel ratio. Rather, they relate in large part to interference susceptibility characteristics of receivers (there are indications that current receiver designs may be more susceptible to these types of effects than earlier receiver designs). The curves in Appendix 2 indicate that a 1/30 (D/U) ratio is required for second adjacent channel protection. Thus, it is seen that the FCC rules do not necessarily provide the same degree of protection for second adjacent channels as that required for co-channel protection, assuming that receiver characteristics have not changed significantly.

Finally, the international agreements do not specify adjacent channel protection ratios for skywave interference to groundwave service. On the other hand, Section 73.182(t) of the FCC Rules sets forth the adjacent channel skywave protection to be afforded to primary groundwave service. As a practical matter, the Commission's Rules generally have not significantly limited the flexibility in the introduction of new or improved service on adjacent channels. The major reason for this that at the interference levels involved a station would generally have to operate with 50 kW or more in order to generate an interfering signal exceeding the maximum permitted. However, if the higher audio baseband frequencies are emphasized by audio signal processing, the adjacent channel protection ratios set out in the rules may no longer be valid and the energy content in the higher sidebands may be sufficient to affect receivers on adjacent channels.

Recommendations/Remedies. It is seen from the foregoing that the selected cochannel and adjacent channel protection ratios are an important element in establishing the quality of interference free service of a broadcast station. These protection ratios, used in concert with additional technical criteria, define the service areas of broadcast stations and establish the maximum permissible level of the interfering signal at a stations

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9 Appendix 2 to this Reports sets out such a typical curve contained in CCIR Recommendation 560, Volume X. These curves also reflect the effects of compression used on desired and undesired signals.

protected contour. If the protection ratios selected are too great for the type of service that is desired, new stations, either cochannel or on adjacent channels can be unnecessarily precluded or their operating parameters can be unnecessarily restricted. Similarly, existing stations having a need to improve their facilities can be unnecessarily restricted in designing modifications to their facilities. Conversely, if the protection ratios selected are too small the quality of desired service will be adversely affected.

Earlier in this Section a review of "Service" was performed. This included considerations regarding usable signal values, both groundwave and skywave, that may be most appropriate today in the AM broadcasting service. Similarly, concepts pertaining to interference received and interference caused were explored. We believe that further study in a formal proceeding is warranted on these and related issues. Protection ratios are fundamental to such studies and will directly effect their outcome. It is important, therefore, that further assessment of protection ratios also be performed in the context of these other studies.

G. Antenna Systems

The broadcast antenna is one of the most critical components of an AM station. The efficiency and effectiveness of the transmitting antenna significantly affects the service area of a station and the level of interference caused to other co-channel and adjacent channel stations.

During the "early" days of development of the AM broadcast service, antennas were relatively simple in design. These early antennas were non-directional because spectrum congestion was relatively small and it had not yet become necessary to tailor service areas through use of directional antennas was not yet necessary. Moreover, the scientific community's understanding of radio propagational phenomena, particularly during nighttime hours, was still undergoing development. Such propagational knowledge was a necessary ingredient in the development of directional antenna design criteria.

Over the years, the AM broadcast service has undergone substantial growth leading to significantly increased spectrum congestion and radio interference. Increasingly, it has become necessary for AM stations to use directional antenna systems in order to avoid interference to other AM stations and to tailor their service areas to the communities and populations targeted for service. Moreover, the complexity of these directional antenna designs have increased with increasing frequency congestion.

The design criteria of directional antenna systems essentially has been unchanged for several decades. Although changes have occurred, they have not significantly affected the basic design formulas for directional antennas. Rather, these changes have related to the procedures for calculating "tolerances" applicable to directional antennas designs in the "real world". For example, prior to 1971, many directional antennas were designed which included the concept of the expected operating value, or "MEOV".10 Then on January 13, 1971, the FCC adopted a standard method (resulting in the so called "standard patterns") for calculating radiation tolerances within which an antenna is expected to operate under normal conditions. Use of the standard pattern has permitted significant strides in standardizing and automating computer calculations of interference, service areas, and prohibited contour overlap. This emphasis on automation has resulted in significant savings to both the FCC and the industry and has expedited the provision of new and improved service to the public.

Recommendations. It has come to the staff's attention that new and novel antenna designs are currently being studied within the industry, and the staff recommends that the Commission encourage experimental tests of such designs to assess their future utility. 11 Experience thus gained could provide the basis for future rulemaking proceedings. Moreover, antenna designs that have been long known but little used, such as directional antennas using parasitic elements, could be further explored to determine their utility in today's broadcasting environment.

Finally, it is important to note that many of the existing antenna systems were put into use many years ago, and some of these systems have received little or no maintenance since they were originally placed into operation. In such cases, it should be recognized that degradation of the system is a natural event and the replacement or refurbishing of these systems could include any new or improved antenna system designs found to be desirable. Thus, design improvements would not be limited to new operations but could be used in existing operation when they are refurbished.

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10 The Maximum Expected Operating Value repesents an estimate by the design engineer based upon judgement and other practical design considerations of the degree to which radiation in critical directions can be reduced.

11 One such design improvement was set out in a paper entitled: A New Dimension for the Design of Medium Wave Antennas. This paper was presented to the IEEE Broadcast Symposium, September 20, 1985, by Ogden Prestholdt, A.D. Ring & Associates.

VI. ENGINEERING STANDARDS

A. Receiver Standards

An often heard complaint associated with the AM broadcasting service is that it does not have the technical ability to compete with the FM broadcasting service in the rendition of high fidelity service. As a result, since the introduction and growth of the FM service, greater reliance has been placed upon the FM service for broadcasting music. As noted elsewhere in this report, AM stations increasingly have been observed to concentrate on talk and news formats in order to compete with the FM service. This currently perceived technical disparity between the AM and FM radio services does not mean that the AM service is inherently incapable of providing a good fidelity service to the public. This is not to say that there are no disparities between the two services. The AM service is more susceptible, for example, to interference from man-made noise and other cochannel and adjacent channel stations than are FM stations. Unfortunately, the full range of technical improvements that are possible in the AM broadcasting system have not been implemented, and this has reinforced the public's perception of technical disparities between the services. In considering improvements to the AM broadcasting system, it is necessary to evaluate the two primary elements of the system. These are the transmitter/transmission systems and the receivers that are generally made available to the public.

The tests reported in FCC Docket No. 21313 and the subsequent implementation of AM stereophonic broadcasting by stations have amply demonstrated that properly adjusted AM broadcast stations are capable of rendering good fidelity aural service. Under good listening conditions, the differences between these broadcasts and comparable FM broadcasts have been reported to be apparent only to the most discerning listeners. Unfortunately, quality reception of such broadcasts is available only to listeners that have invested in AM stereophonic receivers that incorporate design improvements needed for good fidelity stereophonic reception. This is not meant to imply that only stereophonic transmission and reception are capable of providing such quality service; rather, it demonstrates the capabilities of AM broadcasting to provide such quality service. Since AM stereophonic broadcasts are designed to be monophonic compatible, a monophonic receiver containing appropriate enhancements would also benefit from these AM stereophonic broadcasts. Similarly, high quality monophonic broadcasts could also be capable of providing good fidelity monophonic service if receivers were generally available that incorporate the needed receiver enhacements for good fidelity reception.

The element in the AM broadcasting system that is in greatest need of improvement is the AM receiver. AM stereophonic receivers incorporate the only significant changes in the basic design of AM receivers since the early days of AM broadcasting, except for their use of components resulting from

current technologies. Envelope detectors have been used in AM receivers for years and are still generally employed today. It is generally believed that use of such detectors limits the extent to which AM receivers can be improved.

An alternative technique for AM detection that has merit is synchronous detection. It has been suggested that use of synchronous detectors could bring about generally improved audio quality in AM receivers. In addition to improved detection of AM signals, it has been reported that some types of man-made noise would also be suppressed by use of such detectors. Moreover, it has been suggested that use of such detectors would lead to reduced distortion in those instances where there is selective cancellation of the AM station's carrier. Since a synchronous detector does not rely upon the carrier or symmetrical sidebands for proper detection, it is believed that important benefits could result here as well. A synchronous detector only requires one sideband of the transmitted AM signal for proper detection. It is therefore possible to design a receiver equipped with a synchronous detector to be switchable in order to detect only one of the two transmitted AM sidebands. This capability could be used to eliminate adjacent channel interference occurring in the other unused sideband.

In addition to considering use of synchronous detectors in AM receivers, it is believed that other receiver improvements could also be considered, including improved design of RF, IF, and audio stages in the receivers.

Recommendations. Clearly the audio fidelity of the AM broadcasting service can be significantly improved in order to make the service more competitive in the marketplace with the FM service. This will require stations to make needed improvements and adjustments to their transmitters and transmission systems in order to provide good fidelity broadcasts. As noted above, the feasibility of such improvements have been demonstrated during the implementation of AM stereophonic broadcasting. However, the public will not receive the full benefit of such steps until improved receivers capable of good fidelity reception are generally available. Thus, it is necessary that the broadcasting industry and the receiver manufacturing industry work cooperatively together in order to achieve the desired results. The Commission can contribute to such efforts where necessary through the issuance of public inquiries and rule making proceedings. While the Commission no longer regulates the audio quality of broadcasting, per se, it is possible that new rules would be required to deal with needed additional emission limitations concerning AM broadcast transmissions. For example, there may be a need to further balance the competing needs for transmitted bandwidth (higher fidelity broadcasts require greater bandwidth) and adjacent channel protection. Similarly, there could be a need identified requiring limitations on some forms of audio processing that conflict with the emission requirements of AM stations broadcasting higher fidelity audio signals than has generally been the case during the past.

B. AM Stereo

Background The Commission first considered AM stereophonic broadcasting at approximately the same time it was developing its FM stereophonic transmission standards. Several AM transmission standards had been developed, tested and presented to the Commission. Although the Commission proceeded to establish transmission standards for FM stereophonic programming, it denied the petition to concurrently establish AM stereo standards. 12 FM was considered a higher fidelity broadcast service with a greater chance of success in providing stereo. Additionally, the Commission believed that a public interest need for the new transmission service had not been established to justify the additional work required, and that the Commission might direct its resources more efficiently to other matters.

Industry interest in AM stereophonic broadcasting was renewed in the mid-1970's, primarily because FM radio, with its capability to deliver high fidelity stereo sound was quickly becoming the dominant aural broadcast service in many areas of the country. AM broadcasters were looking at methods to retain their listeners, and stereo programming was considered an important ingredient. The National AM Stereophonic Radio Committee (NAMSRC) was activated under the sponsorship of the broadcast and consumer electronics trade associations and national standards organizations. These included the National Association of Broadcasters (NAB), the National Radio Broadcasters Association, the Electronic Industries Association, and the Institute of Electrical and Electronics Engineers (IEEE). Representatives of the sponsoring organizations, broadcasters, and both transmitter and receiver manufacturers were active in the committee work.

Concurrently with the formation of the NAMSRC, the FCC issued a Notice of Inquiry to determine the degree of interest in AM stereo and the criteria to be used in evaluating any system presented for authorization. 13 Response to the NOI indicated considerable interest in stereophonic AM broadcasting and identified criteria upon which systems should be evaluated.

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12 Docket No. 13506, Report and Order, 21 RR at 1605 (May 10, 1961), Memorandum Opinion and Order, 21 RR at 1616, (January 17, 1962).

13 Notice of Inquiry, Docket 21313, 42 FR 34910, July 7, 1977.

Compatibility with existing transmitting and receiving equipment was a high priority. Further, the transmission system should not require signal bandwidth additional to that used by monophonic AM stations (although some additional adjacent channel interference could be expected and tolerated due to the distribution of the modulation energy throughout the authorized channel). High audio signal quality to provide service comparable to FM fidelity was considered to be desirable. However, there was no unanimity on the minimal performance standards that should be accepted for any of the fidelity specifications of noise, frequency response, distortion, or stereo channel separation. However, the information filed in the proceeding was sufficient to justify proceeding with a Notice of Proposed Rule Making. 14

The NPRM proposed five alternative technical standards for AM stereo. These were the systems proposed by Belar, Harris, Kahn Communications, Magnavox and Motorola. The Commission asked for information and comments on both performance criteria and data that would be used in selecting a single transmission standard.

When an initial evaluation of these systems was presented to the Commission, the staff was asked whether, from the data available, one system could be considered preferable to the others. The Commission's Office of Engineering and Technology (OET) reported that its evaluations showed the Magnavox standard to have the overall preferable performance. The Commission then directed the staff to propose adoption of the Magnavox system as the standard AM Stereophonic transmission system.

Subsequently, proponents of other AM stereo systems started to point out potential problems with the Magnavox system. Many licensees, convinced by these arguments, requested reconsideration of the initial system choice. Because of the controversy that developed and to ensure that the initial selection had been correct, the entire technical record was again reviewed and evaluated. At this point, the staff concluded that there were too many gaps in the evaluation data to make a definitive determination. Therefore, the staff recommended to the Commission that a Further Notice of Proposed Rule Making be issued, specifically requesting the additional data from each proponent necessary to complete the evaluation matrix. An evaluation matrix consists of a complete set of weighted criteria used in making an overall evaluation of the pertinent characteristics of each system. It is important because it provides an effective means of making comparative evaluations of the several systems. The FNPRM requested comments on the appropriate

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14 Notice of Proposed Rule Making, Docket No. 21323, 43 FR 48659, September 14, 1978.

weighting factors that could be used to evaluate comparatively each of the several performance factors. 15

In response to the Further Notice, an exceedingly large amount of measurement data was received. Additional comments and reply comments were received that challenged the validity of the measurement procedures and data submitted. Even though certain information was specifically requested, the staff found the data still insufficient for complete evaluation with the desired certainty.

The staff thoroughly reviewed the entire record in an effort to make the most effective selection of a single system. First, the weighting of an evaluation matrix was established. Second, it was determined that if a single system selection was to be made, it was necessary to look beyond the specific measurement data and to analyze each system in terms of anticipated future technological developments. On this basis, the maximum audio bandwidth within the permitted radio frequency channel bandwidth was considered to be a deciding factor. Additionally, the potential for entirely new and simpler types of transmitters than the proposed composite systems was evaluated.

The staff reported its recommendations for a system selection process for final decision. Again, it became obvious that the system selection process could be flawed and could subject the Commission to extensive litigation. Additionally, it was recognized that allowing market forces to establish an appropriate standard was an acceptable approach given the inability of the industry to reach an agreement and the lack of conclusive technical data on which a decision could be made. The Commision determined that permitting all systems to be used and subjected to market testing would be the best course to follow. Should any system or systems prove to be superior, the inferior systems would simply be ignored. The staff was directed to prepare the Report and Order clearly explaining its evaluation process, the results of its evaluation, and the reason why a single system was not selected. 16

Discussion In relying on a marketplace approach as the solution for AM stereo, the Commission did, in fact, avoid litigation which may have arisen had the Commission chosen one system as the standard. The possibility existed that the courts could have remanded the FCC's decision to adopt one standard and, as a result of such court action, the AM stereo issue would

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15 Memorandum Opinion and Order and Further Notice of Proposed Rule Making, 45 FR 59350, September 11, 1980.

16 Report and Order, 47 FR 13152, March 29, 1982.

still have been unresolved. The Commission therefore envisioned more rapid resolution of this matter in the marketplace.

It has been almost four years since the Commission made its decision, to permit the market to resolve this technical standard issue. In that period, a number of companies have vacated the field. However, two of the five systems are still vying for approval by manufacturers and consumers.

Currently only 435 AM stations are equipped to broadcast in stereo. [17] This represents less than 10% of the AM stations currently licensed. On the other hand, over 90% of FM stations now broadcast in stereo. In addition, there are relatively few AM stereo receivers on the market. However, over 2.5 million 1986 automobiles are being equipped with AM stereo radios. [18] This latter figure bodes well for future acceptance of AM stereo by the consumer.

The Commission has several options. It could take no action and thereby continue to let market forces deal with this issue. [19] It is also possible that the remaining stereo systems (Motorola and Kahn) might enter into negotiation to resolve this matter. There are, however, anti-competitive concerns and implications regarding such action unless the parties seek permission from the Dept. of Justice to enter negotiations. The Commission has supported such waivers of the ani-trust statutes in the past. Finally, the Commission could, once again, attempt to pick one system as a standard for AM stereo. However, our original concerns relating to protracted litigation by the "losing party" still remain.

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17 Broadcasting Management and Technology, NAB, December 1985. Stations equipped with the Motorola System currently outnumber those with the Kahn System by about 4 to 1 whereas, in 1983 the number of stations equipped with each system were about equal at approximately 60 stations.

18 Broadcasting, November 11, 1985, p. 48.

19 In this regard, FM broadcasting experienced an extended development process. The Commission authorized FM stereo in 1963, but it did not achieve real success until approximately 1968.

C. Propagation

1. Groundwave

Background. FCC Figure 3, the forerunner of current FCC Figure 3 referenced in Section 73.183 of the rules, became effective August 1, 1939 when it was included in the "Standards of Good Engineering Practice Concerning Standard Broadcast Stations." Figure 3 was a map on which the estimated ground conductivities in the United States and Canada were shown. Although it included some conductivities based on field intensity measurements, for the most part Figure 3 was based on upon speculation as to the conductivities that might be expected to exist for various soil conditions. The soil conditions themselves were established by the Department of Commerce Geological Survey. Nevertheless, determining their exact relationship to ground conductivity was, and still is, an inexact science. Moreover, Figure 3 was based on averaged ground conductivities within relatively large areas. Consequently, it did not provide the desired accuracy needed to establish with any precision the interference due to contour overlap. In 1939, radio broadcasting in the United States had been in existence only a little more than a decade. For the most part, what little measured data had been compiled was limited to large population concentrations in the eastern portion of the United States.

The inadequacies of Figure 3 were well recognized by the Commission. On November 3, 1955, the Commission adopted a major revision to Part 3 (now Part 73) of its Rules. It was in that revision that Figure 3 was replaced by Map M3. Because of its large size, a reduced replica R3, was included in Section 73.190 of the Rules, but its actual use was limited to those situations where a single conductivity was seen to prevail for the entire length of the path under study.

Map M3 incorporated many of the conductivities established through field strength measurements made in accordance with Section 73.186 which were in the Commission's license files at that time. Those measurements were compiled by the National Bureau of Standards and published as NBS Circular 546, issued February 26, 1954. Although use of Map M3 increased the accuracy of daytime interference calculations based upon map conductivity values, Section 73.183 (a) of the rules states, in part: "Interference that may be caused should be determined, when possible, by measurements..." Despite the wealth of measured data that has since been added to the Commission's license files, Figure M3 has not been revised to reflect those data.

The general requirement that daytime interference studies be based upon field strength calculations places a substantial burden upon the industry as well as on Commission resources, when new stations or major modifications to existing stations are proposed to the Commission. Such burdens may discourage or delay new or improved service to the public, or, in instances

where accurate measurements are not available, interference calculations may not be accurately depicted. In the latter case, interference may be caused where none was calculated, or the parameters of a station may be unnecessarily restricted.

In order to reduce the need to rely upon field strength measurements for daytime calculations, the staff recommends that alternative means for updating and improving Map M3 be explored. This could be done through a cooperative effort between FCC staff and the industry native or through the issuance of a contract, as was done when the current M3 Map was prepared.

2. Skywave

Skywave signals are subject to both short-term (within-the-hour) and long-term variability. Short-term variability, together with receiver characteristics, influences the signal to noise (S/N) and signal to interference (S/I) ratios needed to insure a given quality of service. Service range, separation distances and the number of adjacent and cochannel stations within a given area are affected by the statistical distributions of the hourly medians and the distribution of the resultant signal at each location. The night-to-night distribution of the hourly medians are affected by the sunspot number and latitude of the path midpoint.

In order to assess the cumulative effects of skyway interference to Class II and Class III stations licensed within the United States, the FCC rules require calculations to be based upon the root-sum-square (RSS) of the multiple interfering signals. (See Section 73.182(o) of the FCC Rules). Furthermore, in order to limit the number of interfering signals that must be taken into account, this Rule requires application of the "50% exclusion method". This method provides a procedure for determining at what point interfering signals can be disregarded. Ignoring trivial sources of interference facilitates the implementation of new nighttime operations and minimizes the number of calculations required, an important consideration at the time of the rule's adoption when computers were not available to perform interference calculations.

While application of the 50% exclusion method has worked reasonably well through the many years that it has been used, it can result in errors in the calculation of interference. Additionally, there is a basic inconsistency in its application. For example, a new station can be placed on the air as long as its interference contribution to other stations is sufficiently low as to be ignored by the 50% exclusion method. The actual level of interference that is ignored by the rule can approach 1 dB. However, an existing station whose interfering contribution to the same protected station is sufficiently strong as to require its inclusion in the protected station's calculated RSS would not be permitted to increase interference by an equivalent 1 dB level, even though the interfering

effects are the same as that caused by the new station. This inconsistency appears to unnecessarily restrict the flexibility of existing stations in modifying to their facilities to improve service.

A possible alternative that could eliminate this inconsistency is to replace the 50% exclusion method with a rule that would permit any new or existing station to increase interference to another station, using the RSS rule, by 1 dB (or other value established through a rule making proceeding). In considering such a change it would be necessary to weigh the gains versus losses in service that would generally accrue. As a practical matter, it would still be possible to limit the number of interfering contributors used in calculating the RSS to a reasonable number, for example 10 contributors. Although such changes would add to the complexity of calculations, they are practical today through use of computers and would result in increased accuracy and consistency. Another alternative, moving in the other direction, would be to lower the value of the 50% exclusion rule to 25% exclusion.

The FCC rules require that the nighttime skywave interference calculations be based upon the propagation curves set out in Section 73.190 of the FCC Rules, using the curves depicting skywave signals for 10% of the time. A possible issue here is whether RSS calculations using 10% interfering signals in fact provide the intended level of protection. In order to assess this issue it is necessary to consider to what extent the hourly medians of multiple interfering signals are correlated and what effect this correlation has on the accuracy of interference calculations based on the RSS procedures, and thus on service range and required separation between stations.

Recommendations. Procedures for the calculations of nighttime skywave interference are of prime importance. These procedures can effect the accuracy of depicted interference and influence the flexibility of introducing new stations as well as the ability to perform modifications to existing stations. It has been many years since these issues were last considered, and the Bureau believes that their review is now timely.

D. Man-Made Interference to AM Broadcasting

Introduction. Naturally occurring atmospheric noise found in the AM broadcasting band is a pervasive source of degradation to the AM broadcasting service that generally limits the minimum usable field strength of the service during both daytime and nighttime hours. In addition to atmospheric noise, the minimum usable field strength of the AM service is further degraded by cochannel and adjacent channel interference from other AM stations and man-made noise. Man-made noise results primarily from the proliferation of electrical devices in the home as well as in the work place.

Background. In general, any type of device that emits energy in the AM band has the potential of causing interference to the AM broadcasting service. Historically, the Commission has been concerned principally with devices that utilize radio frequency (RF) energy during the course of their operations. Thus, the Commission currently only exercises jurisdiction over a limited number of the totality of devices that have the potential for creating interference to the AM service. For instance, most consumer appliances such as hair dryers, electric shavers and refrigerators are not currently regulated by the Commission.

Sources of Man-Made Noise. Some of the principal sources of man-made noise and interference to the AM broadcast service are the following:

1) Transmitters used in conjunction with licensed services. Unwanted emissions from transmitters operating outside of the AM band have the potential for causing interference within the AM band. The FCC rules generally limit such emissions to a level of 50 microwatts. See e.g., 47 CFR Parts 73, 81, 83. The Commission has not recently addressed the effects of such sources of interference upon the AM service.

2) Restricted radiation devices (RRD). These are devices regulated under Part 15 of the FCC Rules in which the generation of radio frequency (RF) energy is intentionally incorporated into their design. RF energy from such devices is either conducted along wires or is radiated. Not included in this category are transmitters in licensed services or Industrial, Scientific, Medical (ISM) equipment regulated under Part 18 of the FCC Rules. Examples of RRD's are cordless telephones, computers, television and radio receivers, video cassette recorders, and low power transmitters.

3) Incidental radiation devices (IRD). These are devices that radiate RF energy during the course of their operation although they are not intentionally designed to generate RF energy. Examples of such devices are light dimmers and electric motors. These devices are not currently subject to any specific standards by the Commission. However, if these devices cause interference to a radio service, the user is required to take corrective action. With respect to the AM Service, these devices are generally considered to be the dominant source of man-made interference. Each manufacturer of these electrical devices makes design decisions during development that affect the amount of incidental radiation emitted. This usually involves many individual, complex cost tradeoffs such as decisions to employ additional shielding, bonding, filtering or suppression components. Practice varies widely across the entire electrical manufacturing industry. The Commission has been traditionally reluctant to regulate in this area.

4) Industrial, Scientific and Medical (ISM) equipment. ISM equipment is equipment which employ RF energy for non-telecommunication purposes. Examples of such equipment are microwave ovens, ultrasonic room humidifiers, and industrial heaters. Certain bands of the RF spectrum have been exclusively allocated for the use of ISM equipment within which it may be operated with unlimited radiation, notwithstanding other governmental regulations. This equipment generally does not cause interference to AM broadcasting although interference from incidental noise conducted over the power mains has been know to occur. However, some concern has recently been expressed by AM station licensees regarding the emissions from RF excited light bulbs. Further study may be appropriate regarding these latter devices.

Recent Commission Rule Making Actions

During the past few years, the Commission has established rules and technical standards affecting the operation of a number of devices under Parts 15 and 18 of the rules. A few of the more important rule making proceedings are as follows:

Docket No. 20718 - Developed rules for ISM equipment.

Docket No. 20780 - Established rules and standards for computing devices.

Docket No. 79-244 - Established rules on the use of TV Interface devices. These devices include video games and video cassette recorders.

Docket No. 83-325 - Considering interference limits for RF lighting devices.

Conclusion. The effects upon the AM broadcast band from man-made noise could be reduced by Commission action in two basic ways: 1) the imposition of specific emission limitations on incidental radiation devices or appliances, and 2) the introduction of noise susceptibility standards for AM broadcast receivers. It is recognized that there are limited steps that can be taken to improve the performance of receivers. However, considering the increasing concerns expressed by the broadcasting industry, these two possible measures appear to deserve public comment as to the benefits that could accrue to the AM service, particularly in populous areas where the use of electrical devices predominate.

E. Trade-offs and Alternatives As noted in this Section concerning Engineering Standards, There are always trade-offs to be considered when a regulatory agency attempts to establish hard and fast standards to be used by the industries being regulated. The staff acknowledges that such

trade-offs do exist and is committed to a complete and impartial review of alternative regulatory options should rule makings be initiated in any of these areas.

Concerning Interference (Section VI-D) and Receiver Standards (Section VI-A), it is apparent that better quality receivers and less interference would enhance the usefulness of the AM band but at an additional cost to the consumer. Clearly, the marketplace is the preferable location where such considerations should be given before any attempt at federal regulation is initiated. The Bureau is aware of ongoing negotiations between the broadcast and consumer electronic industries on the issue of improved AM receivers and such negotiations should be encouraged. The issue of man-made interference is more difficult to assess because, theoretically, any electrical device is capable of causing interference to AM reception. As a result, any steps to broadly increase federal regulation of electrical devices could more generally affect both the industries that manufacture them as well as the industries and public that use them, depending upon where and how such federal regulations ultimately placed the responsibility for controlling and correcting man-made interference.

As to AM Stereo (Section VI-B), the problem of protracted litigation concerning federal specification of a single standard has already been noted, but more needs to be said.

While the general consensus among broadcasters is that the inability of the Commission to choose a single system has delayed widespread use of AM Stereo, that conclusion may not be accurate. Clearly, there is currently a low level of consumer interest in AM Stereo and that lack of listener "excitement" may be simply a reflection of consumer choice of FM over AM. Broadcasters have the ability to "make the choice" themselves. If there was a consensus today in the broadcast industry between the Kahn and Motorola systems, it is assumed that large numbers of stations would be in the process of installing the system of choice. A lack of commitment by broadcast licensees regarding AM Stereo may reveal, in the final analysis, a marketplace decision by broadcasters that they do not choose to initiate AM Stereo at an early date.

Concerning Propagation (Section VI-C) as well as Assignment Principles (Section V), it must be remembered that allowance of more interference to distant stations in order to provide more local service raises several trade-off questions which the staff acknowledges but is unable to resolve at this time. Would the nation be better served by fewer stations serving larger areas; or, is it clear that a dramatic increase in the numnber of hometown radio stations would better serve the public interest? The quality of the sound of AM Radio could be improved if stations are separated by greater distances; but should quality be a primary consideration of the federal government? On the other hand, it is also clear that a local "daytime" applicant for local nighttime service has little regard for the

loss of service his proposed operation can cause to rural listeners hundreds of miles away. If the Commission does not concern itself with that Section of the listening public, who will?

Therefore, readers of this report who plan to request rule makings related to topics contained in the Section and elsewhere should be sensitive not only to their own perceived regulatory desires but to broader issues of the public interest. Before changes to or deletions of rules will be recommended by the Bureau, some consideration ot trade-offs, alternatives, and "gains and losses" will need to be given. Commenters on this report are encouraged to share their thosughts on these matters to enable the Commission to decide which areas need to be addressed and in which order they should be given attention.

VII. ESTABLISHING AND MAINTAINING PROPER OPERATION OF STATION FACILITIES

A. Summary of Commission Actions to Relieve Regulatory Burdens on AM Broadcasters.

On April 6, 1972 the FCC gave public notice of a "Broadcast Regulation Study". It instituted the study of its rules, particularly radio to determine if its regulatory authority was "being exercised in a meaningful and pragmatic manner consistent with the public interest." Each rule, the notice stated, would "be analyzed to determine current validity and whether it should be continued, modified or deleted", and due consideration would be given to recommendations of the Office of Telecommunications Policy's study of the "de-regulation of radio broadcasting."

Appendix 3 is a chronological summary of FCC actions pertaining to AM radio which, over the years, have relaxed or removed regulatory burdens for AM licensees and thereby advanced the regulatory process to the "state of the art" of the AM radio broadcasting industry.

B. Remote Control and Automatic Transmission Systems

Background. Until the late 1940's all broadcast stations were required to have a First Class Licensed Operator on duty at the transmitter, which in many cases was located in a rural area outside the city of license. The program originations came from a studio usually located in or near the central business area of the city connected to the transmitter by program circuits leased from the telephone company. With the explosive growth of local and small market radio stations following WW II, it became a common practice to locate the studios and business offices at the transmitter building so that one person could perform both programming duties and the

required transmitter operating duties. For a low power AM station in a small community this was very satisfactory, however in large markets this type of operation was not practical.

In order to permit reduced operating costs for non-commercial educational FM stations, the Commission first authorized the use of Remote Control for transmitter operation. At first, remote control operation was restricted to Class D (10 watt) noncommercial FM stations. Remote control operations permitted a transmitter operator to be on duty at the station studio location (to perform program duties) and to observe and make any necessary corrective adjustments from that location. Wire circuits were used to connect the metering and control equipment at the studio to the transmitter. The rules for remote control operation required that any disruption in these circuits that would prevent the operator from either observing or controlling the transmitter cause the transmitter to turn off. If the operator was unable to make necessary corrective adjustments for conditions such as excessive power or directional antenna variations, the operator was required to turn the transmitter off.

Based on the successful operation of the class D low power stations, the Commission permitted higher power noncommerecial, educational FM stations to use this mode of transmitter supervision. During the 1950's remote control operation was extended to commercial FM and non-directional AM stations operating at less than 10 kw power. In order to foster UHF television station operation, the Commission permitted such stations to use remote control. However, the technical requirements for monitoring and station inspection was significantly more stringent for TV operation than for radio stations. Finally, all TV stations and AM stations were authorized to use remote control by 1976.

When many stations began using microwave links to deliver the program signal to the transmitter, they frequently used subcarriers on the microwave circuits to carry remote control signals to eliminate the need for leased telephone line circuits. FM stations could use a subcarrier on the main program service to carry the transmitter meter indications to the control point. Automatic Transmission Systems could operate similarly.

In 1976 the Commission adopted rules to permit the use of Automatic Transmission Systems (ATS). Under ATS, all necessary adjustments to maintain correct power, modulation, and operating modes are made without operator intervention. A licensed operator must be on duty at an ATS monitoring point to manually turn the transmitter on at the beginning of the broadcast period, discontinue operation whenever appropriate, and seek technical assistance upon alarm of an abnormal operating condition that does not warrant automatic termination. The operator is not responsible for any evaluation of the transmission system operation, or for making adjustments or operating mode changes. The original ATS rules contained detailed monitoring, control, and fail-safe monitoring requirements, and were

applicable only to FM stations and AM stations using non-directional antennas.

At the time ATS rules were adopted all duty operators for broadcast stations were required to hold a Third Class Operator Permit with a Broadcast Service Endorsement, obtained by passing a 60-question examination. Under ATS rules, the licensing requirement for duty operators was relaxed. A restricted permit obtained by mail without examination was deemed to be sufficient on the assumption that no technical skills by the operator to observe and adjust the transmitter were necessary.

Very few stations installed ATS. Since most stations wished to retain a duty announcer-program operator on duty, ATS provided very little cost savings. Further, stations were concerned that the fail-safe requirements for the ATS would cause frequent interruptions of their program service. Finally, the cost of the available equipment far exceeds that required for normal remote control operation. When the Commission relaxed the licensing requirements for broadcast duty operators by eliminating the examination requirements, there was even less incentive for licensees to use an ATS.

In 1985, the Commission extensively modified both the remote control and ATS rules by eliminating many of the specific details on equipment requirements and procedures. All broadcast stations, including AM directional and TV stations, may use either remote control or ATS. Essentially, the only difference between the two methods of transmitter operations is that under remote control, the operator is responsible for either adjusting the transmitting equipment to conform to operating modes given in the station license, and the maximum power and modulation limits or to terminate transmissions if required adjustments cannot be made. Under ATS operation, no operator intervention is required. Stations may incorporate features of ATS into the remote control system.

Future Considerations In order to reduce operating costs, many stations are now interested in using fully automated programming services with prerecorded material or satellite distributed programming. Commercial and station identification announcements are also prerecorded and inserted at the station into the program material using computer control without operator intervention. To further save operating costs, licensees may assign the transmitter operator functions to a person who is employed at some other location. Suggested locations include hotel switchboards and fire station alarm offices. The usual concern, however, is the extent to which such non-broadcast employees will properly respond to required transmitter adjustments. Under ATS, there should be few problems; however, remote control operation does involve place greater responsibility for operator evaluation and action. Further, the degree of licensee supervision and control of transmitter operators who are primarily responsible for other essential activities has been questioned.

Under the simplified remote control and ATS rules, equipment manufacturers are developing much more sophisticated equipment. Use of automatic telephone dial equipment to replace the permanent wire circuits are being developed. Some equipment now provides transmitter operating parameters in synthesized voice format permitting meter readings to be obtained from any telephone. The new remote control and ATS systems also use the regular switch telephone circuits rather than leased lines in order to reduce operating costs. Low cost personal computers with special software can be used for a remote control terminal in lieu of the specialized control units previously used. These terminals can be located at any place a telephone is available.

Although not specifically part of the transmitter operating duties, all stations are responsible for monitoring for an official Emergency Action Notification, commonly called an Emergency Broadcasting System (EBS) alert. This requires the use of a special receiver and equipment to transmit an alerting tone signal and message. When there is no program staff on duty at the station studios, the EBS requirements must be assumed by the transmitter duty operator, wherever located. Stations locating their control points or ATS equipment at locations other than the studio are having difficulties in meeting the EBS requirements. Any future amendments to the rules to permit fully automated and unattended broadcast station operation will require revisiting the Emergency Broadcast System operating procedures.

Many stations wish to establish fully unattended transmitter operation using automated or satellite network programming. It will become possible to consider permitting this if Congress acts favorably on a Commission recommendation to make requisite changes in Section 318 of Communications Act.

VIII. NON-TECHNICAL OPERATING REQUIREMENTS

In this Section we wish to explore considerations which look toward permitting greater licensee discretion regarding programming issues As discussed below, these considerations include eliminating the requirement that a licensee broadcast a minimum number of hours during the broadcast day and removing or modifying requirements dealing with studio locations and origination from a main studio. Finally, issues concerning foreign language programming duplication on commonly owned AM, FM and TV stations as well as expanded discretion in transmitting non-broadcast ancillary services are explored.

A. Programming

1. Program Scheduling

Section 73.1740 of the Rules sets forth minimum operating schedules for broadcast stations. A fulltime AM station must broadcast two-thirds of the hours between 6:00 AM and 6:00 PM and two-thirds of the hours between 6:00 PM and midnight, except Sunday. For daytime AM stations, the minimum operating schedule is two-thirds of the hours between 6:00 AM and 6:00 PM. This may be waived on the basis of financial hardship, taking into account the revenues and expenses of the station, including payments to principals and depreciation. It appears timely to consider dropping specific minimum operating schedules altogether, leaving this to the judgment of the license responding to market conditions and costs.

2. Local Program Origination

At present, Section 73.1125 of the Rules requires an AM station to locate its main studio either within its community of license or at its transmitter site. Section 73.1130 of the Rules requires the station to originate a majority of its non-network programming from its main studio. It has long been the Commission position that the public interest benefit of having a main studio within a community of license is to have the main studio accessible to the residents of that community. Orlando Radio and Television Broadcasting Corp, 18 FCC 2d 465 (1969); John Lamar Hill, 19 FCC 2d 849 (1969). This requirement was based on the view that a station could not serve as a medium for local expression unless it provides a reasonably accessible studio for the origination of local programming. See Report and Order in Docket No. 8747, 15 F.R. 8992, December 16, 1950. Requiring the station to originate a majority of its non-network programming from its main studio was regarded as a means of assuring a significant presence in its community of license. cf Arizona Communications Corp., 25 FCC 2d 837 (1970).

It has been more than 30 years since we have addressed, in detail, the underlying premises concerning the location of the main studio. At this time, we feel that it is appropriate to question whether the number of times local residents actually visit an AM main studio justifies a rule requiring that a main studio be located within a community of license. The reasons for our present concern is essentially two-fold. First, it appears more likely that local residents would phone rather than visit the station to register any complaints about programming or suggest programming to meet needs and issues of concern in the community. In all likelihood, management personnel at the station would arrange a meeting to pursue these matters at a time and place convenient to the local residents. It is not essential to have such a meeting or discussions at a main studio. It should also be

noted that the station itself is required to seek out the issues of public concern facing a community. Radio Deregulation, supra. Thus, it appears more likely that the station would initiate any contact with local residents, Second, our concerns pertain to the production of local public affairs programming and local news. Neither Section 73.1125 nor Section 73.1130 requires a station to use main studio facilities for the production of local programming. In the early days of radio, when portable recording or transmission equipment was unavailable, virtually all broadcasting originated in the studio. Local public affairs programming today is often "originated" by use of a taperecorder outside the confines of a local main studio. Examples of this would be an interview with a local official at his or her office or recording a public meeting. In both situations, the tape would be returned to the main studio and played. This constitutes local origination at a main studio. Form is thus exalted over substance.

For the reasons discussed above, we consider the main studio location requirement to be worthy of review. While we do think a local presence is desirable, another form of local office problems may suffice. The subject is believed to merit further consideration.

Finally, we do have to discuss the matter of program origination. Section 73.1130 of the Rules excludes network programming from the majority of programming computation. With the advent of network programming via satellite, more and more of stations' operating schedules are now network programming. The network programming has consisted of entertainment, sports, news and public affairs. The direct result of this is a reduction in the actual amount of programming required to be originated at the main studio. Our concern is not the broadcasting of network programming. This programming has gained wide acceptance by the public and, as stated earlier, can be economically advantageous to a station without sufficient revenue to provide the required minimum hours of locally originated programming. What is important is that the programming provided have interest for the listeners. We believe it desirable to take a fresh look at the program origination requirement. Our primary emphasis should be on whether the station is serving the needs of its community of license and not on where the programming originates.

3. Foreign Language Programming

The idea of foreign language programming goes back to the early days of broadcasting. For many years stations have offered blocks of programming specially directed to a non-English speaking audience. Even though this is not a new concept, there are certain aspects of this type of programming that may well have inhibited its fuller use. Most importantly, each station is acting individually in presenting this material. Although some syndicated material is available, the amount is limited and it may not be

suitable for the market in question. In such situations, these stations have no choice but to produce their own programming, often at considerable cost, and the result often is that such programming ends up not being presented at all. This is a particular problem when the language in question is one that is less frequently used. There is reason to believe however, that it is possible to increase the opportunities in this area.

More than 15 years ago the Commission was asked to authorize dual-language broadcasting in Puerto Rico. This involved motion pictures being transmitted by a television station in San Juan. The sound track the television station carried was in Spanish, but it proposed to have the original English sound track transmitted by an FM station in San Juan. In that way both the English and Spanish speaking audience would be able to enjoy the feature film.

The Commission authorized such an operation on an experimental basis and asked the station to submit a report of its experience regarding the experimental operation in connection with any request to continue this service. The report indicated the operation had met with public support, but a local TV competetor thought that it gave the station offering dual-language programming an unfair advantage over stations unable to operate on the same basis. Ultimately, the Commission amended its rules by adopting a provision (now Section 73.1210) that authorizes TV/FM dual language broadcasting in Puerto Rico. It permits such operations by FM (but not AM) stations, but it limits these operations on a participating TV or FM station to 15 hours per week, no more than three hours of which can be on any one day. The rule does not limit the type of program, but such operations are permitted only in Puerto Rico, which officially has dual-language status.

Although the possibility of extending dual language programming to the mainland had been raised, there was no widespread interest in it at the time. In addition, there was concern over the fact that "regular" programming was not being provided by the FM station while it was offering dual-language programming. Those not watching the TV station would find little interest in the material being carried by the FM station. Also, the Puerto Rican situation reflected the abundance of FM stations there. Dual-language programming was seen as an important support for the FM station's overall operation.

On the mainland, there are some striking parallels with the situation in Puerto Rico. There is an abundance of radio outlets in virtually all markets, especially those where an interest in dual-language programming would exist. Thus, the ability of a station to compete effectively could be enhanced by participation in such a scheme, and the abundance of aural media alleviates any concern about a loss of traditional program choices.

In effect, being able to offer dual-language programming could be important to AM stations in markets with significant non-English speaking audiences. This, of course, is not limited to Spanish speaking audiences but includes Chinese, Korean, Vietnamese, and other languages being used by substantial groups that have recently come to this country. It is realistic to believe that their interest in television program fare is affected by their facility with the language. In some markets, stations program partly or exclusively in languages other than English, but this reaches only part of the audience and only part of the time. Most of the time, television stations will not be offering programming in the particular language for which there is an interest.

Although the program material has not yet developed, it is easy to imagine how AM stations could be used to respond to this need. It requires only the creation of an audio tape in as many languages as are desired. Then this soundtrack could be transmitted on one or more stations at the same time the TV station is presenting the program in question. In fact, it is not necessary to prepare a tape in advance; a script could be used and could be read to coincide with the program. With this flexibility, there is no reason to limit this to feature films, but it could be extended to "soap operas" or to news or information programs. In many cases it would be reasonable to expect that there would be expanded interest in TV programs if language accessibility were assured.

Although the precise scope of such operations is hard to anticipate, it could offer a real opportunity for TV as well as AM stations to serve their communities better. It could aid AM stations by creating an important demand for their programming. Even on a part-time basis it could offer a useful contribution to the ability of AM stations to compete effectively in the marketplace. There seems to be little reason not to free entreprenurial initiative to explore the possibilities.

B. Ancillary Services

The existing FCC Rules permit a licensee of an AM broadcast station to use its AM carrier to transmit signals not audible on ordinary consumer receivers, for both broadcast and non-broadcast purposes, on condition that the use does not disrupt or degrade the station's own programs or the programs of other broadcast stations. It is, however, necessary for the appropriate authorization to be sought from the FCC if common carrier or private carrier uses are to be made of the AM carrier. The requirements are detailed in section 73.127 of the Rules. Uses forseen include utility load management, paging, data transmission, including the transmission of software or teletext like information to the general public with reception by home computers or portable radio data terminals. Facsimile communication may also be possible. Since only a handful of licensees have taken advantage

of these provisions, consideration of their essential features is in order for this report.

The current rules require that AM carrier use for these purposes must be inaudible to broadcast listeners and non-interfering to broadcast signals, must be done during the authorized hours of operation of the station, and the station must be broadcasting programming at the same time. Since these requirements may be responsible for the very limited use of AM carriers by stations, they are considered in turn below.

The requirement for inaudibility greatly reduces the rate at which the information of the non-broadcast use can be transmitted. Inaudibility would not be a concern to listeners if no programming was being simultaneously broadcast, so consideration could be given to removing both the restriction on inaudibility and the need for program transmission during AM carrier use. The licensee would then be able to use discretion in selecting times for non-broadcast use that would not significantly affect listeners, while providing a means for higher data rate AM carrier use. For example, data bursts of warehouse inventory information could be sent to retail outlets of a chain store, possibly during the time of a commercial break. The possibility of interference to other broadcast stations could be eliminated by requiring that the AM carrier transmission be spectrally similar to program material. This is now accomplished over a part of the audio spectrum by the Audicom system, an authorized technique which substitutes commercial identification information for program signals over the 4.1-4.7 kHz audio band. The substitution is not noticeable to the listener since the amplitude of the signal is controlled to simulate the audio response of the program being broadcast. Such a technique could be used over the entire audio spectrum of a broadcast station, with a reference program being simulated. The interference potential to other stations of such a system would be the same as regular broadcast programming.

The restriction to authorized hours of operation for AM carrier use seems essential, for two reasons. First, the possibility of extending the hours of a broadcast station for this use is beyond the scope of this subject. Second, the station would not receive protection from other stations during such additional hours of operation, rendering its signal unuseable anyway.

New uses for AM carriers offer a great potential for improving the profitability of AM broadcasting. The very limited number of stations using their carriers to supplement income may be due to current regulatory requirements. The Bureau believes we should reopen the decisions in Docket no. MM-83-1322 to explore the issues raised in this Report.

IX. RESTRICTIONS ON STATION OWNERSHIP

Introduction. The multiple ownership section considers the various restrictions on ownership of broadcast stations. These multiple ownership rules and policies place both local and national limitations on the ownership, operation, or control of AM broadcast stations. The local rules and policies consist of the "duopoly" rule, the cross-interest policy, the "one-to-a-market" rule, and the newspaper-cross ownership rule. There is also a maximum station holding limit for AM stations on the national level. This portion of the report will examine the background and history of these rules and policies, consider their impact on the operation of marketplace forces in AM broadcasting, and discuss possible modification of these rules given the extremely broad and diverse marketplace that has developed in aural broadcasting in the United States.

A. "Duopoly"

Background. Beginning in the early 1940's, the Commission adopted various rules aimed at preventing the common ownership or control of two or more stations in the same broadcast service which serve a common area. These rules, often referred to as the "duopoly" rules, have the two-fold purpose of promoting economic competition and maximizing diversification of program and service viewpoints. This latter goal has been considered by the Commission as a means of furthering the First Amendment of the U.S. Constitution and, at the same time, preventing a relatively small number of individuals from exerting undue sway over public opinion.

The Commission's first regulation concerning the dual operation of AM stations serving a common area arose in connection with the Commission's landmark Report on Chain Broadcasting, which was issued on May 2, 1941. Although this report was concerned primarily with network practices which adversely affected affiliated stations, the report also promulgated the Commission's first AM "duopoly" rule. Specifically, Regulation 3.106 prohibited networks from owning two AM stations which served substantially the same area. The Commision found that "the licensing of two stations in the same area to a single network organization is basically unsound and contrary to the public interest." 20 Moreover, the Commission was concerned that the practice of owning more than one AM outlet in the same market was on the rise and noted that the National Broadcasting Company (NBC) already owned and operated two AM stations in each of four major markets -- New

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20 Report on Chain Broadcasting, Commission Order No. 37, Docket No. 5060, May, 1941, at 68.

York, Washington, Chicago, and San Francisco. As a result, the rule not only barred network ownership of two AM stations in the same market but also required divestiture. NBC and the Columbia Broadcasting System (CBS) appealed the Commmission's action in issuing the chain broadcasting rules, but the U.S. Supreme Court ultimately affirmed the Commission's rules in the important case of the National Broadcasting Company v. FCC, 319 U.S. 190 (1943). [21]

Three months after issuance of the Report on Chain Broadcasting, the Commission proposed a general "duopoly" rule banning the common ownership, operation, or control of AM stations serving substantially the same area. After considering the public comments, the Commission adopted on November 23, 1943, a slightly different version of the rule. Specifically, it prohibited the common ownership of two AM stations serving substantially the same primary area but provided a "built-in" exception applicable if found to be warranted under the public interest standard. [22] In a subsequent order, the Commission required divestiture to achieve compliance

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21 The chain broadcasting rules contained prohibitions on the ownership and operation of two broadcast networks by a single entity, as well as restrictions on certain network/affiliate practices. The U.S. Supreme Court specifically held that these rules were within the delegated authority of the FCC under the Communications Act of 1934, that the rules had a rational basis, and that the rules did not violate the First Amendment of the U.S. Constitution. After the Supreme Court's decision, NBC complied with the chain broadcasting rules by selling one of its two networks (i.e., the "Blue Network") and certain stations, which ultimately became the ABC Broadcasting Network.

22 Specifically, (then) Section 3.35 of the Rules provided that "no license shall be granted for a standard broadcast station, directly or indirectly owned, operated, or controlled by any person where such station renders or will render primary service to a substantial portion of the same area as that served by another standard broadcast station, directly or indirectly owned, operated or controlled by such person, except upon a showing that public interest, convenience, and necessity will be served thereby." See Commission Order No. 84-A, 8 Fed. Reg. 16065, (November 23, 1943). By way of comparison, the Commission adopted "duopoly" rules for FM and experimental television stations in 1940 and 1941, respectively. These rules prohibited licensees from owning or operating "another FM [or TV] station which serves substantially the same area."

with the rule. 23 This rule remained in effect for approximately the next twenty years. 24

The next stage of development of the "duopoly" rule was the elimination, in 1964, of the general language that prohibited a "substantial" amount of primary service overlap and the substitution of a more clearly defined fixed standard. Specifically, the new rule prohibited overlap of the predicted or measured 1 mV/m contours of commonly owned AM stations, the predicted 1 mV/m contours of FM stations, and the predicted Grade B contours of television stations. 25 In promulgating this rule, the Commission declined to adopt a proposal to bar overlap of the 0.5 mV/m 50% skywave contours between commonly owned Class I AM stations, finding that such a rule would effectively limit ownership of Class I stations to approximately two stations at opposite ends of the country. Although the Commission felt that some further limitations as to ownership of Class I stations may be desirable, the "duopoly" rule was not an appropriate mechanism to deal with what is essentially a "concentration of control"

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23 Commission Order No. 84-B required divestiture of commonly owned AM stations in violation of Section 3.35 of the Commission's Rules but also stated that the Commission would entertain requests for extensions of time to provide for the orderly disposition of stations. See 9 F.R. 3860, April 11, 1944.

24 An attempt was made in 1948 to expand the reach of the AM "duopoly" rule in three respects. First, the Commission proposed an expanded definition of its "duopoly" rule to prohibit the common ownership or operation of two AM stations located in the same community or in different communities in the same metropolitan business district. Second, the Notice proposed to change the measure of overlap that triggered the rule from substantial primary service overlap to "substantial overlap in the service area" of the stations involved. The rationale behind this portion of the proposal appeared to be that the secondary service areas of stations, which can be quite extensive, should be taken into account in considering "duopoly" questions. Finally, the Commission proposed to apply the "duopoly" rule to officers and directors and the holders of minority stock interests in licensees. However, these proposals were not adopted. Since these proposals had been made as part of the rule making that adopted the national ownership restrictions, the Commission decided that a piecemeal approach to "duopoly" questions was inapproriate at that time. See Report and Order in Docket No. 8967, 18 FCC 2d 288, 290-1 (1953).

25 47 C.F.R. 73.3555(a) (1984).

question on the national level. Nevertheless, the Commission did adopt, over the strenuous objections of most commenters, the 1 mV/m overlap standard for commonly owned AM stations. This overlap standard was more "extensive" than the prior "duopoly" rule because it prohibited any overlap of the 1 mV/m contours of AM stations. By way of comparison, under the prior rule, there had to be a "substantial" amount of primary service overlap. Also, the new rule deleted the "built-in" waiver provision that had been part of the prior AM "duopoly" rule.

The Commission explained that the 1 mV/m standard was necessary because the prior case-by-case approach tended to obscure the importance of extensive overlap, which was one of several competing factors weighed by the Commission in determining "duopoly" rule violations. As a result, the Commission decided that a fixed standard would be a more effective means of controlling the number of overlap situations and achieving the policy goals of the multiple ownership rules. A second reason for adoption of the fixed "duopoly" rule was the Commission's view that "the results achieved through case-by-case adjudication do not, in public interest terms, justify the effort expended." 26 In this regard, the Commission felt that the ad hoc approach to "duopoly" questions was a time consuming process that was not required by statute and was not defensible in terms of the results achieved.

The Commission further provided that the "duopoly" rules would be immediately applicable to all applications for new stations, for major changes in facilities, and for assignment and transfer of control of broadcast stations, but present combinations in violation of the rule would be "grandfathered." Nevertheless, the sale of overlapping station packages to the same person or group would not be permitted. Finally, an exception was made so that the rule did not apply to Class IV AM stations requesting power increases.

Thereafter, in response to several petitions for reconsideration, the Commission adhered to its original decision establishing the fixed "duopoly" rules and making these rules applicable to existing applications, including those applications seeking major changes in facilities. The Commission also clarified that commonly-owned stations with overlapping contours "grandfathered" under the rule could improve their facilities if the change did not increase the amount of overlap. However, the area of

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26 Report and Order in Docket No. 14711, 45 FCC at 1490 (1964).

overlap may consist of terrain not included in the previous overlap as long as there is no substantial increase in population. 27

Impact on AM Broadcasting. The present AM "duopoly" rule is unnecessarily impeding the free operation of marketplace forces in AM broadcasting in several ways. First, it is extremely simplistic and ignores variations in service areas. This is because the rule is based entirely upon overlap of 1 mV/m contours and does not consider other relevant factors. For example, the rule does not consider interference limitations on the 1 mV/m signals, the extent of competition by other mass media outlets in the area of overlapping contours, the classes of the stations involved, the areas, populations, and economic conditions within the overlap, or the audience ratings of the relevant stations with overlapping contours. As a result, the rule has led to anomalous results and has prohibited the construction of new commonly owned nearby stations or the improvement of the facilities of existing stations that could have benefited the public. 28 Moreover, as pointed out by Commissioners Hyde and Lee in dissenting to the adoption of the fixed "duopoly" rule, the rule is based on an unproven assumption that common control of stations with overlapping contours results in an "untoward limitation upon competition." 29 This assumption appears especially questionable when stations are located in separate and distinct markets and the overlap occurs in areas far outside and incidental to service to the stations' communities of license. At the least, it is overbroad.

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27 Memorandum Opinion and Order in Docket No. 14711, 29 F.R. 13896; 3 R.R. 2d 1556, 1557-58 (1965). In a further Order, the Commission clarified that stations with overlapping contours that are "grandfathered" under the "duopoly" rule may pass, in the event of death or legal disability of the owner, without violating the rule, provided that no new overlap problems are created involving other stations owned by the beneficiaries. See Order, 29 F.R. 18376; 3 R.R. 2d 1637 (1964).

28 See, e.g., Caldwell Broadcasting Co., Inc., 1 FCC 2d 653 (1965) (provision of first daytime service was not sufficient ground to justify waiver of "duopoly" rule or grant of application for new AM station); Jackson County Broadcasting Service, Inc., 82 FCC 2d 279 (1980) (improvement of AM facilities denied which would have increased "grandfathered" overlap from 2% to 7%); and Quinnipiac Valley Service, Inc., 27 FCC 2d 66 (1971) (application for new AM station that would provide first daytime service dismissed because of overlap of 3.6% of 1 mV/m contour).

29 Report and Order in Docket No. 14711, 45 FCC at 1490 (1964).

Second, the fixed "duopoly" rule unfairly prejudices AM broadcasters because the 1 mV/m signal, which is the measure for prohibited overlap, is not equivalent in quality to the 1 mV/m signal of FM stations. Although this argument was made by many commenters opposing the proposed fixed rule, the Commission, nevertheless, adopted the 1 mV/m standard. In so doing, however, the Commission did recognize the differences in quality between the 1 mV/m signals of AM and FM stations. In this regard, the Commission stated that "[w]hile it is true that a 1 mV/m signal is not precisely comparable to a 1 mV/m signal in FM -- the quality of FM reception being generally better than AM at all equal signal levels -- a 1 mV/m AM signal does provide acceptable service in the less populated areas where overlap between co-owned stations is most likely to occur. In this sense, we believe that the standards we have chosen for AM and FM are roughly comparable." However, in view of this inherent difference in the quality of the 1 mV/m signals of AM stations, use of this standard for the AM "duopoly" rule results in a far more stringent rule than for FM. 30 The question of rectifying this dispartiy will be considered under "remedies," below.

Third, the AM "duopoly" rule is too extensive in its reach. Although the Commission indicated that waiver requests would be entertained, it has rarely granted them except where an overlap is de minimis or unique factors are present such as an overlap occuring over water or in sparsely populated areas. See, e.g., Tidewater Broadcasting Co., Inc, 2 FCC 2d 364 (1966). In this regard, we note that the Commission has granted waivers of the AM "duopoly" rule where the overlap has been about 1-2% of the area within the 1 mV/m contours of the stations involved. 31 However, by comparison, substantially greater amounts of overlap were permitted under the prior ad hoc approach because the significance of the overlap was often

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30 Although the normally protected service areas of AM stations extend to their 0.5 mV/m contours in the daytime, pursuant to Section 73.182(v) of the Commission's Rules, the 0.5 mV/m contour was not used to determine prohibited overlap under the "duopoly" rule because, "over the years, many stations have been assigned which cause or receive a certain degree of interference within their 0.5 mV/m contours." Report and Order in Docket No. 14711, 45 FCC at 1483 (1964). It was for this reason that the Commission did not bar overlap between the normally protected service contours of AM stations but chose instead to prohibit overlap between the 1 mV/m contours of commonly owned AM stations.

31 See, e.g., WREL, Inc., 43 R.R. 2d 546-47 (1978) (overlap of 2% of 1 mV/m contour permitted). By way of comparison, a waiver request was denied where the overlap was 3.6%. See, Quinnipiac Valley Service, Inc., 27 FCC 2d 66 (1971).

outweighed by other considerations such as the number of competing stations in the overlap area and the public interest benefits that would result from waiver of the rule such as the establishment of new or improved broadcast service. Consequently, in adopting a fixed "duopoly" standard for AM, the Commission actually created a more extensive rule under which it is very difficult to obtain a waiver.

Remedies. In view of the ways in which the "duopoly" rules obstructs the operation of natural marketplace forces in the AM service, the Commission should consider a relaxation of the AM "duopoly" rule. This could be done by notably restricting application of the existing "duopoly" rule as it applies to AM broadcasters. Under this alternative, overlapping 1 mV/m contours would not bar grant of applications for new stations, for assignments and transfers, or for changes in facilities that the marketplace would support. We believe that this approach is warranted for several reasons. First, modifying the existing "duopoly" rules could help improve the ability of AM broadcasters to compete more effectively in the radio marketplace. In addition, easing of existing "duopoly" restrictions would enable AM broadcasters to take advantage of economies of scale that are not currently possible.

A second reason for modification of the AM "duopoly" rule is that the rationale which prompted adoption of the "duopoly" rule in the first place is no longer applicable in view of changed circumstances. The original justification for adoption of the "duopoly" rule in 1943 was a concern that the operation of two AM stations in the same community or service area would diminish competition. However, current market conditions have lessened the need to be concerned about the ownership of more than one AM station in an area. In this connection, we note the tremendous growth in the number and variety of media outlets that has occurred since the "duopoly" rule was first adopted. This growth has led to a multiplicity of media outlets and increased competition. Under these circumstances, the common ownership of more than one AM station in the same area should not pose a threat to competition. On the contrary, as noted above, the operation of two AM stations serving a common area may actually enhance competition by permitting AM broadcasters to compete more effectively in the radio marketplace. Third, permitting the common ownership of two radio stations in the same market is consistent with precedent. Specifically, the Commission permits parties to own and operate AM and FM stations serving a common area. We do not believe that the ownership of two AM stations in the same market is any different in terms of its effect on competition and diversity of viewpoint from commonly owning AM and FM stations in the same market. Moreover, our experience has been that the dual operation of AM and FM stations in the same area has not presented serious problems regarding competition or diversity of viewpoint. We believe that the same result is

likely to occur with respect to the common ownership of more than one AM station in a market given current market conditions. 32

Alternatively, the Commission could consider eliminating the current fixed "duopoly" provision for the AM broadcast service and substituting general language that permits overlap questions to be considered on a case-by-case approach similar to the "duopoly" rule that existed prior to 1964. Under such a rule, various factors would be considered such as the class of stations involved, the extent of media competition, and the public interest benefits that would flow from common ownership such as first daytime or night-time service. Case by case consideration is, however, too time consuming a process to be desirable from an administrative standpoint.

Another way to relax the "duopoly" rule would be a modification of the "fixed" standards of the current rule. For example, the measure of overlap could be increased from 1 mV/m to 2 mV/m, which has the effect of narrowing the required separation between commonly owned stations and permitting a greater amount of overlap. In other words, such a rule would enable broadcasters to improve the strength of their signals so that the 1 mV/m contours may substantially overlap yet the 2 mV/m contours would not overlap. Although this is a good approach, it may not go far enough to relieve restrictions on AM broadcasters.

Finally, the Commission could relax the "duopoly" rule by prohibiting the location of a proposed transmitter within the 0.5 mV/m contour of an existing commonly owned AM station. This approach would considerably relax the rule because it is triggered by transmitter site location as opposed to overlapping contours. Although such an approach would work well in most cases, it may preclude the owners of an AM station with a large 0.5 mV/m contour from finding a suitable transmitter site for a lower powered AM station in the same area.

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32 As a related matter, the staff recognizes that the Commission recently relied upon the efficacy of the local multiple ownership rules in eliminating the regional concentration of control rule and in relaxing the national multiple ownership restrictions. See Report and Order in MM Docket No. 84-19, 101 FCC 2d 402, 412 (1984), recon. denied, 100 FCC 2d 1544, 1550-51 (1985); and Memorandum Opinion and Order in Gen. Docket No. 83-1009, 100 FCC 2d 74, 82 (1985). However, our proposal in this report to eliminate the AM "duopoly" rule does not affect other local multiple ownership rules involving the commercial FM and television broadcast services, nor ownership by as daily newspapers.

B. The "One-to-a-Market" Limitation

Background. While the "duopoly" rule prohibits the common ownership of more than one station in the same broadcast service in the same area, it does not prevent a licensee from owning more than one station in the same area if the stations are in different broadcast services. As a result, many commonly owned combinations of AM, FM, and television stations were permitted to exist. However, by 1970, the Commission became concerned with the effect of these cross-service combinations on diversity of viewpoint and economic competition in local markets. Because of this concern, the Commission adopted a rule, commonly referred to as the "one-to-a-market" rule, that prohibited the common ownership, operation, or control of more than one unlimited-time AM, FM, or television station in the same market. Specifically, as applied to the AM broadcasting service, the rule prohibited the licensee of a full-time AM station from acquiring an FM or television station if the predicted or measured 2 mV/m contour of the AM station encompassed the entire community of license of the FM or television station. In addition, the licensee of an FM or television station could not become the licensee of an AM station if the 1 mV/m contour of the FM station or the Grade A contour of the television station encompassed the entire community of license of the AM station. 33 See First Report and Order in Docket No. 18110, 22 FCC 2d 306 (1970).

The Commission made this new rule immediately applicable to all applications for new stations and for assignment or transfer of existing stations. However, the Commission did not require divestiture of existing combinations. Moreover, in view of the strong opposition of the majority of the commenters to the proposed rule, the Commission adopted several important exceptions. Specifically, the licensee of a Class IV AM station

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33 See, 47 C.F.R. 73.3555(b) (1984). The use of this encompassment standard to define a "market" was a significant relaxation of the standard that the Commission had been applying on an "interim" basis to applications filed during the pendency of this rule making. Under this interim policy, the Commission deferred action on any application if the grant of such application would result in the common ownership of two full-time stations and if there would be overlap of the specified contours of the stations -- the predicted or measured 1 mV/m contour for AM stations, the predicted 1 mV/m contour for FM stations, and the predicted Grade B contour for television stations. In deciding upon an encompassment standard, the Commission recognized that the overlap standard of the interim policy "went further than we thought necessary to achieve the desired ends of the proposed rules." First Report and Order in Docket No. 18110, 22 FCC 2d 306, 315 (1970).

in a community under 10,000 population and the licensee of a daytime-only AM station in any community were permitted to obtain an FM station in the same market. In addition, the licensee of AM and FM stations located in the same market would be allowed, on a showing that the two stations cannot be separately sold and operated, to sell both stations to a single party. Finally, in order to encourage the development of UHF television, the licensee of a full-time AM station could acquire a UHF television station in the same market provided it affirmatively demonstrated that such dual ownership would serve the public interest.

Broadcasters strongly objected to the newly adopted "one-to-a-market" rule. They contended that the rule would have adverse impact on the development of FM radio and that the rule was unnecessary in view of the Commission's nonduplication rules, which limit the permissible duplication of programming over commonly owned AM and FM stations in the same market. After reviewing the matter again, the Commission recognized that there was merit to many of the petitioners' contentions and that the question of whether to retain the rule was a "close question." The Commission decided to delete the prohibition of commonly owned AM and FM stations in the same market. See Memorandum Opinion and Order in Docket No. 18110, 28 FCC 2d 662, 670-72 (1971). In particular, the Commission believed that more data was needed on the impact of the new rule on the further development of FM radio and that such a record could be compiled in a later stage of this proceeding. Furthermore, the Commission indicated that it would be revisiting the AM-FM nonduplication rule soon and would consider whether that rule would serve as an effective alternative to promote diversity of viewpoint in local markets than prohibiting common ownership of AM and FM stations in the same market. Thereafter, the Commission declined to change its decision permitting common ownership of AM and FM stations in the same market.

Impact on AM Broadcasting/Remedies. Although the "one-to-a-market" rule places some restraints on the operation of marketplace forces in the AM service, the Bureau does not believe that the impact is as great as the "duopoly" rule. Moreover, in view of our recommendation to modify the AM portion of the "duopoly" rule, we are of the view that no further changes should be made with respect to the "one-to-a-market" rule. Nevertheless, the Commission may wish to solicit comment on the impact that deletion of the AM "duopoly" rule would have on the "one-to-a-market" rule. In addition, the Commission could request comment on whether the current rule should be relaxed to permit the common ownership of VHF and AM combinations to be considered on a case-by-case basis.

C. Newspaper Cross-Ownership

Background. In 1970, when the Commission issued its First Report and Order in Docket 18110 establishing the "one-to-a-market" rule, it also commenced a second phase of that proceeding inquiring into the possibility of barring

the common ownership of newspaper-broadcast combinations in the same market and requiring divestiture of existing existing combinations within five years. After several years of developing and considering an extensive record, the Commission adopted, over the strenuous objection of most of the commenters, a newspaper cross-ownership rule that prohibits the common ownership of a daily newspaper and either aural or television facilities in the same market. 34 Specifically, as applied to the AM service, the rule prohibits the common ownership of an AM station and a daily newspaper if the predicted or measured 2 mV/m contour of the AM station encompasses the entire community in which the newspaper is published. See, Second Report and Order in Docket No. 18110, 50 FCC 2d 1046 (1975). 35

The Commission made the rule applicable to applications for new stations and for assignment or transfer of existing stations. However, the Commission decided against the massive divestitures originally proposed. Rather, divestiture was limited to 16 "egregious" cases where the sole daily newspaper published in a community was commonly owned with either the sole broadcast station or the sole television station in that community. Although the Commission believed that its original divestiture proposal would foster diversity of viewpoint, it concluded that implementation of its proposal would disrupt the structure of the industry and cause undue individual hardship.

The Commission justified adoption of the newspaper cross-ownership rule primarily on the need to promote diversity of viewpoint, as it had done in the "one-to-a-market" phase of this proceeding. Although the Commission recognized the pioneering contributions that newspaper owners had made to the broadcast industry, the Commission believed that the broadcast media had matured to the point where newspapers were no longer needed for that purpose. Moreover, in view of the diminishing availability of broadcast frequencies at that time, the Commission concluded that granting licenses

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34 See, 47 C.F.R. 73.3555(c).

35 For purposes of the newspaper cross-ownership rule, a daily newspaper is defined as "one which is published four or more days per week, which is in the English language, and which is circulated generally in the community of publication." 47 C.F.R. 73.3555 n. 6 (1984). Moreover, the rule specifically exempts college newspapers on the ground that they are not considered to be "circulated generally."

for new stations or for transfers of existing stations to newspapers would not add to diversity of viewpoint in local markets. 36

After promulgation of the newspaper cross-ownership rule, several communications organizations appealed the decision. The U.S. Court of Appeals for the District of Columbia Circuit affirmed that portion of the Commission's decision barring new newspaper-broadcast combinations but reversed and remanded the decision insofar as it limited divestiture to only 16 egregious cases. The court believed that divestiture should be warranted in all cases unless a compelling showing was otherwise made. However, the U.S. Supreme Court ultimately reversed the Court of Appeals' decision and reinstated the Commission's Second Report and Order in its entirety, finding that the Commission acted in a reasonable manner in adopting the rule and limiting divestiture.

Impact on AM Broadcasting/Remedies. Like the "one-to-a-market" rule, the newspaper cross-ownership rule places some restraints on marketplace forces in the AM service. However, the Bureau does not believe that those restraints necessitate modification of the rule. If any parties wish to seek modification of the newspaper cross-ownership rule, they would be free to come forward with pertinent proposals.

D. The Cross-Interest Policy

Background. The cross-interest policy is a corollary of the various local multiple ownership rules described above. Like the multiple ownership rules, it is intended to promote both economic competition and diversity of viewpoints in situations that are not explicitly covered by the various multiple ownership rules. Specifically, it was developed because the Commission believed that that the same concerns underlying the multiple ownership rules should apply to situations that did not fit squarely into the prohibitions on "common ownership, operation, or control," under the rules. Originally, the policy applied to "duopoly" situations involving the ownership or control of one AM station and a minority stock interest at another AM station in the same community. See, e.g., Minnesota Broadcasting Corp., 13 FCC 672, 674 (1949). The policy quickly evolved and was applied to situations involving any degree of "cross-interest," direct or indirect, in two or more stations in the same broadcast service serving substantially

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36 In response to several petitions for reconsideration, Commission reaffirmed both the newspaper cross-ownership rule and the divestiture requirements established in the Second Report and Order in this proceeding. See, Memorandum Opinion and Order in Docket No. 18110, 53 FCC 2d 589 (1975).

the same area. For example, it was applied early in its development to "positional" interests such as being an officer or director of two stations, or their parent companies, in the same broadcast service in the same community.

Over the years, there has been some confusion as to where the reach of the multiple ownership rules ends and where the cross-interest policy begins. See, e.g., United Community Enterprises, Inc., 37 FCC 2d 953, 957-58 (Rev. Bd. 1972). However, it is now established that the "attribution" provisions of the multiple ownership rules make them applicable to an individual who is an officer, director, partner, or owner of 5% or more of the voting stock of the broadcast licensee. 37 By way of comparison, the cross-interest policy applies when an individual has "meaningful relationships," direct or indirect, at competing stations serving substantially the same area, even though these "meaningful" interests are not "cognizable" or "attributable" under the multiple ownership rules.

Although the cross-interest policy was originally intended to limit cross-interests in two broadcast stations in the same service in the same area, it was subsequently expanded to apply cross-service as an extension of the other local multiple ownership rules. In the First Report and Order in Docket No. 18110, 22 FCC 2d 306, 324-25 (1970), adopting the prohibition on radio-television ownership in the same market, the Commission decided to expand the cross-interest policy to deal with situations not covered by the newly adopted rule. Thereafter, in adopting the newspaper-broadcast cross-ownership rules, the cross-interest policy was carried over to supplement that rule. Second Report and Order in Docket No. 18110, 50 FCC 2d 1046, 1077 (1975).

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37 Under the "attribution" provisions of the multiple ownership rules, several important exceptions are provided. First, limited partners are not considered to have attributable ownership interests if they meet certain criteria indicating that they are not materially involved, directly or indirectly, in the management or operation of the media-related activites of the partnership. Second, no minority stock interest will be attributed if there is a single holder of more than 50% of the outstanding voting stock of the licensee or daily newspaper in which the minority interest is held. Third, banks, insurance companies, and investment companies, as defined in 15 U.S.C. 80a-3, will be considered to have cognizable interests only if they own 10% or more of the stock of a licensee or newspaper, because they are "passive" investors. See, Report and Order in MM Docket No.83-46, 97 FCC 2d 997 (1984), recon. granted in part, Memorandum Opinion and Order in MM Docket No. 83-46, 58 R.R. 2d 604 (1985).

The cases interpreting the cross-interest policy have concentrated on defining two major concepts. First, the Commission has attempted to determine, on an ad hoc basis, what constitutes a "meaningful relationship" at a broadcast station in order to trigger the cross-interest policy. Review of one line of cases reveals that the Commission has considered a variety of employment or consulting positions as requiring implementation of the policy. Specifically, this policy has been applied where an individual is a "key employee" at one station and has an "attributable" interest in another station in the same market. In this regard, a key employee has been defined as a person in a position of authority such as a general manager, program director, chief engineer, or a sales manager. See, e.g., Martin-Lake Broadcasting, 21 FCC 2d 180 (1970); and United Community Enterprises, Inc., 37 FCC 2d 953 (Rev. Bd. 1972). The policy may also apply where the spouse of an applicant for one broadcast station is a also a paid consultant or bookkeeper to other stations serving substantially the same area because that individual has access to confidential information at competing stations which could potentially impair competition. See, e.g., Guy S. Erway, 48 R.R. 2d 829 (Rev. Bd. 1980); and Lexington County Broadcasters, Inc. 42 FCC 2d 581 (Rev. Bd. 1973). However, the holding of lesser positions such as a combination "announcer/engineer" has been held not to necessitate application of the cross-interest policy. See, e.g., Media, Inc., 20 FCC 2d 937 (1969).

In another line of cases, the Commission has held that the cross-interest policy applies to "joint-ventures" in which two competing AM stations apply for authority to operate a television station in the same community, with each AM station having a 50% stock interest in the proposed television station. Because the successful operation of the television station would require a harmonious relationship between competing AM stations, the Commission was concerned about the potential for adverse impact on competition for advertising and programming. See, Macon Television Co., 8 R.R. 703, 704-05 (1952).

In contrast, owning "participatory preferred stock" in a new television station and controlling an AM-FM combination in the same city did not warrant denial of an application under the cross-interest policy. Although the preferred shares represented a significant financial interest in the television permittee, it was not a "meaningful" relationship under the cross-interest policy because it was unaccompanied by any managerial or voting control. Moreover, the preferred stock had rights which were expressly limited to exclude control rights over the affairs of the station. Cleveland Television Corporation, 91 FCC 2d 1148 (Rev. Bd. 1982), rev. denied, FCC 83-235 (released May 18, 1983), affirmed sub nom., Cleveland Television Corp. v. FCC, 732 F.2d 962 (D.C. Cir. 1984). Similarly, being a principal at one station and holding a standard promissory note for the sale of another station in the same community has been held to not violate the cross-interest policy. Morris, Pierce & Pierce, 88 FCC 2d 713 (Rev. Bd. 1981). The rationale of this decision is that a "debtor/creditor"

relationship, standing alone, is not a sufficient basis for inferring that there would be anticompetitive problems. In any event, if there were a default under the promissory note, the "security" could be sold and the proceeds remitted to the creditors.

The second concept involved in the cross-interest policy cases is determining when stations are serving substantially the same area. Clearly, the policy applies to stations located in the same community. Less clearly, it has been applied to stations located in adjacent communities provided that there is a substantial amount of overlap of the service contours, 42 FCC 2d 581 (Rev. Bd 1973). However, the cross-interest policy has not been applicable to situations that merely involved some overlap of the 1 mV/m contours and the stations are not considered to be in the same market. See, e.g., Farmville Broadcasting Co., 47 FCC 2d 463, 464. (1972).

Impact on AM Broadcasting/Remedies. The cross-interest policy, like the "duopoly" rule, has a potential restraining effect on the operation of free marketplace forces in the AM broadcast service. This is due to the fact that it can prevent individuals with substantial broadcast experience from having an ownership interest in one AM station and working at another broadcast station in the same market. Those broadcasters who are familiar with the particular tastes and needs of their individual local markets are probably in a good position to help AM stations compete more effectively in the radio marketplace. Accordingly, it is open to question whether the policy should continue to be applied to all cases of cross-interests in AM stations in the same market. It may be that relaxing the policy would not pose a threat to competition because of the multiplicity of media outlets that currently exists. It could be that elimination of the cross-interest policy would actually enhance competition by freeing the AM service from an artificial impediment for which there does not appear to be a sufficient need.

E. National Ownership Restrictions

Background. As a complement to the various local ownership rules discussed above, the Commission also promulgated rules prohibiting the grant of a license to any individual or entity if the acquisition of the license would result in an undue concentration of control at the national level. In order to implement this policy, the Commission has, over the years, established various limits on the number of AM, FM or television stations that could be owned by any one party. Moreover, although AM broadcasting was initially the dominant broadcast service from the time of its inception in 1920, numerical ownership restrictions were adopted for this service well after such restrictions were adopted for FM and television. Specifically, the Commission provided in 1941 that, for purposes of measuring what constituted an undue concentration of control, no more than a maximum of three experimental television stations and 6 FM stations could be commonly

controlled. 38 However, no limit for AM stations was formally adopted until 1953.

Prior to the adoption of a limit on the number of AM stations that could be commonly owned, the Commission applied a case-by-case approach. An important case under this approach occurred in 1946 when CBS sought to purchase station KQW, an AM facility licensed to San Jose, California. At that time, CBS was the licensee of seven AM stations. The Commission denied CBS' request for an eighth station, stating that its policy was to lessen concentration of control of broadcast facilities in any single person or organization. Furthermore, the Commission indicated that the character of stations, as well as the number of outlets held, was an important consideration in determining the concentration of media control. The Commission's clear intent was to evaluate AM multiple ownership situations on the basis of the extent of coverage and other qualitative factors rather than by numerical limitation alone.

Subsequently, in 1953, the Commission adopted a Report and Order, 18 FCC 2d 288 (1953), establishing a maximum limit of 5 television stations, 7 FM stations, and 7 AM stations. The Report and Order included a statement of purpose indicating that the Commission's intention was to promote diversification of program and service viewpoints, as well as to prevent undue concentration of economic power. The Commission stated a belief that a large group of diversified licensees would serve the public interest better than a small and limited group. The AM limit was reached on the basis of the existing ownership patterns. 39

The Commission's right to establish numerical ceilings on broadcast ownership was challenged in 1954 by Storer Broadcasting Company. However, the Supreme Court ultimately upheld the Commission's numerical limits on station ownership as consistent with the Communications Act and an appropriate "particularization" of its policy against undue concentration.

During the period from 1953 to 1983, no changes in the seven station rule were made by the Commission. The Commission on July 26, 1984 adopted a Report and Order, 100 FCC 2d 17 (1984), in which it concluded that all numerical national ownership limits should be eliminated. Nonetheless, the

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38 See, H.H. Howard, Multiple Broadcast Ownership: Regulatory History, 27 Fed. Comm. B.J. 1, 8 (1974).

39 Upon reconsideration, the television limit was raised to seven, providing that no more than five were VHF stations. The rationale for this change was to help encourage the development of UHF television by the entry of the networks and other group owners.

Commission, on an interim basis, increased the national limit to 12 AM stations during a six year transition period.

The Commission pointed to improved technology and the substantial increase in broadcast stations since the seven-station rule was adopted as indicating that undue economic concentration has been eliminated as a serious threat. The Commission buttressed its argument by relying upon the emergence not only of FM radio and UHF television but also the abundant and growing non-broadcast technologies, such as cable television, low power television, multipoint distribution systems, satellite master antenna television, and subscription television.

With respect to diversity of viewpoint, the Commission determined that group owners, far from imposing a monolithic editorial viewpoint on their stations, instead permit and encourage independent expression by the stations in response to local community concerns and conditions. The Commission concluded that because group owners broadcast are more issued-oriented programming than non-group owned stations, group ownership augments popular discussion of important public issues. The Commission also determined that a national ownership limitation was not relevant in promoting diversity on a local level. In a Memorandum Opinion and Order adopted on December 19, 1984, 100 FCC 2d 74 (1984), the Commission decided, on reconsideration, to retain a national ownership limit of 12 AM, 12 FM, and 12 television stations. These limits could be extended to 14 stations per service if no more than 12 stations are controlled by persons other than members of minority groups.

Impact on AM Broadcasting/Remedies. In light of the fact that the Commission has relaxed its national multiple ownership rule to provide an opportunity for entrepreneurial initiative in this service, we recommend that the Commission now consider the related issues raised by the proposed future use of synchronous transmitters, AM or FM translators, and satellite stations. These new technological innovations promise to improve or extend the service range of an AM station by simultaneously carrying the programs broadcast on the main station. The question is whether or not each such extension or improvement should be counted as a station within the purview of the national station limitation.

In this regard, the Bureau suggests that these synchronous transmitters and satellite stations that simultaneously broadcast the same programs as the main stations not be counted as stations for purposes of applying the 12-12-12 station rule. We believe that these new stations could serve as useful adjuncts to traditional AM stations and would enable AM broadcasters to compete more effectively in the radio marketplace. Moreover, this approach is consistent with the Commisson's recent action of not counting terrestrial satellite television stations for purposes of the numerical and audience reach limits of the 12-12-12 station rule.

X. NEW CONCEPTS

A. Negotiated Acceptance of Interference

The circumstances affecting FCC's responsibilities regarding interference protection have changed over the years. Initially, the Commission focused on the protection of the service areas of AM stations against undue interference from other stations. Proposals for new stations or for changes in existing stations had to establish that the proposal would not cause or receive excessive interference as defined by the Commission's rules. In effect, by virtue of the protection they provided, these interference standards defined the station's coverage area. Some waivers were granted, but for the most part, these rules were applied on an across-the-board basis. This approach was well suited to the early days of broadcasting when large numbers of stations were to be established throughout the country. It was important to ensure that the station would have an established service area that would be protected from interference. Now the situation has changed drastically. Virtually all of the United States receives one or more radio services. Equally important, the opportunities for establishing new stations is limited, particularly in AM. Even in the areas where such opportunities might exist, the current interference standards place severe additional restrictions. In view of the vast changes which have taken place in AM radio, it is no longer clear that the current approach should be continued. Instead, it may be appropriate to consider whether it would be desirable to give to AM station licensees the opportunity, through mutual agreement, to adjust the amount of interference to be permitted.

The question raised here is different from the interference issues addressed in Section V. That part of the report addressed the question of whether the generally applicable rules that determine the amount of interference that stations may receive or cause should be modified. However changed, such rules would, like the ones they replace, continue to apply nationally, without taking into account their effect in varying individual local circumstances. The question considered in this section is whether--notwithstanding generally applicable requirements to afford protection to other stations--AM licensees should be permitted to enter into and carry out agreements, including agreements for monetary or other valuable consideraton, to alter the pattern of service and protection that derives from the automatic application of interference limitations and protection requirements.

It is important to note the conditions that gave rise to the established system of FCC mandated, nationally applicable interference protection standards. The impetus for creating the predecessor, the Federal Radio Commission, in 1927 was the rampant, mutually destructive,

interference among AM stations that the previous licensing authority (Secretary of Commerce) lacked authority to control. The FRC was empowered and directed to remedy this problem. When, in 1934, the successor FCC inherited FRC's responsibility for controlling interference, much the larger part of AM development, in terms of the proliferation of AM stations and program services, still lay ahead. In those circumstances, FCC's task as regards interference control at that stage was primarily to continue to perform the task begun by FRC: to establish and maintain an industry-wide framework of interference protection. This framework was designed to foster AM's continuing development by providing a generally applicable scheme of interference limitation and control that would:

--enable station applicants and licensees to plan investment commitments with a reasonably stable and foreseeable basis for anticipating the range of interference-free service they could continue to render as additional AM stations came on the air; and

--thereby make possible and foster the provision of interference-free broadcast service to the public.

Today, the AM band between 535 and 1605 kHz is densely occupied by nearly five thousand assigned stations. Whereas the Commission's earlier task was to provide the framework for the orderly development of a national service from its early beginnings, (only 1 in 15 of today's AM stations were on the air when the FCC came into existence) today's very different need is to provide for the optimal use of residual spectrum space that remains in this band. This calls upon the FCC to facilitate the fitting and tailoring of new and improved AM services into the relatively limited and scattered portions of the band that remain unpreempted by existing stations.

It has been suggested that one way to accomplish this would be to open up access to some unused parts of the present AM band that at present are blocked by the present inflexible interference protection requirements. Under the present system, some possible improvements or additions to AM service are precluded because they would result in prohibited interference to areas defined by calculated service contours of protected stations, This is the case even though they may have relatively little relevance to the actualities of service needs. Protection is thus afforded to some areas which the protected station does not in any case reach, or which have little population, or where the protected station has few listeners. Interference protection involves limitations upon broadcast radiations that, if less restricted, would enable the "interfering" stations to provide improved or extended service. Thus, the rigid application of generally applicable rules of interference protection operates in some situations to wastefully block service.

At the same time, it would overtax administrative resources to achieve better "tailoring" through ad hoc adjudications by the regulatory agency. This was amply demonstrated during the period preceding the shift to the present "go-no-go" basis for interference control, under which the overlap of signals of prescribed field strengths is rigidly proscribed. This system provided sorely needed relief from the system it replaced, which involved minute scrutiny--often in expensive, lengthy hearings--of claims that proposed new or changed station facilities would render service that would more than offset service losses from resulting interference to existing stations. Long and unfavorable experience with laborious case-by-case adjudications by this agency, that were heavily but unavoidably burdened and delayed by the complicated paraphernalia of due process, demonstrated that they would not be a desirable way to reintroduce flexibility into the station assignment process.

As already noted, it has been proposed that a better way to facilitate the "tailoring" of interference protection to accommodate particular, individual situations, and thus improve the efficiency of the AM spectrum use at this "mature" stage of AM station assignments would be to permit interested statons to negotiate, for the causing and acceptance of interference otherise not permitted under generally applicable rules. For example, a station licensee desiring to improve or extend his station's service, may be blocked from doing so because of resultant interference to an area technically within another station's protected service contour which that other station does not in fact serve, or which is unpopulated. It may now be timely to consider a procedure that would allow stations to conclude mutual agreements regarding the causing and receiving of interference.

It has been pointed out that a licensee's interest in increasing the range or quality of his signal, and another's disinterest in insisting upon generally prescribed protection for some parts of his normally protected service area, both derive ultimately from the presence or absence of actual or potential audience interest. It is this "public interest" factor that primarily generates entrepreneurial incentive to seek increased signal radiation, or to renounce unneeded signal protection. Thus, it has been suggested, it would be in the public interest to empower licensees to exercise the option to preserve or forego interference protection to which the rules generally entitle them.

This approach to improved "tailoring" of AM spectrum usage would appear to involve substantially less admininstrative burden than agency adjudication of the justification for exceptions to or waivers of generally applicable interference protection requirements. The Commission may therefore wish to provide interested parties an opportunity to comment in an inquiry proceeding on the subject, and, in particular, to invite the parties to address the question of how, if such a proposal were adopted, the Commission could best assure its continued discharge of its statutory responsibilities relating to the fair, efficient and equitable distribution

of broadcast service. Comment could also be sought on the desirability of pursuing the alternative course of seeking statutory revision that would more clearly establish the Commission's power to transfer to station licensees and applicants the discretion to depart at will from generally interference protection requirements.

B. Full-Time Operation By Daytime Stations

Traditionally, AM stations have been divided into two major categories. The first consists of "full-time" stations, that is stations licensed to operate on an unlimited time basis. Although these stations operate during both daytime and nighttime hours, they often employ a different mode of operation for each period. The daytime operation may employ quite substantial facilities, limited only by co-channel and adjacent channel groundwave considerations. Nighttime, the station faces additional restrictions because the potential for skywave interference must also be taken into account. As a result, nighttime radiation in pertinent directions often has to be significantly reduced in order to avoid such interference, either through a power reduction or through the use of a directional antenna, or both. The other category consists of "daytime-only" stations, that is, stations which are licensed to operate only during daytime hours.

The licensing of AM stations on a daytime-only basis derives from the special signal propagation characteristics of the AM band, most notably that they produce different effects during daytime and nighttime hours. During all periods of the day, AM broadcast stations transmit signals that travel in two basic directions. Those signals which travel parallel to the surface of the Earth are referred to as "groundwave". Those which travel upward, away from the station are referred to as "skywave". 40 Although groundwave signal values vary depending on frequency and ground conductivity, they do not change from day to night. As set forth earlier, sywave signals behave quite differently. During the day, most of the skywave signals are not reflected back to the Earth and have no significant effect on the Earth. At night, however, the ionsphere acts like a mirror, reflecting these signals back to earth, hundreds or even thousands of miles away, where they have the potential for causing serious interference to the signals of other stations. By way of contrast, at these great distances, groundwave signal values would be too low to cause interference problems.

Many stations that are able to operate during the day because their groundwave signals do not cause objectionable interference to other stations would cause significant interference if they were operated with the same

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40 See discussion of skywave transmission in Section VI-B-2 of this Report.

facilities at night. In fact, this could have led to the creation of vast areas of mutually interfering signals dotted with small islands of service. Clearly, such an unacceptable allocations approach could not have been followed. Because even the most efficient nighttime arrangement would have left an enormous amount of unused space during daytime hours, the Commission concluded that it was necessary to provide the opportunity to opporate on a daytime-only basis even if the station could not be accommodated at night.

Recognizing the fact that in many cases daytime operation was the only opportunity for bringing desired AM service, many parties took advantage of the opportunity to obtain daytime-only authorizations. In fact, the demand by these parties was so great that there are now more than 2,400 stations which are licensed for operation only during daytime hours. This is approximately half of the total U.S. AM stations. Although about equal in number, they are not in a position to compete equally.

Daytime-only stations face two sets of difficulties because of the limitations on their hours of operation. Not only are they precluded from operating during certain periods, they do not even have a consistent operating schedule throughout year. They are able to operate for a longer period during the summer months when the days are longer, but during the winter when there are fewer daylight hours, these stations must curtail their hours of operation. These seasonal variations offset one another in terms of total broadcast hours, but not all hours are of equal value to the station or its listeners.

The advantage gained by the station by being able to stay on the air longer during the summer months is a relatively small one, as these are not peak listening hours. In addition, the numbers of additional hours is not normally sufficient for the station to present longer broadcast segments, such as a night baseball games. This is not to suggest that this additional period of operation is not of value to the station. Rather, the point is that it falls far short of providing an adequate balance for the difficulties faced by these stations as a result of their foreshortened winter schedule. This begins to be a problem in late October, when daylight savings time ends. It is at this point that daytime-only stations begin to lose part of the critical" drive time" period during which so much radio listening and advertising is concentrated.

This situation worsens in November and is generally at its very worst during December when local sunset can occur at or near 4:00 p.m. This produces a serious problem for the station in being able to compete for a reasonable share of available revenues during the very period when the largest amount of radio advertising is being placed. Likewise, the effect on listeners can be serious, especially where the daytime-only station provides the only local service in the community. In some ways, the pre-sunrise limitation is even more serious, but as detailed below, daytime-only stations have long had at least partial relief from the restriction on

pre-sunrise operation. More recently, post-sunset relief was provided. Although these were important actions, alone they are insufficient to remove the competetive disabilities facing daytime-only stations.

Ideally, these stations would obtain the maximum benefit by obtaining nighttime operation, but there are serious engineering questions to be addressed before nighttime operation for these stations can become a reality. Although it would be possible to ignore the effects of skywave-caused interference, such a step would lead to a highly inefficient use of the spectrum and has never been seriously contemplated for general use.

In the earliest days, pre-sunrise operation by daytime-only stations was permitted unless a valid interference complaint was received. If interference was documented, the station had to terminate its pre-sunrise operation. As the number of stations increased and the frequency of interference complaints increased along with it, this system was found to be unsatisfactory. Questions were raised about putting the burden of documenting interference on the station receiving the interference. The station causing the interference also had a problem, as it faced the increasing risk that its operation could be terminated at any time based on an interference complaint. Thus, in the 1960's the Commission undertook a major rule making proceeding to develop new standards for pre-sunrise operation. These standards were designed to ensure effective pre-sunrise operation wherever possible consistent with appropriate protection to the service of full-time stations on the channel.

Under these rules, Class II daytime-only stations were permitted to conduct such operation starting at 6:00 a.m. local time with a power of up to 500 watts, provided interference was not caused thereby. In cases in which interference would result, the power or the period of pre-sunrise operation was limited.

Class III daytime-only stations were a different matter. They were permitted to begin operation at 6:00 a.m. using a power of 500 watts even though this could lead to substantial interference to some stations. This limited acceptance of interference was tolerated because there is a crucial need during early morning hours to make announcements regarding weather conditions and school closings. Having been off the air throughout the night, the station was unable to offer needed information to its listeners. In the case of a one-station locality, this could produce a serious problem. Since the pre-sunrise operation was keyed to 6:00 a.m., it only came into play when days were shorter, and it offered the most benefit during the very winter months when the service was most needed. In other months, the interference was either brief or non-existent. The Commission had been urged to make similar provision for post-sunset operation, but for a long time international impediments prevented it from taking such action.

In an earlier era, when AM was the dominant medium, even daytime-only stations functioned as effective competitors in the marketplace. However, as the position of AM declined and as FM services multiplied, the negative competitive implications of daytime operation became more severe. With this in mind, the Commission renewed its efforts to bring post-sunset relief.

These efforts bore fruit with the new AM Agreement with Canada which in 1984, for the first time, permitted post-sunset as well as expanded pre-sunrise operation. Although there was an existing agreement with Mexico permitting post-sunset operation, implementation of this possibility had to await Canadian agreement. Now that it had been obtained, efforts have been undertaken to obtain Mexican agreement to increase the scope of the post-sunset operation. Simultaneously, the Commission itself undertook a major review of the subject. This led to the authorization of post-sunset operation for the great majority of daytime-only stations. Under the rules adopted by the Commission, daytime-only stations could operate for up to two hours after local sunset with a power of 500 watts, reduced as necessary to avoid interference. Later, the rules were modified to allow Class III daytime-only stations to use additional power before 6:00 p.m. even though modest amounts of interference might result. Finally, adjustments also were made in the operations of Class II stations, but the non-interference standard continued in effect.

While the new rule has brought substantial benefits to both stations and listeners, they fall short of removing the distinction between daytime-only and full-time stations. Nor does such operation necessarily represent the furthest step the Commission could take consistent with its interference protection standards. Just as the Commission had used its computer capacity to calculate the maximum post-sunset power that could be used without causing interference, it could apply that same computer process to determine the power which could be used under full nighttime conditions. In most cases, this would involve the use of a power below the 250 watt minimum now specified by the Commission's rules.

In another action made possible by new AM agreements which had been or were being negotiated, the Commission took just such a step to permit new nighttime uses of what had been foreign Class I-A Clear Channels. 41

After studying these 14 channels, the Commission concluded that the existing pattern of assignments was such that new full-time stations could

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41 The Class I-A Clear Channels on which priority use was formerly awarded to other countries are: 540, 690, 740, 860, 990, 1010, and 1580 kHz (Canada); 540, 730, 800, 900, 1050, 1220, and 1570 kHz (Mexico); and 1540 (Bahama Islands). (Both Canada and Mexico had Class I-A priority use of 540 kHz.)

be established only in limited areas of the country. Elsewhere, new stations could not be established consistent with interference protection criteria. Thus, the Commission was faced with deciding whether to limit its use of these frequencies to the small number of additional operations which could be permitted or whether it should use the opportunity to permit the daytime-only stations to operate at night, albeit with reduced power.

The Commission studies established that it was feasible for these stations to operate at night. During the first stage of such operation, the Commission authorized a maximum power of 500 watts, reduced as necessary to protect existing full-time foreign and domestic stations on the channel. However, these stations were not required to protect one another. These stations were encouraged to increase power up to the 500 watt maximum (as much as permitted by the interference standards) through the use of directional antennas. In a subsequent stage, permissible power for these stations would increase to 1 kW, and protection would be afforded to all stations, including the former daytime-only stations, operating at night with 250 watts or more.

Although reconsideration had been sought regarding other aspects of the Commission's decision in this regard, no question has been raised regarding the authorization of nighttime operation for the previously daytime-only stations.

The possibility exists of taking similar action on other frequencies. Whether such action is appropriate involves an analysis of the situation involved on these frequencies and a determination regarding the continuation of existing interference standards. To further explore this topic, it is necessary to examine Class II-D and Class III daytime stations separately.

In the case of Class II-D stations, it would be possible to compute the nighttime power that could be used without causing interference to full-time foreign or domestic stations. Although the protection to foreign stations is mandated by international agreement, the same does not hold true for U.S. stations. Thus, the current standards could be changed.

Class II stations operate on clear channels and are required to provide substantial groundwave and skywave protection. Unless the protection standards were changed, it is unlikely that nighttime operations could be conducted with more than minimal power. Nonetheless, the Commission could proceed in a fashion similar to its decisions concerning post-sunset operations and use of foreign clear channels and authorize any operation of 1 watt or more. The affected stations could then decide whether the level of power authorized was sufficient to warrant actually using it.

Alternatively, as discussed at length in other sections of this Report, changes could be made to the protection standards. Skywave protection to the 0.5 mV/m 50% contour for Class I stations could be changed, or if

warranted, it could be removed entirely. Then, interference would be calculated solely on the basis of groundwave protection. Here, too, adjustments could be made to better facilitate an efficient use of this spectrum. Such adjustments could be expected to make nighttime operation possible for many more stations and for other stations to use more power than now would be possible. The exact dimensions of this situation cannot be known without further study, but such study does appear to have merit.

The Class III situation is different, as there is no skywave service to protect. As a result, most of these stations could be authorized to operate at night, many of them with reasonable levels of power. However, even these power levels often fall well below the current power minimum of 250 watts. Thus, before authorizing such operation the Commission would have to consider whether to abandon the concept of minimum power for existing stations. The situation on the foreign clears was unambiguous: either use the spectrum to permit nighttime operation by daytime-only stations or let it lie fallow. Whether the same situation or a similar one holds true on the regional channels on which Class III stations operate is not now known. Nonetheless, the idea is an appealing one and should be examined in depth.

If full-time operation by daytime-only stations is to be authorized, two points need to be addressed: What sort of protection to afford sub-standard nighttime operations and whether new daytime-only stations should be authorized. As noted earlier, when authorizing nighttime operation on the foreign clear channels, the Commission permitted such operation with as little as 1 watt power, but no protection was to be offered to stations using a power below 250 watts. The goal of this approach was to facilitate nighttime operation without at the same time causing inefficient spectrum usage by protecting such low power operations. Also, this system provided a strong incentive for stations to increase power and thereby obtain protection, a step that promotes spectrum efficiency. Initially, it appears that a similar approach would be appropriate on other channels as well. However, the specific methodology would have to await the required studies of station distribution and the opportunities presented for new nighttime operations.

Having said all this regarding the plight of daytime-only stations, it becomes obvious that a question arises regarding the authorization of additional daytime-only stations. In the case of the foreign clear channels, the Commission already has reached the conclusion that no more daytime-only stations should be authorized. Although there are differences, many of the same arguments apply to the other channels as well. There are several reasons to question the long-term viability of daytime-only stations in today's market place, but there is an even more important reason for not authorizing more of them. Doing so compounds the problem of offering relief to existing stations. As more are added, the relief available diminishes. In fact, it becomes virtually impossible to assess the implications of any contemplated solution if its parameters are not khown. For these and other

reasons, there seems to be little reason to foster the creation of new daytime-only stations, especially when doing so is likely to compound existing difficulties for all stations.

C. Use of Multiple Transmitters

Conventional methods for enhancing and extending the service area of an AM broadcast station typically call for increasing the transmitter power, designing a directional antenna system to improve the service in the desired direction, relocating the station, or any combination of these. However, the crowded conditions that now exist in the AM band limit the opportunities for such changes without creating objectionable interference. Moreover, these conventional methods do not always provide stations with sufficient flexibility to economically improve their service in all areas most needing it. The use of additional transmitters that simultaneously rebroadcast the programs of a primary originating station is a potentially effective and economical method that could be applied in some circumstances to improve and extend a station's service area.

There are numerous examples where such applications could be made. Additional transmitters, rebroadcasting the programs of an originating station, could be located in or near the areas where service improvements are desired. Such service enhancements could be along major highways in order to permit a station to serve the travelling public over long distances. Additional transmitters also could be located in nearby communities lacking sufficient population to support their own independent stations. Other uses could include use of lower power transmitters to improve service within a station's predicted service area at locations suffering from inferior service because of anomalous propagation conditions.

The following sections discuss several uses of multiple transmitters that appear to be potentially applicable.

1. Synchronous Operations

One potential means for extending and enhancing AM service is through the use of "synchronized groups" of transmitters. By this technique, service is tailored through use of synchronized transmitters operating from several different sites, using a common broadcast channel and programming with synchronized signals. The signals of all transmitters are synchronized so as to significantly reduce mutual interference within the group. This enables synchronized transmitters to be located closer together than would be the case if the transmitters were not synchronized. This is a technique which could be used to extend service to desired locations where co-channel or adjacent channel protection requirements would preclude a power increase or change in antenna design that otherwise would be needed to accomplish the same improvement.

Synchronized transmitters could be utilized to tailor the service area of a station to fit the population distribution in a geographical area or to respond to the results of audience research. By using this technique, it would be possible to serve one or more adjacent or non-adjacent geographical areas without causing objectionable interference to other stations not in the synchronized group. Such uses could provide additional opportunities for AM stations to improve their service to the public that otherwise would not be possible.

The technology relating to synchronized transmitters was discussed early in the United States in a paper written by Charles B. Aiken of Bell Telephone Laboratories in 1933. In 1937, the first experimental authorization to explore this technology was granted to radio station WLLH, Lawrence, Massachussets. A wealth of data resulted from these experimental operations, and WLLH has continued its synchronous operations to this day. Similar experiments have been conducted in Boston (WBZ), Charlotte, N.C. (WBT), Cincinnati, Ohio (WSAI), and in Washington, DC (WINX and WWDC). Synchronized groups of transmitters have been used in the AM band on a large scale in Europe for many years, and more recently in Japan. These international operations have been based upon the same theoretical bases as the earlier United States operations. The results of the international experience has been largely consistent with that obtained in the United States. These operations have further demonstrated the feasibility of synchronous operations and have confirmed earlier predictions of the performance to be expected from different system designs.

The principal disadvantage of transmitter synchronization is the creation of zones of mutual-interference within the service areas of the synchronized transmitters at locations where the signal levels from two or more synchronized transmitters are roughly equal. At night, these zones of interference are less significant, since interference received from transmitters outside the synchronized group usually has a greater effect upon service. The design of the synchronized group determines the extent of these areas of interference and the interference characteristics within them. The interference can be controlled through transmitter spacing or by geographically locating the synchronized transmitters in such a way as to cause the areas of mutual interference to occur at locations where there are few listeners. The effects of mutual interference can be further minimized through the equalization of modulation delay at points of desired service within the zone of mutual interference and through the use of phase rather than frequency synchronization.

Synchronization Techniques. Synchronization can be achieved through either frequency synchronization or phase synchronization. The former is accomplished by closely aligning the carrier frequencies (to 0.1 Hz or better), and the latter is accomplished by phase locking the transmitters together through the use of a radio circuit (the availability of radio relay channels in the area could be a factor in the choice of synchronization

methods). Either form of synchronization employs a common programming source. The experimental operations previously referred to tested both forms of synchronization. The experiments for phase synchronization employed transmitters called "boosters" or "synchronous amplifiers." Depending on the proximity of the transmitters within the group, synchronization may be required only during nightime hours, which would permit different programming to be broadcast during daytime hours if desired.

When phase synchronization is employed, there is no relative carrier frequency variation between the different transmitters, and the pattern of mutual-interference remains fixed in time and place. Such interference would not be very noticable on automobile receivers since automobiles in motion would normally move quickly through any areas of interference. For AM radios with ferrite rod antennas (virtually all table models and portable radios), the effect of the stable pattern of interference can be greatly reduced by orienting the radio to improve the signal strength received from one of the transmitters.

When there is a difference in the carrier frequency of the transmitters in the group, this results in a variation in the total received signal at any point in the common service area over time. If the frequency difference is small enough (on the order of 0.1 Hz), the variation can be compensated for by the automatic gain control (AGC) circuitry of the receiver, and the listener will not notice significant distortion, except where the signals from the different transmitters are nearly the same. At these latter points, the variation may exceed the dynamic range of the AGC and distortion effects similar to slow fading will be experienced.

Discussion. The current FCC rules make no specific provision for synchronous, operations and there is a need to consider both technical and non-technical issues concerning such operations before they could be authorized on a routine basis. The first of these regards the technical standards applicable between synchronized transmitters within the same synchronized group for determining their areas of mutual interference and service areas. Section 73.182(y) of the rules makes reference to a frequency tolerance as well as a co-channel protection ratio for use in estimating coverage and areas of mutual interference. However, these standards are considered to be reflective of views that were drawn many years ago by the Commission when it initially was addressing this issue. It would be appropriate, therefore, to perform studies relating to the merits of alternative standards that could be applied in the future to synchronous operations if they are permitted.

Other important technical considerations concern standards for determining permissible interference to and from synchronized operations and stations not in the synchronized group. For example, one issue is whether inferference contributions from stations in a synchronized group should be

treated individually or whether the cumulative interference effects of the entire synchronous group should be considered when calculating skywave interference to other stations on the channel. Such a decision can affect the power levels permitted for the stations in the synchronous group. Moreover, standards are needed regarding technical restrictions such as transmitter power, separations between transmitter sites of transmitters within the synchronized group, etc.

Conclusions. The use of synchronized groups of transmitters appears to offer promise as a means for AM stations to extend and enhance their broadcast service. Synchronizaton can provide the technical means to implement new approaches to AM broadcasting which would no longer be tied to the service that a single transmitter could provide. In general, however, the Bureau feels that there is a need to undertake a further exploration of the issues raised in this report in a future Notice of Proposed Rule making. It also is important to develop further data. In order to accomplish this, it is recommended that further experimental operations by interested AM broadcasters should be encouraged.

2. AM Satellite Stations

Another potential method for tailoring the service area of an AM station is through the use of "AM satellite" stations. For convenience in this discussion, an AM satellite station is defined as a commonly owned AM station, not on the same channel, which simultaneously rebroadcasts the programming of a primary originating station. Such stations could be authorized to employ power levels applicable to full service stations. The concept is similar to that which has been employed in the past for TV satellite stations.

Discussion. AM satellite stations could be employed for uses similar to those described above under "synchronous operations" for the purpose of extending service from an originating station into areas lacking it. An AM satellite station could be operated in communities adjacent to the originating station in order to extend its service range. Similarly, such stations could be operated along highways in order to provide service from the same programming source over long distances to the motoring public. A common studio facility and program staff could be maintained, and the functions of management, advertizing sales, system engineering and procurement could be centralized. These economies could result in improved overall service to the public through improved programming at the originating station.

Unlike the case for synchronous operations which operate on the same channel, an AM satellite station would be designed to operate on an AM channel adjacent to that of the origininating station. Because of this, several of the technical issues pertaining to synchronous operations would not be applicable for satellite stations. However, it would be expected

that the various co-channel and adjacent channel protection standards generally applicable to the design of AM stations would apply to AM satellite stations as well. Application of these standards would be expected to seriously limit overall opportunities for establishing AM satellite stations. One possible exception might be to permit adjacent channel overlap between the primary station and its satellite stations. In such a case, the acceptability of interference resulting from the overlap could be left to the descretion of the licensee.

3. AM/FM Translators

The use of multiple transmitters to enhance and extend AM broadcast service is not necessarily limited to the use of synchronous and satellite transmitters. Another option to consider is the use of AM or FM translators. Currently, there are no provisions in the FCC rules permitting FM translator stations to rebroadcast the signals of AM stations. On the other hand, the current rules permit FM boosters within the predicted service contour of an FM station in order to enhance the FM station's signal. Similarly, the rules permit FM translator stations beyond the predicted service contour of an FM station in order to extend the FM station's signal to areas and communities remote from the FM station. 42

FM translators may only rebroadcast the signal of a primary FM station or another FM translator station by altering the frequency and amplitude of the received channel. The rebroadcast signal is obtained by direct off-air reception. Translators may originate brief messages only to solicit financial support or to transmit emergency information. FM translators are effective because they can be placed at high locations where direct line-of-sight reception of the originating FM station is possible. Also the translator may use an antenna of higher gain (efficiency) than is normally used by consumers. The retransmissions can then be redirected through use of a directional antenna toward one or more population centers which are shielded from direct reception of the FM station by intervening terrain.

Discussion. The Commission has received numerous informal and formal requests from AM station licensees for authority to rebroadcast their signals through use of AM or FM translators in a manner similar to the existing FM translator service. These requests primarily have come from AM broadcasters in the Rocky Mountain area where there are numerous isolated

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42 A booster station is one that operates on the same channel as the primary station. Its use is to overcome anomolies in the service contour of an FM station resulting from effects such as terrain shielding and buildings which cause the FM signal to be blocked. A translator station is a low power FM transmitter operating on a different FM channel from the primary station. The signal rebroadcast is simply converted to the new frequency.

population centers too small to support a full service station. A relatively recent proposal of such nature was submitted by the Rocky Mountain Broadcaster's Association ("RMBA"). The Commission dismissed RMBA's request, as well as the other earlier requests, on technical grounds.43 It appeared that the requested service was to have been technically modeled after the existing FM translator service. In dismissing these proposals, however, it was noted that there are distinct technical differences between the AM and FM services that argue against simply extending the current service to include the rebroadcasting of AM signals.

One of these differences concerns the marked propagation differences between the AM and FM services. Unlike the signals of FM stations which are propagated essentially along line-of-site paths, the primary groundwave signals of AM broadcast stations propagate along the surface of the earth. For this reason the line-of-sight clearance between the AM transmitter and receiving antenna does not have the same importance as it does for the FM broadcast service. If a translator station were to be authorized to rebroadcast the signals of an AM station through direct off the air pick-up, the signal strength of the AM station at the translator's site would be approximately the same as the signal strength in the translator's service area.

Another difference noted by the Commission was the propagation difference during nighttime hours that occurs in the AM band. During nighttime, transmitted signals in the AM band are in effect reflected from the ionosphere and are able to cause interference to other AM stations over great distances. As a result, the distance over which the primary signal of an AM station can be received during nighttime is considerably less than that during the daytime. Thus, direct off the air rebroadcast of an AM station by a translator during nighttime hours would be difficult if designed in the same manner as the current FM translator service.

It should be noted here, however, that there are potential technical steps that could be taken to increase the feasibility and desirability of translator stations for the AM service. Receivers used at the translator's receive site for direct off the air pickup of the AM station could be designed with characteristics superior to those noted in typical home receivers. Such desirable characteristics could include improved selectivity to reduce adjacent channel interference and improved sensitivity to enable a weak signal to be satisfactorily received for rebroadcast purposes. Other technical steps could include the use of an efficient receiving antenna at the translators's receiver site. Such an antenna could be designed to exhibit high gain with directivity which would permit weaker

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43 The proceeding was terminated by Commission action in Memorandum Opinion and Order, Docket 81-305, adopted June 30, 1981.

signals to be received as well as reducing cochannel and adjacent channel interference from undesired stations. An example of such an antenna is a large tuned bi-directional vertical loop antenna.

To overcome interference problems during nighttime hours, some alternative form of program signal delivery to the translator could be used in lieu of direct off the air pickup at the translators transmitter site. Such delivery systems could include leased circuits or microwave relay. The program signal carried by such means could be obtained by direct off the air pickup at a point within the AM station's primary service contour which would be free of interference.

Conclusions. Theoretically, it would be possible to create a translator service for use with AM stations that would operate either in the AM band or the FM band. Translators operating in the AM band would require complex engineering studies in order to avoid causing interference to AM broadcast stations, particularly during nighttime hours. The engineering costs for such studies and associated FCC processing costs could be a limiting factor in implementing such a service.

The use of low power FM transmitters to accomplish the intended objective could have many technical advantages. Additional frequencies for such FM operations could be made available by removing the present requirement that translators use only the 20 designated Class A FM frequencies. Because of this restriction, sixty FM commercial channels have not been made available for use by FM translators. To simplify the licensing process, fixed mileage separation tables could be used so that frequency assignments could be made on a simple go-no-go computer processing search.

Recommendations Regarding Multiple Transmitters. There are some policy questions that are common to all potential uses of multipla transmitters. For example, what limits, if any, should be imposed on the geographic reach of stations whose service is augmented by the use of multiple transmitters? When transmitters are part of a common system as being discussed here, under what conditions should the transmitters be each counted in order to ascertain compliance with the 12-12-12 station rule limiting the maximum number of station holdings by any one licensee? To what protection should multiple transmitters be entitled? What protection should they be required to provide to other stations? What protection requirements if any, should be provided among commonly owned multiple transmitters? These and other related matters could usefully be made the subject of an invitation for comment by interested parties.

The Bureau believes that, generally, the fewer restrictions the Commission places on the use of multiple transmitters, the greater the possibilities that broadcasters will be able to use them innovatively to the benefit of the radio audience. It would be desirable to avoid applying

unduly artificial limitations on the numbers or reach of multiple transmitters. A very substantial augmentation of the service area of an AM station through use of multiple transmitters could still fail to enlarge it to the size of service area that many other, higher power stations can provide with a single transmitter. If multiple transmitters provide a means for reaching areas and populations that the Commission would have been willing to permit through higher power had it been possible to authorize it, then multiple transmitters should be welcomed as an alternative means to the same end. If interested parties are given opportunity to comment, the Commission may expect to be furnished helpful discussions of the pros and cons of various approaches that parties with differing interests may be expected to advance.

XI. SUMMARY OF RECOMMENDATIONS 44

This Report is concluded with the following summary of the numerous AM rules revisions that it is believed could be usefully considered. As wide a range of topics has been covered as was possible within the available time; but disfavor of other possible revisions should not be inferred from their omission from the Report. 45

ASSIGNMENT PRINCIPLES

Channel and Station Classifications. Discontinue confining the assignment of the several classes of stations to channels of designated classes. (V-A)

Station Location. Instead of requiring service to a "community" as such, permit AM broadcasters to define the focus and timing of their service more flexibly: e.g., to a metropolitan area, a defined region or rural area, a resort area on a seasonal basis, a highway segment, a community, or group of communities. (V-B)

Skywave Service. Eliminate or reduce protection now afforded to secondary ("skywave") service east of the Mississippi River. (V-C-1)

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44 The parenthetical references are to sections of this report.

45 The Report, for example, does not address joint sales. This matter is under active consideration, however, and the Commission will be able to consider pertinent staff recommendations.

Groundwave Service. Provide daytime protection to the 0.5 mV/m contours of Class I clear channel stations, instead of to their 0.1 mV/m contours. (V-C-2)

Interference. Loosen or abandon the rigid limitations against specified signal strength overlap. Modify prescriptions of the protected contours of the several classes of AM stations. (V-D)

Station Power. Examine the desirability of modifying both maximum and minimum power levels of AM stations. (V-E)

Protection Ratios. Consider whether change in the present ratios would be desirable. (V-F)

Antenna Systems. Encourage improvement of antiquated and degraded systems, and encourage the submission to the FCC of industry data on experience with new antenna designs that should be taken into account in considering rules reforms. (V-G)

ENGINEERING STANDARDS

Receiver Standards. Consider the desirability of improving AM receiver standards through the use of synchronous detectors, improved design of RF, IF and audio stages, additional emission limitations concerning AM broadcast transmissions, and possible limitations on some forms of audio processing that conflict with the emission requirements of higher fidelity signals. (VI-A)

Groundwave Propagation. Examine the possibilities for introducing into the groundwave used for calculations of groundwave signal propagation the reliable measurement data in licensee files. (VI-C-1)

Propagation. Reexamine the 50% exclusion practice in calculating the aggregate interfering effect of multiple interfering signals. (VI-C-2)

Man-Made Interference to AM Broadcasting. Obtain comment on possible emission limitations on incidental radiation devices and consider prescribing minimum performance standards for AM broadcast receivers. (VI-D)

Trade-Offs and Alternatives. Carefully evaluate the trade-offs, alternatives, gains and losses associated with rules changes that are given consideration. (VI-E)

STATION OPERATION

Remote Control and Automatic Transmission Systems. Revisit Emergency Broadcasting System processes and seek pertinent amendments to Section 318 of the Communications Act in the interests of automatic control. (VII-B)

Program Scheduling. Eliminate required minimum hours of broadcasting by AM stations. (VIII-A-1)

Local Program Origination. Eliminate requirements relating to the originating of specified portions of AM programming from the main studio. (VIII-A-2)

Foreign Language Programming. Permit AM stations to carry foreign language aural portions of programs simultaneously broadcast by TV stations. (III-A-3)

Ancillary Services. Free AM broadcasters from the requirement that ancillary (non-broadcast) services be inaudible to ordinary receivers, thus permitting AM stations to render ancillary services during hours when they are not transmitting broadcast programs. (VIII-B)

RESTRICTIONS ON STATION OWNERSHIP

"Duopoly" Restrictions. Curtail "duopoly" restrictions on the common ownership of AM stations with overlapping service areas. (IX-A)

One-to-a Market Rule. Consider permitting the common ownership of AM and TV stations serving the same market. (IX-B)

Newspaper Cross-Ownership Restrictions. Consider the desirability of permitting common ownership of a newspaper and an AM station serving the same market. (IX-C)

Cross-Interest Policy. Remove the constraint that this policy places on cross interests (other than ownership) in AM stations in the same market. (IX-D)

National Restrictions on Station Ownership. For the purposes of the 12-12-12 maxima, omit count of additional transmitters authorized to supplement the service rendered by an AM station's main transmitter. (IX-E)

NEW CONCEPTS

Negotiated Acceptance of Interference. Permit AM station licensees to enter into agreements under which they would consent to the causing and receiving of interference at levels different from those prescribed in the general protection standards. (X-A) Fulltime Operation by Daytime Stations. By removing minimum power requirements, enable daytime stations to make such nighttime use of available spectrum as requisite protection to other stations permits. (X-B)

Use of Multiple Transmitters. Permit AM stations to improve or extend their service by operating multiple transmitters. This could be achieved by authorizing, in addition to the main transmitter: synchronous co-channel transmitters, AM "satellite" transmitters on other frequencies, or AM or FM translators. (X-C-1,2, and 3)

NEXT STEPS

The Commission may wish to inaugurate proceedings in which the comments of all interested parties could be submitted on:

---the recommendations presented in this report;

---any variants of these recommendations that parties may wish the Commission to consider.

---any other revisions of the AM rules reforms that parties may wish to propose.

It appears desirable to defer the formulation of legislative recommendations until the Commission has had an opportunity, with the benefit of the comments of interested persons on this report, to determine what specific AM licensing and regulatory reforms would be appropriate, and what specific rules revisions and legislation would be needed to carry them out. The staff does not recommend one large all-encompassing proceeding. Rather, it believes that a schedule of smaller rule making proceedings addressing specific issues would be more productive.

Comments on this report should be filed with the office of the Chief, Mass Media Bureau, Federal Communications Commission, Washington, DC 20554

APPENDIX 1

The State of AM Broadcasting

This is an examination of AM broadcasting, over time, in terms of revenues/profits, audience/ratings and station sale prices. The analysis will show that in each of the categories, AM broadcasting has declined, while its FM aural broadcasting counterpart has grown.

Revenues/Profits

On March 11, 1982, the Commission adopted a Report and Order that eliminated the requirement that all commercial broadcast stations file Form 324, annual financial statement, with the Commission. 46 The last official collection and consolidation of the financial data was for calendar 1980. 47 Time trend data from 1976 to 1980 indicate that a relatively stable percentage of AM stations and AM/FM station combinations were profitable initially (1976-1978). However, data for the years 1979 and 1980 indicate a substantial decline in the percentage of profitable stations. 48 Also, over this same time frame, the average loss per AM, or AM/FM station increased dramatically as indicated by the following table.

Table 1.

	Number of AM, AM/FM Stations	Percent Reporting Profit	Average Loss
1980	5539	59	$79,943
1979	4079	60	78,317
1978	4214	67	64,362
1977	4216	66	55,808
1976	4275	67	51,224

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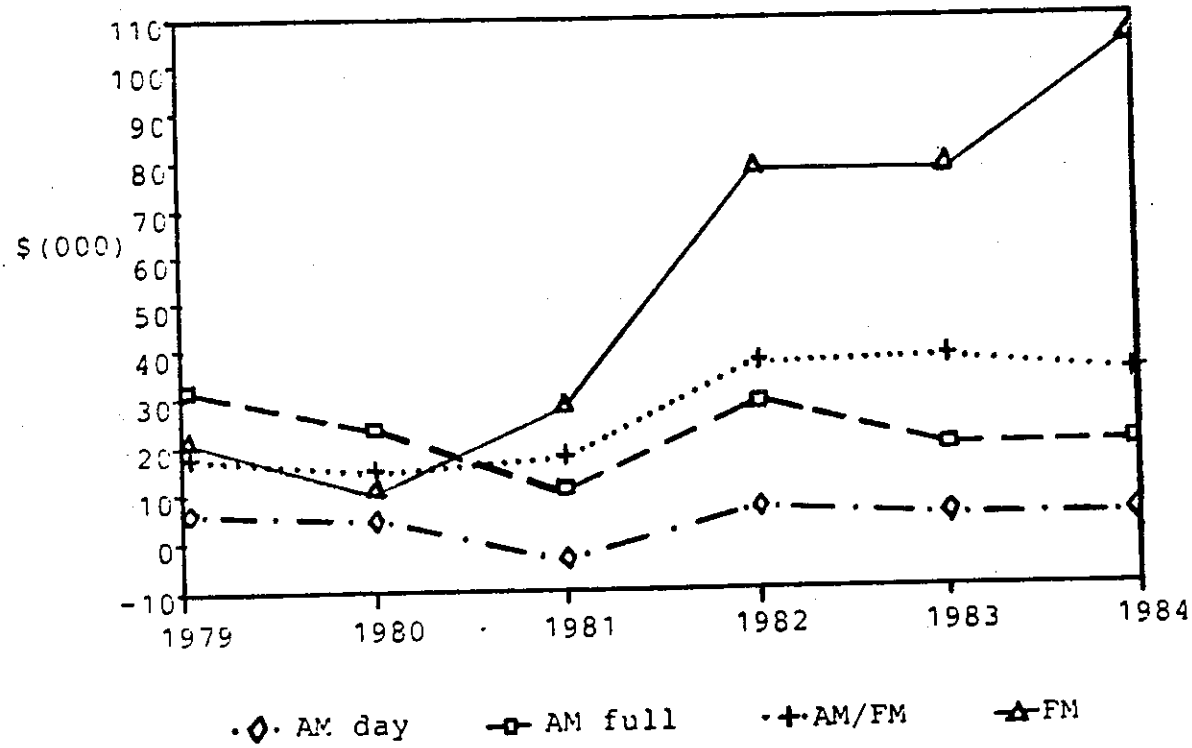
46 Report and Order, Amendment of Form 324, Annual Financial Report of Broadcast Stations, 47 FR 13345, March 30, 1982.

47 1980 AM/FM Financial Data, FCC #2603, March 12, 1982.

48 AM stations and AM/FM combinations that filed a combined 324 form were not separated in the reports.

Since the elimination of the FCC financial report in 1980, the National Association of Broadcasters (NAB) has undertaken the task of compiling financial data for the radio industry. The NAB report of financial data is based on the responses of a sample of radio stations. A recent study has analyzed the NAB's 1980-1984 Annual Radio Financial Reports and has offered time trend data that illustrate the decline of AM revenues since 1980. [47] This study has separated AM daytime only stations, AM fulltime stations, AM/FM combined stations and FM stations. As can be seen from the following chart, since 1981 AM daytimers have a relatively low median profit level as compared to AM fulltime stations. Likewise, AM fulltime stations' median profit level is substantially lower than AM/FM combinations' profit level.[48]

Median Profit Levels by Type of Station



47 Financial Information on Commercial Radio Stations for AM Band Expansion Report, Mark R. Fratrik, National Association of Broadcasters, May 28, 1985.

48 All the dollar values have been deflated by the consumer price index. Chart includes data from 1985 Radio Financial Report, National Association of Broadcasters.

There was an upswing in radio advertising revenue for all types of stations in 1982. Except for major surges in the median profit level of FM stations in 1982 and 1984, the four types of stations stayed in relatively the same position. The hierarchy of median profit levels has not changed since 1981. It should be noted that these profit levels are for the industry as a whole and are based on a sampling of stations. 51 As a general proposition however, the chart is reflective of the relative profit status of the median of all responding stations in each category. 52

Audience/Ratings

As further evidence of the decline of AM, the following chart illustrates the marked reduction in the share of the national listening audience that AM broadcasting has experienced during the last decade. 53 The contrasting rise in FM's share of the national audience is also listed.

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51 Profit levels for each type of station stratified by size of market could reveal varying results.

52 For further discussion, see report footnote 4.

53 American Radio Fall 1984 by James Duncan, Jr.

Table 2

	AM Share (%)	FM Share (%)
FAL 84	34.03	65.97
SPG 84	34.78	65.22
FAL 83	37.13	62.87
SPG 83	36.55	63.45
FAL 82	38.44	61.56
SPG 82	39.84	60.16
FAL 81	40.47	59.33
SPG 81	41.53	58.47
OCT/NOV 80	43.04	56.96
APR/MAY 80	44.50	55.50
OCT/NOV 79	46.58	53.42
APR/MAY 79	47.75	52.25
OCT/NOV 78	48.73	51.27
APR/MAY 78	51.31	48.69
OCT/NOV 77	52.18	47.82
APR/MAY 77	54.17	45.83
OCT/NOV 76	56.22	43.78
APR/MAY 76	57.99	42.01
APR/MAY 75	61.09	38.91

As can be seen from the table, in 1978, the majority of the radio listening audience shifted from AM to FM stations. AM's share of the listening audience has dwindled to 34% in the Fall of 1984. More recent data suggest that AM commands only 30% of the radio audience. 54 Further documentation of the erosion of the audience for AM is the fact that even as recent as 1980, 40 of the top 50 stations in terms of metro cume rating were AM stations whereas by the Fall of 1984, only 15 AM stations were in the top 50. 55

Some of the erosion of AM audience can be explained by the fact that the number of FM stations has increased dramatically in the last 10 years, particularly when compared to the growth in the number of AM stations.

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54 Broadcasting, November 11, 1985, p. 35.

55 American Radio, Fall 1980 and 1984 by James Duncan, Jr. Metro cume rating is the estimated number of different listeners expressed as a percentage of the universe of people in the metro area.

Additionally, the universe of radio listeners experienced only modest growth during that time frame, which meant that a relatively fixed audience was fragmented and shared by a large number of stations. 56

Table 3

AM and FM Radio Station Growth
Licenses and CPs
As of Jan. 1 Each Year

	AM	FM	Total
1985	4973	5386	10359
1984	4880	5141	10021
1983	4815	4863	9678
1982	4760	4701	9461
1981	4724	4637	9361
1980	4679	4599	9278
1979	4610	4435	9045
1978	4585	4289	8874
1977	4559	4117	8676
1976	4540	3920	8460
1975	4520	3722	8242

Source: Television and Cable Factbook, Vol. 53, 1985, p. 17

Station Sales

The following table displays the average trading price of radio stations by type traded, January 1980 through June 1981, listed with the average revenue each type of station generated in 1978. 57

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56 The number of radio listeners has increased by 2.5 million to about 25 million. Broadcasting, November 11, 1985, p. 35.

57 Statistical Determinants of Radio Stations' Revenues and Trading Prices, FCC, James Brown, Jr., August 1982, p. 28.

Table 4

	Number of Sales	Average Trading Price	Average Revenue	Trading Price Divided By Revenue
AM only	251	$596,990	$310,860	1.92
FM only	104	1,250,100	334,640	3.74
AM/FM	159	1,155,300	424,930	2.72

Note: Stations with either trading prices or 1978 revenues less than $10,000 are omitted

This table clearly shows the FM-only station to be the highest valued radio purchase given that the buyer was willing to pay 3 3/4 times the revenue generated by the station. In contrast, purchasers of AM only stations paid, on average, less than twice the annual revenue generated by the station. Also, the average purchase price of an FM-only station was more twice that of an AM only station further indicating the relative almost lower value of AM versus FM. A comparison of more recent station sales prices with those in the previous table indicate similar valuations by those who purchased stations in 1984. 58

Table 5

	Number of Sales	Average Sale Price 59
AM only	378	$ 553,380
FM only	178	$1,271,584

Here again, purchasers of FM only stations in 1984 were, on average, paying over twice the amount paid by buyers of AM-only stations.

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58 No revenue data are available for stations traded after 1980.

59 Broadcasting, January 28, 1985, p. 45.

There are, of course, many other factors that determine the sale price of a station in any individual market. There are AM-only stations that sell for many times that of an FM in some instances. However, looking at all the sales that occur during specific time frames and examining the average sale price, an overall indication of the relative worth of each type of station can be ascertained. 60

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60 Two AM properties recently sold for less than their previous purchase price. An AM station in Denver sold for $11 million which was $4 million less than the purchase price in 1981 (Broadcasting, November 11, 1985, p. 35), and an AM station purchased in 1981 for $2.7 million changed hands for $875,000 two years later (Wall Street Journal, October 21, 1985, p. 2). In contrast, an FM station in Los Angeles was recently sold for a record $44 million (Broadcasting, October 28, 1985, p. 41).

APPENDIX 2

CCIR RECOMMENDATION 560

The CCIR

UNANIMOUSLY RECOMMENDS .

that the radio-frequency protection ratios for sound broadcasting in bands 5(LF), 6(MF), and 7(HF) as given in §§ 1 and 2 should be applied.

1. Radio-frequency protection ratio in bands 5(LF) and 6(MF)

The radio-frequency protection ratio (as defined in Recommendation (447-1), for co-channel transmissions (± 50 Hz) should be 40 dB when both the wanted and the unwanted signals are stable (groundwave).

When the wanted signal is stable and the unwanted signal fluctuates (including short-term fluctuations), the radio-frequency protection ratio should be 40 dB at the reference time (see Annex to Report 575-1) for at least 50% of the nights of the year. This protection ratio corresponds to the ratio of the wanted field strength and the annual median value of the hourly medians of the interfering field strength at the reference time.

The protection so defined is provided:

- for 50% of the nights at the reference time;
- for more than 50% of the nights at times other than the reference time;
- for 100% of the days during daylight hours.

The radio-frequency protection ratio values specified above will permit a service of excellent reception quality. For planning purposes, however, lower values may be required. In this respect, proposals have been made by some countries and organizations (see Report 794).

Note 1. – The minimum usable field strength to which this protection ratio of 40 dB applies varies in the different regions and with frequency. Within the European zone, this minimum is of the order of 1 mV/m.

Note 2. – In the United States of America, when the wanted and unwanted signals are stable (groundwave), the radio-frequency protection ratio for co-channel transmissions is 26 dB. When the unwanted signal is fluctuating (sky-wave), the same protection ratio is applied for 90% of the nights of the year, computed for the second hour after sunset. The minimum usable field strength is either 100 or 500 μV/m, depending upon the class of service.

2. Relative radio-frequency protection ratio curves in bands 5(LF), 6(MF)* and 7(HF)

The relative radio-frequency protection ratio is the difference, expressed in decibels, between the protection ratio when the carriers of the wanted and unwanted transmitters have a frequency difference of Δf (Hz or kHz) and the protection ratio when the carriers of these transmitters have the same frequency.

Once a value for the co-channel radio-frequency protection ratio (which is equal to the audio-frequency protection ratio) has been determined, then the radio-frequency protection ratio, expressed as a function of the carrier-frequency spacing, is given by the curves of Fig. 1 (see also Annex I):

- curve A, when a limited degree of modulation compression is applied at the transmitter input, such as in good quality transmissions, and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;
- curve B, when a high degree of modulation compression (at least 10 dB greater than in the preceding case) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;
- curve C, when a limited degree of modulation compression (as in the case of curve A) is applied and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz;
- curve D, when a high degree of modulation compression (as in the case of curve B) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz.

* This Recommendation replaces Recommendations 262-1, 413-3, 448-1, and 449-2 which are hereby cancelled. Further information is given in Report 794.

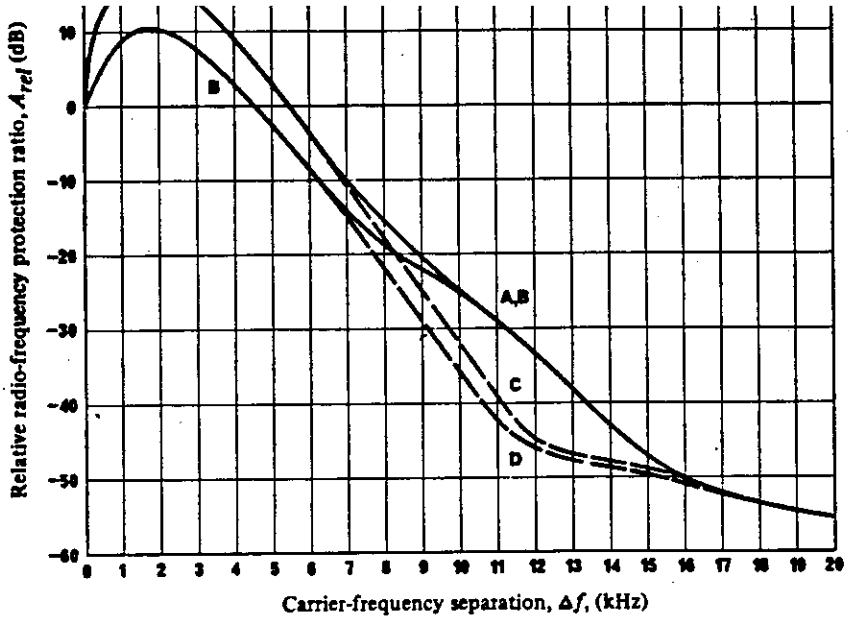

FIGURE 1 – *Relative value of the radio-frequency protection ratio as a function of the carrier-frequency separation*

The curves A, B, C and D (see also Annex I) are valid only when the wanted and unwanted transmissions are compressed to the same extent. They have been obtained mainly from measurements and calculations with a reference receiver representative of good quality receivers used for reception in bands 5(LF) and 6(MF). The overall frequency response curve of the European Broadcasting Union (EBU) reference receiver used passes through −3 dB, −24 dB and −59 dB at 2 kHz, 5 kHz and 10 kHz, respectively, [Petke, 1973].

Care should be exercised when applying the curves of Fig. 1 for broadcasting in band 7(HF). Particularly, at least with the majority of receivers in use for reception in band 7(HF), the relative radio-frequency protection ratio at 5 kHz frequency separation should not be considered to be less than 0 dB.

ANNEX I

The shape of the relative radio-frequency protection ratio curves depends on the receiver selectivity, on the bandwidth of the audio-frequency modulating signal, and also on the ratio of the energy of the carrier and of the sidebands. This latter phenomenon is most important between 250 Hz and 5 kHz approximately, where the disturbance is essentially due to the whistle produced by the carrier-frequency beat. The shape of the curves in Fig. 1 therefore depends on the average modulation depth and on the dynamic compression of the modulation signals.

Curve A represents average values derived from calculations and from tests made with various receivers mainly designed for reception in band 5(LF) and band 6(MF), with modulation compression typical of that currently applied in the studios, i.e. with compression permitting a maximum dynamic range of at least 30 dB.

Curve B applies to the use of compression, as applied by an automatic device, of at least 10 dB higher than in the preceding case.

Both curves A and B, as distinct from curves C and D, apply to a bandwidth of the audio-frequency modulating signal of the order of 10 kHz.

Curves C and D apply to the use of compression of the same order of magnitude as in the cases of curves A and B, respectively. The bandwidth of the audio-frequency modulating signal, is, however, restricted to about 4.5 kHz. This degree of bandwidth limitation reduces interference from adjacent channels without, in practice, leading to any significant degradation of the reception quality.

It should be noted that, in some circumstances, listeners are able to reduce the interfering effect of an unwanted transmission, spaced by more than approximately 3 kHz, by adjusting their receivers (slight detuning, selectivity control, tone control, etc.). Under these conditions, the curves of Fig. 1 are no longer applicable for spacings of more than about 3 kHz. However, the practice of detuning leads to distortion and cannot be used when two interfering emissions of approximately equal strength are present, on both sides of the wanted carrier frequency. Moreover, many receivers are not equipped with a selectivity control or tone control.

Note 1. – In addition to the relative radio-frequency protection ratios given in this Recommendation there are other factors of importance in determining optimum frequency spacings (see Question 25/10).

APPENDIX 3

FCC Actions Since 1972 That Have Relieved Regulatory Burdens for AM Licensees

1972

Reduced meter readings and logging of transmitting systems from every 30 minutes to every 3 hours.

Reduced inspection of transmitting equipment from once a day to once a week.

Removed the requirement that operating and maintenance logs must be kept individually by allowing them to be kept in one common log.

Removed the requirement that station identification must be made within 2 minutes of the hour and half-hour and allowed it to be given "hourly, as close to the hour as feasible".

Removed the requirement of notification to the FCC of rebroadcast permission from an originating station; provisions for rebroadcast of signals of non-broadcast stations were codified for purposes of clarity.

Revised "Mechanical Reproduction" rule to clarify its directives regarding broadcast of "taped, fimed or recorded material" and sizeably simplified, contemporized and clarified the rule.

Removed daily anouncements that "some of the [station's] network programs were taped for later broadcast." (Combined into one rule for all services.)

Removed requirement to file certain contracts with the FCC so as to reduce administrative detail and eliminate unnecessary filings.

Removed requirements that an auxiliary transmitter must be tested at least once a week at specified hours; thereafter licensee determined need, time, frequency and dates of testing.

Allowed auxiliary transmitters to be operated at higher than licensed power up to 105% of regular transmitter power.

Granted 3rd Class radioletephone operators, with broadcast endorsements, authority to operate AM stations with directional antenna systems and high power.

Deleted the 5 days restriction on use of auxiliary transmitters without authority from the Commission, thereby eliminating burdensome filings.

Relaxed maintenance logging requirement regarding auxiliary transmitter scheduled testing.

Removed requirement to notify Commission in Washington and District EIC of temporary failure to maintain minimum operating power or hours of operation. Streamlined written requests for such operation if it persisted past 10 days.

Clarified operator access to monitor, and meter visibility, relieving numerous liability citations because the instruments were not " directly in front of the operator"

Removed numerous notifications to the FCC's District EIC including:

defective modulation monitor,

defective indicating instruments,

defective frequency monitor,

failure to maintain minimum operating schedule,

failure to maintain minimum operating power,

departure from share-time schedule, and

transmission of point-to point messages during emergencies.

Deleted specifications concerning temperature variations at the crystals used in transmitters, continue allowing licensees to determine the means for maintaining frequency stability.

Eliminated requirements to retain circuit diagrams from the transmitter manufacturer at the control point.

Allowed equipment performance measurement data to be kept at the remote control point as well as at the transmitter, at licensee's option.

Deleted requirement that station maintain a "supply" of spare tower lamps in station inventory.

Removed requirement for entry into operating log of each carrier wave interruption, plus its cause and duration.

Removed rule to file contracts of part-time 1st Class radiotelephone operators with District EIC's.

Removed requirement for attended operation of one-hop aural STL's and aural inter-city relays.

1973

Removed requirements that stations with DA's, operating by remote control, read and log antenna parameters at the transmitter within two hours after start of DA operation; this often required multiple visits each day. Relaxed requirements adopted.

Eliminated the requirement that stations be equipped to continuously monitor frequency and reduced the schedule of frequency measurements to intervals not to exceed 40 days, at a time left to broadcaster's discretion.

Revised guidelines for ascertainment of community problems by renewal applicants to provide a simplified procedure for licensees to carry out.

Permitted any specified hours station, on a local channel, to operate beyond the hours specified in its license in order to carry special events programming.

Removed the requirement that notification must be made to the Commission in Washington and to the District EIC when specified hours station operates beyond authorized hours.

Relaxed the written prior approval request to the FCC for the rebroadcast of point-to point messages, originated by government or privately owned non-broadcast stations, by providing for informal requests by telephone, with written confirmations to follow.

Deleted requirments that formal notification be given to the FCC and its District EIC when licensees began equipment and program tests on certain classes of auxiliary stations.

1974

Adopted new rules permitting use of extension metering of transmitters which solved the continuing and vexing problem of "transmitter visibility" by operators.

Clarified rule text pertaining to extension of construction permits and application to replace expire permits thus relieving applicants of unnecessary administrative burden created by unclear directives.

Deleted requirement in rules to renew remote control authority on station license renewal application which contradicted staff letter to renewal applicants and further confused applicants since no such renewal paragraph existed on the application form. Rule removal ended burdensome calls and letters from confused licensees.

Reduced minimum number of measurements on each radial of remotely controlled DA's from 5 measurements to 3 measurements for skeleton proofs made for triennial license renewal applications.

Clarified specified hours rules and consolidated a listing of certain exemptions to the rule in one section.

Relaxed the "posting of operator license" rule, allowing licensee option in determining manner of posting.

Adopted, prepared and distributed to licensees the "Broadcast Bureau Telephone Directory", designed to assure licensees of completing calls to the proper staff member accurately and easily.

Relieved criticisms of the industry by certain elements of the public (and Congress) regarding broadcasting's high power and energy usage during the critical gasoline shortages of 1973. By conducting study, FCC showed overall industry transmitting and receiving usage was only approximately 3% of total electrical energy consumed in U.S.A. Criticisms were stilled.

Removed requirement to notify to District EIC in writing when lesser grade operators are used in place of absent operators of higher required grade.

Changed 10-day notifications to FCC, when licensees were forced to operate at reduced power, to 30 day notifications thereby tripling time to correct power underage before notification requirement was triggered.

Removed 10-day limit in failure to adhere to operating schedules of stations and increased limit to 30 days.

Reduced equipment performance observations for aural STL's and IC relays from every hour to every 3 hours .

Relaxed the requirements for storage of ammeters used in a jack-and-plug arrangement permitting removal from the antenna circuit during non-use periods.

Removed prohibition on using 1st Class radiotelegraph operators and 2nd Class radiotelephone and radiotelegraph operators to perform duties of operators holding 3rd Class permits with broadcast endorsements. Also, did not require 1st and 2nd Class to obtain broadcast endorsements.

1975

Clarified rules pertaining to calibration of remote control instruments.

Removed requirement to file applications or submit fees for transmitters retained for auxiluary or alternate main use after installation of new transmitter. Informal notification replaced formal application.

Clarified an extension of operation authority past the allowable 60 days, in the event an antenna monitor became defective. Rule, which was silent regarding post 60 days procedures, gave licensees no guidance.

Significantly amended, relaxed or removed certain program log requirements including, most importantly:

automated program system logging devices;

comtemporizing the use and certification of modern automatic logging and automatic maintenance of logging data equipment;

removing or relaxing certain requirements pertaining to changes and corrections in program logs;

streamlining entries of sponsor identification and "uses" by political candidates

relieving certain noncommerical educational logging restrictions;

revising the principle of what constitutes a program log.

Adopted new automatic transmission system rules which sizeably reduced or eliminated:

routine station staff tasks;

station personnel requirements;

meter reading and logging requirements;

transmitter inspections and continuous hands-on adjustments to the transmission system.

Removed weekly frequency measurement requirement from maintenance log rule to conform to monthly measurements as required in other regulatory sectors.

Relaxed remote control rule to remove requirement to immediately cease operation in event of malfunction, in favor of a less strict rule allowing up to one hour to correct problem or assume direct tranmitter control.

Removed maintenance log requirement to enter the precise amount of time used in transmitter inspections.

Deleted maintenance log requirement to retain all orginial transmitter inspection data which may be in rough form so that all portions of "original memoranda, shall be preserved as part of the complete [maintenance] log." (Such "original memoranda," in so-called rough form, could include match covers, Kleenex boxes, sleeve cuffs and assorted scraps of paper with notes, many times in an illegible scrawl).

Deleted the same "rough form-original memoranda" rule in operating log requirements.

Deleted the requirement that each licensee sharing a common antenna tower was responsible for all tower service or maintenance, inspections and logging of inspections in operator and maintenance logs, and for notifications to the FCC. This sizable duplication was repealed to allow one appointed licensee to respond to tower regulations for himself and all co-users per agreement between them.

Eliminated antenna structure marking and lighting requirements found in 28 separate sections of FCC rules and consolidated them into one rule in Subpart H, Part 73-Rules applicable to all broadcast stations.

Removed requirement which restricted broadcaster to the use of only one type of measuring instrument for indication of RF currents (a thermocouple type ammeter).

1976

Significantly revised Remote Pickup (RP) Broadcast station rules as follows:

licensed RP transmitters as a group or system, eliminating the practice of licensing them individually;

sudivided the 20 wide frequency channels in the 450 and 455 mHz band into 56 channels resulting in an overall increase to 101 in the number of channnels available;

provided channels of different bandwidth to meet the needs for high fidelity programs, dispatching and tone signalling;

expanded the number of frequency bands available for wireless microphones for in-studio or remote location program productions;

allowed broadcast networks to become eligible for licensing of stations in auxiliary broadcast services;

eliminated requirements that licensees obtain special FCC authorization to use their remote pickup stations in other than their licensed areas;

eliminated notification of "out-of-licensed-area operation" to District EIC's;

eliminated requirements that detailed operating logs be kept of RP station transmissions;

expanded the permissible use of RP stations by licensees.

Corrected rules to allow static electricity and tower lighting components to be installed across antenna terminals at a point where they do not influence antenna resistance measurements.

Deleted requirement that remote controlled AM stations, using an approved antenna sampling system and type-approved monitor, must make antenna monitor readings at the transmitter site every second day for each DA pattern.

Relaxed the posting of station authorization requirements, allowing retention of license in a binder or folder rather than afBixing it to the wall of the transmitter control point.

Removed requirement making direct controlled stations, using type-accepted antenna monitors, take more frequent base current measurements than remotely controlled stations.

Adopted rules clarifying "complete," "partial" and "skeleton" proofs of performance.

Simplified and shortened new renewal application form (and thereby renewal process) for commercial radio stations with adoption of new FCC form 303-R.

Revised rules pertaining to antenna monitor design requirements to allow marketing of less costly monitor for direct controlled transmitters.

Removed certain restrictions and relaxed others pertaining to standards and installation requirements relating to indicating instruments used to determine power and evaluate system performance.

Eliminared application for 90 day authorization to make proof of performance measurements by providing for continuing test authority for licensees.

1977

Adopted alphabetical index of rules in Part 73 to facilitate quick and accurate location of FCC's rules' sections.

Simplified authorization procedures for substitution of frequency control systems in existing transmitters.

Allowed exemptions with respect to certain indicating instruments for stations operating with Presunrise Service Authorizations.

Added the indirect method of power determination as part of automatic transmission system operating procedures.

Modified requirement for observing and logging, on a daily basis, condition of antenna tower lighting equipment by allowing use of automatic alarm system to detect and provide indication of lighting failure.

Deleted operating and maintenance log requirements after effective date of installation of type approved antenna monitors.

1978

Removed separate licensing requirements for each transmitter of a broadcast station (main, alternate and auxiliary) allowing these co-located transmitters to be covered by the single station license.

Deleted requirements to request authorization from or give notification to the FCC when installing new type accepted transmitters.

Clarified different licensing procedures for auxiliary antennas and co-located transmitters.

Clarified and codified (for first time) the use of emergency antenna when main antenna is inoperative (damaged). Removed remote control authorization procedures; substituted simple notification requirement.

Reorganization of rules begun (7/78). resulting in rules' reduction of 40%. Expansion of Subpart H, 47 CFR Part 73, begun.

Listing of broadcasting policies of FCC in Part 73 with appropriate citations, informing licensees, via this rule book inclusion, the exact requirements pertaining to policies such as renewals, ascertainment, minority matters, payola and commericials, (53 policies in all).

Clarified political broadcast rules making it simpler and easier for licensees and candidates to understand the law in this area.

Reduced paperwork by combining two forms into one: FCC Form 701 and FCC Form 321 (The number 701 survives).

1979

Allowed routine operation of stations (except those with "critical" D.A.'s) by operators holding any class of commerical license or permit. Restricted Radiotelephone Operator Permit included, thus allowing all licensees, particularly those in remote, smaller markets to qualify persons by obtaining an operator's permit via mail.

Modified, clarified and restored requirements in rule "Public notice of licensee obligations." Removed many obfuscations, offering licensees precise guidance in this important area.

Authorized AM stations with "critical" D.A.'s, and those with more than 10 kW power, to use operators holding any class of license, including Restricted Permit.

Reduced from full-time to less than full-time the required employment of a "Chief Operator" holding a 1st Class Radiotelephone Operator license for technical supervision and maintenance.

1980

Removed requirement that antenna monitors be installed at the transmitter control point of DA stations, and gave licensee the option to install monitors at the site of phasing equipment when such equipment is located at the center of the tower group.

Eliminated requirement to file chief operators' agreements with District EIC's.

Removed requirement that a partial antenna proof of performance measurement must be made when a replacement for chief operator is appointed.

Restructured, rewrote and corrected Pre-sunrise Service Authorizations for ease of understanding and removal of obsolete statements and terms.

Removed requirement to obtain prior FCC authority to transmit messages originated by non-broadcast stations operated by Federal Government agencies. Permission from the controlling agency only is required.

Revised rules to permit continuous transmitter operation for aural STL and ICR stations;

Removed operator observations every three hours for aural STL and ICR stations in favor of checks every 24 hours.

Removed station identification requirement during periods when STL or ICR stations are not carrying program material.

Removed detailed operating log requirements for aural STL and ICR stations.

Removed requirements to obtain construction permits or any other form of prior FCC authority to replace station transmitters when replacing with type accepted equipment.

Deleted requirement for licensees to await "specific FCC authority" (after written requests for such authority are made) for PTA's (program test authority) and STA's (special temporary authorizations). Commission provided "automatic" PTA's for nondirectional AM's and "automatic" STA's, for 30 days, allowing licensees to undertake needed remedies or desired modifications.

Clarifications were made in local public inspection files rules.

Deleted requirement for detailed showing of financial qualifications in application for change in existing stations.

Allowed licensees to include in their official station idenltification announcements the names of an additional community or communities, in addition to their communties of license.

Allowed storage of logs (retention period: 2 years) to be retained on microfilm, microfiche or other data-storage system.

1981

Deregulation of radio:

eliminated non-entertainment program percentages;

eliminated designation of amount of commercial minutes per hour which were not to be exceeded;

eliminated community ascertainment requirements;

eliminated program log requirements.

Permitted uniform 6:00 AM presunrise sign on time for certain Class II stations.

Adopted simplied renewal applications. Also eliminated certain filing requirements and simplified certain public notice requirements pertaining to applications for renewal.

Eliminated the 1st Class Radiotelephone Operator license and permitted Restricted Radiotelephone Operator Permit holders to install, maintain, repair and technically supervise transmitting equipment; discontinued 1st Class Radiotelephone operator examinations.

Extension of license renewal period from 3 years to 7 years. (Omnibus Budget Reconciliation Act. Pub. L. 93-35, 95 Stat. 357).

1982

Eliminated verification requirement on the station renewal application, showing conformance with programming duplication rules. (AM/FM co-owned station).

Removed requirements for shared tower "tenants" to formally request FCC approval of one tenant picked to be responsible for conformance to tower rules. May now proceed without involving FCC.

Established AM sterophonic broadcasting technical standards, equipment authorization requirements and administrative procedures under which AM stations may transmit stereophonic programs.

Eliminated the requirement that licensees file annual financial report; removed 47 CFR 73.3611 from rules.

Deleted rule that applicants for construction permits submit proofs of compliance with local notice requirements found in 47 CFR 73.3580.

Eliminated 16 written notifications to District EIC's required by rules, relieving licensees of considerable paper work burdens.

Permitted utilty load management signals to be transmitted through the AM broadcast carrier.

Deleted rules which required licenses be held by broadcasters for 3 years before resale of station may be considered.

1983

Expanded special temporary authority from period of ninety days with only one renewal allowed, to period of 180 days with renewals of as many like periods as the Commission deems proper.

Major corrective clarifications made in local public inspection file rules.

Eliminated polices concerning misuse of audience ratings data and the use of inaccurate or exggerated coverage maps or claims by licensees.

Eliminated the requirements that aural modulation monitors be type approved, and that the operator on duty have continuous access to modulation level indications, and that the licensee install equipment to monitor modulation levels.

Eliminated operating and maintenance logging requirements concurrently excising many onerous operational requirements, such as following schedules of meter and monitor readings, inspections, observations, measurements and entry regulations.

Enlarged the categories of Class II full-time stations that are eligible for pre-sunrise operating authority.

Allowed most Class II and III daytime-only stations to operate during post-sunset period; and adopted new diurnal curves for use in calculating interference protection requirements during pre-sunrise and post-sunset periods.

Deleted 10 unnecessary broadcast policy statements no longer warranted or required by public interest. FCC policies eliminated were Alcoholic beverage advertising; Astrology broadcasts; Foreign language programs; Harrassing and threatening phone calls; Music format service company agreements with broadcasters; Musical recordings, repititious broadcasts; Presentation of off-network programs and films; Call-in polls; Private interest broadcasts to annoy and harass others; Sirens and like emergency sound effects in announcements.

Eliminated application, review and approval process for multi-city station identification, allowing licensees to mention, in the station ID, any community that it wishes without regard to the station's signal coverage over it.

Deleted requirements pertaining to station call letter assignments, of procedures in applying for call letters; basic call letter conformation; reassignment of relinguished call letters; suitable clearance; good taste in call letter selection; requests for new or modified calls; and resolutions to call letter disputes.

1984

Updated AM technical rules to reflect capabilities of current technology, to provide AM licensees with a simple means of ascertaining proper directional antenna operation and provide flexibility in the design of DA monitoring systems.

Permitted Class IV stations to increase maximum permissible nightime power from 1/4 kW to 1 kW.

Enlarged the power which can be used by CLass III daytime-only stations during post-sunset operation thereby enlarging areas and populations they serve.

Eliminated regional concentration of control provisions of multiple ownership rules that prohibit ownership of 3 stations if any 2 are located within 100 miles of a third, and have prohibited overlap.

Deleted requirements for AM stations to provide premium signal coverage over business and factory areas within the community of license; alleviated regulatory burdens by eliminating subjective judgements as to what constitutes "business areas"; and allows greater flexibility in transmitter site selection.

Removes the requirment that licensees of DA's take field strength measurements in connection with their license application.

Eliminated completion and posting of Form 759, Verification of radio operator license or permit, when orginal of operator's license is posted at his other-job location, supplanting this proceedure with a provision allowing photocopying instead.

Eliminated the "seven station" rule and allowed the numerical cap on station ownership to expand to 12.

Excised Commission policies pertaining to horse racing broadcasts.

Eliminated restrictions on AM carrier usage, allowing licensees to use their carrier signals for non-broadcast purposes provided they still mettheir broadcasting obligations.

Deleted the restriction which prevented certain applicants for new unlimited time stations from obtaining greater daytime than nighttime power.

Amended certain technical rules to provide additional interference protection to certain Alaskan AM stations.

Amended, clarified and updated remote control rules so that licensees can use new and innovative technology and removed rules which no longer served regulatory purposes.

Eliminated certain rules that specified minimum quality levels of service.

Permitted direct reading power meters, thereby relaxing restrictive regulations, accommodating new measurement technologies and providing licensees more flexibility and choice in operating power measurements.

1985

Eliminated use of wallet size "verification cards" (Form 758-F) issued to licensed operators, when orginal license or permit is posted at "other job".

Removed Commission policises pertaining to audience ratings; licensee distortion; false, misleading and deceptive commercials; conflicts of interest; promotion of non-broadcast business of a station; sales contracts, failure to perform; and sports announcer selection.

Amended various sections of the rules to reflect provisions of new international agreements, making it possible for certain Class III stations to operate with greater power and for stations throughout the USA to have greater flexibility in operating power choices.

Amended rules to provide for nighttime operation by U.S. Class II AM stations on 14 Canadian, Mexican on Bahamian Clear Channels which are expected to provide an important expansion of nighttime U.S. service.

Eliminated the prohibition on rebroadcasting CB and GMRS stations; revised the amateur radio rules pertaining to broadcast related activity; permitted rebroadcast of CB and amateur transmissions without prior

permission of the originator and eliminated the requirement for FCC rebroadcast permission.

Permitted temporary operation, under certain circumstances, without requesting a Special Temporary Authorization from the FCC.

Removed the requirement for radio licensees to file network affiliation contracts with the FCC.

Amended rules pertaining to DA systems to simplify and standardize measurement procedures to monitor antenna functions; removed certain design and construction specifications; permitted licensees greater flexibility in incorporating new technology into their transmitting systems and reduced the schedule of measurements to be made.

Deleted that part of the AM application rules relating to non-technical requirements for acceptance of applications for new AM stations and major changes to them. Removing the requirements enhances the opportunity of providing competitive AM services.

Extended the time period for construction of AM stations from 12 months to 18 months thereby recognizing the substantial changes in the complexity and amount of equipment needed and the growing multiplicity of business decisions involved in establishing stations.

Rules summarized in the Appendix of those adopted by the Commission up to December 31, 1985