EXTENDED BROADCAST HOURS FOR DAYTIME STATIONS, DOCKET NO. 12274:

Petition of Daytime Broadcasters Association, Inc., to permit all daytime standard broadcast stations to operate from 5 a. m. or local sunrise (whichever is earlier) to 7 p. m. or local sunset (whichever is later) denied.

Rationale.—Population-gaining service would be far exceeded by population-losing service; daytime stations would serve only small fraction of daytime areas and populations during nondaytime hours; such severe interference would result to unlimited-time class II and III stations that many could not even serve their principal cities; almost all secondary service would be lost (some 20 million persons now receive only secondary service); would cause severe interference to foreign stations and violate international agreements and understandings; greater need exists for service that would be lost than for new service that would be gained.

BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON 25, D. C.

In the Matter of AMENDMENT OF PART 3 OF THE RULES TO PERMIT EXTENDED HOURS OF BROADCASTING FOR DAYTIME STANDARD BROADCAST STATIONS.	Docket No. 12274

REPORT AND ORDER

(Adopted: September 19, 1958)

BY THE COMMISSION: CHAIRMAN DOERFER ABSENT; COMMISSIONER CROSS CONCURRING AND ISSUING A STATEMENT.

1. The Commission has before it for consideration its notice of proposed rulemaking (FCC 57-1387) issued in this proceeding on December 19, 1957, in response to a petition filed December 9, 1955, by the Daytime Broadcasters Association, Inc. (DBA), requesting *inter alia*, that all daytime standard broadcast stations be authorized to operate from 5 a. m. or local sunrise (whichever is earlier) to 7 p. m. or local sunset (whichever is later), in lieu of the sunrise to sunset hours provided for in the present rules.

Fundamentals of standard broadcast allocations:

2. Since the DBA proposal, if adopted, would permit general operation by daytime stations during hours other than daytime, it involves a departure from the long-established system of standard broadcast (AM) allocations. Hence, a brief discussion of present allocation principles is helpful in comprehending the effects and implications of the proposed action.

3. The portion of the radio spectrum allocated for standard broadcasting is between 535 and 1605 kc. Within this range there are 107 channels of 10 kc. each, on which over 3,300 standard broadcast stations are presently assigned. Under the Commission's basic allocation pattern, different channels are designated for use by different classes of

stations, which operate with different amounts of power and are intended to render service varying in extent. The number of stations which may be assigned to any particular frequency is limited by the fact that under favorable transmission conditions standard broadcast signals travel long distances, and create interference to the service of stations located on the same frequency or adjacent frequencies. A salient fact which must be borne in mind is that these signals cause destructive interference over an area much greater than that to which they provide useful service. Where two signals on the same frequency (cochannel) are involved, under the Commission's standards objectionable interference is present where the strength of the interfering signal is one-twentieth or more of the strength of the desired signal. Further, the range of AM radio signals—both those providing a usable service and those farther from the transmitter causing destructive interference—varies considerably as between the daytime and nighttime hours, because of the characteristics of skywave propagation.

4. The energy radiated from the transmitting antenna of a broadcast station is affected differently by the earth's surface and the upper atmosphere. Part of the energy, called the groundwave, travels closely along the surface, where its intensity in a given location remains almost constant day and night and from season to season. It is affected principally by the station frequency and power, and the character of the terrain over which it travels. At night, in addition to groundwave transmission, radio signals are propagated by skywave transmission, consisting of energy traveling upward and outward from the transmitter to an electrified layer called the ionosphere, from which it is reflected back to earth at distances much greater than the reach of groundwave signals. The range of skywave signals is affected by many more variables than groundwave signals, including latitude, time of year, the current stage of the sunspot cycle, and, particularly and most substantially, the time of day. Caused principally by the sun's radiation, the ionization of the upper atmosphere exhibits diurnal variations of such nature and extent that skywave signals, returned to earth with negligible intensity during most of the day, are reflected with great efficiency at night, where with varying intensity they reach distances far beyond the range of the groundwave. Skywave signals begin a measurable buildup about 2 hours before sunset, reach quasi-maximum values about 2 hours after sunset, maintain approximately that level until about 2 hours prior to sunrise, and then progressively deteriorate until they again reach insignificant levels about 2 hours after sunrise. Such signals are less constant in intensity than groundwave signals, because of the continuous change in the characteristics of the ionosphere, resulting in "fading" from time to time in skywave reception.

5. Skywave signals render a useful service over wide areas, although because of their somewhat intermittent nature such service is, under the Commission's rules, considered secondary service, whereas the more constant groundwave service is considered primary service. Such service by skywave transmission is possible, however, only under highly restricted conditions. Both transmitter power sufficient to propagate usable signals over long distances, and freedom from ob-

jectionable electrical interference which might prevent service of an acceptable standard, are required.

6. With the aforementioned radio propagation characteristics in mind, rules were adopted governing the assignment of standard broadcast stations to specific frequencies. These rules seek to achieve to the greatest possible extent the following three objectives:

(*a*) To provide some service of satisfactory signal strength to all areas in the nation;

(*b*) To provide as many program choices to as many listeners as possible;

(*c*) To provide locally originated service to as many communities as possible.

7. The effective inplementation of these three objectives produces inevitable conflict. Maximum area coverage can be obtained by using a single station or a very few high-powered stations on a given channel. On the other hand, the assignment of numerous stations on a channel to provide local outlets for as many communities as possible can only be accomplished by severely restricting station coverage to small areas ringed by interference from the numerous other stations on the channel. Similar conflicts affect the maximum attainment of objective (*b*). In view of the aforementioned marked differences between daytime and nighttime propagation of AM radio signals, the conflicts in implementing the three basic objectives are much greater during nighttime than during daytime. It is not engineeringly feasible to cover the entire United States with interference-free groundwave (primary) signals at night. It is generally agreed that approximately half of the land area of the United States and some 20 million persons must depend on skywave (secondary) signals for nighttime radio service.

8. The impossibility of simultaneously implementing all three of the above-listed objectives on any single channel led to the classification of broadcast frequencies into separate groups, with different rules for the assignment of stations, depending upon the purpose for which each class of channels was established: (*a*) Clear-channel frequencies designed to provide primary (groundwave) and secondary (skywave) service over an extended area and at relatively long distances by high-powered stations known as class I stations; (*b*) regional frequencies designed for stations (known as class III stations) to render service primarily to metropolitan districts and the rural areas contiguous thereto; and (*c*) local frequencies designed for stations (known as class IV stations) to render service primarily to cities and/or towns and the suburban and rural areas contiguous thereto. This pattern of allocation dates from the adoption of the Commission's rules and standards, essentially in their present form as far as standard broadcasting is concerned, in 1939. Because of the relative inefficiency of skywave transmission during daylight hours, it is possible to assign many more stations to a given channel for daytime operation. Moreover, the assignment of daytime stations permits more efficient channel utility than would otherwise result. It has therefore been possible, and in furtherance of the basic objective of providing as much service and as many local broadcast outlets as possible, for the Commission to assign additional stations on the clear

and regional channels in various parts of the country limited to operation during the daytime hours, as well as to permit unlimited-time stations to operate with increased facilities during these hours. There are now about 1,400 daytime stations,[1] of which about 850 are assigned to regional channels and all but 1 of the remaining 550 to clear channels.

9. From the foregoing, it is apparent that the authorization of daytime stations was specifically intended to permit the utilization of spectrum space which, after accommodating other stations (i. e., clear-channel and full-time regional stations), was available during the day but not at night. By longstanding domestic usage and international agreement the hours for daytime broadcasts are those between sunrise and sunset. The subject DBA proposal would permit daytime stations to operate during the nighttime (postsunset and presunrise) period during several months of the year.

Relation Between Instant Proceeding and Clear Channel (Docket No. 6741) and Daytime Skywave (Docket No. 8333) Rulemaking Proceedings

10. A grant of the instant DBA proposal would have a direct bearing upon two current rulemaking proceedings. As stated in paragraph 4, above, the appearance and disappearance of skywave transmission is not, as our present allocation rules might imply, an instantaneous phenomenon commencing precisely at sunset and ending precisely at sunrise. Data which have been accumulated from field intensity recordings of numerous stations have shown that skywave transmission, which is negligible during most of the day, builds up progressively in a significant degree at about 2 hours before sunset and reaches its approximate maximum at about 2 hours after sunset.[2] Likewise, nighttime skywave transmission, which begins to deteriorate progressively about 2 hours before sunrise, is present to a limited degree as long as 2 hours after sunrise. As a result, operation of daytime stations even within the period between sunrise and sunset causes progressively diminishing or increasing skywave interference to stations sharing the use of the channel and, to some extent, adjacent channel stations. This interference is sufficiently severe to impinge substantially on the service areas of stations which under the Commission's present allocation rules are entitled to protection from objectionable interference over the wide areas that they are intended to serve.

11. In 1947 the Commission initiated a rulemaking proceeding (docket No. 8333) to determine the existence, nature, and extent of daytime skywave transmission of standard broadcast signals and to

[1] The term "daytime station" as used herein includes approximately 15 stations which are licensed on clear channels as "limited time" stations. The only difference between the two groups is that where a limited-time station is located east of the dominant station on the same frequency it may operate until sunset at the dominant station, while daytime stations may operate only until local sunset.

[2] The order of magnitude of the increase is indicated by data in docket No. 8333. As an example, on a frequency in the middle of the standard broadcast band, a signal will increase roughly 40 times in intensity from 2 hours before sunset to sunset and will reach approximately 150 times the 2-hour-before-sunset intensity at 2 hours after sunset. The variation between presunset and postsunset signal intensity is more pronounced at lower frequencies and less pronounced at higher frequencies.

ascertain what, if any, changes should be made in the rules as a result of its findings. In March 1954, the Commission issued a proposed report and order in that proceeding (10 Pike and Fischer R. R. 1541), embodying amendments to the rules and technical standards which would restrict the daytime skywave radiation of interfering stations toward desired class I stations to a specifically prescribed degree. This could be achieved by reducing power, directionalizing interference signals away from the desired station, or both. While affording some degree of protection from daytime skywave interference, the proposed amendments reflect a compromise in that the restrictions were not so limited as to afford the cochannel class I stations the full degree of protection which was sought by these stations. In July 1954, the Commission held oral argument on the proposed rules, and subsequently received written comments concerning whether the proposed restrictions should be confined to new or changed station assignments or should be applied also to existing stations. The Commission has not yet reached a final conclusion in that proceeding.

12. The daytime skywave proceeding (docket No. 8333) in turn is intimately related to far broader issues concerning even more basic questions of revision of the standard broadcast allocations pattern which are under review in the clear channel proceeding (docket No. 6741).[3] Under the present allocation, a total of 46 frequencies are assigned as United States clear channels. Twenty-four of these clear channels are reserved for the exclusive use at night of a single class I–A station. On the remaining 22 United States clear channels more than 1 class I–B dominant station may be assigned, such stations affording each other mutual protection through the use of directional antennas. The assignment of secondary or class II stations is permitted on all of the clear channels. On the clear channels assigned for class I–A use, only daytime class II stations are permitted; whereas on clear channels assigned for class I–B use, unlimited time class II stations affording day and night protection to the dominant class I–B stations are permitted. On April 15, 1958, the Commission issued a further notice of proposed rulemaking in docket No. 6741, inviting comments on a proposal to assign additional unlimited time stations on 12 of the 24 United States class I–A clear channels in order to improve service in certain areas. On 5 of these 12 channels new class I–B station assignments would be permitted in specified Western States with directional antennas to protect both new and existing class I stations. The proposal also contemplates that class II (secondary) stations could also use these channels at night under certain conditions. It further provides that on the other 7 of the 12 class I–A clear channels mentioned, additional class II stations would be authorized in locations where they would provide needed primary service in areas now lacking it. While no action was taken with respect to the other 12 class I–A clear channels, the Commission asserted that it will consider at a later date the advisability of authorizing the use of higher power on these channels. Comments in response to the

[3] Docket Nos. 6741 and 8333 were consolidated in 1947 but in 1953 were severed in order to permit separate consideration of the daytime skywave proceeding (docket No. 8333).

April 15 further notice were filed on and before August 15, 1958, and reply comments are due by September 29, 1958.

13. It is evident that the entire clear channel problem embraces the daytime skywave problem as one large facet, and that the latter in turn affects the basis on which it would be possible to approach the questions raised by the instant DBA proposal for extended hours of daytime stations. The DBA proposal contemplates an action diametrically opposed to the tentative conclusions announced by the Commission in its March 1954 proposed report and order in docket No. 8333. Thus, insofar as the instant proposal concerns daytime stations on clear channels, it could not be granted in whole or in part without having a direct bearing upon the aforementioned clear-channel and daytime-skywave proceedings, and involving a prejudgment of the issues therein. Denial of the instant proposal, of course, would not involve such prejudgment.[4]

Record in This Proceeding

14. Comments favoring the proposal were filed by the Daytime Broadcasters Association (DBA), an organization representing about 150 daytime stations, and by the licensees of over 100 daytime broadcasting stations. Oppositions were filed by the Clear Channel Broadcasting Service (an association representing 14 non-network-owned class I–A stations), the National Grange, and by the licensees of over 240 clear-channel and full-time regional stations. A large volume of correspondence from individuals and groups favoring the proposal, and a smaller quantity of informal communications opposing it, were received.

15. The proposed extended hours of operation prior to local sunrise and after local sunset by daytime-only stations would automatically involve extended hours of interference to full-time stations operating on the same frequencies.[5] Thus, the ultimate question in this proceeding—apart from international considerations—is whether or not the public interest would be better served by permitting all daytime stations wishing to do so to broadcast during these extended hours, despite resultant interference to unlimited-time stations, or whether the public interest would be better served by retaining the present rules prohibiting the operation of daytime stations during nighttime hours. In our notice we stated that, in order to resolve this question and to evaluate adequately DBA's proposal, we needed reliable information on which to make a reasonable assessment of the probable resultant losses of service as well as a showing of the extent of the service gains which could be achieved through its adoption. Accordingly, we requested reasonably complete and accurate data concerning:

(*a*) The times during which, the areas in which, and the populations for whom the DBA proposal would result in added primary service.

[4] On August 15, 1958, WCAR, Inc., licensee of station WCAR, Detroit, Mich., filed a petition requesting that the Commission consolidate the instant proceeding with the clear channel and the daytime skywave proceeding (docket Nos. 6741 and 8333). Other parties in their comments in this proceeding also requested consolidation. For the reasons set forth in this report, and in view of our action herein, to the extent that these requests ask consolidation of dockets 6741 and 8333 with the instant proceeding, they are denied.

[5] None of the formal comments filed in this proceeding challenged this assertion.

(*b*) The extent to which such primary service gains would occur where no other primary service is available:
(1) from any other station;
(2) from any other station located in the same city or town.
(*c*) The periods during which, the areas in which, and the populations for whom primary service available under the present rules would be subjected to objectionable interference to the signals of United States class I–A, I–B, unlimited-time class II and class III stations.
(*d*) The extent to which the foregoing losses of service would occur in areas and for populations receiving no other primary service.
(*e*) A showing similar to (*c*) and (*d*) with respect to losses of skywave service within the 0.5-mv./m., 50-percent skywave contours of class I stations.
(*f*) The extent to which limitations set out in the above-referenced international agreements would be infringed.
(*g*) Views of the parties concerning the need for the additional services which would be made possible by extending the hours of operation of daytime stations and the effect on the public interest of the consequent losses of service from other classes of stations.

16. The comments of DBA and the other proponents, while containing some material as to hours of operation and the communities in which daytime stations are the only local radio outlets, supply no data on areas and populations which would gain or lose service by adoption of the proposal. They urge that such data is of little use because service from distant high-power stations is not of value to local communities, even if available, because the programing of such stations is not designed for or of interest to the populations of distant communities. This argument, aimed primarily at clear channel rather than regional stations, is considered below. The opponents assert that there is great need for any data which may shed light on the probable or possible effects of the DBA proposal in terms of services to be gained or lost by the public. Many of the opponents have filed engineering statements setting forth the results of studies concerning the nature of the proposal. While most of these statements are admittedly not as comprehensive in scope and detail as the Commission's notice called for, the opponents express the view that they are nonetheless adequate to establish, for the frequencies and locations which have been studied, that severe losses in area and population now receiving interference-free nighttime primary groundwave service and secondary skywave service would result from operation of daytime-only stations beyond local sunset hours and, likewise, that interference effects suffered by daytime-only stations after local sunset would markedly reduce any gain in service by these stations.

17. Much of the data which has been filed is tabulated in summary form in the appendices attached hereto. While our consideration is by no means limited to data therein, these appendices serve as a convenient vehicle and ready reference for a substantial quantity of the technical data which has been filed in this proceeding.

18. Appendix I shows the areas and populations served by daytime stations and the service which would be afforded if these stations were authorized to operate at night after local sunset or before local sunrise. Appendix II shows the areas and populations receiving primary service nighttime from stations authorized for nighttime operation and the areas and populations which would lose this service as a result of interference under the DBA proposal. Appendix III shows the areas and populations receiving nighttime secondary service and the areas and populations which would lose this service under the DBA proposal.

19. Interference computations were made using the average skywave field intensity charts contained in section 3.190 of the Commission's rules, which are based on the average field intensity corresponding to the second hour after sunset. In addition, the diurnal variation curves contained in figure 5 of the Commission's exhibit 1 in docket No. 8333 were used by some parties on the basis that these curves are more appropriate for the first hour after sunset or before sunrise. Where data was supplied on both bases, the appendices show both values. We believe these field intensity charts and diurnal variation curves and the various other engineering tools and assumptions—based upon professional engineering experience—are sufficiently valid to render the data submitted by these parties of practical use to the Commission in reaching our decision herein.

We proceed to consider the seven propositions set out above.

(*a*) *The times during which, the areas in which, and the populations for whom the DBA proposal would result in added primary service*

20. The stations licensed for daytime operation only for which data has been filed are listed in appendix I. Although in some instances not complete, data requested by the notice herein has been filed for 81 stations. Sunrise and sunset hours for the months of March and December are shown in the appendix for each station. Thus the hours of operation requested by the petition may be determined for each station by comparing the sunrise and sunset time shown in the table with the 5 a. m. to 7 p. m. hours requested by the petition. For example, sunrise and sunset at Texas City, Texas in March is 6:30 a. m. and 6:30 p. m.; in December it is 7 a. m. and 5:15 p. m. When compared with 5 a. m. to 7 p. m., the early morning operation involved amounts to 1½ hours and evening operation for ½ hour during March and 2 hours and 1¾ hours, respectivley, during December.

21. The month of March has been chosen as representative of spring and fall (October) conditions and December as representative of the conditions during the winter. In general, during summer 5 a. m. follows sunrise and 7 p. m. precedes local sunset. Thus, sunrise and sunset hours for June, as representative of summer, are not shown.

22. Disregarding the summer season, during which slight if any additional operation is involved, the additional morning hours of operation from the table range from a minimum of 1 hour during

March to a maximum of 3¼ hours during December, with an average of 1.5 hours during March and 2.4 hours during December.

23. Since the stations licensed for daytime operation only do not now operate after local sunset or before local sunrise, any primary service which would be provided by such stations during the extended hours requested by the petition would result in added primary service. The data tabulated in appendix I shows that 7,977,444 persons within 36,800 square miles would receive primary service from 50 stations on which sufficiently complete data has been supplied, based upon the interference conditions during the second hour after sunset. By way of comparison, 44,567,568 persons within 540,223 square miles receive service from these same stations during their daytime operation. Thus, these stations would, in the aggregate, afford service during the additional hours requested to 17.9% of the population and 6.8% of the area that they serve during daytime hours. For conditions during the first hour following sunset or before sunrise (2 hours of the total additional operating hours requested in the petition are under first hour conditions) the data shows that 8,421,166 persons within 20,285 square miles would receive primary service from the 24 stations for which first hour data is available. During these hours the daytime stations would serve in the aggregate 31.1% of the population of 27,100,159 and 6.1% of the area of 334,484 square miles served by the same stations during daytime hours.

(*b*) *The extent to which such primary service gains would occur where no other primary service is available:*

(*1*) *from any other station*

(*2*) *from any other station located in the same city or town*

24. Based on data for the entire 81 stations listed in appendix I, of the total area and population which would receive added primary service only 64,151 persons in approximately 330 square miles do not now receive primary service from any other station during nighttime hours. 1,541,153 persons in 28 communities do not receive nighttime primary service from any other station located in the same city or town in which the daytime station is located, although other nighttime primary service is available.[6]

25. The above population, area, and percentage figures are limited to the stations for which coverage data has been submitted in this proceeding. These stations comprise a minor percentage of the stations licensed for daytime operation. It is thus appropriate to consider carefully the question whether such data is adequate for our use herein. Upon careful consideration it is our view that the data is typical of all daytime stations and is thus fully adequate. The electrical interferences to the signals of the various stations, which limit their coverage, extend over great distances at night, and thus affect those stations for which no data has been filed as well as those for which data has been filed. The extent of the interference on each channel for which data was filed will be greatly increased under the operation proposed by DBA as compared to the interference now ex-

[6] In several instances such primary service is received from the principal city of the urbanized area in which the community is located. In this connection see footnote 16 on p. 20.

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isting. Such interference will prove to be at least as severe as additional stations are considered in the data. Finally, our examination extends to daytime and unlimited-time station coverages under the data which has been filed. Thus, a substantial number of stations are included, and on these our most careful evaluation convinces us that the daytime stations for which data has been filed are in no way atypical but are fully representative of all daytime stations, both those now licensed and those which may be granted in the future. While additional data could serve to provide greater detail to buttress our decision herein, and to that extent would be desirable, no additional data is necessary in order to support our conclusion herein.

26. One additional and somewhat countervailing factor is appropriate for consideration here. There are listed in appendix IV all of the cities and towns within nighttime "white areas" (i. e., areas receiving no nighttime primary service) in which daytime stations now operate. The proposed nighttime operations would afford immediate primary service to these communities to the extent that such service would not be prevented by electrical interference. It is reasonable to assume, moreover, that in most instances centrally located transmitter sites could be found which would provide service to all persons in these cities and towns.

(*c*) *The periods during which, the areas in which, and the populations for whom primary service available under the present rules would be subjected to objectionable interference to the signals of United States class I–A, I–B, unlimited time class II and class III stations*

27. The unlimited time stations for which primary service data has been filed are listed in appendix II. This data, although incomplete for some stations, has been filed for 169 stations.

28. The loss in the service of 132 stations based on second-hour conditions aggregates a total of 94,591,111 persons in areas totaling 1,289,827 square miles. The loss of service amounts to 43.7 percent of the populations and 68.6 percent of the areas now served at night by these stations.[7]

29. Based on first-hour conditions, the interference shown in the appendix for 24 stations for which such data is available totals 27,513,881 persons in 646,989 square miles. The loss amounts to 30.8 percent of the population and 53.9 percent of the area now served by these stations during these hours.

30. Sunrise and sunset hours are not shown in appendix II because those appearing in appendix I are considered to be more meaningful. It is from these that the extended hours of operation by daytime stations, and thus the duration of interference causing the loss of service of unlimited time stations, can be determined. Moreover, the periods during which interference would be encountered would not prove appreciably different if computed upon the basis of sunrise and sunset hours at the slightly different locations represented in appendix II, these being generally similar in geographical latitude and longitude.

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[7] The present service areas that would be lost by a number of these 132 stations overlap. Thus, while many persons would lose 2 or more services, the total population and areas which would lose 1 or more services is considerably less than the aggregate totals of 94,591,111 persons, and 1,289,827 square miles.

(*d*) *The extent to which the foregoing losses of service would occur in areas and for populations receiving no other primary service*

31. No data has been tabulated in the appendices showing the other primary services in the area which would lose service if the DBA proposal is adopted, since very little data on this point was submitted in this proceeding. In any event the significance of such data, if it had been tendered, would have been minimal because of the reduction in primary service by substantially all unlimited time stations which would result from adoption of the subject proposal. It is evident from appendix II that all of the unlimited-time stations on frequencies on which daytime stations are or may be licensed will lose service. The effect of these losses cannot be considered by measuring the loss of service of any one station but must be considered when all of the service losses are combined. While data has been supplied in various comments showing that substantial "white" areas would be created by loss of service from an existing station, a summation thereof has not been feasible at this time in view of the incompleteness of the data submitted. We are certain, however, that very considerable "white" area would result if the proposal were adopted.

(*e*) *A showing similar to* (*c*) *and* (*d*) *with respect to losses of skywave service within the 0.5-mv./m. 50-percent skywave contours of class I stations*

32. Secondary service is provided to those areas in which a skywave signal has sufficient strength to render satisfactory service and is free from interference from other stations. Under our rules only class I stations provide secondary service. Such service is considered to begin at sunset and end at sunrise the following day, coincident with the required signoff and sign-on, respectively, of the stations licensed to operate on the same channel during the daytime hours.[8] The full coverage potential of secondary service is not realized during the first hour following sunset (or before sunrise), however, as the 50-percent-time skywave service signals increase in strength in accordance with the diurnal curve. The increase in strength and thus in service potential of these signals does not depart significantly from the increase in strength of the interfering signals governed by the same diurnal effects. The exact amount of skywave service destroyed under the DBA proposal will thus vary from day to day and from time to time in any given day because the time in which the interference occurs includes the time during which the skywave service is in the process of increasing or of decreasing. We conclude, however, that all or substantially all such service would be subjected to objectionable interference under the proposal during all nighttime hours that daytime stations would operate, particularly in view of the large number of pending applications that request operation during these hours.

33. DBA and other proponents assert that nighttime skywave sig-

[8] The exact buildup of skywave service depends both upon the increasing strength of skywave signals and the elimination of interfering signals. Sunset time for two or more daytime stations may be somewhat different for each location. Thus, a reduction of interference will be realized as each leaves the air, until the interference is entirely eliminated. During morning hours an inverse sequence is followed, each daytime station commencing operation at its own local sunrise.

nals from the clear channel stations are too weak, intermittent, and undependable to provide service throughout large areas of the USA. These proponents urge adoption of the DBA proposal as a remedy for this asserted lack of service. However, after carefully studying the technical data submitted in comments in this proceeding, in addition to other engineering information in the Commission's files, we are of the view that the cure would be worse than the sickness, if any. The DBA plan would deprive vast populations of all secondary service without providing any replacement for most of the areas concerned. A multiplicity of skywave service is necessary for adequate secondary service due to the intermittent character of skywave transmission. The destructive effect of the proposal is only very slightly mitigated by the fact that on a few of the clear channels (such as 670 kc., 720 kc., and 1200 kc.) there would be no cochannel interference at the present time because there are no daytime-only stations assigned on these frequencies. As a specific example of the effect of the destruction of secondary service, it might be noted that in Idaho and Montana there is an area of about 7,000 square miles, containing about 10,000 persons, to which there is available no primary service and only 2 secondary services during nondaytime hours. Both of these secondary services would be completely destroyed during certain hours under the proposal, leaving this area and population with no radio service whatsoever.

34. Although not in its original petition for rulemaking, DBA in its comments suggests that the Commission permit full-time stations operating with different facilities day and night to operate with their daytime facilities during the same extended hours that daytime stations are permitted to operate. Such an additional change in allocation policy would of course increase by a considerable amount the interference which would prevail during nondaytime hours. Some opponents of the proposal in their engineering analyses have assumed that a grant of extended hours for daytime stations would entail a grant of the same extended hours of operation by full-time stations with their daytime facilities, and have made part of their engineering showings on that basis. In view of our disposition of the DBA proposal in this Report, we need not decide whether granting the DBA request for extended hours of operation by daytime stations would or would not necessarily require authorization of extended hours of operation by full-time stations with their daytime facilities. Our evaluation of the DBA proposal is based upon the conditions which would prevail if daytime stations operated during extended hours and full-time stations operated as they presently do with daytime facilities during daytime hours and nighttime facilities during all other hours.[9]

[9] It might be argued that if daytime-only stations are allowed to operate during extended hours, as a matter of equity full-time stations should be allowed to operate during the same hours with their daytime facilities. On the other hand, it could also be contended that since the essence of the daytime stations' argument is service to local communities, and since by definition under the Commission's rules full-time stations adequately serve their communities with their nighttime facilities, there is not present the element of need necessary to support such a change in the rules in the case of full-time stations. In any event, it is obvious that such an additional change in the rules would materially worsen interference conditions during the nondaytime hours beyond that which would occur from a grant of the proposal as to daytime stations; and, since there is no showing of such a need, the public interest would clearly not be better served by a grant of the proposal for both types of operations than by grant of the proposal for daytime stations only.

Conclusions Based Upon Technical Data Submitted

35. The tabulation (appendices I, II, and III) of the data secured in response to the various engineering matters listed in the December 19, 1957, notice demonstrates conclusively that, in view of the tremendous losses which would result to the existing radio service throughout the United States from the operations contemplated by the instant proposal as compared with the much smaller amount of new service which would be provided in some locations, the proposal fails to accord with the statutory standards governing radio broadcast services [10] and the objectives set forth in paragraph 6, above.

Explanation of Tables

36. While substantially all of the technical data which has been filed in this proceeding is tabulated in the appendices, it has not been possible to include some data. In a few instances, for example, data is not included in which only partial or fragmentary data was supplied or where the data supplied was based solely upon potential or hypothetical stations in which one or more additional stations were presumed to be licensed and operating. We do not believe that the data so filed is sufficiently consistent with the other data, and sufficiently nonspeculative, to warrant inclusion in the appendices. We also note that the data in the table is not based precisely upon the same conditions in each instance. However, such slightly disparate nature does not detract significantly from its usefulness in this proceeding.[11] Finally, we observe that the data is based upon the operation of stations now licensed for daytime operation without including any additional stations which may be licensed and without reference to the applications for new daytime stations which are now pending before the Commission. Likewise, possible nighttime operation of unlimited-time stations by using licensed daytime facilities is not reflected in the data.

Other Contentions of Proponents Re Commission's Engineering Standards

37. The DBA and other proponents have contended that the Commission's engineering standards contained in the present broadcast rules are not wholly applicable for various reasons to the nighttime operation following sunset and before sunrise envisaged by the petition. It is contended that the Commission's skywave curves (figs. 1 and 2 of sec. 3.190 of the rules) should not be used in measuring post-sunset interference conditions in the first 2 hours after local sunset and prior to local sunrise since these curves represent propagation conditions corresponding to the second hour after sunset, conditions which do not apply to the hours involved here. The term "twilight

[10] See secs. 1 and 307 (b) of the Communications Act of 1934, as amended. Sec. 1 requires that the Commission "make available, so far as possible, to all the people of the United States * * * a radio communication service."

[11] For example, some parties filing comments did not use the 50 percent exclusion method contained in the Commission's engineering standards, contending that such becomes inapplicable in view of the great number of stations which would be involved in the nighttime operations at reduced separations. We believe the effect thereof in reference to the resulting data is de minimis.

hours" is suggested by DBA to serve as a virtual substitute for the use of sunrise and sunset times in the Commission rules. DBA has supplied a table of sunrise, sunset, and astronomical twilight times for nine cities distributed throughout the central time zone. The proponents contend further with reference to figures 1 and 2 of rule 3.190 that "The data in these curves was derived on the basis of data compiled in the second hour after sunset at the *western end of the path.*" [Emphasis supplied.] From this the proponents argue that for west to east transmissions, the curves become applicable only when the time at the receiving location is somewhat later than 2 hours past sunset. Before proceeding to further discussion of the curves, it is appropriate to note that we are left with no guidance as to how the proponents' argument proceeds from "data compiled in the second hour after sunset" to the conclusion expressed in terms of "2 hours past sunset," for the two are by no means the same. As used in the Commission's standards and pronouncements, the term "second hour after sunset" means the entire 60-minute period extending from 60 minutes after sunset until 120 minutes after sunset.[12] Figure 1, used for stations operating on clear channels, is based on data corresponding to the second hour after sunset at the recording station (i. e., the receiving location). Accordingly, the curves therein represent not conditions existing at the exact period of sunset plus 120 minutes or sunrise minus 120 minutes, as might be gathered from the proponents' discussion, but instead represent average conditions existing during the second hour following sunset and the second hour before sunrise. In securing the data, automatic recordings were made of the field intensity delivered by 40 transmitting stations at 11 different points in the United States. East to west, west to east, and north to south paths were included. The curves of figure 2 used on regional and local channels are derived on the basis of data covering hourly median fields for 10 percent of the year at the western end of the path. This data, insofar as reciprocity of transmission east and west may be assumed, may equally well be interpreted as a representation of propaga-

[12] A different meaning is carried by the term "SSMP+2" which is used in the abscissa scale of the diurnal curves which appear as figs. 2 and 5 of the Commission's exhibit 1 in docket 8333 as discussed hereinbelow. This term is an abbreviation for sunset midpoint (of transmission path) plus 2 hours, i. e., plus 120 minutes. Any point SS+X on the curves is based on data for the hour centered on X hours after sunset. From a statistical viewpoint any point on the curves represents the best estimate for the hourly median field centered on the abscissa for that point. Based upon the statistical variation of the instantaneous field in intervals of an hour where the sunset interval is centered on true sun time sunset (report of committee III in preparation for the clear channel hearing, docket 6741, dated January 15, 1946), these figures present abscissa values which are designated on a linear time scale, the minimum division of which represents one-tenth of an hour or exactly 6 minutes. Lesser time increments may be read from the scale by interpolation. Figs. 2 and 5 show, respectively, a plot of the data for station WFAA as recorded in Grand Island, Nebr., over a period of approximately 6 years beginning in 1939, and curves for 0.5, 1.0, and 1.5 megacycles based upon data from 14 transmission paths recorded during these years. Diurnal curves submitted in the comments herein show slight variations from FCC data but present no conflict of decisional significance to this proceeding. Fig. 5 is appropriate for use in the manner set forth in exhibit 1 of docket 8333 and in the report of committee III in preparation for the clear channel hearing, docket 6741, dated Jan. 15, 1946. When so used, it may with substantial validity (exhibit 1, docket 8333, p. 3, line 12, et. seq.) be applied directly to fig. 2 (formerly fig. 1a) of sec. 3.190, which reflects data on curves also prepared by the above-named committee III (exhibit 109, docket 6741, p. 3, line 12, et. seq.). By this procedure, the field intensity may be determined for any hour of transmitter local time following sunset (or before sunrise) within the entire range of abscissa values shown thereon. Its use in similar manner with fig. 1 is also considered to be substantially accurate in view of the significant similarities between figs. 1 and 2. Moreover, any slight inaccuracies which may be reflected by such use are considered to be insignificantly small and thus not significant to our decision herein.

tion over the same path to the east from a transmitter located to the west. Development of this fact is made in FCC exhibit No. 1 of docket 8333, to which the petitioner has made reference. The exhibit presents "an analysis of data recorded on 14 transmission paths for a period of approximately 6 years" with the objective "to obtain curves representing '10-percent skywave field intensities' at any distance, in any direction, at any frequency, at any hour of transmitter local time for a station at any latitude." The diurnal curves, figures 2 and 5 of the exhibit, contain data concerning the variations of strength of skywave signals following sunset and thus can be used to determine the interference during the first hour after sunset (or before sunrise). It is to be observed that the diurnal curve produced by this analysis yields results of a relatively higher order of accuracy, since it involves only ratio measurements and not the absolute value of any measurement and also that the skywave curves of the Commission are accepted throughout the world as being indicative of average propagation conditions. This data is properly to be used in terms of the sunrise and sunset times used by the Commission in its rules.[13] Thus, whether or not there be "twilight" following sunset lacks significance in the face of actual measurement data concerning skywave propagation conditions during these hours.

38. These proponents' contention that the Commission's curves should not be applied to determine interference during the first 2 hours after sunset does not mean that there will be no interference effects in the 2-hour postsunset and presunrise periods or that the Commission can proceed on any such invalid assumption. Indeed, DBA and most of the proponents admit that interference will result. Furthermore, it is noted that, although the proponents in discussing interference refer to the 2-hour period after sunset and before sunrise as though they were the only periods affected by the proposal, the interference problem is not so confined, since some daytime stations would increase their broadcast hours in the morning and again in the evening to as much as 3¼ hours after sunset and before sunrise during midwinter months.

39. The proponents also contend that, since figures 1 and 2 of section 3.190 of the rules present a statistical method for predicting interference, such interference would, in fact, exist as little as 10 percent of the time. This is an oversimplification of the problem, and a misinterpretation of the significance of the 10-percent figure. Section 3.182 (o) of the Commission's rules states that objectionable interference is created by an undesired signal to a desired signal when the undesired signal exceeds an intensity, determined elsewhere in the rules, for 10 percent or more of the time. Figures 1 and 2 indicate for a specified radiation intensity and for transmission paths of varying lengths the intensities of the continuously varying skywave signal which are exceeded 10 percent or more of the time. Therefore, if the intensity of an undesired signal, as determined by the employment of figure 1 or figure 2, exceeds the permissible undesired/desired signal ratio, the undesired signal causes objectionable interference, without regard to the fact that it has less than the intensity deter-

[13] Sec. 3.79 of the Commission's rules.

mined from figures 1 or 2 for a major portion of the time, and may have completely destructive intensity for a much shorter time. The Commission has selected the 10-percent level as being a reasonable limit of interference. Ionospheric propagation, the basis of figures 1 and 2, is a subject of exceeding complexity, the study of which has occupied many capable physicists and engineers over a period of years. While interferences are predicted in standard broadcast station allocations by tools employing the statistical method, we believe that therein lies strength of these tools and that predictions of station interference based upon them are meaningful.

(*f*) *The extent to which limitations set out in international agreements would be infringed*

40. It is necessary to consider the impact of the DBA proposal on international agreements and understandings affecting allocation of standard broadcast facilities, since these agreements provide stricter limitations upon the operation of unlimited time stations than upon daytime-only stations on almost all frequencies and since they define daytime operation as operation between local sunrise and local sunset.[14] Almost 400 of the United States daytime stations are currently assigned on frequencies on which other North American governments have clear channel stations protected from interference by United States cochannel stations. This protection is accorded on the same basis as those countries protect the larger numbers of clear channels on which the United States has priority under the relevant agreements. As to channels designated in the agreements as regional channels, any nation may make use of these frequencies, subject to the conditions as to power and prevention of objectionable interference set forth in the agreements. Any country making an assignment of any facilities on a frequency must notify the other countries involved of the assignment; if another country objects thereto, it becomes the subject of negotiation under the agreements. The agreements involved are the North American Regional Broadcasting Agreement of 1950 (to which the signatory parties are Canada, Cuba, the Dominican Republic, the Bahamas and Jamaica, and the United States of America), and the agreement between the United States of America and United Mexican States, signed January 29, 1957. Pertinent provisions are found also in the executive agreement between the United States and Mexican Governments which became effective March 29, 1941, and continues in force until ratification of the successor agreement signed January 29, 1957. In both the 1950 NARBA and the 1957 United States-Mexican agreement, definite standards of protection are set up for all of these frequencies, with different standards for day and night (sunset and sunrise) operation. With respect to the class I–A channels on which the respective countries have priority, the protection extends to the border of the country, and a cochannel signal from a station in another country exceeding 5 μv./m. daytime or 25 μv./m. nighttime is prohibited. Also contained in the 1950 NARBA, with respect to such channels, is a provision that no station is to be assigned in another country for nighttime operation within 650 miles of the border of the

[14] The definition of "daytime operations" in the North American Regional Broadcasting Agreement of 1950 (annex II, sec. A (6)) is quoted in par. 18 of the December 19, 1957, notice initiating this proceeding.

country having priority; the United States-Mexican agreement of 1957 states that no nighttime assignments will be made by either country (except in the specific cases mentioned therein) on a channel on which the other country has such priority.

41. While neither the 1957 agreement with the United Mexican states nor the 1950 NARBA has yet entered into formal effect through requisite ratification by the parties,[15] the signatory governments, in the interest of avoiding chaotic mutual interference to the several broadcast services concerned are, in general practice, observing the limitations which these agreements stipulate. It is not possible, therefore, to disregard these international agreements. The Commission has so stated; in the note to section 3.28 of its rules it is provided that, pending ratification and entry into force of these agreements:

* * * no assignment for a standard broadcast station will be made which would be inconsistent with the terms of these agreements.

This policy has been uniformly applied by the Commission.

42. It is apparent that grant of the instant DBA proposal would violate the standards of protection set forth in these agreements and adhered to by the Commission, not only with respect to clear channels on which other nations have priority of use, but also with respect to regional channels. From the data submitted in this proceeding, it is readily apparent that operation by United States regional daytime stations during the nondaytime hours proposed by DBA would cause serious objectionable interference in many cases to stations in foreign countries. One example of interference which would be caused on a clear channel is seen, in connection with operation on 740 kc., a channel on which Canada has class I–A priority and station CBL, Toronto, operates as a class I–A station. Under maximum interference conditions which would prevail under the DBA proposal (7 p. m. in December), CBL would be limited, as a result of operation by United States stations on 740 kc, after sunset, to its 11.6-mv./m. contour, instead of rendering service out to its 0.5-mv./m. contour and beyond. CBL's 0.5-mv./m. groundwave contour includes all of southern Ontario between Georgian Bay and the eastern end of Lake Ontario. If limited to its 11.6-mv./m. contour the station would render primary groundwave service at 7 p. m. in December only within an area with a radius of about 40 miles around its transmitter.

43. After the issuance of the December 19, 1957, notice in the present proceeding, the Commission requested the Department of State to elicit the views of the other nations which are signatories to the above-mentioned international agreements. The reply which has been received from the Dominion of Canada voices strong opposition to the proposal because of its effect upon the primary service of all classes of stations. Mexico is of the view that the DBA proposal involves very difficult problems and it indicates that no approval of the proposal will be forthcoming in the near future. Of the other signatory countries that have replied, only Bahama, Jamaica, Cuba, and the Dominican Republic have indicated that they may not object to the proposal.

[15] To date, Canada and Cuba have ratified the North American Regional Broadcasting agreement.

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44. DBA and other proponents state that since the two agreements have not yet been ratified, the mere fact of their execution and existence is no reason to reject the DBA proposal. But this assertion ignores the fact that, though not ratified, the agreements have been of tremendous importance in affording some measure of protection to United States stations from the uncontrolled interference which could result if the United States, or other countries signatory to the agreements, gave no further consideration to their mutual commitments under such arrangements. We question whether under any circumstances we could appropriately undertake a change in our allocation policies so seriously inconsistent with international understandings, which would jeopardize the framework of mutual protection throughout the continent. We are not impelled to take such a serious step here.

(*g*) *Need for the additional services which would be made possible by extending the hours of operation of daytime stations and the effect on the public interest of the consequent losses of the service of other classes of stations*

45. Under the provisions of section 3.24 (b) (2) of the rules, a proposed assignment which will cause objectionable interference to existing service will be permitted only when the public need for the new service clearly outweighs the need for the service which will be lost. This same principle applies in our consideration of the DBA proposal; the public interest will not be served by adopting the proposal unless the need for the service which daytime stations will render during nondaytime hours exceeds the need for the service of unlimited time stations which will be lost during such hours. In making this comparison of the relative need for the service that would be gained and lost by adoption of the proposal, we note that operation of daytime stations as contemplated by the DBA proposal would result in loss of existing service to a vastly greater population than that which would receive additional service. While this finding is a persuasive one, it would not necessarily be determinative if the need for the service which would be gained by a relatively small population were greater than the need for the presently existing service which would be lost. After carefully considering all of the comments filed in the instant proceeding (including letters from community groups and others in support of the DBA proposals, and also those portions of the record of the hearings conducted by the Select Committee on Small Business of the United States Senate in April 1957, which were incorporated by reference in some of the comments herein), we believe that such a preponderant need for the extended hours proposed by DBA is not established, but, rather, that the record shows a greater need for the preservation of service which would be lost under the proposal.

46. The proponents assert that there is a large, unsatisfied need for local service during the hours between 5 a. m. and 7 p. m. It is asserted that this need is not being met by the service rendered by distant stations because (1) with the increasing availability of closer signals, listeners are no longer content to make use of the weaker signal of a distant station for radio reception; and (2) even if the

distant station provides a technically adequate signal, its program service is not geared to the needs and interests of the local community, and does not meet them. Of particular significance, state the proponents, is the fact that in the United States 913 communities, with a total population of more than 7,500,000, have available to them no local radio outlet other than a daytime-only station.[16] It is asserted that extended hours are necessary for daytime stations in order that the needs of these communities and surrounding areas for broadcast service may be more fully met.

47. In evaluating this argument, it must be borne in mind that the absence of a local nighttime standard broadcast station in these communities (the number of 913 has not been challenged, and is accepted here) does not mean that that number of communities are without nighttime primary service. It is established by the data furnished herein that of the 913 communities, approximately 535, with a population of nearly 6,400,000 are located in areas where 0.5 mv./m. or better primary service is available nighttime.[17] The rural area around these 535 communities thus receives primary service nighttime; it cannot be determined from the data of record how many of these 535 communities (nearly all of which are of 2,500 population or more) receive by night the 2.0-mv./m. signal required for primary service to urban communities, but it appears that most of them do. Many of these 535 communities are located in metropolitan or urbanized areas, and receive primary service from stations located in the principal city thereof or in another suburban community.[18] In other cases, some of these 535 communities receive primary service nighttime from a station located in the same county. We recognize the importance of providing a local outlet for as many communities in the Nation as possible. This is one of our basic allocation objectives. Yet this objective should not be reached by changing the AM allocation rules so that an inefficient use of broadcast facilities would result therefrom.

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[16] Some of the daytime stations supporting the proposal are located not in any of these 913 communities but in cities well supplied with full-time service, including Baltimore, Los Angeles, Pittsburgh, Providence, Akron and Columbus, Ohio, and Greenville, S. C. These stations stress, in support of their request for additional hours, the unique or extraordinarily valuable character of their program service to their communities, including such matters as public-service programing and announcements; the fact that the full-time stations are all network affiliated, whereas the proponent's station would furnish an independent, locally oriented service during the extended hours; foreign-language programing; religious programing; and programing of a higher cultural character than that available in the community from the full-time stations. We conclude herein that the need for additional local service in communities now having no local nighttime outlet does not justify the result sought by DBA; a fortiori, it cannot be concluded that the proposal should be granted because of the programing characteristics of stations in communities having a full-time local outlet such as those mentioned above. Furthermore, such characteristics of programing are of course highly changeable, and therefore are not a valid reason for changing the permanent, basic allocation structure.

[17] The figure of 535 communities is contained in reply comments filed on behalf of station WING, Dayton, Ohio; it is stated that all of them have "interference-free groundwave service available at night." However, an examination of the exhibits cited in support of this assertion shows that some of the communities listed (e. g., those listed for Alabama) are over 2,500 population and receive only 0.5 mv./m. but not 2.0 mv./m. groundwave service.

[18] For example, DBA lists among the 913 communities Silver Spring and Wheaton, Md., and Alexandria, Fairfax, and Falls Church, Va., all of which are in the Washington metropolitan area. Other suburban communities listed are Glendale and Inglewood (Los Angeles); San Mateo and San Rafael (San Francisco-Oakland); Evanston (Chicago); Covington and Newport, Ky. (Cincinnati); Bossier City, La. (Shreveport); Dundalk and Towson, Md. (Baltimore); Cambridge, Medford, and Quincy, Mass. (Boston); Inkster (Detroit); Anoka, Hopkins-Edina and St. Louis Park, Minn. (Minneapolis); St. Charles and Clayton, Mo. (St. Louis); Morristown, N. J. (Newark); Campbell, Ohio (Youngstown); Massillon, Ohio (Canton); Worthington, Ohio (Columbus); Braddock, Homestead, New Kensington-Tarentum, Pa. (Pittsburgh); Prichard, Ala. (Mobile); Scottsdale, Ariz. (Phoenix-Mesa); Groton, Conn. (New London); Coral Gables, Fla. (Miami); Decatur, East Point, Ga. (Atlanta); Rossville, Ga. (Chattanooga); New Albany, Ind. (Louisville); and Council Bluffs, Iowa (Omaha).

The need for and advantages accruing from extended hours for a local outlet are expressed by the proponents as including the following more specific elements (which, it is asserted, are not met by stations located elsewhere):

(*a*) Need for service, particularly during evening and early morning hours during winter months, to convey information about bad weather and other emergency conditions. In wintertime (before sunrise) it would be desirable to have more broadcasting of school closings due to bad weather, changes in school bus routes, etc. On certain occasions daytime stations either could have rendered such service but were unable to do so because of their short hours, or rendered such service (in connection with tornadoes, etc.) in months when they were permitted to operate, but could not have done [19] so if the emergency situation had occurred at another time of year.

(*b*) Need for service to provide farm market and weather information in the evening and early morning, when farmers are able to hear it and make advantageous use of it (e. g., in connection with deciding whether or not to ship livestock). Wide-area stations, while they can and do provide agricultural information generally, cannot gear such information specifically to the needs of the local farmers in all parts of their wide and diverse areas.

(*c*) The advantage which would accrue to public-service organizations from the stations having more time to devote to public service programing and announcements. Because of the short operating hours during the months (late fall and winter) when business is good, stations must necessarily devote the bulk of their time to commercial material; some worthy causes (such as the March of Dimes) put on their drives in wintertime, when the short span of daytime operation limits the effectiveness which a station can have in supporting them.

(*d*) The general need for and advantage of providing desirable programs, such as news, at times when people are free to listen to them. During daytime hours in late fall, winter, and early spring, programs can be presented only during hours when much of the potential audience is at work, in school, or otherwise not free to listen, and that it would be preferable to be able to present such programs during the dinner hours.

(*e*) Elimination of the confusion which results from lack of uniform hours. The audience becomes confused as to when the daytime station signs on and off and during what part of the year a program will be available at a certain time. The audience tends to identify the station with its shortest hours (the only hours during which it is always available); accordingly, it is difficult to build an audience for the additional hours which become available as daytime hours increase seasonally.

[19] One specific example of this kind of service was described by station WLBH, Mattoon, Ill. On that occasion, in January 1957, a large local industrial plant was not able to go into operation in the morning because of a break in a gas main (hundreds of miles away) during the night. The plant manager called the station manager about midnight and requested that the station broadcast announcements of the event between 6 and 7 a. m. so that workers at the plant would not come to work. The station was of course unable to do so since sunrise was not until after 7 a. m., and no other station in the area was available to make the announcement.

(*f*) The difficulty of building programs at particular hours during the year and then having to cancel or shift them when daytime hours become shorter. Sponsors will buy a particular program at one hour but not at another hour (e. g., a 5 : 30 news broadcast); this results in gaining a sponsor only to lose him when the program must be canceled or shifted, and the same thing applies to the listening audience.

(*g*) Greater service to local advertisers. Local merchants are deprived of the opportunity to promote their products or services by the absence of a radio outlet during nondaytime hours, particularly during the months when business is at a high level (in particular the pre-Christmas months, October, November, and December). This works to the detriment of the local community in that it gives big city advertisers an advantage because they can advertise over full-time stations in the larger communities and appeal to the local community audience, while the local advertisers have no outlet during important listening hours. The small business concern is hurt in this respect, since the local (daytime) station is often the only medium it can afford to use.

(*h*) The desirability of the hours involved, from the standpoint of the listener, the advertiser, and the station (for example, hours up to 7 p. m. are valuable because television viewing does not reach its peak until after that hour).

(*i*) The advantage to the station, from the standpoint of both stability of staff and economy of operation, of being able to conduct its operations during generally the same hours all year, rather than (as at present) having to either support all year a staff adequate for its longest hours of operation, or hire new people for the longer hours every spring or summer.

(*j*) Advantages to the daytime-only stations, as such. The daytime stations are small business, their opportunities are limited by an archaic allocation system which at present works for the benefit of a few wide-area stations which no longer render a significant service to communities distant from where they are located. While figures may show a fair income for daytime stations as a group, a number of them are not doing well economically and would be hurt in any business recession.

(*k*) In general, the need for a medium of communication in additional hours, particularly in communities where there is no daily newspaper and where (as in a few cases) the daytime station is the only station in an area of two or more counties.

48. Many of the proponent daytime stations submitted letters from city officials, representatives of civic, educational, religious, and business groups, county agents, and similar persons, as well as from listeners, expressing views that some or all of the needs and potential advantages exist. It may be observed, in general, that these persons did not appear to be aware of the fact that during the extended hours the service area of a daytime station would be less than, and often only a small fraction of, the station's daytime service area. Some of them seem to be aware in a general way that the DBA proposal would create interference, but they do not appear to know the extent thereof.

49. We recognize that these needs and advantages of extended hours of operation by daytime stations exist insofar as they concern the public and the community rather than the station itself, and that, absent interference considerations, it would be desirable that a local outlet operate during whatever hours may be necessary to meet them. But these same needs and advantages are common to all radio service and any change in allocation rules which results in degradation of overall radio service results in less meeting of the various needs and provides for less of the advantages than at present. We recognize the importance and value of permitting the only local outlet in a community to operate during additional hours, especially where, as in the case of some of these daytime stations, the resulting additional service would be the only primary service available during the hours in question. Yet the losses in service which would result, losses often near and in some cases within the very communities which the full-time stations are licensed to serve,[20] far outweigh the gains. The losses would thus impair the present ability of stations to meet the needs and provide the advantages expected of radio to an extent much greater than that to which the extended hours would afford daytime stations an opportunity to render similar service. For example, as to service in emergencies, it is desirable for a local station to be able to render such service; but not at the expense of the ability of other stations to render similar service, when the population lost would be much greater than the population gained.[21] The same consideration applies in the case of the Commission's conelrad system. The optimum value of this system is obtained only when radio service is maintained reasonbly unimpaired.

50. With respect to service in emergencies and generally, it must be borne in mind that under the DBA proposal, while individual communities would gain some service, the nation as a whole would lose much more than it would gain. The area and population served by the daytime stations would be severely limited as compared to their daytime coverage, and the primary service rendered by full-time stations would suffer vast inroads. The result would be the curtailment of presently available primary service to large areas and populations, especially rural areas, during the hours in question.[22]

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[20] Several opponents of the proposal submitted an engineering study of the effect of the subject proposal on the coverage of a number of 5-kw., unlimited time, regional stations. The study discloses that 64 percent of these stations would not provide interference-free service to the cities for which they are licensed and that 46 percent of them would not even be able to serve the principal business districts of their communities.

[21] As some of the opponents have noted, other methods are available to bring locally originated nighttime radio services to the 913 communities now without such service. In some cases the daytime stations on regional channels and on foreign clear channels could bring a full-time service to their principal communities by installing directional antennas for nighttime operation on the same or some other frequency. Where this would not be feasible, the daytime stations might consider constructing and operating FM stations. As shown by data in the record, FM stations can give much greater coverage of the communities and surrounding areas during night hours than that obtainable from a daytime-only station subject to the limitations which would prevail. It is reasonable to assume that the public would purchase FM receivers if there is sufficient unsatisfied need for radio services in these communities.

[22] For example, a large area in New York, Pennsylvania, and New Jersey, now served by New York City, clear-channel stations with a groundwave signal nighttime of at least 0.5 mv./m.[1] would lose the service of these stations. Within this area of approximately 11,000 square miles, nearly 6,500 square miles would have no primary service available during these hours in spite of the fact that daytime-only stations would be serving very small portions of the area. Of the approximately 644,000 rural population within this area, about 323,000 would continue to receive primary service during these hours from daytime stations and existing full-time stations as limited by the additional interference; but about 321,000 persons, who now receive service from New York stations would have

51. The proponents assert that extended hours of operation are needed to permit daytime stations to carry many programs of sole or primary interest to outlying rural areas. The licensees of a number of clear-channel and unlimited-time regional stations reply: that they already provide extensive unique programing designed solely for rural listeners; that this programing has a wide appeal to farm listeners, evidenced by mail received from such listeners in all parts of their service areas; and that these programs are principally scheduled during morning and evening mealtime hours, which are presunrise and postsunset hours during winter months. The mutually destructive interference which would result from permitting all stations on regional and clear channels to operate with daytime facilities in presunrise and postsunset hours would have the effect of largely wiping out the service to rural areas of both the full-time and the daytime stations.[23] In this connection, a national organization representing rural interests, the National Grange, filed an opposition in which it stated that the instant proposal would result in a severe reduction in satisfactory radio service to millions of persons in rural areas.[24] We are of the view that, instead of greater service to rural areas, the proposal would result in markedly less service.

52. One of the cornerstones of the DBA argument is that the distant stations do not provide a useful service for communities located at some distance from them and, furthermore, now that better signals are available, listeners are not content to listen to the mediocre signal of a distant station. In short, it is urged, the allocation scheme designed to protect wide-area coverage is archaic. DBA asserts that whether a station's service is of value cannot be ascertained by technical concepts and rules, but should be determined by surveys of the extent to which the station is regularly received by listeners. DBA asserts that such surveys would show distant stations have little or no listener significance. While not advancing such data itself (a few proponents advanced very fragmentary data of this sort), DBA asserts that it is clearly within the ability of the full-time stations to do so. The interference entailed by the DBA proposal would not however, affect merely, or principally, distant stations, but would have a most serious effect upon the service of regional stations close to or even within the community to which they are assigned.

53. A number of full-time stations, both clear channel and regional, made showings that their programing which was specifically geared to outlying communities and rural areas within their service contours. This programing includes agricultural programs, civic programs for each community and local sporting events. The Clear Channel Broadcasting Service (CCBS), in its comments filed on August 15, 1958,

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available to them no nighttime primary service from any source. Similarly, around Greenville, S. C., operation by daytime stations under the DBA proposal would cause severe losses to full-time Greenville stations during postsunset hours. Daytime stations would serve portions of this area, and also additional adjacent areas not now receiving primary service during postsunset hours. The record also discloses that "white" area would be similarly created around Dallas, Omaha, Salt Lake City, Phoenix, and other cities.

[23] As an example of this loss of rural service, the licensee of station KSAL, Salina, Kans., asserts that 35 cities and towns and extensive rural area encompassing all of 5 counties and parts of other counties, now served at night by KSAL and by 2 other stations, would lose all primary nighttime service.

[24] Another national farm organization, the National Council of Farm Cooperatives, while not taking a firm position opposing the proposal, asks that the Commission carefully consider its possible adverse effect upon rural listeners.

in the clear channel proceeding (docket No. 6741), submitted mail response tabulations of its member stations to show that large numbers of persons living great distances from clear channel stations listen to the nighttime skywave signals of these stations. This data reveals the following mail response for the listed clear channel stations, each of which elicited such response from its listeners by announcements made during periods of up to 2 weeks during the month of June 1958: [25]

Station and location	Dates announcements made in June 1958	Mail response from secondary service area only (i. e., beyond nighttime groundwave contour)
WSM, Nashville, Tenn	20–28	718 counties in 36 States.
WLW, Cincinnati, Ohio	24–27	138 counties in 24 States.
WGN, Chicago, Ill	17–25	290 counties in 34 States.
WWL, New Orleans, La	9–22	476 counties in 32 States.
WHO, Des Moines, Iowa	20–27	100 counties in 27 States.
WOAI, San Antonio, Tex	23–27	289 counties in 26 States.

Storer Broadcasting Co., in its reply comments filed in this proceeding, tabulated the mail received from listeners of its class I–B station WWVA, Wheeling, W. Va., in the month of April 1958. During that month mail was received from 41 States. Fifty-six percent of the mail was received from States located entirely outside of the primary groundwave service contour of WWVA. In sum, no data of which the Commission is aware, shows or tends to show that the listening habits of the Nation have changed in such a way that distant stations should no longer be protected or daytime stations be permitted to operate in spite of the resultant interference of the magnitude involved here.

54. Some proponents contend that extended hours for daytime broadcasters should be considered as a means for improving the capacity of daytime broadcasters as "little business" to compete with other, bigger stations. It would not be realistic, however, to treat the proposal in this light. Extended hours for daytime stations would adversely affect numerous other small broadcasters, including small unlimited time stations whose service areas and populations reached would be drastically curtailed by interference caused by extended hours of operation of daytime stations. Moreover, apart from the fact that the proposal does not involve a simple conflict between smaller broadcasters on the one side and bigger broadcasters on the other, we cannot lose sight of the primary basis on which the Commission is called upon to assess the effect of the proposal on the public interest; that is, its effect on services provided to the public. In this respect the evidence overwhelmingly establishes that adoption of the proposal would permit highly circumscribed increases in service by daytime stations at the prohibitive cost of destroying service now rendered to many millions of people by numerous other stations, both large and small.

[25] The CCBS comments in docket No. 6741 also include listener data for other member stations. Since these other stations, however, obtained mail from listeners in response to announcements made over extended periods of time, instead of only during a short period in June 1958, they are not included in this tabulation.