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A

SUMMARY CHRONOLOGY -- LAND MOBILE RADIO (Docket 18262)

1. August 17, 1973: OTP releases (900 MHz - LMR) policy statement, letter to FCC, and press release recommending (a) hold a substantial portion of spectrum reserve until systems can be tested in the marketplace, (b) allocate 40 MHz for competitive, non-rate regulated basis, and (c) allocate 14 MHz for wireline common carriers (WCC's).

2. May 2, 1974: FCC issues Second Report and Order basically accepting OTP recommendations.

3. June 1974: Petitions for Reconsideration filed by a number of parties. National Association of Radiotelephone Systems (NARS) most vocal because the Radio Common Carriers (RCC's) did not get a specific allocation. Argue that common user systems would in fact be common carriers and must be regulated as such. NARUC upset because of pre-emption.

4. December 1974: NARS petitions to reopen the Docket because of anti-trust case against AT&T.

5. Current Status: Waiting on FCC action on Petitions.

NOTES: Other LMR related issues --

(a) Sutter wrote to FCC Chief Engineer Spence regarding the Chicago Experiment and questions whether the Regional Frequency Management Centers should be expanded to other cities;

(b) Docket 18262 did not deal with Radio Paging -- the fastest growing sector in LMR. We are now studying demand, industry structure, spectrum tradeoffs, in order to make supplementary recommendations to the Commission on this topic.

B

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504

AUG 17 1973

DIRECTOR

Honorable Dean Burch
Chairman
Federal Communications Commission
Washington, D. C. 20554

Dear Dean:

The allocation of additional frequencies for the mobile radio services which is under consideration in Docket No. 18262 presents the Commission with a unique opportunity to expand the availability of improved mobile communication services. The Commission has available, for the first time in many years, sufficient additional spectrum to enable the adoption of new and improved procedures for allocating and using the radio spectrum to assure the continued development of mobile communications.

Naturally, this new allocation poses major policy issues whose resolution is extremely important to the public. The Office of Telecommunications Policy has undertaken analyses of these issues and has reviewed the comments of the various parties to this proceeding in the light of fundamental goals and objectives of national communications policy. On the basis of this analysis, we have arrived at certain conclusions which are set forth in the enclosed statement.

This proceeding affords the Commission with an excellent opportunity to make mobile communications widely available to large numbers of businesses and consumers alike, and to significantly enhance both the quantity and the quality of mobile radio services. We believe that the policy which we propose achieves those objectives.

The need for a policy commitment to a nationwide, standardized mobile telephone system has not been demonstrated at this time. Indeed, such a commitment could unduly restrict technological and marketing innovation. The Commission should, however, require a capability for interconnection of all mobile telephone systems with the landline telephone network and with each other so that local or regional systems can evolve into a nationwide system if justified by future demand.

We recommend a regulatory approach to mobile communications services that relies as much as possible on competition in meeting customers' needs for mobile communications services. In general, all technically and financially qualified entities should be permitted to offer any mobile communications services. This policy should result in more diverse service offerings at competitive prices and vigorous technological innovation to improve and expand those services.

The frequency allocation and assignment process should be as flexible as posssible to accommodate future needs, while at the same time providing incentives to make efficient use of the spectrum. We believe that these objectives can best be achieved by holding a substantial portion of the spectrum in reserve to be made available as required in the future. The remaining available spectrum should be allocated for the provision of (1) mobile telephone service by wireline common carriers and (2) all mobile radio services by any qualified entity on a competitive basis, with no further detailed suballocations within these blocks. This will not deter financial commitments on the part of potential entrants, and will afford maximum flexibility within each allocation for new or expanded service offerings.

Finally, we believe that the availability of the 900 MHz band for mobile radio services offers an opportunity for experimentation with procedures which would permit market mechanisms to augment the regulatory process in the area of spectrum efficiency. Such methods might include pro forma transferability of licenses between mobile users and the adoption of license fee schedules reflecting spectrum value.

We believe that this policy will enable the widest possible flexibility for serving the mobile communications needs of the public. It will also lead to more efficient use of spectrum resources, provide incentives for technological innovation by means of competition and permit the benefits of such innovation to flow directly to consumers of mobile services.

Sincerely,

Clay T. Whitehead

Enclosure

C

Conclusions and Recommendations of the
Office of Telecommunications Policy Regarding
Land Mobile Radio Service in the 900 MHz Band
(FCC Docket No. 18262)

I. Introduction

In the past, the availability of mobile radio services has been largely restricted to commercial and business users, as well as state and local governmental agencies. The general public has benefited greatly by the use of mobile radio by these private and public entities, but only indirectly. There is a need to make low-cost mobile communications services available directly to the consumer and to allow for the expansion of mobile radio use by entities providing goods and services to the consumer. In this regard the allocation of additional frequencies in the 900 MHz band provides an excellent opportunity for the Commission to foster the development of new service concepts and new technologies so that the benefits of mobile communications can be brought to all members of the public.

A major issue posed in this proceeding is whether the increased availability of mobile communications services is best achieved by a regulatory commitment to a monopoly system premised upon a particular technology or by the

creation of a diverse competitive environment. OTP believes that the needs of mobile communications users can best be met by an approach which enables customers themselves to determine, through market mechanisms, the most efficient and cost-effective use of the spectrum resource.

II. Nationwide Standardized Mobile Telephone System

Although a nationwide, standardized mobile telephone system, dependent upon a particular technology, might well come to supplement the nationwide public message telephone system, no need has been adequately demonstrated for immediate commitment to or implementation of such a system. The mobile telephone service market does not appear to exhibit strong natural monopoly features, and there is no conclusive information as to whether there are economies of scale sufficiently substantial to justify a policy commitment to a single system or a particular technology. In a period of rapid technological change, there are significant risks attendant to a commitment of a substantial portion of spectrum to a particular technology (however innovative it may presently appear) for the provision of mobile telephone service on a nationwide basis. Such a commitment could unduly inhibit further technological development and impede the growth of mobile telephone services.

Moreover, the propagation characteristics of the 900 MHz band make it most suitable for use in the top 25 to 30 major markets where high capacity systems may be required, whereas remaining areas of the country might be better served by smaller systems operating at lower frequencies.

Despite the lack of justification for a regulatory commitment to a single nationwide mobile telephone system, there is, nevertheless, a need to create an environment for mobile communications that would not preclude the development of a nationwide service in the future if justified by consumer demand. Such an environment can be created by the adoption of a spectrum allocation and assignment policy which will be responsive to future changes in demand.

III. Frequency Allocation and Assignment

The Commission's allocation and assignment policies should facilitate the availability of new services as rapidly as possible. However, in view of the many technical and market issues which are as yet unresolved, the Commission should preserve flexibility with respect to future spectrum needs in the 900 MHz band. OTP

recommends that the total 115 MHz available be allocated initially into "blocks" of sufficient size to motivate industry to undertake the necessary investments for product and market development. These allocations, however, should not exhaust at the outset the total available spectrum so as to result in overcommitment in any particular service category. Such a course could inhibit or distort growth in other service categories as consumer demand shifts in the future.

To this end, approximately 14 MHz of the available 115 MHz should be allocated for the exclusive use of wireline common carriers for the provision of tariffed mobile telephone services and ancillary dispatch services. Based on current market projections available to the FCC, it appears that this amount will be sufficient to accommodate present and near term mobile telephone service needs in the major markets.

Approximately 40 MHz of the available spectrum should be allocated for any mobile service to be offered on a non-rate regulated competitive basis (e.g., mobile telephone, dispatch, paging, etc.).

The balance of approximately 61 MHz should be held in reserve so that the Commission can expand or modify its initial allocations if warranted by demand. This will afford both common carrier and competitive entities a reasonable expectation that additional frequencies adjacent to their respective initial allocations will be available if and when warranted.

It is recognized that the new, so-called cellular technology which has been proposed for mobile telephone service might eventually require systems of relatively high channnel capacity. However, this technology has not yet been proven and, as stated earlier, the demand for mobile telephone service has not been sufficiently demonstrated to justify a present allocation of a substantial portion of the spectrum to this service, either to wireline carriers or to others who might wish to introduce this technology.

Nevertheless, the development of cellular technology should not be discouraged -- it should be permitted to develop in steps keyed to technological progress and growth in consumer demand. In order to avoid the need for subsequent re-engineering of equipment if the use of high capacity cellular technology proves justified by demand, parties proposing the use of this technology may wish to incorporate into their initial equipment design the capability for eventual high capacity operation.

The Commission should, therefore, identify specific frequencies within the initial allocations where possible, or within the reserve, if necessary, which could be incorporated into the initial equipment design for these systems in addition to those frequencies already allocated. These frequencies could not be assigned or used for other types of services until after the present uncertainties surrounding market demand have been resolved and technical results for high capacity mobile telephone service have been satisfactorily evaluated. Further, these additional frequencies would be assigned for mobile telephone service only as necessary to provide sufficient capacity to meet substantiated customer demands.

In this manner, parties would be permitted to design cellular systems with the assurance that, if warranted by demand and system performance, specific additional frequencies eventually will be allocated for this type of service. Conversely, if the expected demand for a high capacity mobile telephone service does not materialize within a reasonable, pre-established period of time, these frequencies would become available for allocation to other mobile services as needed.

Beyond the allocation of frequencies for common carrier and competitive services, there should be no further initial

suballocation within the band to particular user categories such as public safety, transportation, industrial etc. These user groups should be permitted to take full advantage of the availability of multi-user trunked systems, private single or multi-channel arrangements, or private trunked systems, depending on their needs. This should afford the opportunity for all private and governmental entities to use high quality and efficient systems which will conserve spectrum and which may avert future reliance on exclusive suballocations.

Naturally, the advantage of mobile communications must be readily available to local government and public safety institutions which are significantly dependent upon such services. In this regard, local government entities should be encouraged to accommodate, where possible, all their mobile service functions on a single shared trunked system, either private or multi-user. Similarly, adjacent municipalities may wish to combine their services on such a single system. While there may be a need at some future time to reassess the need for exclusive suballocations in view of the unique characteristics

of public safety functions, we believe that, for the present, all users including local governments should attempt to make maximum use of the emerging high quality and spectrum-efficient systems.

IV. Competition in Mobile Services

Mobile communications services heretofore have been provided on a common carrier basis or by private systems. In the course of its deliberations in Docket No. 18262, the Commission has been presented with numerous innovative proposals including new technologies and new service concepts. For example, several parties have proposed to offer multi-user, multi-channel (trunked) dispatch services for hire. Such services would provide the mobile communications customer with an alternative to privately-owned systems and to the services offered by tariffed mobile telephone systems. In addition, this service concept should afford more efficient use of the spectrum than a proliferation of private systems.

The history of the mobile communications industry has been characterized by competitive free enterprise which has stimulated growth even in the face of spectrum limitations. Further policies should foster and expand this competitive environment. OTP recommends a policy which will permit existing and new services

to be made available in a timely manner and at competitive prices in response to consumer demand. Such a policy is consistent with the Commission's recent approach to domestic satellite communications and specialized common carriers. There is every indication that a competitive policy will be even more fruitful here, since it is capable of benefiting the consumer directly.

The Commission's allocation of frequencies in the 900 MHz band should allow the provision of all types of service (mobile telephone, dispatch, paging, etc.) on a competitive basis by all potential entrants. All mobile communications services, with the exception of those provided by wireline common carriers as discussed below, must be permitted to develop without the encumbrances of rate regulation. By creating an environment which will accommodate numerous, competitive suppliers, the need for rate regulation is obviated; the multiplicity of competing systems (and the potential for new entrants) will assure competitive pricing. Accordingly, the Commission should authorize systems upon a showing of minimum technical and financial qualifications and in accordance with the minimum spectrum efficiency standards it establishes. There should be no necessity for a showing of continued economic viability.

Questions have been raised in the course of the Commission's deliberations in Docket No. 18262 concerning the participation of wireline common carriers, mobile radio equipment manufacturers and radio common carriers in the mobile communications services market.

A. Wireline Carriers

Because of the local monopoly advantages enjoyed by wireline common carriers in the provision of switched telephone service and the consequent potential for interservice cross-subsidy, telephone carriers should not be permitted to participate in the non-regulated portion of the mobile communications market in their own telephone service area. In any event, it would appear that the largest such carrier, AT&T, would necessarily be limited by the terms of the Western Electric consent decree from participating in a non-regulated activity. However, wireline common carriers should be permitted to provide rate regulated mobile telephone service, whether by means of cellular or other technology, as an extension of their regulated public switched telephone service. These carriers would also offer dispatch services on a rate regulated basis only as an adjunct to their mobile telephone services.

B. Radio Common Carriers

Unlike wireline common carriers, radio common carriers need not operate on a local monopoly basis. Hence, there is no justification for precluding them from offering licensed but otherwise non-regulated mobile services (mobile telephone, dispatch or other) on a competitive basis. However, it is central to OTP's policy that the non-regulated environment essential to competitive market activity be preserved. There may, therefore, be a need for federal preemption regarding all licensed competitive services in order to assure that radio common carriers (or their subsidiaries) and others providing multi-user services would not be subject to rate regulation by other jurisdictions.

C. Radio Equipment Manufacturers and Suppliers

We see no justification for excluding mobile radio equipment manufacturers and suppliers from the operation of mobile communications systems, whether multi-user systems for hire or otherwise. However, in order to provide mobile service customers adequate flexibility in the choice of equipment and to assure full and fair competition in both

the mobile radio service and equipment supply markets, interoperability of all mobile equipment with any base station and terminal equipment should be required by the Commission. The actual development of specific interoperability standards to implement this requirement should, however, be left to the industry. In addition, the Commission might require as a condition to any license that the licensee place its customer on notice that mobile equipment from any manufacturer may be used with the system.

In order to allow full competition among and between mobile communications services, all land mobile radio systems should be guaranteed access to the public switched telephone network on a non-discriminatory basis. This access might be by manual or automatic dial capability by private or multi-user dispatch systems.

D. Fair Competition

While it is expected that the policy we have proposed will permit full and fair competition in the market for mobile communications services, we believe that there will be a continuing need for FCC and Department of Justice oversight

as the industry develops. Both the public message telephone industry and the mobile radio manufacturing industry are characterized by companies with substantial economic power. Therefore, both the Commission and the Department of Justice should closely scrutinize the use of large financial and marketing resources by these companies in the emerging mobile communications markets and should take appropriate action to correct abuses if and when they occur. Particularly, the FCC should safeguard against the anti-competitive dangers presented by cross-subsidization between the landline public message telephone service and mobile communications services on the part of the wireline carriers.

V. Technical and Economic Efficiency in the Use of the Spectrum

For all of the mobile communications services we have discussed, the Commission should impose at the outset enforceable, minimum standards of spectrum efficiency for the allocation, assignment and use of the 900 MHz frequencies. We expect that the FCC's Spectrum Management Task Force, as well as the Interdepartmental Radio Advisory Committee, will continue to make significant progress in the area of spectrum efficiency standards.

It is important that the Commission continue to encourage industry experimentation in areas such as channel spacing, through experimental assignments and other means, in order to further improve spectrum efficiency, particularly with regard to cellular technology. If past technical innovation through such experimentation is any guide, even the most optimistic projections of market demand for mobile communications may be accommodated in less spectrum than has been specified in some of the cellular system proposals submitted to the Commission.

Furthermore, in order to foster greater economic efficiency in the use of mobile radio frequencies, the Commission should permit the transferability of operating rights for licensed services on a relatively pro forma basis to allow market mechanisms to provide added flexibility in spectrum utilization by mobile users.

But on a long term basis, it would be appropriate to introduce stronger economic incentives for efficient spectrum use. One possibility would be to adopt a schedule of license fees reflecting in part the scarcity value of the spectrum

D

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504

August 17, 1973

NEWS RELEASE

OTP ANNOUNCES POLICY ON LAND MOBILE COMMUNICATIONS

The Office of Telecommunications Policy (OTP) today released a policy statement on the allocation of new frequencies for mobile radio use. The statement recommends an approach which would maximize competition and minimize regulation in the mobile communications industry. In the past, the frequency spectrum for mobile communications has been limited and these services have been largely restricted to state and local governments and commercial users. Now that new frequencies will be available, OTP forsees an opportunity to make low-cost mobile communications available directly to consumers.

According to the OTP plan, the new portion of the radio spectrum available for mobile services would be allocated in blocks of sufficient size to encourage industry investment in new technologies and services. However, in order to preserve flexibility and to avoid initial overcommitment to any particular service or technology, OTP recommends that a substantial portion of the available spectrum be held in reserve to be allocated at a later time as warranted by consumer demand.

OTP recommends that one portion of the spectrum (approximately 40 MHz) be allocated for all mobile radio services on a competitive, non-rate regulated basis. This approach would create an environment which would accommodate numerous competitive suppliers and would obviate the need for rate regulation. It would also encourage the development of new services and technologies.

Another portion of the spectrum (approximately 14 MHz) would be allocated to telephone common carriers for the provision of rate regulated mobile telephone service and ancillary dispatch services as an extension of their regular telephone service.

OTP also recommends that procedures be adopted to permit the operating rights for licensed mobile services to be transferred on a relatively pro forma basis in order to allow market mechanisms to provide added flexibility in spectrum utilization. In order to provide economic incentives for efficient spectrum use, the Office suggests that the FCC consider adopting a license fee schedule to reflect the scarcity value of the spectrum.

In a letter to FCC Chairman Dean Burch forwarding the OTP policy statement, OTP Director Clay T. Whitehead said:

> "We believe that this policy will enable the widest possible flexibility for serving the mobile communications needs of the public. It will also lead to more efficient use of spectrum resources, provide incentives for technological innovation by means of competition and permit the benefits of such innovation to flow directly to consumers of mobile services."

* * * * *

Copies of the policy statement may be obtained by calling 395-4990.

E

NEWS

Federal Communications Commission
1919 M Street, NW.
Washington, D.C. 20554
Public Notice

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call 632-7260

Report No. 9416 ACTION IN DOCKET CASE May 2, 1974 - C

LAND MOBILE RULES FOR 900 MHZ BAND ADOPTED BY FCC
(DOCKET 18262)

In a second phase of the proceeding dealing with the reallocation of 115 MHz of spectrum in the 806-947 MHz band to the land mobile radio service, the FCC has amended Parts 2, 89, 91 and 93 to authorize three types of land mobile systems -- cellular, multi-channel trunked, and conventional -- and four basic license classifications -- private, shared, common user and common carrier.

The first phase of the proceeding was initiated by a rulemaking and inquiry notice released July 17, 1968, and resulted in a First Report and Order released May 20, 1970. The second phase, released in conjunction with the Report and Order, dealt with questions of spectrum allocations within the land mobile service and the development of systems standards and regulations applicable to the new 900 MHz bands. The Commission received oral presentations in May 1973.

The new rules include frequency allocations of 40 MHz for cellular and 30 MHz for private, shared and common user systems. Land mobile reserve bands totalling 45 MHz were also established for future allocation. Microwave ovens operating at 915 MHz were given temporary access to 12 MHz of the reserve spectrum. There was no allocation for public air-ground communications. General guidelines and policies governing the development of cellular communications systems were adopted.

The operation of cellular systems was restricted to wireline common carriers through separate subsidiaries to be established for that purpose. Only one cellular system will be authorized per area and nationwide standardization will be required. Initial frequency assignments for developmental or start-up cellular systems will be less than 40 MHz with additional spectrum available as needed based on loading standards to be adopted in subsequent rule making.

Automatic fleet-call operation will not be permitted on cellular systems. Cellular system operators and their affiliates are prohibited from manufacturing any radio equipment to be used in operational cellular systems and from supplying or maintaining cellular mobile units. Wireline carriers will be required to offer interconnection services to public on same basis as provided to cellular system operating companies.

(over)

The Report and Order also contained detailed regulations applicable to conventional and trunked systems, including eligibility criteria, licensing procedures and techniques for selecting and loading channels. Licensees of conventional and trunked systems may be private users, user organizations, or communications entrepreneurs.

Conventional systems will employ one to 5 channels under manual control for fleet dispatch services to eligibles under Parts 89, 91 and 93 of the rules. Interconnection of conventional systems to wireline telephone lines is permitted by manual means only. Channels will be available from a single pool, and the Commission will perform all channel selection. Each channel will be loaded to a prescribed level before the next channel is assigned in each area.

Trunked systems may be used for either fleet dispatch service to eligibles or mobile telephone service to the general public. Only systems serving the public may be fully interconnected to the wireline telephone networks. Channels for trunked systems will be assigned in blocks of 5 to 20 to be selected by the Commission. Applications will be handled on a first-in priority basis. Any qualified entity other than wireline carriers may apply for a license to operate a common user system. Each land mobile equipment manufacturer or affiliate may operate only one common user trunked system per market in a total of only five markets nationwide. Commercial systems will operate on fully competitive basis and economic injury pleadings will not be accepted. The Commission has pre-empted state regulations to the extent they conflict with the competitive intent of this decision.

Action by the Commission May 1, 1974, by Second Report and Order. Commissioners Wiley (Chairman), and Lee, with Commissioners Reid and Hooks concurring in the result and Commissioner Quello not participating.

F

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

FCC 74-470
11582

In the Matter of	)	
	)	
An Inquiry Relative to the Future Use of the Frequency Band 806-960 MHz; and	)	Docket No. 18262
	)	
Amendment of Parts 2, 18, 21, 73, 74, 89, 91, and 93 of the Rules Relative to Operations in the Land Mobile Service Between 806 and 960 MHz.	)	

SECOND REPORT AND ORDER

Adopted: May 1, 1974 Released: May 2, 1974

By the Commission: Commissioners Reid and Hooks concurring in the result; Commissioner Quello not participating.

1. This rulemaking proceeding deals with the allocation of frequency spectrum in the 806-947 MHz band to the land mobile radio service and to the development of regulations pertaining to the future use of that spectrum. The first phase of the proceeding, initiated on July 17, 1968, with a Notice of Proposed Rule Making and Notice of Inquiry (33 FR 10807) and consummated on May 20, 1970, with a First Report and Order and Second Notice of Inquiry (35 FR 8644), accomplished a general reallocation of spectrum in the 806-947 MHz band with the effect of providing an additional 115 MHz of spectrum to the land mobile radio service. It also provided a tentative sub-allocation of this spectrum within the land mobile service, with 75 MHz being allocated for the development of high capacity common carrier mobile communications systems to be operated by wireline common carriers and 40 MHz for the development of efficient private and shared systems for use by eligibles in the Industrial, Land Transportation and Public Safety Radio Services (Parts 89, 91 and 93 of the Rules). The second and current phase of this proceeding was initiated with the Second Notice of Inquiry, released coincident with the First Report and Order, and deals in greater detail with the questions of spectrum allocations within the land mobile service and the development of systems standards and other regulations applicable to the new 900 MHz land mobile bands.

2. In the Second Notice of Inquiry, the Commission requested interested parties to undertake detailed technical and marketing studies looking toward the future use of the 900 MHz band to meet the public need for land mobile radio services to and beyond the year 1980. Special emphasis was placed on the need for greater spectrum efficiency in designing new systems for this band. In December of 1971, a number of parties submitted written reports describing the results of their developmental efforts. Supplemental filings and comments on the initial reports were received in July of 1972. Many of the technical reports and comments contained new data or raised policy questions which had not been previously addressed in this proceeding. Therefore, to allow interested parties an

opportunity to present their views on these matters, the Commission received oral presentations on May 14 and 15, 1973.

3. During the course of the second phase of this proceeding some 58 parties filed written statements and/or were represented in oral arguments to the Commission. The names of these parties are listed in Appendix A. Numerous comments and letters have also been received from members of the public and Congress and have been taken into consideration. All of the information submitted to the Commission has been thoroughly analyzed and care taken to ensure that all positions and arguments are fully understood. We have now reached the point in this proceeding where we believe it appropriate to decide the major policy questions, to finalize the basic frequency allocation and to adopt specific regulations governing the licensing of 900 MHz land mobile systems. For convenience and clarity we have arranged our discussion of these matters in three sections. The first section deals with frequency allocation and related matters; the remaining sections deal with policies and regulations pertaining to the various systems to be accommodated in the 900 MHz band. Rules being adopted at this time are contained in Appendix B.

4. The main areas of controversy throughout the current phase of this proceeding have centered on questions of spectrum allocations and Commission policies toward the regulation of the various land mobile systems which have been proposed for operation in the 900 MHz band. Before discussing our conclusions regarding those matters, we believe it will be useful to briefly define the land mobile systems which are being considered for this band.

5. The cellular system, as proposed by AT&T and others in this proceeding, is a sophisticated, high capacity land mobile system requiring a large capital investment and a substantial spectrum allocation. The spectrum assigned to such a system would be divided into discrete channels which are assigned in groups to small geographical cells covering a defined service area. The key to the cellular system's high capacity is its ability to shrink the size of those cells while holding the total amount of spectrum used by the system constant. What results is a multiple re-use of channels throughout a given geographical area and more traffic intensity per unit of spectrum in advanced stages of development than other land mobile communications system proposed to date. This is achieved, however, with considerable expense and technical complexity. Fortunately, the expense can be shared over a much larger user base than with other systems. To date, two companies, Bell Laboratories and Motorola, have submitted detailed cellular system proposals to the Commission. Although the basic systems concepts are identical, there are some technical differences which affect the amount of spectrum each system would need to operate efficiently. The primary technical difference lies in the bandwidth of the discrete channels. The AT&T proposal calls for channel widths which are 60% wider than those proposed by Motorola. On the surface it might appear that 60% more spectrum would then be needed for the AT&T proposal over that of Motorola. However, complicating the argument over bandwidth is the ability to re-use channels at close geographical spacing.

According to AT&T, the wider bandwidth allows for more intensive channel re-use, which outweighs any initial spectrum saving due to the narrower channels. There is also a difference in the type of service to be provided on the two proposed systems. The AT&T system would be utilized for fleet dispatch as well as mobile telephone service, whereas Motorola's system is designed for mobile telephone service only. This difference has a significant impact on the amount of spectrum each would need. AT&T's dual purpose system calls for 64 MHz while the initially proposed Motorola telephone-only system would need 19 MHz.

6. The second class of system under consideration is the multi-channel trunked system. This system is similar in concept to so-called community repeaters widely employed in the private dispatch service today except that the users would have access to a number of channels instead of just one. Actual channel access is controlled by a central computer, which gives a user the first available channel or places the user in a waiting line (queue) to be served in turn. This technique provides the user a higher grade of service than is possible in comparably loaded non-trunked systems by reducing the amount of time he must wait for a channel and/or reducing the probability that his call will be blocked. Small scale trunked land mobile systems are presently being used to a limited degree by common carriers providing mobile telephone services in the 450 MHz band. The innovation lies in its intended application to vehicular fleet dispatching and the potential of using many more channels per system than is now possible. As proposed by both General Electric and Motorola, trunked dispatch systems would be suitable either for large single users, cooperative groups of users on a cost shared basis, or commercial operators providing service for hire. The nature of trunked systems makes them particularly suitable for serving different types of users on the same group of channels without interference. With today's single-channel systems it is generally desirable to put similar types of users on the same channels in order to control interference. That approach, however, requires separate allocations of channels for the various classes of users which often leads to spectrum inefficiencies. In the trunked system, different types of users can be intermixed more readily as they operate essentially independently of each other, the computer assigning channels on demand. Once a user is assigned a channel, it is his exclusively for the duration of his call and no one else on the system can listen or interrupt during normal operation.

7. The final category of system proposed for the 900 MHz band is the basic conventional land mobile system in use today in the lower frequency bands. While these systems may also employ one or more channels, their distinquishing feature is manually controlled channel access as opposed to the computer control used in trunked systems. This makes the conventional system simpler and cheaper, but causes some loss of traffic efficiency resulting in either fewer mobiles per channel or lower service quality. The degree of such inefficiency depends largely upon the traffic characteristics of the users. Our analysis would indicate that for a significant segment of the land mobile requirement, particularly where short range, short message communications are involved, the conventional system can be as

or more efficient than the trunked system. Therefore, considering its lower cost and greater operational simplicity, the conventional system, we feel, has a definite place in the 900 MHz band alongside the more sophisticated systems described above.

Discussion of Allocations

8. In the past, the Commission has treated land mobile spectrum requirements from a service perspective, allocating blocks of spectrum, usually on a nation-wide basis, to each of the twenty or so radio service categories. This method of allocation has led to parochialism among the users and inequitable situations where spectrum shortage and abundance exist side by side in the same cities. In this docket, we are proceeding to meet land mobile spectrum requirements in a somewhat different manner. Rather than allocating according to user categories or services, we have chosen to allocate by system type and to allow the market to determine ultimately how much spectrum is utilized by the various types of users. With this in mind, the allocation problem becomes a matter of defining the systems to be accommodated, determining how much spectrum will be needed to satisfy the demand for such systems over a reasonable period of time, and arranging the separate allocations in an orderly plan, taking into account the technical characteristics of the systems and their electrical compatibility with each other and with systems in neighboring bands.

9. The concept of allocating spectrum for systems rather than services has been accepted or encouraged by many who have participated in this docket. To be sure, some of today's service groups have asked for their own private allocations of radio spectrum, but the weight of arguments in the proceeding recognizes the drawbacks of such allocations and supports specific allocation proposals along the lines of systems or broad types of service, e.g., dispatch or mobile telephone. A half dozen different allocation plans were proposed in the various filings in this proceeding, each of which has been carefully considered in developing our own plan.

10. Throughout this docket the Commission, industry, and the public have been dealing with innumerable unknowns, ranging from radio propagation phenomena and new system technologies to innovative service offerings and future market projections for these services. While we now believe that we have a better grasp of these factors through our analysis of the information submitted to the Commission and discussions with industry and user groups, there are still a number of technical questions which only further developmental work can answer, and the ultimate demand for the proposed systems can only be determined in the market itself. For these reasons it is important that any allocation plan be flexible enough to cope with new and often unforeseen technological and economic forces. We feel the allocation plan which we are advancing provides us with that flexibility while amply satisfying presently defined needs.

I. Frequency Allocations to Cellular Land Mobile Communications Systems

11. Originally in this docket the Commission tentatively allocated 75 MHz for the use of wireline common carriers to develop cellular land mobile and air/ground systems. The size of this allocation was generally supported by the wireline industry and by a number of radio equipment manufacturers. However, it was opposed as being excessive by the radio common carriers, most radio equipment manufacturers, independent equipment sales outlets, private user organizations, and a large number of private users themselves. The Department of Justice and Office of Telecommunications Policy also deemed this allocation to be excessive.

12. At the time the allocation was made, in 1970, there was very little evidence to indicate if 75 MHz of spectrum was too much or too little for the intended purpose. Little was known about cellular technology and even less about the potential market for such a system. Based on our current understanding of these factors, we have concluded that the 64 MHz which AT&T proposed for a domestic public cellular land mobile system is somewhat excessive 1/. According to most market projections, 64 MHz of spectrum would handle the foreseeable demand for mobile telephone and a substantial portion of the dispatch market to the end of this century in our biggest cities. In the medium to small urban areas, those of two million and under, such an allocation would give the operator enough capacity to handle the total land mobile demand, dispatch and telephone, far beyond the time frame contemplated in this proceeding. Consequently, we are reducing the size of the allocation for cellular systems to 40 MHz. In addition, we will not assign the full 40 MHz to any single operator all at once. Rather, in each area the system operator will be given the minimum amount of spectrum required for that area initially. Additional spectrum will be made available upon a showing of need. This plan is similar to AT&T's as outlined for Philadelphia in its December 1970 technical filing. In AT&T's plan a start-up system could be established by utilizing only 12.5 MHz. As the system grew it would utilize additional spectrum until the allocation was exhausted. After that, further expansion would require cell division. Our plan, therefore, differs from AT&T's in the size of the total allocation and in the fact that the Commission will retain control over the unused portion of the allocation until actually needed in each system. We note that our approach is similar in effect to the recommendation of the Office of Telecommunications Policy which called for an initial allocation of 14 MHz for cellular systems with additional reserve to be allocated as required.

13. A 40 MHz cellular system utilizing 40 KHz channeling should have an ultimate capacity to handle about 105,000 telephone subscribers and 105,000 dispatch users (see AT&T December 1970 filing, page 40). This is sufficient capacity to handle the predicted market for mobile telephone to the year 1990 in the largest cities, plus one quarter or more of the dispatch market in those areas. There is, however, considerable uncertainty involved in predicting the mobile telephone market. This uncertainty results primarily from the possibility of the service developing into a consumer item. For this reason, we have also strategically placed spectrum reserves totalling 20 MHz

1/ AT&T proposed to use the remaining 11 MHz for public air-ground service.

in proximity to the cellular allocation which could be used in the event of unexpected growth. We must stress, however, that the marketing studies submitted to the Commission do not indicate that such would be the case, at least in the foreseeable future. Moreover, should a consumer market develop,it would most probably require spectrum in excess of the total available in the 900 MHz range. Therefore, we cannot realistically plan for that kind of growth in this proceeding but would have to look to other regions of the spectrum to obtain the necessary capacity.

14. AT&T has argued that an allocation of less than 64 MHz for a cellular system would result in an increase in the cost of the service. The Commission has studied this point carefully, but we do not feel that the cost penalty of reduction from 64 to 40 MHz would be significant. Using AT&T's own data, the proposed reduction in available spectrum for the cellular system will raise the shared facility cost per mobile unit by about 20%. In as much as the shared facilities' cost represents only about one-half to one-third of the total cost to the user, the 20% cost penalty is reduced to less than 10% in his overall bill. Moreover, the capacity and ultimate cost of mobile telephone service in a cellular system is highly dependent on technology. For instance, a reduction in channel spacing, which some have argued is feasible, could increase the total system capacity and affect ultimate costs. The application of mass production techniques and competition in the production of mobile units for the cellular system could drive prices down below that which is presently foreseen. Despite these uncertainties over the future market for mobile telephone service, we believe the 40 MHz proposed for a cellular system is sufficient and will provide for adequate growth and reasonable costs over the foreseeable future.

II. Frequency Allocations to Air/Ground Communications Systems

15. At this time we are making no allocation for a public air/ground system. AT&T had proposed that 11 MHz be used for such a system although it made no factual showing in this docket to substantiate any appreciable public demand for the service which cannot be met through the use of channels presently allocated for that purpose. Furthermore, ARINC, in its July 1972 comments, noted the Air Traffic Conference of 1963 adopted a resolution which, in effect, prevents the use of public air/ground systems in scheduled service. Therefore, the spectrum which might have been allocated for air/ground service is being incorporated into the several reserve bands mentioned earlier. Should it be warranted, a separate proceeding may be instituted in the future to consider the overall question of public air/ground communications spectrum requirements. Also, the proposals of ARINC for additional spectrum for general aviation use in this band are being denied on the grounds that such proposals were considered on their merits and denied in the First Report and Order herein (paragraphs 21 through 23). No new information has been submitted by ARINC which would alter that decision. Furthermore, this band is not well suited for aeronautical services which generally require a high degree of international standardization. The use of these frequencies for mobile services in the United States will be in derogation of ITU Region II allocations and coordination of aeronautical service with neighboring countries would be difficult, if not impossible.

III. Frequency Allocations to Conventional and Trunked Land Mobile Communications Systems

16. The next allocation which we will discuss is for conventional and trunked systems. For the most part, we expect those systems to be used for fleet dispatch operations of the kind now accommodated under the so-called private land mobile services. In the 1970 Report and Order, the Commission tentatively allocated 40 MHz of the 900 MHz spectrum for private land mobile services. The size of this allocation has not been seriously disputed in this proceeding, although some parties, notably equipment manufacturers and user groups, urged that the private allocation be larger. These same parties later supported the OTP recommendation of 40 MHz to be allocated for "any mobile service to be offered on a non-rate regulated competitive basis".

17. At this time we are making available an allocation of 30 MHz of spectrum for conventional and trunked systems with additional reserve bands so placed as to be readily accessible for future growth if needed. Based on market projections given by industry, 30 MHz should be sufficient in most areas well into the 1980's, and the reserve bands will take care of any unforeseen growth within and beyond that time frame. As will be discussed further in a later section, it is our intent that the allocation for conventional and trunked systems be available for both private and commercial (third party) operation and used for either mobile telephone or fleet dispatch service. These provisions are discussed in more detail in the section below dealing with the regulation of these systems.

IV. Frequency Provisions for Industrial Scientific and Medical (ISM) Devices

18. Throughout this proceeding the General Electric Company has urged us to reconsider our plan to reduce the size of the ISM (industrial, scientific and medical) spectrum provision from 50 MHz to 26 MHz. General Electric claims that such a reduction will make it impossible to continue manufacturing economical microwave ovens for this band. It argues that a minimum of 38 MHz is needed to make an oven which is competitively priced and capable of cooking all types of foods properly. Although there appears to be some merit to GE's arguments, we are not inclined to give up our ultimate goal of reducing the ISM emission limits to 26 MHz. To reopen all or a large part of the original ISM provision would cause a serious reduction in the amount of spectrum available for land mobile communications services in this range. On the other hand, it is likely to be 10 to 15 years before the full land mobile allocation will be required and thus some interim provision can be made for continued use of wide-band ISM ovens during this period. This should provide necessary time for the production of ovens capable of utilizing the narrower emission, without crippling the industry by forcing it into tighter standards which are not now feasible. Our decision, therefore, is to establish a guard band 12 MHz wide immediately above the regular ISM provision so that the total spectrum available for microwave ovens would be 38 MHz. However, this guard band would carry a time limitation of 5 years, after which the band would revert exclusively to land mobile use. This will provide an opportunity for the oven industry to continue development of more spectrally efficient devices which can meet the narrower bandwidth. In the meantime, the

temporary 12 MHz ISM guard band could be considered for sharing by land mobile or related services which can tolerate oven interference and which do not require a paired allocation.

V. Land Mobile Reserve Allocations

19. Most parties who filed allocation proposals in this docket recommended the establishment of reserve bands to accommodate new land mobile services or unexpected growth in existing services. We feel that this concept is an excellent one and a generous amount of reserve spectrum has been incorporated into our allocation plan. Our plan calls for 8 reserve bands with a total of 45 MHz. The bands are so positioned as to allow the greatest flexibility in expanding the proposed services and for accommodating new services. The reserve bands also provide buffers between high and low power land mobile stations and provide some degree of flexibility in coping with special problems along the Canadian and Mexican borders. These reserve bands are not being allocated to any specific use at this time, but are merely designated as land mobile reserve. Their allocation in the future will be the subject of separate rule making as the need arises.

VI. Treaty Considerations

20. Under present international treaty obligations land mobile operations in the 900 MHz band will be in derogation of the ITU allocation table for Region II. Such derogations are permitted under No. 115 of the International Radio Regulations, provided we afford protection to assignments operating in accordance with the ITU allocation table and accept any interference from such operations. The obligation to protect both Canadian and Mexican television assignments between 806 and 890 MHz will mean that the assignment of some types of land mobile operations, primarily high powered and/or omni-directional stations, will be impaired close to the border areas. This is especially true in Detroit and Buffalo, where even low powered mobile units might cause interference in certain nearby Canadian UHF-TV coverage areas. In exceptional cases such as these, the national allocation table we have outlined might be modified to provide land mobile spectrum relief in the reserve sections above 890 MHz. The need for such adjustment would be the subject of future rule making if necessary. In order to meet international commitments, we intend to examine all applications for land mobile stations within possible interference range of each border to ensure that harmful interference to Canadian or Mexican assignments will not result. This procedure will apply to land mobile operations within the entire band 806 to 947 MHz. More specific coordination procedures may be adopted at a later date as a result of our continuing discussions with the respective administrations.

Policies Relating to Cellular Communications Systems

I. Ownership of Cellular Systems

21. The parties filing comments have generally not questioned allowing wireline carriers to operate cellular systems. There has been a general feeling of malaise about letting wireline monopolies expand in the mobile communications market which has been traditionally served primarily by competitive entities. However, the wireline carriers are the only organizations which have demonstrated that they possess the resources and the expertise necessary to establish cellular systems which would have nation-wide compatibility. AT&T was the only entity which submitted a comprehensive proposal for developing and implementing compatible cellular systems. Therefore, we have concluded that wireline carriers should be permitted to operate cellular systems. Moreover, since a cellular system is technically complex, expensive, and requires a large amount of spectrum to make it economically viable, competing cellular systems would not be feasible in the same area. Also, as these systems will require extensive interconnection with the wireline telephone system, and nation-wide compatibility is desirable, we have concluded that only wireline carriers should be licensed to operate them.

II. Restrictions on Wireline Telephone Companies

22. A major concern voiced to the Commission by various parties to this proceeding deals with potential anti-competitive action on the part of wireline telephone companies through the use of cross-subsidies. It is feared that the guaranteed revenues generated by the telephone companies in their wireline operations will be used to give them an advantage in the sale of mobile dispatch services on the cellular system.

23. The Commission is fully aware of the danger of unchecked cross-subsidization in a competitive communication market and we fully intend to take appropriate steps to ensure that this practice does not take place. Therefore, as a minimum we shall require that any wireline telephone company establish a wholly separate operating company with separate books of account, separate officers and separate personnel in order to operate a cellular land mobile system as well as any other separation requirements we may deem necessary to prevent cross-subsidization. We shall establish detailed regulations and procedures for the separation of subsidiary and parent organizations at a later date.

24. While we think that establishment of separate operating companies with separate books of account, separate officers and separate operating personnel will go far to prevent the cross-subsidization feared by many parties, we will also impose certain other restrictions on the wireline companies. They, for the most part, have already been accepted by the Bell System and the independent telephone companies. Thus, the wireline companies will not be permitted, directly or indirectly, to manufacture, provide or maintain mobile equipment. In addition, the base station components must be manufactured by companies wholly independent of the wireline carriers. 2/

2/ Wireline carriers will be allowed to manufacture and maintain radio equipment for use in initial developmental cellular systems. However, this equipment may not be used when the system becomes operational or in developmental systems offering service to the public.

All contracts between any telephone company and its mobile telephone affiliate or subsidiary shall be filed with the Commission and records of all money flows and exchanges or flows of property (of whatever kind) between them shall be maintained and reported periodically in accordance with rules specified by the Commission. Moreover, any telephone company will be required to offer interconnection services to the public on the same basis as it does to its mobile telephone affiliate or subsidiary. We should like to think that these measures are sufficient to provide regulatory control of the cross-subsidization problem.

25. A number of the parties filing comments expressed a concern that permitting the wireline carriers to offer dispatch services through their cellular systems could, because of their ability to cross-subsidize, result in anti-competitive practices and eventual market dominance by the wireline companies. On the other hand, dispatch or dispatch related service makes up a substantial part of the initial market for cellular systems proposed by the wireline carriers. To exclude dispatch-type services entirely could delay or even prevent the implementation of any cellular systems. Also, if cellular systems can, through natural economies, provide lower-priced dispatch services, the public should not be denied that benefit. We have therefore concluded that the operators of cellular systems should be allowed to provide some dispatch services. With regard to the cross-subsidization issue, we feel that the restrictive measures described above will greatly minimize the ability of wireline carriers to cross-subsidize. However, we think it desirable to place some restriction on "fleet type" automatic dispatch offerings by operators whereby a dispatcher can call several vehicles simultaneously. In this regard, there is technical evidence that the widespread use of "fleet call" in a cellular system would substantially reduce its efficiency, thus eliminating an important reason for having a cellular system at all. Therefore, we will not allow cellular systems to offer dispatcher-originated communications service with "fleet call" capability whereby a single dispatcher can automatically call several vehicles simultaneously.

III. Developmental Authorization of Cellular Systems

26. Initially, we will authorize only developmental systems until we are reasonably sure that all factors necessary for regular implementation are accomplished. Developmental systems will be authorized on a one-to-a-market basis and only one system per telephone company. For system planning purposes the entire 40 MHz of spectrum may be considered as being available although the Commission may limit initial assignments of spectrum to less than 40 MHz. Therefore, any proposal for an initial developmental authorization must include a request for the minimum amount of spectrum required for the area proposed to be served. Additional spectrum, beyond that specified in initial developmental authorizations, will be made available upon a demonstrated showing of need and in accordance with criteria to be set forth in a subsequent rule making proceeding to amend Part 21 of the Rules to provide for the regular licensing of cellular systems. That proceeding will also provide technical standards, loading criteria, etc. It will be instituted when more detailed technical information becomes available through the developmental systems.

27. The guidelines under which developmental cellular systems will be authorized are contained in Appendix C.

The Assignment Plan for Private, Shared, and Common User Communication Systems in the 900-MHz Band

Preliminary Comments

28. In the past we have made separate allocations and provided different regulatory schemes for private systems of communication and for radio facilities used to provide service to the public. The former were authorized in the Safety and Special Radio Services and the latter in the Common Carrier Services. Nevertheless, over the years, especially during the course of the decade just passed, hybrid arrangements for radio communication facilities have evolved in the private services, particularly under our cooperative use and multiple licensing practices.

29. We have examined what we plan to do, here, in the light of the history of the foregoing regulatory framework and of the development of the land mobile services, and we have decided to modify, considerably, the traditional scheme of regulation we have followed in the past. Thus, while we still believe, as we have made clear in prior portions of this Report and Order, that common carrier-type regulation is appropriate for the large cellular land mobile radio systems (which, because of their design, can most effectively be operated by a single entity), we have determined that such manner of administrative control is neither appropriate or desirable for the variegated systems of communication we plan to authorize in the 806-821 MHz and 851-866 MHz bands.

30. In this connection we would point out that while some systems of land mobile radio communication have been authorized as common carriers, the vast majority of those employing radio are licensed in the private services. These private systems serve vital needs and requirements of governmental, industrial, and land transportation entities, but, unlike facilities licensed in the Domestic Public Radio Services, they operate under restrictions and limitations as to the persons who may employ them; as to the purposes for which they may be used; and as to the kind of messages that may be transmitted. The scheme of regulation we adopt here parallels that used in the private services. Accordingly, while our action departs from the traditional approach to administrative control over public and private systems of radio communication, it does follow closely assignment policies and practices used in the private services. Thus, in major respects, our plan is not entirely new or untried; rather, it arises out of and amplifies and builds on what we have found to be an effective and efficient method of management of the radio spectrum. 3/

3/ The Commission has long treated private and land mobile communication systems under a specialized regulatory scheme. Basically, we have expanded that plan, here, to cover a wider range of alternatives for establishing or obtaining communication services. In accomplishing this objective, we have abandoned, to a large degree, the service categories employed in the past, and we have also combined private, shared, and common user systems under a single assignment and regulatory plan which we believe to be more efficient than that used in the past.

31. To explain, our new plan is designed to permit the establishment of a large variety of systems of radio communication to meet the many and varied requirements of different users. The assignment plan is flexible. It will allow police eligibles (and other classes of users, as well) to establish their own radio facilities and to manage them in ways they think best meet their individual requirements. Also, they may share facilities with other classes of users on a cooperative basis; or form nonprofit corporations or associations to serve as licensee and to manage their systems for them. In this way they will be able to spread the costs over a broader base and reduce capital and operating expenses proportionally. Finally, under certain conditions, we would license a person to provide service, on a commercial basis, to a single customer, say a large, metropolitan police department. That is one possibility. Another would be to license a common user system to provide service to a number of small police forces, which may be operating in adjacent jurisdictions, under some arrangement which would afford all the means of communication they require at low cost and in an efficient manner. And, of course, many other variations of such arrangements will be possible. Our plan provides for this.

32. In addition, eligibles will have the choice of trunked or conventional systems. Further, within each of those modes of operation, they will have a variety of ways in which to use radio, and this will permit them to tailor, to a fine degree, the communication systems they elect to establish. Added to this, overlaying all of these alternatives, they will have an option to switch from one type of system to another, and then back again, should any prove to be unsatisfactory or not to work out as expected.

33. A plan of this kind is feasible, for we now have sufficient spectrum space to offer a large number of options to the land mobile community. Thus, in any one area, and in adjacent areas, too, we have the potential for 600 single-channel conventional systems; or 30, 20-channel, or 60, 10-channel, or 120, 5-channel trunked systems. There are other combinations, too. Therefore, overall, with the spectrum we are making available for immediate use and with what we are holding in reserve, we are assured, perhaps more so than ever before, that we will be able to accommodate the needs and requirements of land mobile operations, in a most effective and efficient manner (with little or no congestion), for many years to come.

34. We are fully aware (the parties have not failed to remind us of this) that some of the entities we propose to license, i.e., entrepreneur-operated, common-user systems, could be licensed as common carriers and regulated under Title II of the Communications Act. However, our basic goal in this proceeding is, as it has been since its inception, to make available to the land mobile service additional spectrum and to do this in a way that would promote the larger and more effective use of this spectrum in the public interest, all in conformity with our duties, obligations, and responsibilities under Title III of the Act. Moreover, the type of radio operations planned, here, for the land mobile services at 900 MHz, were not envisioned by the original drafters of the Communications Act. In this instance, the radio services we are establishing fall somewhere between what Congress had in mind in framing the provisions of Title II and what it intended to cover under Title III of the Act. In these circumstances, then, we feel we have the discretion necessary to select the regulatory tools we believe will most effectively promote the public interest.

35. In accomplishing this goal, we are free, we believe, to adopt whatever comprehensive regulatory scheme is best suited for the purpose. In this instance, on the basis of the extensive record in this rule making, and also in light of our experience, particularly that over the past two decades, we find that our plan for the use of the 900 MHz spectrum would not be best implemented by restricting the number of licensees. We are of the view, rather, that reliance should be placed on the competitive forces present in the communications market to give land mobile users the options and choices we feel should be theirs. In this connection, then, we have concluded that we do have the necessary statutory authority to choose one regulatory process which is preferable, on demonstrable grounds, over another which is not at all suited to the objectives of the action we propose to take. This, we think, is the central holding in United States v. Southwestern Cable Co., et al., 392 U.S.157 (1968); and Philadelphia Television Broadcasting Co. v. Federal Communications Commission, 123 U.S. App. D. C. 298, 359 F.2d 282 (1966).

36. In this connection, we have, of course, addressed ourselves to the argument advanced by a number of the parties that the Communications Act, together with certain precedents cited in support of the proposition, compel the conclusion that we do not have discretion in this matter to select one regulatory scheme over another; that we must treat any entity offering commercial service to eligibles or licensees in the private services or to the public as a common carrier and regulate that entity as a common carrier. But we do not think we are restricted or limited in this way in carrying out our duties and responsibilities under the Act of assuring the most effective and efficient use of the radio spectrum under whatever controlling circumstances exist. We believe, rather, that the Communications Act, read as a whole, directs us to regulate the use of the radio frequencies that are available in the way that affords maximum benefits to the public, and that is what we have done, here.4/

4/ It is pointed out that such a licensing practice would be at variance with that presently used in authorizing service in the Domestic Public Radio Services, under Part 21 of our rules. This is so. But where we find it necessary, in achieving a desirable goal, to abandon a trail once followed, and to turn to a new one, we must have the right to do so. There must be progress, and we must be able to learn through experience what is good and what is not, and to act upon that experience. For this reason and others set out, above, in our opinion, we deny the "Motion for Severance of the Issue of Multiple-User Licensees from the Frequency Allocation Aspects of this Proceeding and for Resolution of that Issue in an Evidentiary Hearing," filed herein on October 19, 1973, by the National Association of Radiotelephone Systems (NARS). The issue NARS points to has been debated at length. Parties, including NARS, have addressed themselves to it in their comments and pleadings and in oral argument, too, and we see no need for further proceedings to decide this legal question. Accordingly, as stated, the referenced motion is denied.

37. In this connection, we would point out that we have allocated 30 MHz of spectrum space, or an equivalent of 600 25 kHz voice-grade channels, for the future development of mostly dispatch-type land mobile radio communications systems. Further, this is a new range of spectrum for land mobile use, much higher than that used in these services in the past. Thus, as we have mentioned, new system design; new equipment; and new marketing practices are to be worked out as the frequencies are placed in use. In these circumstances, we cannot predict with any degree of certainty what types of communication systems will emerge or what methods of marketing will make them most available to the land mobile communication users. However, our experience over the past 25 years teaches us that detailed subdivision of the spectrum, with attendant restrictions, does not always promote the fullest and most efficient utilization of radio frequencies. Accordingly, we have grouped varying classes of users and varying methods of use together and we have allocated for their use the entire band of 30 MHz. We did this specifically and intentionally, for we wanted the competitive forces in the market place and the relative needs of each user or group of users to decide what assignments are made first and to whom such assignments are made. In this way the three basic types of eligibles are placed on equal footing, i.e., private, shared, and common user systems have commensurate or corresponding opportunities to apply for and to establish systems of radio communication required to carry out authorized functions and activities. No person is excluded and no person can exclude, by recourse to challenges on economic or other grounds inconsistent with this plan, so there will be open entry to the market and competition among users, but all this on a fair basis as we have just described.

38. With this spectrum, with the combinations mentioned, we believe that the competitive forces of the market place can be relied upon to provide the foundation upon which we may properly rest our regulatory approach. To illustrate, as to the cost and quality of service, or as to the form it takes, there is no need for regulatory measures like those imposed on common carrier operations, for each user will be free to negotiate with multiple suppliers and communication companies for the facilities he needs. Also, in certain circumstances, he may apply for and construct his own system, should he find that mode of operation to his advantage. Or he may join with others to bring together the necessary elements of a radio system under our "cooperative use" practices; or form a nonprofit association or corporation for the purpose; or rely on a trade organization, which may offer communication services to its members on a nonprofit, cost-shared basis. All of these avenues are open to the user; and with them we feel he is protected from those abuses that might arise, were the circumstances other than what they are.

39. Additionally, we think it very important that we exercise our authority and adopt a regulatory plan which is greatly simplified. We want the burden on the applicant to be significantly less. We would like to cut down on the costs to the public, particularly in the case of those seeking to bring service to it through common user systems. Also, we find it imperative to adopt procedures which will enable us to authorize

eligible persons to establish the radio stations applied for at a much earlier date than is possible under current processes that now apply to radio common carriers.[5/] We believe this can be best accomplished by adopting our plan--a plan we have modeled and fashioned on our practices and procedures in the private services, where a higher level of administrative efficiency does obtain.

40. On that point, we think it clear that no one user will necessarily have to look to a single business entity for service. This is as it should be, at least in the context of the fundamental objectives we have set for ourselves in the formulation of our 900 MHz assignment plan. Those objectives, we will mention again, are to provide a maximum number of ways under which a maximum number of qualified persons may, at the earliest date possible, with the least administrative delay and under minimum procedural restraints, provide themselves with the means of radio communication they may require to enable them to conduct their affairs in an efficient and effective manner.

41. Furthermore, there are great advantages to the public in having at 900 MHz a multiplicity of sources for the kinds of equipment and related facilities needed to meet the requirements of land mobile users. Companies of this kind--providing such services and facilities--can and do function independently, competing with one another for business, all without any adverse impact on the public. This being so, our plan is premised in part on the nature of the requirements of land mobile users; and we think it clear that "limited competition" or "natural monopoly" approaches, where detailed and complex regulatory procedures are imposed, would be antithetical to the best interests of these users and to the public, too.

42. Further, we are convinced that we, for our part, must not carry forward to the 900 MHz band the burdens and delays inherent in present procedures, used in regulating common carriers, except, of course, with regard to cellular service to be provided by wire line telephone companies. It is our view that it is very much in the public interest to shed this

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5/ We would note that, over the years, where procedures have been followed that provided for consideration of economic impact on common carriers, we have witnessed what seems to us are interminable delays in the authorization of service, in some cases extending up to 4 or 5 years and at times longer. Many of these delays, in our view, had or have little or nothing to do with the ultimate merits of any given proposal; rather, they are primarily the result of efforts on the part of existing carriers to keep out competition. These efforts have been effective in delaying, if not limiting competition; and, in some cases, they have frustrated the actions of persons interested in establishing what might very well have been a valuable service to the public, all with few, if any, corresponding benefits in terms of the overall public interest, convenience, and necessity.

heavy cloak and exchange it for one with far greater flexibility and far greater promise for maximizing the potential of utilization of the radio spectrum at 900 MHz.6/

43. Finally, we emphasize that our new assignment plan and the scheme of regulation we have devised to implement it are designed to be carried out on a national basis. All of the 600 radio channels are made available nation-wide. The frequency assignment methodology and technical standards and our operational rules are to apply nation-wide, where each frequency assignment will control where the next may be made--this without regard to state boundaries or varying local jurisdictions. In these circumstances, the methods which potential users may employ to make use of radio frequency must also be compatible on a nation-wide basis. If they are not, we will not be able to achieve the goals we have set for ourselves--goals which we feel certain will bring to the public what we foresee to be means for efficient, effective, and low cost communications.

44. We recognize that some state and local authorities, in exercising jurisdiction over intrastate common carrier communications, may attempt to impose regulations and controls over some or all types of common user systems which would be inconsistent with our allocation scheme for 900 MHz. In this regard we are particularly concerned about regulation which may take the form of limiting or excluding potential users or classes of users from utilizing this band.7/ Such action would

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6/ In this regard, our 900 MHz plan will require a minimum of time for adjustments to service parameters, because we have, in our technical and loading standards, built-in allowances to permit expansion of service as it is required, all without major study or evaluation on our part. That is one of the features of the new plan, i.e., it has been conceived in a way which will permit us to eliminate the costly, time consuming, case-by-case treatment of every change or variation in the method of operation or in the charges or types of service provided by the licensee.

7/ In addition to generally frustrating the objectives of this proceeding, any state restriction limiting the number of users would have a negative impact on frequency allocation. Rather than attempting to determine by administrative process the best use of the radio spectrum, our new plan at 900 MHz harnesses the competitive forces of the market place as a regulatory tool to insure efficient and effective frequency use. If those that are first licensed do not effectively utilize frequencies or provide for public need, opportunity will encourage others to seek radio facilities which, under free competition (and the rules we have designed), will supplant the less effective radio users.

be in direct conflict with our attempt in this proceeding to establish a nation-wide system of radio communications consistent with our obligation under Title III of the Communications Act. Both Sections 2(b) and 221(b) of the Act, which reserve to the states jurisdiction to regulate intrastate common carrier communications, begin with language that makes it clear that state action must yield to the sole jurisdiction and power of the Commission to provide for allocation of the radio spectrum and to issue radio licenses. We think both these sections make it clear that Congress did not intend that such regulatory powers the state may be given with respect to intrastate communications be used to inhibit or thwart the Commission in exercise of its obligations in establishing a uniform national plan for use of radio frequencies. We stated in Telerent Leasing Corp., 45 FCC 2d 204, 220, 223: "State action must yield to the sole jurisdiction and powers of the Commission to license radio facilities in the public interest" and that "no state regulation can oust this Commission from its clear jurisdiction." 8/ Moreover, the Supreme Court has held that federal exclusion of state law is inescapable where compliance with both federal and state regulation is impossible. Florida Lime & Avocado Growers, Inc. v. Paul, 373 U.S. 132, 142-143 (1963). Accordingly, we assert Federal primacy in this area and declare that any state regulatory action that may be taken with regard to users or potential users of the 900 MHz band that is inconsistent with the rules and policy promulgated in this proceeding is unlawful. While we are reluctant to take such preemptive action, we believe it imperative to the success of this program.

8/ Under appeal, U.S. Court of Appeals for the Fourth Circuit.

Licensing 900-MHz Stations

Eligibility

45. Under our assignment plan, there will be three basic license classifications. Facilities will be authorized either as private, or shared, or common user stations. Under the first heading, private systems, we will license any person or entity eligible in any of the radio services included under Parts 89, 91, and 93 of the rules.

46. In the second license classification, we include, as eligibles, any person or entity offering to provide communication services and facilities, on a not-for-profit, cost-shared basis, to persons eligible under either Part 89, 91, or 93 of the rules. Thus, the licensee may be an individual licensee; a non-profit corporation or association, formed for the purpose of providing radio facilities to qualified participants; or it may be an entity such as a medical society or industry organization which has as its primary purpose some function other than the provision of communication services for their members.

47. Under the third and last license category, we have grouped commercial common user systems. These include any commercial concern offering to provide service to persons eligible under either Part 89, 91, or 93 of the rules, on the one hand, and on the other, to the public, in general, without regard to the eligibility factor. As we will point out, later, arrangements of the first type will be regulated differently from those of the other type; but in neither case will the licensee be subject to regulation as a common carrier.

48. Reviewing, then, there are to be three license categories, that is, one for private systems; another for shared systems; and the third for commercial common user facilities. Private systems, we envisage, will not be unlike those authorized under our present rules. Shared systems are to be operated on a not-for-profit, cost-shared basis, and they are to be available only to persons eligible in the private services. But the third license category is a new one, for under it commercial concerns will be able to provide communication services for profit, either to eligibles under Parts 89, 91, and 93, or, alternatively, to the public, in general. 9/

9/ While, as we have indicated, we will not treat these commercial ventures as common carriers, this does not mean that they will not be regulated. They will be, but in a way which will promote, in our view, the fuller and more effective use of the new spectrum in the public interest.

Policy on Interconnection

49. Our new rules also place restrictions on interconnection. In this regard, our policy will be to permit full interconnection only in those cases in which the licensee provides radiotelephone services, on a commercial basis, to the public. Thus, where the licensee serves himself (a private system), or where he provides service to eligibles on a not-for-profit, cost-shared basis (a shared system), or where service is offered to a restricted class of eligible users, but on a commercial basis (one of the two forms of common user systems), interconnection with the wire line facilities of the telephone company serving the area will be limited to those situations in which it is accomplished manually, by a person in the employ of the licensee or user, at the licensee's or user's principal place of business. Interconnection at a control point common to more than one licensee or user will not be allowed. 10/

50. Our policy on interconnection is being adopted because our continuing experience with it, in the private services, has convinced us that the mode of operation is basically incompatible with dispatch-type requirements. Thus, where interconnection is used, message time invariably increases, and, further, it brings into play a number of factors which decreases system efficiency. These factors include dial-up time requirements; use of "hold" features of telephone facilities; and a tendency not to monitor the channel before transmission, even in those cases in which the equipment employed is designed to permit it. Accordingly, while we know that interconnection is desirable in certain situations and necessary in others, we make limited provision for it, as previously explained.

10/ This practice is now being followed in connection with shared community repeaters authorized in the Business Radio Service in the 450-470 MHz band. It has worked well, and we have received no complaints from licensees that the restriction interferes in any meaningful way with their traditional dispatch-type operations.

Other Restrictions on Operation
and Use of 900-MHz Systems

51. We have said that we plan to license 900-MHz stations under three basic categories, namely, as private systems, where licensees use their stations in carrying out authorized activities and functions; next, as shared systems, where service and facilities are provided to eligible persons on a not-for-profit, cost-shared basis; or, finally, as common user systems, where commercial firms offer facilities and services either to eligibles in the private services or to the public.

52. Now, in every instance in which service is to be provided solely to eligibles in the private services (in three of the four use categories just mentioned), there are to be three additional license restrictions. First, radio facilities so authorized may only be used for purposes expressly allowed in the radio services included under Parts 89, 91, and 93 of the rules. Second, each licensee or user must be shown to be eligible for facilities, either under this subpart or in the radio services, listed, above. Third, all messages and transmissions must be limited to those permitted in the services in which the participants are eligible.

53. These license restrictions are in contrast to those governing stations employed to provide radiotelephone services to the public. In the latter system, interconnection is to be allowed. There are to be no restrictions on the class of persons served, and messages of all types may be transmitted. In brief, common user systems of this type are to have the maximum degree of flexibility in the way, and by whom, they are employed; whereas, private, shared and common user facilities, used to serve specific classes of eligibles, are to be restricted and designed in a way that will permit qualified persons to conduct certain activities and functions in an efficient manner. 11/

11/ This point may be illustrated by the use made of radio systems by public utilities, eligibles in the Power and Petroleum Radio Services. There, radio is used as a "tool", so that these enterprises may provide untility service on a more effective and efficient basis. And in the Fire and Police Radio Services, where, again, radio is used as a "tool," not in the conduct of the personal affairs of policemen and firemen, but to allow officials to carry out their governmental functions in a more effective and efficient manner. That is the essence of the private services, and we preserve it in the 900-MHz licensing processes through the limitations and restrictions placed on systems operated for, or by, groups eligible in these services.

Filing and Processing of Applications for 900 MHz Facilities

54. Applications for stations are to be submitted to the Commission at its offices in Washington, D.C.[12] All applicants are to use FCC Form 400, along with the additional information which must be submitted in connection with 900-MHz facilities.[13]

55. Our plan is to process these applications essentially in the order in which they are received. Once received, the proposal will be reviewed to determine whether it is acceptable for filing, i.e., not deficient in any material respect. If it is acceptable, it will be assigned a "priority", based primarily on the date and time it was filed. It will then be placed on our "processing line" for consideration "in turn". Where possible, the application will be granted. Should this not be possible, the proposal will be dismissed or denied, depending on the circumstances, and returned to the applicant, and, in this event, he will lose his assigned "priority".

56. These procedures will be followed until all of the channels available in the area are assigned. At that time, all applications on file, proposing operation in the area in question, will be placed in "pending status", if the applicant has made this election. Following this, each application in "pending status" will be considered "in turn" at such time as additional frequencies become available.[14] Where the applicant has not made this election (that his proposal be retained in "pending status"), it will be returned to him. He may, then, either file it at a later date or submit it, in modified form, for consideration for grant in some other area or region.[15]

12/ Applicants proposing operation within the Chicago Spectrum Management Region as defined in the First R&O Docket No. 19150, adopted Oct. 28, 1971, 36 FR 2167 shall file their application on Form 425 with the Chicago Regional Office. A subsequent order will be issued delegating authority to the Chicago Regional Office for the processing of such applications. Rules adopted herein will apply in the Chicago Region pending possible future rule making dealing specifically with 900 MHz land mobile operation in that Region.

13/ While we have not established a schedule of fees for filing or grant of applications for 900 MHz facilities, we plan to do so following the issuance of our report and order in this proceeding. Meanwhile, we will accept applications for filing, subject, however, to the payment of the required fees at such time as they are established.

14/ We should add, "together with those submitted at a later date, seeking facilities in the same area." We do not intend to preclude the filing of applications even where the frequencies allocated for use in a given region have been exhausted.

15/ This may be an alternative course of action an applicant may wish to follow, because we will not permit anyone to file multiple applications for radio facilities where such proposals are situated so that if one application is granted, some other one, filed by the same applicant in an adjacent area, would have to be denied or dismissed.

57. We should emphasize, here, that applications for stations in the 900-MHz band will be processed and considered within the framework of specific standards, those set out in our rules. If the proposal meets these specifications, it will be granted. If it does not, it will either be dismissed, or denied, or kept in pending status, whichever action the facts of the case demand. In general, then, there are to be no hearings on comparative or economic issues, as such; and petitions to deny, in general, will not be entertained nor will other procedural or administrative remedies be available, except where the law so prescribes.16/

58. These practices have been worked out, with care, to enable us to attain our primary objectives, i.e., to provide the maximum number of channels for communication to the maximum number of qualified users at the earliest possible date, all with a minimum of regulatory "red tape", but with options as to how, and from whom, service may be obtained.

59. Achievement of these goals is possible, we think, for we have sufficient spectrum space, with additional channels in reserve, to permit the establishment of multiple facilities in any one area or region and to duplicate them in adjacent cities and communities. With this, and with the licensing alternatives provided for, there will be no need for comparative consideration of proposals. Besides, such hearings would preclude implementation of our scheme of regulation, since it rests, in an essential way, on there being free and open competition in each area between persons offering equipment and services.17/

16/ These procedures parallel those employed by us in licensing radio facilities in the private services. There, we have found they work well, enabling us to license facilities with the minimum delay, for the benefit not only of the licensee but, ultimately, for the public, as well.

17/ Our experience under the licensing procedures presently employed in the private services, where hearings have not been necessary, contrasted to the administrative delays occasioned by the processes applicable to common carrier regulation, confirms our views in this regard. We see no reason why the same benefits should not be translated to apply at 900 MHz.

Selection and Assignment of Frequencies in the 900-MHz Band.

Preliminary Considerations

60. As pointed out, we have allocated 30 MHz for use in providing service to persons qualified to operate at 900-MHz. This has been done in two bands, with 15 MHz allocated in the 806-821 MHz band and 15 MHz in the 851-866 MHz band.

61. In both trunked and conventional systems, mobile station transmitting frequencies will be selected from those available in the 806-821 MHz band and base station transmitting frequencies, from those allocated in the 851-866 MHz band. There will be uniform 25-kHz channeling; and the spacing between associated mobile and base station frequencies, in each instance, will be 45 MHz.

62. This 30-MHz allocation makes possbile a number of options for system design. For example, we could authorize 600, single-channel conventional stations. On the other hand, we could have 30 trunked systems, with 20 channels each; or 60, with 10 channels; or 120 with 5 channels. There are other combinations, too; but the important feature of our plan is its flexibility. This flexibility gives assurance that competitive forces in the market place can operate freely and allow the establishment of the best combination of services and facilities possible under the present state-of-the-art.

63. But, initially, as a matter of policy, we have decided not to authorize, in any one area or region, more than 100 25-kHz channel pairs for conventional use and 200 25-kHz channel pairs for trunked systems. The remaining 300 25 kHz frequency pairs will be temporarily reserved to give us an opportunity to study system development trends in the available spectrum. Further, we do not want to allow one type of system to dominate the market, where the other might better serve the needs and requirements of eligible users. Accordingly, as an interim safeguard, we will impose the restriction mentioned.

Frequency Assignments for Trunked Systems

64. Applicants for trunked systems will be assigned frequencies in groups, from 5 to 20 channels, depending on the nature of the service to be provided; the area to be served; the class and number of users or customers to be offered facilities; and a number of other factors.

65. Mobile station transmitting frequencies for trunked operation will commence with Channel No. 1 at 820.9875 MHz, followed by Channel No. 2 at 820.9625 MHz, and proceed to the band end with uniform 25-kHz channeling. Base station transmitting frequencies will commence with 865.9875 MHz, Channel No.1, followed by 865.9625 MHz, Channel No. 2, and proceed to the band end with uniform 25-kHz channeling. 18 /

Frequency Assignments for Conventional Systems

66. Applicants for conventional systems will be assigned channel pairs in accordance with applicable loading criteria. 19/ Where justified, on the basis of the showing made by the applicant, one or more channel pairs will be made available to him for use in his system of communications. However, the absolute maximum number of channels that will be made available for use in a conventional system will be five, regardless of the number of mobile units the applicant plans to serve. 20 /

67. Mobile station transmitting frequencies for conventional systems will commence with Channel No. 1 at 806.0125 MHz, followed by Channel No. 2 at 806.0375 MHz, and proceed to the band end with uniform 25-kHz channeling. Base station transmitting frequencies will commence with Channel No. 1 at 851.0125 MHz, followed by Channel No. 2 at 851.0375 MHz, and proceed to the band end with uniform 25-kHz channeling. 21/ As in the case of trunked systems, discussed immediately, above, the spacing between associated mobile and base station frequencies will uniformly be 45 MHz.

18/ The band ends referred to will be determined by the policy mentioned, above, at para. 63 .

19/ See Section 89.802, et seq.,of the new rules.

20/ Where an eligible has requirements for additional frequencies, he must meet those needs through the use of a trunked system. We emphasize a maximum of 5 channel pairs will be assigned to any one licensee for use in a conventional system.

21/ As in the case of trunked systems, the interim criteria will apply, here, too. See para. 63, supra.

Authorization of Operational Fixed Stations in the 900-MHz Band

68. Much thought has been given to whether operational fixed stations should be permitted in the 900-MHz band. However, for the same reasons that have persuaded us in the past, we will only allow control stations and then only with specific limitations similar to those now applying to such stations in the 450-470 MHz band.

69. These limitations require that the control station operate on the assigned frequency of the associated mobile station. Also its use is subject to the condition that harmful interference not be caused to stations of licensees authorized to use the frequency for mobile service communications. Further, and in order to minimize potential interference, directional antennas will be required at control stations and their power output will have to be adjusted so that the control station's signal at the controlled station will not exceed by more than 6 dB the signal of an associated mobile transmitting from the same location as the control station.

Protection Parameters for Operation in the 900-MHz Band

In General

70. We gave much thought to the development of appropriate protection parameters for stations operating at 900 MHz. In doing so, we kept in mind our basic objective of authorizing multiple systems of communication capable of providing a variety of services to a large number of eligible persons and, also, to the public, in general. To attain this objective, we knew we would have to have a regulatory plan which would be relatively simple to implement and which would allow us to pass on each proposal in an orderly but expeditious manner, without recourse to highly complex and time consuming procedural and adjudicatory processes. 22 /

22/ In the future, when our computer procedures and capabilities are advanced further, new licensing and assignment methodology will be utilized. But, for the present, we must evaluate proposals on the basis of the standards and criteria set out in our opinion and our new 900 MHz rules.

71. With this in mind, we first looked into the question of whether protection should be accorded both co-channel and adjacent channel operations. We concluded that adjacent channel protection would not be necessary in making frequency assignments. Our plan of placing all base station transmitters in one band separated by 45 MHz from the base station receiving band eliminates the potential for adjacent channel interference between base stations. We recognize the potential of random adjacent channel interference when a mobile receiver is in close proximity of a base station transmitting on an adjacent channel. We believe, however, that the probability of intersystem interference to be so small and random as not to be a serious problem. Also, the possibility of intersystem adjacent channel interference within a trunked group of frequencies, in our view, can and should be minimized or eliminated by the system operator. Our greatest concern (with regard to adjacent channel interference possibilities) had been that control stations, operating at fixed points, might cause harmful interference of this type. But by limiting power and by our other requirements, we feel that the adjacent channel interference potential will be controlled. Accordingly, we have concluded that adjacent channel interference need not be taken into account in 900 MHz channel assignments, and we have not done so.[23] And, by taking this approach,we will be able to achieve great flexibility in the assignment and use of frequencies in both conventional and trunked systems of communications.

72. We also concluded that transmitter intermodulation interference would not be a factor in making frequency assignments. The principal source of this interference stems from high powered base stations operating in close proximity, both physically and frequency wise. Trunked systems will create this situation by their very nature. But odd order transmitter intermodulation products of the magnitude to cause a problem will fall outside this particular band and the overall allocation structure is such as to minimize the problem.

73. In summary, we have concluded that adjacent channel interference and possible interference from intermodulation can be disregarded, in this instance, in establishing protection parameters for 900-MHz systems. [24] It follows that our assignment plan is based primarily on co-channel operating characteristics, praticularly in terms of propagation of signals and on the design of available receiving equipment. With this decided, we turn to a discussion of the various considerations which went into determining the specific co-channel separation requirements for trunked and conventional systems of communication.

23/ This is our present thinking, nevertheless we may make a further evaluation of this factor in our Chicago Spectrum Management Region.

24/ As in the case of potential adjacent channel interference, the possible impact of intermodulation interference may be studied further in our Chicago Spectrum Management Region.

Co-Channel Station Separation

74. As just mentioned, in establishing mileage separations for co-channel stations, a number of factors were taken into consideration. Among these were permissible power and antenna height. Next, whether the same maxima should be specified for trunked and conventional systems; and, in addition, whether these maxima should be identical for urban, in contrast to suburban, operations. Also, the quality of service and the related consideration, interference levels, are important parameters.

75. As to the specification of permissible power and antenna height, progagation characteristics at 900 MHz and probable station locations were looked into. 25 / On the latter point, we have concluded that most trunked and conventional stations will be established in areas of relatively high population density. It would seem certain that trunked systems would be located there, since they will be expensive to construct and operate and only in the larger markets will there be present an economic base sufficient to support them. Further, it is most likely that the majority of conventional systems will also be located in heavily populated areas, because it is in such locations that greatest frequency shortages have been experienced.

25 / On propagation at 900 MHz, we studied both our own R-6602 curves and the so-called Okumura curves, referred to and relied on by a number of the parties filing comments. We found no great differences in the signal levels predicted. The major distinction between them involved the dissimilar receiving environment in which the test data was gathered. As to this, we applied a correction factor; and with it, there was very close correspondence in the two sets of data. Overall, we believed the data to be highly reliable, and we used it in predicting signal level contours and corresponding service area mileages.

76. Our study of the desirable level of signals in 900-MHz systems, led us to conclude that we should set maximum power and antenna height at 1 kilowatt (ERP) and 1000 feet (AAT), or the equivalent, respectively. 26/ This will be for all trunked operations and for those conventional systems with transmitter sites located within 15 miles from the geographic center of the Urbanized Areas listed at Table 1 of Section 89.751(g) of our new regulations. For conventional systems with transmitter sites more than 15 miles from the geographic center of the referenced Urbanized Areas, we felt lower power and antenna height could be used. In those regions there are generally fewer tall buildings; line-of-sight conditions are not uncommon; and the absorption factor is down. Accordingly, we felt it reasonable to set the limits at 500 watts (ERP) and 500 feet (AAT), respectively. 27/ Nonetheless, should these power and antenna height parameters for suburban stations prove to be unduly restrictive, we will take the steps necessary to adjust these values. These are maximum values for power and antenna height; and the applicant, of course, must justify his request based on his coverage requirement.

26/ Our objective is to provide a high quality signal to about 50 percent of the locations, 50 percent of the time, within the service area of the stations. To accomplish this objective would require a signal approximately 20 dB above receiver threshold, at the edge of the service area. We have also assumed, based upon the record of this proceeding, that receivers will be available with a sensitivity of 0.45 microvolts across a 50 ohm antenna terminal for 20 dB SINAD. On this basis, the average desired signal level should be 40 dBu at the edge of the service area. Based on available propagation data, R-6602 curves modified to account for mobile antenna receiving heights, urban, suburban, or rural environments, terrain roughness, etc., this quality of service could be afforded in the order of 20 miles in an urban environment with a 1000 feet (AAT) antenna and 1 kilowatt power (ERP). To maintain this quality of service with a margin to permit solid capture of the FM receiver, the interfering signal from a distant co-channel station should be 10 dB less than the desired signal at the boundary of the service area of the protected station. This would mean that the interfering signal could not exceed 30 dBu in 10 percent of the locations, 50 percent of the time.

The value of 40 dBu was employed for a number of reasons, but in simple terms we selected it because we determined that it would, in the absences of interference, enable the licensee of a 900-MHz facility to give a high level of service in the area in which he planned to operate. At 900 MHz this is important, because systems and equipment will be relatively expensive; and there must be some compensating factor for the investment required to establish service.

27/ While it might be argued that greater range in suburban areas is desirable, because the distances between points of communication would seem likely to be more than that found in urban areas, we still believe the lower limits are warranted. In part, our reason has to do with our plan for loading suburban-conventional systems, where 25-mile radii will be employed, not 15-mile radii used in connection with urban-conventional systems. In any event, under suburban/rural conditions, we would expect a useable signal to be received at essentially the same levels as for urban stations with greater power and antenna height.

77. Summarizing on this aspect of the rule making, we have set 1 kilowatt (ERP) and 1000 feet (AAT) as the maximum permissible power and antenna height for trunked systems and for urban-conventional facilities. For suburban-conventional systems, we selected 500 watts (ERP) and 500 feet (AAT) as the limits. 28/ With these powers and antenna heights we are certain all classes of stations will offer satisfactory service to those using them. 29/ But there is one further matter to take into account, establishing limits on interference.

78. As to interference, we concluded that the undesired signal should be 10 dB down from the desired one. This will mean that at the 40 dBu contour, of the protected station, the signal strength of the lower priority facility should not exceed 30 dBu. Translated in terms of mileage, it simply means that the two facilities, to afford one another the protection required, must be 70 miles apart. For suburban conventional stations, the distance is less, 45 miles. This is due to the use of lower power and antenna height. Accordingly, these are the values we will use, but they will not be applied in the same manner to trunked and conventional systems, due to the complexity of the loading problem, to be discussed, below.

Trunked Systems

79. As just stated, the separation between co-channel trunked systems is to be 70 miles. This standard is to apply in every case, regardless of where the trunked facility is located. This is feasible in trunked operations, because the applicant must make an initial showing that the facilities requested will be occupied in conformity with the applicable loading criteria.

28/ The Commission, however, is concerned with the practice of serving mobile users who require small areas of coverage on trunked systems which are essentially wide area coverage systems. Such situations are known to exist in the operation of wide-area repeaters in the lower land mobile bands. While not prohibited, this practice should be discouraged in the 900 MHz band, as it could lead to serious deficiencies in overall spectrum utilization. Accordingly, the Commission will be watchful of the effects of such practice on the efficient development of the 900 MHz band and may impose corrective regulation in the future if warranted.

29/ As previously mentioned, equivalent power for antenna heights in excess of 1000 feet are established and set out at Section 89.651(c), Table 1 of the new rules. For a trunked or urban-conventional station, 1 kilowatt (ERP) is the maximum power regardless of whether an antenna of less than 1000 feet is employed. For suburban-conventional stations, the same principle applies, that is, the maximum power is 500 watts (ERP) regardless of the height of the antenna above average terrain, even when it is less than 500 feet (AAT).

Conventional Systems

80. As we have said, for urban-conventional systems, a basic co-channel separation of 70 miles is required to enable the licensee to produce signal levels sufficient to give good, or highly reliable, service. For suburban-conventional systems, the separation is 45 miles. But we cannot apply this criterion directly, because, for conventional system, special provisions must be made to make loading feasible. For this purpose, for now, we have decided to use a simple protected-area approach. For urban-conventional systems, this will be that area circumscribed by a circle with 15 mile radaii. This will be measured from the designated geographic center of the Urbanized Area involved, as set out in Section 89.751(g), Table 1, of the new rules. Accordingly, all applications for urban-conventional systems (those specifying a transmitter site within 15 miles from the geographic center of the mentioned Urbanized Areas) will be considered, for loading purposes, with any existing or proposed co-channel facility in that area until the channel in question is fully occupied in accordance with the loading criteria set out in our new rules. Further, once a channel pair is assigned for use within the reference 15 mile radaii, it will be treated as unavailable for use by any applicant specifying an antenna site outside the 15 mile area, in that vicinity, of course.

81. For suburban-conventional systems (those with transmitter sites more than 15 miles from the geographic center of the mentioned Urbanized Areas), we have decided to consider, for loading purposes, all proposals for facilities specifying a transmitter site within 25 miles of the site of an existing suburban station or within 25 miles of the site specified in a prior filed proposal. Once the channel pair in question is occupied, in accordance with applicable standards, it will be treated as no longer available. Further, once a channel has been selected for occupancy by suburban-conventional stations, it will be unavailable for assignment for use in an urban-conventional system, that is, in the same general area. 30 /

30 / We wish to be clear on what we mean here. We do not intend to imply that a frequency pair, once designated for use in either an urban-conventional, or suburban-conventional, system, may not be used elsewhere for one type of system or another. This is not the case. Locally, its use will be restricted. Nationally, it will not be.

82. As stated, these measures are necessary to allow us to load conventional systems vertically. To do this, we must have some area or point of reference. The latter would be a more desirable approach; but as the number of co-channel stations multiplied, the problem of determining which systems should be taken into consideration in deciding whether a given channel was fully occupied or not rapidly becomes an impossible one, at least at the present stage of development of our frequency management program.

83. Accordingly, we plan to use the 15 and 25 mile radaii specification. With this decided, it is necessary to adjust mileage separations for conventional stations to account for the protected areas. Therefore, in the case of urban-conventional systems, assignments on occupied co-channel frequencies will not be made unless the proposed site of the new facility is at least 85 miles from the geographic center of the Urbanized Area involved. As to suburban-conventional systems, assignments on occupied co-channel pairs will not be made unless the site of the proposed station is at least 70 miles from the first suburban co-channel station authorized and this is to be the rule regardless of whether the channel assigned to that station is fully occupied or not. 31 /

31/ In any case in which the proposed transmitter site is within the 15 and 25 mile radaii, such application, of course, will be studied with co-channel stations in the protected areas, until such time as the channel is loaded in accordance with applicable standards. We would note, however, that all of these procedures are subject to further study and review, and based on day-to-day operating data, we may find they can be improved. Should this be so, appropriate steps will be taken to reflect this experience.

Channel Loading Standards

In General

84. For channel loading, in the absence of actual experience and data, especially for trunked systems of radio communication of the type we have under consideration at 900 MHz, we felt we should rely on the number of mobile units in operation as a base from which to set up channel occupancy figures. We have used mobile units, for, over the years, in the land mobile services, we have developed a series of guides for determining the channel requirements of licensees in the several services.

85. For example, in the Police Radio Service, we have found that, as a general rule, a channel pair can be employed in an effective manner in dispatching 50 mobile units of the vehicular type and an even greater number of portable or hand carried units. In this we recognize that there are no two situations exactly alike and that there are many factors to be taken into account. Among them are average message length; the number of units in operation in any given time period; the number of times, each hour, the dispatcher and mobiles originate calls; the number of dispatchers on duty at any one time; the size of the system (the number of communication channels available for use at any one point in time); and, certainly, the nature of the functions and activities of the licensee. All of these factors have an impact on system capacity. Nevertheless, as an overall or average measure, we have determined that in the Police Radio Service, 50 vehicular mobile units per channel is a reasonable and realistic criterion to apply in licensing stations in that service.

86. This may be contrasted to the Business Radio Service. There, the frequencies allocated were intended to be shared more intensively, because they were designated to serve a much broader group of eligibles and there were inherent differences in the nature of the communications of businessmen and of police departments. Consequently, higher loading standards were employed, with each frequency or channel licensed to serve approximately 90 mobiles. In densely populated areas, where the demand for business frequencies turned out to be very great and message loads correspondingly heavy, this norm did not always provide licensees with the communication capabilities they felt they needed. Nonetheless, overall, the 90 mobile criterion proved to be a good guide in licensing stations in the Business Service.

87. Similar conclusions have been arrived at as to frequency loading in the other services. To illustrate, in the Taxicab Radio Service, we know that a frequency pair can be employed effectively in dispatching 150 mobiles or more; and we have set channel loading in that service at a higher level. Further, the communication needs and requirements of licensees in the Power and Petroleum Radio Services are not the same as those in other radio services. This is in part due to the fact that radio facilities are used in different ways and for different purposes by licensees in the several services. But we have found that users can be grouped together for loading purposes; and that mobile units can serve as a good guide for frequency assignment purposes.

88. There is an added factor of some significance. Where a channel is assigned for the exclusive use of a particular licensee, circuit discipline of a high order can be maintained. It is relatively easy to do so, for the employees using the system are under the direct control of the licensee; and he has an interest in seeing to it that his messages to and from his mobile units are not delayed. Also, system monitoring can be performed in a more efficient manner, since station operators do not have to listen for the signals of other licensees. This eliminates, to a high degree, objectionable interference and message interruptions which cause inefficiencies. With these considerations in mind, we have differentiated between systems which are licensed to provide service to a single entity and those serving several licensees. In doing this, we have designated categories for single licensees; for 2 to 5 licensees; and for over 5 licensees. 32/

89. Summarizing, then, on the basis of the foregoing considerations and also from what we have learned from the vast record in this proceeding, we have developed the norms or general rules to assist us in determining when an assigned frequency is to be treated as occupied, or not occupied, in terms of its capacity to serve in an effective way the requirements of the users. We used this background in assisting us in setting the loading requirements at 900 MHz.

32/ See Section 89.802 of the new rules which deals with loading requirements for conventional systems.

Loading Trunked Systems

90. For trunked operations, we have separated user groups under five major headings, with police and fire eligibles in one group; business licensees in another; inter-urban and urban passenger motor carriers in the third group; and, in the fourth group, the "all other" classification, we would include the remaining service categories. For radiotelephone operations, a special criterion is used, due to the nature of such systems of communication. 33/

91. While we recognize that trunking provides added efficiencies in the use of the spectrum and improved communication service, to the present time we are not certain of the degree of improvement in channel capacity. In this regard, while we recognize certain data does exist as to wire line telephone operation, we are not sure that the same criteria can be applied to the types of 900-MHz systems with which we are concerned, here. There are many variables, and we feel that we do not have sufficient experience with the interplay of these factors to permit us to establish definite loading standards at this time.

92. In the light of these considerations, but using such information as has been made available to us on this subject, we have designated levels for channel loading which we believe most closely approach what actual operating experience will indicate. Accordingly, although these criteria must be treated as interim in nature, we will require, until operating data becomes available, that they be followed. In this connection, we will ask our licensees to maintain traffic records to assist us in any future re-evaluation of our standards.

93. For the purpose, then, we require trunked system serving the various user groups to be loaded as follows: 34 /

	5 channels	10 channels	20 channel
Police and Fire group	300	750	1500
Business Group	500	1000	2000
Passenger Motor Carriers	800	1600	2500
All other Groups	400	800	1600
Radiotelephone Group	200	400	800

33/ Applicants may apply for radiotelephone systems only where trunked operation is planned. Conventional systems, because of the efficiency element, may not be employed for this mode of use.

34/ See Section 89.801 of the new rules which sets out loading requirements for trunked facilities.

94. It is our belief that these interim loading parameters will provide users with high quality service on an efficient basis. But, as we have said, we consider these measures as interim ones, which, if necessary or desirable, will be modified to conform with what actual operating conditions show loading should be. Further, as we have indicated, we will not permit conventional systems to be used for radiotelephone operations. Our basic reason for this is that in conventional mode, principally because of the nature of telephonic communication, use of single channels or groups of single channels is inefficient for that purpose.

Loading Conventional Systems

95. Loading standards for conventional systems were developed out of the general considerations which we have outlined, above. As in the case of trunked facilities, we have grouped together users which we feel have similar or at least compatible communication requirements. Thus, police and fire users are grouped together. For them, the loading criterion will be 50 mobiles or 100 portable units. This standard is to apply only where the system is not shared with other police and fire users.

96. We have pointed out that some conventional systems will be vertically loaded. In such cases, it is appropriate to use different criteria; and we have done so. Thus, where a channel is shared by 2 to 5 licensees, the 40 vehicular, 80 portable rule will apply. Where it is used by over 5 licensees, the standard will be 30 vehicular and 60 portable units. This is for the police and fire group. The requirements for other groups are set out in the pertinent loading table. 35/

97. There is one difference in loading trunked and conventional systems which we will mention. In the former, no provision is made for eligibles in the Taxicab Radio Service. This is because the method of communication used by taxicab companies is such that no improvement in it can be achieved through trunking. This is the case in that communications generally flow from the dispatcher to the mobile units. Also, we have made no provision in the Taxicab Group for "portables". This is based on the fact that this kind of use is not usual in taxicab operations.

98. In order to qualify for a channel pair for use in a conventional system, an applicant must certify that, in his service category, whatever that might be, he will have a minimum of 70 percent of the mobiles specified in operation not later than 8 months from the date of the grant of his proposal. If 70 percent of the mobiles specified in the applicant's proposal equals 70 percent of the occupancy requirement of the applicant's service category or group, then the channel pair or pairs involved will be assigned for his exclusive use. Also, just as in the case of trunked operations, when a licensee is able to show that his facility is loaded to 90 percent of its assigned capacity, he may then apply for an additional channel pair or pairs, depending on the facts of the case.

35/ See Section 89.802 of the new rules which sets out the various user groups and gives loading requirements for each.

Loading Systems Serving Multiple Service Groups

Trunked Systems

99. As we have indicated, we have not allocated the frequencies to the various land mobile services. Therefore, all persons will be permitted to share systems with other eligibles in the private services. Systems serving this type of mix of eligibles in the private services will be loaded in accordance with the "Business Radio Group". This will mean for a 5-channel system, loading will be set at 500 units; for a 10-channel system, at 1,000 units; and for a 20-channel trunked system, 2,000 mobile units.

Conventional Systems

100. The same principle as used in trunked operations will apply to conventional systems serving a mix of users. There, we will apply the 70/140 criterion, that is 70 mobiles and 140 portables, where shared by two through five users, and the 50/100 criterion where shared by more than five licensees, are the standards for channel occupancy.

Other Considerations Applying to Loading Trunked and Conventional Systems

101. In loading trunked and conventional systems there are certain additional considerations which must be given attention. In this connection, we will examine each proposal to determine the mode of operation asked. Where, for example, an applicant requests a mobile relay facility, if he is to share, it must be with others using the same mode of communication, i.e., mobile relay with mobile relay. 36/

102. Further, two-frequency simplex operation will not be combined with mobile relay use; nor will we combine either of these modes of operation with full duplex systems. They are not compatible with one another.

36/ We wish it to be very clear that we will authorize radiotelephone service only on trunked systems.

103. In general, then, we will only assign the same frequencies for systems which involve the same mode of operation. In addition, we will not, where possible, mix user groups in vertical loading. This is because the loading criteria applicable varies, and this makes it undesirable and, at times, impossible to mix users. However, where this becomes necessary, the loading standard for the "mixed group" will be used. Also, in assigning frequencies for shared use in conventional systems in any one particular area, we will consider, among other things, the nature of the applicant's activities.

104. These are the major factors that we will take into account in loading channels. But we should note that where an applicant demonstrates that he can meet the requirement for occupancy in the group in which he applies, he will be permitted to use the license facility in any way permitted in the service in which he is eligible.

105. Accordingly, in loading 900 MHz systems, we will not only be concerned with the number of vehicles or portables the applicant plans to use, but we will also take into consideration the planned mode of operation; the service group into which the applicant falls; and, among other features, the number of persons licensed to use a given frequency in a given area. We plan to build our assignment plan on this basis; however, we will continue to examine our methodology, and we will take corrective steps to improve it when we can.

Additional Requirements for Common User Systems

106. One further matter, in order to promote the competition envisioned at 900 MHz and, also, to prevent manufacturers or equipment companies from gaining dominance in this market, we will limit such concerns to a single trunked system in a market and to no more than a total of 5 trunked systems nation-wide, except on a showing that the limitation should not apply in a given case. This approach will offer the opportunity to potential competitors to enter the field and to compete successfully with entities of the type mentioned. We are permitting equipment companies into this field, because we want to bring to bear their experience and know-how in the development of trunked and conventional systems. We feel this approach has advantages, for these facilities will be expensive to construct and we are not certain that the means of financing them will be otherwise available at initial stages. Once proven out, and the manufacturers will have an incentive to make the investment to accomplish this, a greater amount of capital will most surely be available. Further, we want pilot systems to be established at an early date; and the manufacturers have clearly demonstrated a willingness to enter the market immediately. While we proceed along these lines with caution, because of possible adverse impacts on competition, with the safegrards we have built into our rules we foresee no problems. Also, we will watch the progress made; study any effects; and take remedial action. However, we wish to observe that we may find no adverse impact; and, in that case, we would extend the privilege to manufacturers to operate in additional markets.

107. In addition to the foregoing, we will expect manufacturers providing commercial service to so design their systems that equipment obtainable from different companies can be readily used in it. We anticipate that an effort toward this end will be undertaken at an early date. However, should this not turn out to be the case, we may find it necessary to develop system standards, ourselves.

108. Finally, we wish to be clear that it is our intention to review and study continually all aspects of our assignment plan. In this regard, we fully recognize that the subject concept is new. It is in part untried and untested. Most likely changes and modifications will have to be made; and we will be alert to adjust our policies, standards, and criteria to what the public interest requires. This will be done on our own motion; and, in addition, we would expect, and we request, significant input from the land mobile industry and from land mobile users and those representing them. However, we are confident of the soundness of the structure of the measures we have adopted; of the desirability of the goals and objectives we have set for ourselves; and of the benefits to the public that will flow out of our approach to licensing at 900 MHz.

Subpart S

109. Subpart S will only be added to Part 89. However, it should be understood that the rules set out in Subpart S are to apply to all systems of communication included under Parts 91 and 93 of the rules. In the future, we plan to incorporate these rules with those of Parts 91 and 93.

110. We would also point out that some of the procedural rules set out in Subpart S may not be in complete harmony with the procedural rules contained in Subpart F of Part 1. Where there is a conflict, the rules in new Subpart S will, of course, be controlling.

General Accounting Office Requirements

111. Our new rules will require applicants and licensees of 900 MHz systems to submit certain information and data in addition to that now furnished. This, of course, is subject to approval by the General Accounting Office (GAO). Steps will be taken to obtain the necessary clearance. When GAO has decided the matter, a public notice will be issued. Until then applications may not be filed.

112. Accordingly, IT IS ORDERED, effective June 17, 1974, That Parts 2, 89, 91, and 93 of the Rules are amended as shown in Appendix B, attached hereto; and That the interim guidelines governing the developmental authorization and operation of cellular systems, set forth in Appendix C, are adopted. Authority for this action is found in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

113. IT IS FURTHER ORDERED, That the proceeding in Docket No. 18262 IS TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION

Vincent J. Mullins
Secretary

Attachments

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APPENDIX A

Alphabetical List of Participants

Aeronautical Radio, Inc.

AIL, A Division of Cutler-Hammer

Airsignal International, Inc.

American Petroleum Institute

American Telephone and Telegraph Company

American Transit Association

Association of American Railroads

Association of Maximum Service Telecasters, Inc.

Associated Public - Safety Communications Officers, Inc.

Atlanta Transportation Association

Boston Cab Company

Chicago Communication Service

Chicago Transit Authority

City of Fort Lauderdale, Florida

Collins Radio Company

Communications, Inc.

Digital Paging Systems, Inc.

Electronic Industries Association

Gainesville Industrial Electric Company

General Electric Company (Major Appliance Business Group)

General Electric Company (Mobile Radio Department)

GTE Service Corporation

Henry Ford Hospital

Integrated Systems Technology, Inc.

International Association of Chiefs of Police

International Association of Fire Chiefs

International Bridge, Tunnel, and Turnpike Association, Inc.

International Bridge, Tunnel, and Turnpike Association, Inc.

International Municipal Signal Association

Jeremiah Courtney

Lake Side Communications

Magnavox Company

Martin Marietta Corporation

Mobilfone, Inc.

Motorola

Mueller Electronics

National Association of Broadcasters

National Association of Business and Educational Radio, Inc.

National Association of Radiotelephone Systems

National Association of Regulatory Utility Commissioners

New Jersey Hospital Association

Radio Broadcasting Company

Ram Broadcasting Corporation

RCA Corporation

Sangamo Electric Company

Scott Communications Company

Southeast Ohio Emergency Medical Service

Special Industrial Radio Service Association, Inc.

St. Louis Electronics

Terminal Taxi Company

United States Department of Justice

United States Independent Telephone Association

United States Office of Telecommunications Policy

United States Small Business Administration

United Telecommunications, Inc.

Utilities Telecommunications Council

Xerox Corporation

Yellow Cab Company of Greater Buffalo, Inc.

APPENDIX B

Parts 2, 89, 91, and 93 of Chapter I of Title 47 of the Code of Federal Regulations are amended as follows:

PART 2 - FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS: GENERAL RULES AND REGULATIONS

1. In §2.106, columns 5-11 of the table are amended to read as follows:

§2.106 Table of Frequency Allocations.

United States		Federal Communications Commission				
Band (MHz)	Allocation	Band (MHz)	Service	Class of Station	Frequency (MHz)	Nature {OF SERVICES of stations
5	6	7	8	9	10	11
*		*	*	*	*	*
470-902	NG. (NG30) (NG43) (US36) (US88) (US100) (US116) (NG63) (NG65)	***	***	***	***	***
		806-821	LAND MOBILE.	Land Mobile.		Conventional and Trunked Systems.
		821-825	LAND MOBILE.			Reserve.
		825-845	LAND MOBILE.	Land Mobile.		Cellular Systems.
		845-851	LAND MOBILE.			Reserve.
		851-866	LAND MOBILE.	Base.		Conventional and Trunked Systems.
		866-870	LAND MOBILE.			Reserve.
		870-890	LAND MOBILE.	Base.		Cellular Systems.
		890-902	LAND MOBILE.			Reserve.
902-928	G. (US36) (US115)				915	Industrial scientific, and medical equipment.
928-960	NG. (US36) (US116) (US)	928-947	LAND MOBILE.			Reserve.
		***	***	***	***	***
*		*	*	*	*	*

2. In the list of footnotes immediately following the table in §2.106, footnote US115 is amended and a new US footnote is added in proper numerical sequence, to read as follows:

US115 The Frequency 915 MHz is designated for industrial, scientific, and medical purposes. Except as provided by US215 , emissions must be confined within the limits of ± 13 MHz of that frequency. Radiocommunications services operating within those limits must accept any harmful interference that may be experienced from the operation of industrial, scientific, and medical equipment.

US215 Emissions from microwave ovens manufactured on and after January 1, 1980, for operation on the frequency 915 MHz must be confined within the band 902-928 MHz. Emissions from microwave ovens manufactured prior to January 1, 1980, for operation on the frequency 915 MHz must be confined within the band 902-940 MHz. Radiocommunications services operating within the band 928-940 MHz must accept any harmful interference that may be experienced from the operation of microwave ovens manufactured before January 1, 1980.

PART 89 - PUBLIC SAFETY RADIO SERVICES

2. In §89.103(a), the table is amended to read as follows:

§89.103 Frequency stability.

(a) ***

Frequency range	All Fixed and Base Stations	All Mobile Stations	
		Over three watts	Three watts or less
MHz	Percent	Percent	Percent
Below 25	0.01	.01	.02
25 to 50	.002	.002	.005
50 to 450	(1) .0005	.0005	.005
450 to 470	(3,4) .00025	.0005	.0005
470 to 512	.00025	.0005	.0005
806 to 820	.00015	.00025	.00025
851 to 866	.00015	.00025	.00025
950 to 1427	(2)	(2)	(2)
1427 to 1435	(5) .03	.03	.03
Above 1435	(2)	(2)	(2)

* * * * *

3. In §89.105, paragraph (a) is amended and paragraph (e) is added to read as follows:

§89.105 Types of emission

(a) Except as provided in paragraphs (c), (d), and (e) of this section, stations in these services will be authorized to use only A3 or F3 emission for radiotelephony. The authorization to use A3 or F3 emission is construed to include the use of tone signals or signalling devices the function of which is limited to establishing or maintaining voice communications or to actuate emergency warning devices used solely for the purpose of advising the general public or emergency personnel of an impending emergency situation.

* * * * *

(e) Operation in the frequency bands 806 to 821 and 851 to 866 MHz is limited to F3 emission.

4. In §89.107 (b)(2), the Table is amended to read as follows:

§89.107 Emission limitations.

* * * * *

(b) ***

(2) ***

Frequency Band MHz		Authorized Bandwidth (kHz)		Frequency Deviation (kHz)
25-50		20		5
50-150	(1)	20	(1)	5
150-450		20		5
450-470	(2)	20	(3)	5
470-512		20		5
806-821		20		5
851-866		20		5

* * * * *

5. In §89.109, Paragraphs (d) and (i) are amended to read as follows:

§89.109 Modulation requirements.

* * * * *

(d) Each transmitter in the frequency ranges 25 to 50, 150.8 to 162, 450 to 512, 806 to 821, and 851 to 866 MHz shall be equipped with an audio low-pass filter. Such filter shall be installed between the modulation limiter and the modulated stage and shall meet the specifications contained in paragraph (h) or (i) of this section. The provisions of this paragraph do not apply to transmitters of licensed radiocommunications systems operated wholly within the limits of one or more of the territories or possessions of the United States or Alaska, or Hawaii, except those systems operating in the frequency ranges 806 to 821 MHz, and 851 to 866 MHz.

* * * * *

(i) For stations authorized in the 450-470 MHz band on or after November 1, 1967, and for all stations authorized in the 470-512, 806-821, and 851-866 MHz bands, at audio frequencies between 3 kHz and 20 kHz, the low-pass filter required by the provisions of paragraph (d) of this section shall have an attenuation greater than the attenuation at 1 kHz by at least:

$$60 \log_{10} (f/3) \text{ decibels}$$

Where "f" is the audio frequency in kHz. At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz.

* * * * *

6. In §89.111(b), the Table is amended to read as follows:

§89.111 Power and antenna height.

* * * * *

(b) ***

Frequency range (MHz)	Maximum plate power input to the final radio freq. stage (watts)	Maximum effective radiated power (watts)
1.3 to 3	2000	
3 to 25	1000	
25 to 100	500	
100 to 470	600	
470 to 512		1000
806 to 821	(2)	(2)
851 to 866	(3)	(2)
Above 950	(1)	(1)

1. To be specified in the station authorization.
2. For power limitations see Section 89.651
3. The output power of a transmitter on any authorized frequency in this service shall not exceed 250 watts (24 dBw).

* * * * *

7. In Part 89, a new Subpart S is added to read as follows:

SUBPART S -- SPECIAL REGULATIONS GOVERNING LICENSING AND USE OF FREQUENCIES IN THE 806-821 MHZ AND 851-866 MHZ BANDS

Sec.

General Information

General Restrictions and Limitations on Operation of Conventional and Trunked Systems Authorized in the 806-821 MHz and 851-866 MHz Bands

Application and Processing Procedures

Policies Governing the Selection and Assignment of Frequencies for Use in the 806-821 MHz and 851-866 MHz Bands

Sec.

Channel Loading Requirements for Trunked and Conventional Systems

- - - - -

SUBPART S -- SPECIAL REGULATIONS GOVERNING LICENSING AND USE OF FREQUENCIES IN THE 806-821 MHZ AND 851-866 MHZ BANDS

General Information

§89.601 Purpose.

The purpose of this subpart is to set out the regulations governing licensing and use of conventional and trunked systems of communication to operate in the 806-821 MHz and 851-866 MHz bands.

§89.602 Definitions.

Channel loading. The number of mobile stations assigned to operate on a co-channel basis within the same service area.

Co-channel interference. Interference caused in one communication channel by a transmitter operating on the same channel.

Conventional radio system. A method of operation in which one or more radio frequency channels are assigned to mobile and base stations but are not employed as a trunked group. An "urban-conventional system" is one whose transmitter site is located within 15 miles of the geographic center of any of the first 50 urbanized areas (ranked by population) of the United States. A "suburban-conventional system" is one whose transmitter site is located more than 15 miles from the geographic center of the first 50 urbanized areas. See Table 21, Rank of Urbanized Areas in the United States by Population, page 1-87, U.S. Census (1970).

Duplex radio communication. A method of radio communications, commonly used in radiotelephone systems, involving simultaneous two-way independent transmission in both directions accomplished through the use of two radio frequency channels, one for each direction of transmission.

Geographic center. The geographic center of an urbanized area is defined by the coordinates given at Table 1 of paragraph (g) of Section 89.751 of this subpart.

Trunk (telephony). A one- or two-way channel provided as a common traffic artery between switching equipment.

Trunk group. All of the trunks of a given type or characteristic that extend between two switching points.

Trunked radio system. A method of operation in which a number of radio frequency channel pairs are assigned to mobile and base stations in the system for use as a trunk group.

§89.603 Organization and applicability of rules.

The rules in this subpart set forth the procedural and substantive regulations which apply, distinctly, to land mobile systems licensed to operate in the 806-821 MHz and 851-866 MHz bands. They are to be read in conjunction with applicable requirements contained in Parts 89, 91, and 93 of this chapter; however, to the extent the provisions of this subpart conflict with those set out in Parts 89, 91, and 93 of this chapter, the former are to be treated as controlling, insofar as licensing and use of frequencies in the 806-821 MHz and 851-866 MHz bands are involved.

§89.604 Eligibility.

The following persons and entities are eligible for licensing in the 806-821 MHz and 851-866 MHz bands.

(a) Any person or entity eligible for licensing under either Part 89, 91, or 93 of this chapter.

(b) Any person or entity proposing to provide dispatch service, subject to the restrictions set forth in this subpart, to any person or entity eligible for licensing under either Part 89, 91, or 93 of this chapter on a not-for-profit, cost-shared basis.

(c) Any person or entity, except wire line telephone common carriers, proposing to provide dispatch service, subject to the restrictions set forth in this subpart, to any person or entity eligible under Part 89, 91, or 93 of this chapter.

(d) Any person or entity, except wire line telephone common carriers, proposing to provide radiotelephone service to the public over trunked systems of communication.

§89.605 Station identification.

(a) Conventional systems of communication shall be identified in accordance with existing regulations governing such matters.

(b) Trunked systems of communication shall be identified through the use of an automatic device which transmits the call sign of the base station facility at 30-minute intervals. Such station identification shall be made on the lowest frequency in the base station trunk group assigned to the licensee. Should this frequency be in use at the time station identification is required, such identification may be made at the termination of the communication in progress on this frequency. Identification may be by voice or International Morse Code. When the call sign is transmitted in International Morse Code, it should be at a rate of between 15 to 20 words per minute; and it should be transmitted by the means of tone modulation of the transmitter, the tone frequency being between 800 and 1000 hertz. The level of modulation is to be high enough to be clearly discernable, but low enough not to be disruptive of voice communications in progress.

General Restrictions and Limitations on Operation of Conventional and Trunked Systems Authorized in the 806-821 MHz and 851-866 MHz Bands

§89.651 Limitations on power and antenna height.

(a) The maximum effective radiated power and antenna height, respectively, for base stations used in suburban-conventional systems of communication operating in the 851-866 MHz band shall be no greater than 500 watts (27 dBw) and 500 feet above average terrain (AAT). These are maximum values; and applicants, of course, will be required to justify power levels and antenna heights requested.

(b) The maximum effective radiated power and antenna height, respectively, for base stations used in trunked and urban-conventional systems authorized in the 851-866 MHz band shall be no greater than 1 kilowatt (30 dBw) and 1000 feet above average terrain (AAT), or the equivalent thereof, determined from Table 1 of subparagraph (b) of this section. These are maximum values; and applicants, of course, will be required to justify power levels and antenna heights requested.

(c) Table 1. Equivalent powers and antenna heights for base stations operating in the 851-866 MHz band.

Antenna Height (AAT) (in feet)	Power (watts) 1/
4501-5000	65
4001-4500	70
3501-4000	75
3001-3500	100
2501-3000	140
2001-2500	200
1501-2000	350
1001-1500	600
Up to 1000 2/	1000

Note 1. Power is given in terms of effective radiated power(watts)
Note 2. Maximum permissible power and antenna height are 1 kilowatt (ERP) and 1000 feet (AAT), respectively. Licensees will not be permitted to exceed the specified 1000-watt power limitation, regardless of whether or not use is made of an antenna which is less than 1000 feet in height (AAT).

(d) The maximum output power for mobile stations operating in the 806-821 MHz band is 100 watts (20 dBw).

§89.652 Restrictions on operational fixed stations.

(a) Except for control stations, operational fixed operations will not be authorized in the 806-821 and 851-866 MHz bands.

(1) Control stations associated with one or more mobile relay stations, will be authorized only on the assigned frequency of the associated mobile station. Use of a mobile service frequency by a control station of a mobile relay system is subject to the condition that harmful interference not be caused to stations of licensees authorized to use the frequency for mobile service communication.

(2) Control stations shall in all cases employ directional antennas with the main lobe of radiation directed toward the station, or stations, being controlled. In each case, the antenna used, consistent with reasonable design, shall produce a radiation pattern that provides only the coverage necessary to permit satisfactory control of each mobile relay station and limits radiation in other directions to the extent feasible.

(3) The strength of the signal of a control station, controlling a single mobile relay station, may not exceed, by more than 6 dB, at the antenna terminal of the mobile relay receiver, the signal strength produced there by a unit of the associated mobile station. When the fixed station controls more than one mobile relay station, the 6 dB control-to-mobile signal difference need be verified at only one of the mobile relay station sites. The measurement of the signal strength of the mobile unit must be made when such unit is transmitting from the control station location or, if that is not practical, from a location which is not more than one-fourth mile from the control station site.

(4) Each application for a control station to be authorized under the provisions of this paragraph shall be accompanied by a statement certifying that the output power of the proposed transmitter will be adjusted to comply with the foregoing signal level limitation. Records of the measurements used to determine the signal ratio shall be kept with the station records and shall be made available, upon request, for inspection by Commission personnel.

§89.653 Restriction on interconnection.

(a) Automatic interconnection with land line facilities shall be permitted only in those cases where the licensee provides radio telephone services to the public on a commercial basis.

(b) Systems licensed for use by an individual person or entity eligible under either Part 89, 91, or 93 of this chapter; or to any person or entity providing service to any person or entity eligible under either Part 89, 91, or 93 on a not-for-profit, cost-shared basis; or to any person or entity providing service on a commercial basis to any class of persons or entities eligible under Part 89, 91, or 93 of this chapter shall not be interconnected with the wire line facilities of any telephone company, except where such interconnection is accomplished manually at the licensee's or user's place of business. Further, such interconnection may not be accomplished at any station or control point common to more than one licensee or user.

(c) In those situations where a licensee is permitted to interconnect with the facilities of a land line carrier pursuant to this section, it shall be the obligation of the local land line carrier to provide interconnection under reasonable terms and conditions upon reasonable request therefor.

§89.654 Restriction on permissible communications.

(a) Systems licensed for use by persons eligible under Parts 89, 91, and 93 of this chapter may be employed solely for the transmission of messages permissible in the radio service or services in which those persons are so eligible.

(b) Trunked radiotelephone systems licensed for use by the public shall not be subject to the limitation set out at paragraph (a) of this section.

§89.655 Limitations on use and mode of operation of systems licensed in the 806-821 MHz and 851-866 MHz bands.

(a) A system licensed for use by a person or entity eligible under either Part 89, 91, or 93 of this chapter may be employed for any purpose or operated in any manner which is consistent with the regulations governing the service in which the user is eligible; Provided, the loading standard which applies to the system is met and the channel or channel pairs are assigned to that person or entity for its exclusive use.

(b) Trunked systems licensed to be used by more than one person or entity may be employed for telephony, only.

(c) Systems licensed to provide radiotelephone service to the public on a commercial basis may offer such service employing full duplex, continuous carrier mode of operation: Provided, however, facilities of this type will be authorized for operation in trunked mode, only.

(d) Systems licensed to provide service to more than one person or entity eligible under Part 89, 91, or 93 of this chapter may, in conformity with the following restrictions, be used:

(1) Only for purposes expressly allowed under Parts 89, 91, and 93 of this chapter.

(2) Only by persons who are shown to be eligible for facilities, either under this subpart or in the radio services included under Parts 89, 91, and 93 of this chapter.

(3) Only for the transmission of messages or signals permitted in the service in which the participants are eligible.

§89.656 Special conditions governing the furnishings of radio equipment by licensees.

Every licensee of a trunked or conventional system furnishing service on a commercial basis, under this subpart, shall afford every user or customer the option of purchasing or leasing the necessary associated control and mobile station radio gear. Should the user or customer elect to lease the equipment, he (the user or customer) must be given the further right to cancel the lease agreement at any time, without penalty, on ten days' written notice to the licensee.

§89.657 Restriction on licensing manufacturers and equipment suppliers to furnish service in the 806-821 MHz and 851-866 MHz bands.

No person engaged in the manufacture or sale of radio equipment to be used in systems authorized under this subpart, or who has any direct or indirect interest in any such manufacturing or sales enterprise, may be licensed to operate more than one common user trunked system of communications used to provide commercial service to eligibles or to the public in any one market, and no more than 5 such systems in the United States, unless a showing is made demonstrating that the public interest, convenience, and necessity would be served and that an exception is warranted.

§89.658 Acceptability of transmitters for licensing in the 806-821 and 851-866 MHz bands.

Except for transmitters used in developmental stations, each transmitter utilized by a station authorized for operation in these bands must be a type which is included on the Commission's current Radio Equipment List, or be of a type which has been type-accepted by the Commission for use in these bands.

Application and Processing Procedures

§89.701 Forms to be used.

Applications for conventional and trunked radio facilities shall be submitted on FCC Form 400, and such applications shall be filed with the Commission, at its offices in Washington, D. C. Where the facility is to be established in the Chicago Regional area, FCC Form 425 shall be used and all such applications shall be filed with the Chicago Regional Office.

§89.702 Supplemental information to be furnished by applicants for facilities under this subpart.

(a) Applicants for conventional or trunked systems of communication shall, in addition to the information required by FCC Form 400 or FCC Form 425 furnish the following data and material.

(1) Where the applicant is a person eligible under Part 89, 91, or 93 and proposes to provide dispatch service solely to itself, then the applicant need submit only the information required by FCC Form 400 or 425, except as otherwise indicated in this section, below.

(2) Where the applicant is a person proposing to provide dispatch service to eligibles under either Part 89, 91, or 93 of this chapter on a not-for-profit, cost-shared basis, he shall furnish:

(i) A copy of the plan or agreement under which service will be offered. It must be in sufficient detail to show that such service will be provided at cost.

(ii) A statement of the purposes for which the system is to be used and the planned mode of operation.

(iii) The names and addresses of each person to participate in the sharing arrangement.

(iv) A statement showing that each participant is eligible to use the system for the purposes for which it is to be employed.

(3) Where the applicant is a person proposing to provide dispatch service to eligibles under either Part 89, 91, or 93 of this chapter on a commercial basis, he shall supply:

(i) A statement of the purposes for which the system is to be used and the planned mode of operation.

(ii) A statement certifying that no person not eligible to use the proposed facility for the purposes for which it is to be authorized will be offered or provided service over or through the licensee's system.

(iii) A copy of the basic agreement under which the dispatch service will be offered.

(4) Where the applicant is a person proposing to provide radiotelephone service to the public on a commercial basis, he shall furnish:

(i) A statement of the purposes for which the system is to be used and the planned mode of operation.

(ii) A copy of the basic agreement under which the radiotelephone service will be offered.

(5) Where the applicant proposes to provide service to other persons on a commercial basis, and where it has any interest of any kind whatsoever in any company engaged either in the sale or manufacture of radio equipment, in addition to the information required in this section, it shall accompany its application with:

(i) A full description of the applicant's interest in any such company or companies.

(ii) A list of any other radio station facility or facilities in which the applicant has any interest whatsoever.

(iii) The location and station designation of any facility identified in subparagraph (ii) of paragraph (a)(5) of this section.

(iv) Where the applicant has any interest whatsoever in any concern which provides radio communication services to persons other than itself, as to all such concerns, the applicant shall include in his filing the information required by subparagraphs (ii) and (iii) of paragraph (a)(5) of this section.

(b) All applicants for conventional systems shall specify the number of vehicle or portable units to be placed in operation upon grant of the authorization and the number of such units that will be placed in operation within 8 month of the date of grant.

(c) All applicants of trunked systems shall specify the number of mobile units to be placed in operation within the term of the license.

(d) Each applicant shall furnish a functional system diagram illustrating the inter-relationship of all stations being applied for, together with technical details (including antenna height (AAT) and effective radiated power (ERP)), together with his porposed area of coverage and the signalling methods he will employ.

§89.703 Supplemental reports required of licensees authorized under this subpart.

(a) Licensees providing service to persons eligible either under Part 89, 91, or 93, on a not-for-profit, cost-shared basis, shall, prior to furnishing service to any user not previously identified, notify the Commission of its intention to do so, and furnish the Commission with sufficient information as to the prospective user to enable it to determine whether this person is eligible to participate in the sharing arrangement. Service to the participant may commence 30 days after such notification, unless the licensee is advised, in writing, of any deficiency in the licensee's showing or in the eligibility of the person to be served. In the latter case, until the deficiency is corrected or the user is shown to be qualified and eligible, he may not participate in the use of the system.

(b) Where a licensee provides service under the terms of an agreement, on a not-for-profit, cost-shared basis, such agreement may not be modified in any material respect until the changes in the terms and conditions are reported to, and approved by, the Commission.

(c) Where a licensee provides service on a commercial basis, he shall not modify, in any material respect, the basic agreement under which such service is provided until the changes in its terms and conditions are reported to, and approved by, the Commission.

(d) Licensees offering service on a commercial basis to any person or entity eligible under either Part 89, 91, or 93, or to the public, must report, annually and at the time of filing applications for renewal of license, the number of mobile units being served; and such licensees shall, at that time, give the name and full address of each customer; the number of mobile units operated by each of them; and such other data as the party reporting may feel would be helpful in determining channel occupancy of the system, together with a certification that the terms of the basic agreement under which service is provided have not been modified or changed in any material respect. Such data shall be current as of the day and date falling 30 days prior to the date on which such licensees are required to file for renewal of their licenses, or, for the annual reports, at the close of the 12-month period covered by the annual report. The licensees of systems of the type covered by the provisions of this rule shall maintain records which, if referred to, will support any of the information required to be filed in the subject report. These records shall be available to the Commission upon request.

(e) Licensees furnishing service to eligible persons on a not-for-profit, cost-shared basis, shall, within 30 days of the close of the first full calendar year of operation, and each year thereafter, submit a report setting out the following information:

(1) A certification that during the period covered by the report, services have been offered and provided in accordance with the terms and conditions of the agreement approved by the Commission; that said agreement has not been modified or changed, except with the express approval of the Commission; and that records have been kept which show that service and facilities were made available on a not-for-profit, cost-shared basis. These records shall be available to the Commission upon request.

(2) A list of persons served during the period covered by the report.

(3) The number of mobile units operated by each user and a statement showing whether these units are of the vehicular or portable type.

(4) The total number of units served by the system during the period of the report, together with the number served on January 1st and on December 31st of the year of the report; and the average number of such mobile units served during this period of time.

(f) Licensees of trunked systems serving only themselves shall report annually, and at the time of filing applications for renewal of licenses, the number of mobile units being served, together with such other data as the licensees may feel would be helpful to the Commission in determining channel occupancy of their systems. Records supporting the information required in these reports shall be maintained by the licensees and shall be available to the Commission upon request.

(g) All licensees of conventional systems, in addition to the other requirements of this section, shall report the number of vehicular and portable units placed in operation within 8 months of the date of the grant of his license. Such reports shall be filed within 30 days from that date.

(h) All licensees of trunked systems shall report the date on which construction of the authorized facility began; that part of the facility completed; and the schedule for completion of construction of any part of the system not yet finished.

§89.704 Processing of applications.

(a) Applications for facilities to operate in the 806-821 MHz and 851-866 MHz bands will be processed as follows:

(1) All applications will first be considered to determine whether they are substantially complete and acceptable for filing. If so, they will be assigned a file number and put in pending status. If not, they will be returned to the applicant.

(2) All applications in pending status will be processed in the order in which they are received. The order in which they are received will be determined by the time and date on which the original proposal was filed with the Commission.

(3) Each application will then be reviewed to determine whether it can be granted. Should it be granted, frequencies or channels will be assigned by the Commission in accordance with its assignment policies and loading criteria.

(4) Where, upon examination, it is determined that the proposal must be dismissed, that application will be returned; and the priority accorded it will no longer obtain.

(5) Where, upon examination, it is determined that the proposal cannot be granted or dismissed; but that it must be designated for hearing, such action will be taken. In this event, the applicant will not lose the priority accorded it and frequencies will be set aside for use

in the proposed system in the event of ultimate favorable action by the Commission on the application. Should the proposal be denied, the frequencies reserved will become immediately available for assignment to other persons; and this will be so regardless of whether or not appeal by any party to the proceeding is made to the courts; Provided, however, the grant will not become effective for a period of thirty days to allow any interested party to request a stay of the action the Commission plans to take.

Policies Governing the Selection and Assignment of Frequencies for Use in the 806-821 MHz and 851-866 MHz Bands

§89.751 Selection and assignment of frequencies.

(a) The Commission will select and assign frequencies for operation in the 806-821 MHz and 851-866 MHz bands.

(1) For trunked systems, the assignment of frequencies will be made, in accordance with applicable loading criteria, in minimum groups of five and in maximum groups of twenty channel pairs. All mobile and control station frequencies will be chosen from those allocated in the 806-821 MHz band. Mobile station transmitting frequencies will commence with Channel No. 1 at 820.9875 MHz, followed by Channel No. 2 at 820.9625 MHz, and proceed to the band end with uniform 25-kHz channeling; and base station transmitting frequencies will be selected by the Commission and assigned from those allocated in the 851-866 MHz band, commencing with Channel No. 1 at 865.9875 MHz, followed by Channel No. 2 at 865.9625 MHz, and proceed to the band end with uniform 25-kHz channeling. The spacing between associated mobile and base station frequencies shall be, uniformly, 45 MHz.

(2) For conventional systems, the assignment of frequencies will be made in accordance with applicable loading criteria. Accordingly, depending upon the number of mobile units to be served, the applicant may either be required to share a channel, or, if the applicant shows a sufficient number of mobile units to warrant the assignment of one or more channels for its exclusive use, he may be licensed to use such channel or channels on an exclusive basis in his area of operation.

(3) For conventional systems, mobile station transmitting frequencies, as well as those for use by control stations, will be selected from those allocated in the 806-821 MHz band. Mobile and control station transmitting frequencies will commence with Channel No. 1 at 806.0125 MHz, followed by Channel No. 2 at 806.0375 MHz, and proceed to the band

end with uniform 25-kHz channeling. Base station transmitting frequencies will be selected and assigned from those allocated in the 851-866 MHz band, with Channel No. 1 commencing at 851.0125 MHz, followed by Channel No. 2 at 851.0375 MHz, and proceed to the band end with uniform 25-kHz channeling. The spacing between associated mobile and base station frequencies shall be, uniformly, 45 MHz.

(b) Stations authorized by the Commission to operate in the 806-821 MHz and 851-866 MHz band will be afforded protection solely on the basis of the mileage separation criteria set out below. Only co-channel interference between base station operations will be taken into consideration. Adjacent channel and other types of possible interference will not be taken into account.

(1) For trunked systems, the separation between co-channel systems shall be 70 miles.

(2) For urban-conventional systems, the separation between co-channel base stations shall be 70 miles; provided, however, where the transmitter site of a previously authorized, co-channel facility is located at any point within 15 miles from the geographic center of any one of the 50 Urbanized Areas listed in Table 1, at paragraph (g) of this section, then the distance between the transmitter site of the proposed co-channel conventional system and the geographic center of the urbanized area involved shall be a minimum of 85 miles.

(3) For suburban-conventional systems, the separation between co-channel base stations shall be 45 miles; Provided, however, for all proposals for facilities specifying a transmitter site within 25 miles of the site of an existing suburban-conventional station, or within 25 miles of the site specified in a prior filed application for such station, the separation shall be 70 miles.

(c) Notwithstanding the provisions of paragraph (b)(2) of this section, where an assigned channel of an urban-conventional system is not fully loaded in accordance with applicable loading criteria, and where the transmitter site of that system is located within 15 miles from the center of the urbanized area involved, the Commission may issue additional authorizations for facilities to be located within 15 miles of the center of that urbanized area until the channel in question is occupied in conformity with applicable loading criteria.

(d) Notwithstanding the provisions of paragraph (b)(3) of this section, where an assigned channel of a suburban-conventional system is not fully loaded in accordance with applicable loading criteria, the Commission may issue additional authorizations for facilities to be located within 25 miles of the transmitter site

of the first station authorized until the channel in question is occupied in conformity with applicable loading criteria.

(e) UHF television translator stations using UHF output channels from Channel 70 through Channel 83, shall operate on a secondary basis to land mobile stations using the UHF bands allocated under this subpart for land mobile use, and, accordingly, such television translator stations will not be protected from interference from such authorized land mobile stations.

(f) Pending further negotiations with Canada and Mexico, land mobile stations operating in the 806-890 MHz band shall do so on a secondary basis to any Canadian or Mexican television station placed in operation on television channels in this band.

(g) Table 1, Urbanized Areas.

URBANIZED AREA	GEOGRAPHIC CENTER	
	N. LATITUDE	W. LONGITUDE
Akron, Ohio	41° 05' 00°	81° 30' 44°
Albany-Schenectady-Troy, N.Y.	42° 39' 01°	73° 45' 01°

Atlanta, Georgia	33° 45' 10"	84° 23' 37"
Baltimore, Maryland	39° 17' 26"	76° 36' 45"
Birmingham, Alabama	33° 31' 01"	86° 48' 36"
Boston, Massachusetts	42° 21' 24"	71° 03' 24"
Buffalo, New York	29° 45' 26"	95° 21' 37"
Chicago, Illinois	41° 52' 28"	87° 38' 22"
Cincinnati, Ohio	39° 06' 07"	84° 30' 35"
Cleveland, Ohio	41° 29' 51"	81° 41' 50"
Columbus, Ohio	39° 57' 47"	83° 00' 17"
Dallas, Texas	32° 47' 09"	96° 47' 37"
Dayton, Ohio	39° 45' 32"	84° 11' 43"
Denver, Colorado	39° 44' 58"	104° 59' 22"
Detroit, Michigan	42° 19' 48"	83° 02' 57"
Ft. Lauderdale-Hollywood, Fla.	26° 07' 30"	80° 09' 00"
Ft. Worth, Texas	32° 44' 55"	97° 19' 44"

Houston, Texas	29° 45' 26"	95° 21' 37"
Indianapolis, Indiana	39° 46' 07"	86° 09' 46"
Jacksonville, Florida	30° 19' 44"	81° 39' 42"
Kansas City, Missouri, Kansas	39° 04' 56"	94° 35' 20"
Los Angeles, California	34° 03' 15"	118° 14' 28"
Louisville, Ky., Ind.	38° 14' 47"	85° 45' 49"
Miami, Florida	25° 46' 37"	80° 11' 32"
Memphis, Tenn. Miss.	35° 08' 46"	90° 03' 13"
Milwaukee, Wisconsin	43° 02' 19"	87° 54' 15"
Minneapolis,-St. Paul, Minnesota	44° 58' 57"	93° 15' 43"
New Orleans, La.	29° 56' 53"	90° 04' 10"
New York - Northeastern New Jersey	40° 45' 06"	73° 59' 39"
Norfolk-Portsmouth, Va.	36° 51' 10"	76° 17' 21"
Oklahoma City, Okla.	35° 28' 26"	97° 31' 04"
Omaha, Nebr. - Iowa	41° 15' 42"	95° 56' 14"
Philadelphia, Pa, New Jersey	39° 56' 58"	75° 09' 21"
Phoenix, Arizona	33° 27' 12"	112° 04' 28"

Pittsburgh, Pennsylvania	40° 26' 19"	80° 00' 00"
Portland, Oreg., Wash.	45° 31' 06"	122° 40' 35"
Providence-Pawtucket-Warwick R.I., Mass.	41° 49' 32"	71° 24' 41"
Rochester, New York	43° 09' 41"	77° 36' 21"
Sacramento, California	38° 34' 57"	121° 29' 41"
St. Louis, Missouri, Illinois	38° 37' 45"	90° 12' 22"
St. Petersburg, Florida	27° 46' 18"	82° 38' 19"
San Antonio, Texas	29° 25' 37"	98° 29' 06"
San Bernardino-Riverside, Cal	34° 06' 30"	117° 17' 28"
San Diego, California	32° 42' 53"	117° 09' 21"
San Francisco-Oakland California	37° 46' 39"	122° 24' 40"
San Jose, California	37° 20' 16"	121° 53' 24"
Seattle, Washington	47° 36' 32"	122° 20' 12"
Springfield-Chicopee-Holyoke, Mass., Conn.	42° 06' 21"	72° 35' 32"
Toledo, Ohio-Mich.	41° 39' 14"	83° 32' 39"
Washington, D. C. - Maryland-Virginia	38° 53' 51"	77° 00' 33"

Channel Loading Requirements for Trunked and Conventional Systems

§89.801 Trunked systems.

(a) Trunked systems of communication will be authorized on the basis of the loading criteria set out in this section.

(b) Table 1, Loading requirements for trunked systems.

Service Group 1/	Vehicular Radio Units 2/		
	5-Channel Systems	10 Channel Systems	20-Channel Systems
Police and Fire Group 3/	300	750	1500
Business Radio Group	500	1000	2000
Motor Carrier Group (urban and inter-urban passenger carriers only)	800	1600	2500
Other Services Group	400	800	1600
Mixed Service Group	500	1000	2000
Radiotelephone Group	200	400	800

Note 1. No provision is made for use of trunked systems by persons eligible in the Taxicab Radio Service, since this mode of communication is not compatible with normal transmission requirements of taxicab companies.
Note 2. For loading trunked systems of communication, no distinction is made between vehicular and portable mobile units.

(c) Each applicant for trunked facilities shall certify that a minimum of 70 percent of the mobile units specified in its application will be place in operation not later than the date on which the term of his license for the system expires.

(d) Any licensee, at any time its authorized trunked system is occupied to 90 percent of its specified capacity, may apply for additional channels. Assignments will be made based, first, upon the availability of frequencies for use by the licensee; and, second, based upon the showing made by the licensee of its requirements for additional channel pairs.

(e) Licensees of trunked facilities must commence construction within six months from the date of grant and complete construction within one year or such further time as the Commission may allow.

§89.802 Conventional systems.

(a) Conventional systems of communication will be authorized on the basis of the loading criteria set out in this section.

(b) Table 1, Loading requirements for conventional systems.

Service Group	Channel Loading --- Units per Channel Vehicular/Portable		
	Single Licensee	2-5 Licensees	Over 5 Licensees
Police and Fire Group 1/	50/100	40/80	30/60
Business Radio Group	90/180	70/140	50/100
Taxicab Radio Group 2/	150	125	100

Motor Carrier Radio Group (urban and inter-urban passenger motor carriers, only)	150/300	125/250	100/200
Other Services Group	70/140	50/100	40/60
Mixed Service Group		70/140	50/100

Note 1. Full sharing of channels allocated in the 806-821 and 851-866 MHz bands is permissible; and where the eligibles in one service share facilities in common with persons eligible in one of the other radio services, i.e., where channels are jointly used on this basis, then the loading criteria shall be 70/140 or 50/100 mobile and portable units per channel.
Note 2. No loading criteria for portable units in the Taxicab Radio Group are given, since the requirement for units of this type has not been established in that service.

(c) Every applicant for a conventional system of communication shall certify that a minimum of 70 percent of the mobile units specified in its application will be placed in operation not later than 8 months after the date of grant of his license for the system.

(d) Where licensees, authorized under the provisions of paragraph (c) of this section, do not load the channel or channels assigned in accordance with specified loading criteria, any (assigned channel) not so occupied shall be available for assignment to other applicants. All authorizations for conventional systems are issued subject to this condition.

(e) Any licensee, at any time its authorized conventional system is occupied to 90 percent of its specified capacity, may apply for additional channel pairs. Assignments will be made based, first, upon the availability of frequencies for use by the licensee, and, second, based upon the showing made by the licensee of its requirements for additional channel pairs.

§89.803 Other criteria to be applied in assigning channels for use in conventional systems of communication.

(a) In every case, the Commission will examine a proposal to determine the requirements of the applicant in terms of the number of mobile units to be served, together with the nature

of the activities the applicant is engaged in. Where the applicant shows that the channel will be loaded to 70 percent of its assigned capacity, then that channel will be made available to that applicant for its exclusive use in the area in which he proposes to operate. Where the showing made justifies the assignment of more than one channel to the applicant, then additional frequencies will be made available for his use.

(b) Where a commercial concern proposes to furnish service to either eligibles under either Part 89, 91, or 93, or to the public, using a conventional system of communication, its application will be considered on the same basis as that of an applicant for private or shared communication facilities.

(c) In loading channels, the Commission will further consider the mode of operation planned; the purposes for which the system is to be used, as noted; the persons to be served by the station and other factors. The other factors shall include the following:

(1) Mobile relay or repeater operations will not be assigned on channels to be used in two-frequency simplex mode, and conversely.

(2) Systems employing full duplex mode of operation will not be licensed on frequencies assigned for mobile relay or two-frequency simplex systems.

(3) Applicants in one service group, where possible, will not be required to share with applicants in other service groups, where the loading criteria of the services involved are different, except where circumstances require it.

(4) Push-to-talk operations will not be licensed on channels which are to be used under other modes of operation, except in those cases where it is shown that such method of operation is feasible.

(d) Conventional systems will not be authorized for radiotelephone operations.

(e) The Commission, in addition to the foregoing standards, set out at paragraph (c) of this section, may take into consideration any other factor which might enable the persons licensed to use a given channel or channels in more efficient and effective ways.

(f) No applicant shall be required to obtain any approval from a state or local regulatory authority to operate facilities authorized pursuant to these rules. State or local regulation may be exercised only to the extent that it does not limit competition or otherwise conflict with these rules. There shall be no limit on the number of systems authorized to operate in any one given area except that imposed by allocation limitations; and no person authorized to operate any radio facility under the provisions of this subpart shall have a right to protest proposals on grounds other than violation of or inconsistency with the provisions of this subpart. All grants are made subject to this condition and to the other conditions and standards set out in this subpart.

§89.804 Other criterion to be applied in licensing channels for use in trunked systems of communication.

There shall be no limit on the number of trunked systems authorized to operate in any one given area except that imposed by allocation limitations; and no person authorized to operate any trunked radio facility shall have a right to protest any other proposal on grounds other than violation of an inconsistency with the provisions of this subpart. All grants are made subject to the conditions and standards set out in this subpart.

PART 91 - INDUSTRIAL RADIO SERVICES

8. In §91.102(a), the table is amended to read as follows:

§91.102 Frequency stability.

(a) ***

Frequency Range	Transmitter (input) Power			
	Fixed and Base Stations		Mobile Stations	
	Over 300 watts	300 watts or less	Over 3 watts	3 watts or less
MHz	Percent	Percent	Percent	Percent
Below 25 (1)	0.005	0.01	0.01	0.02
25 to 50	.002	.002	.002	.005
50 to 450	(2) .0005	.0005	.0005	.005
450 to 470	(3,5) .00025	(3,5) .00025	.0005	(3) .0005
470 to 512	.00025	.00025	.0005	.0005
806 to 821	.00015	.00015	.00025	.00025
851 to 866	.00015	.00015	.00025	.00025
950 to 1427	(4)	(4)	(4)	(4)
1427 to 1435	(6) .03	(6) .03	.03	.03
Above 1435	(4)	(4)	(4)	(4)

* * * * *

9. In §91.103, paragraph (a) is amended and paragraph (c) is added to read as follows:

§91.103 Types of emission.

(a) Except as provided in paragraph (b) and (c) of this section, stations in these services will be authorized to use only A3 or F3 emission for radiotelephony. The authorization to use A3 or F3 emission will be construed to include the use of tone signals or signalling devices whose sole function is to establish or maintain communication between stations.

* * * * *

(c) Operation in the frequency bands 806 to 821 and 851 to 866 MHz is limited to F3 emission.

10. In §91.104(b)(2), the table is amended to read as follows:

§91.104 Emission limitations

* * * * *

(b) ***

(2) ***

Frequency Band (MHz)	Authorized Bandwidth (kHz)	Frequency Deviation (kHz)
25 to 50	20	5
50 to 150	(1) 20	(1) 5
150 to 450	20	5
450 to 470	(2) 20	(3) 5
470 to 512	20	5
806 to 821	20	5
851 to 866	20	5

* * * * *

11. In §91.105, Paragraphs (f) and (h) are amended to read as follows:

§91.105 Modulation requirements

* * * * *

(f) Each transmitter which is operated on a frequency in the bands 450 to 512, 806 to 821, and 851 to 866 MHz and which is provided with a modulation limiter in accordance with the provisions of paragraph (c) of this section shall also be equipped with an audio low-pass filter in accordance with the provisions of paragraph (g) or (h) of this section.

* * * * *

(h) For stations authorized in the 450-470 MHz band on or after November 1, 1967, and for all stations authorized in the 470 to 512, 806 to 821, and 851 to 866 MHz bands, the audio low-pass filter required by provisions of the preceeding paragraphs of this section shall be installed between the modulation limiter and the modulated stage and, at audio frequencies between 3 kHz and 20 kHz, shall have an attenuation greater than the attenuation at 1 kHz by at least:

$$60 \log_{10} (f/3) \text{ decibels}$$

where "f" is the audio frequency in kHz. At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz.

* * * * *

12. In §91.106(b), the table is amended to read as follows:

§91.106 Power and antenna height.

* * * * *

(b) ***

Frequency Range (MHz)	Maximum plate power input to the final radio freq. stage (watts)	Maximum effective radiated power (watts)
1.6 to 6	2000	
25 to 100	500	
100 to 216	600	
216 to 220	(1)	(1)
220 to 470	600	
470 to 512		1000
806 to 821		(2)
851 to 866	(3)	(2)
Above 950	(1)	(1)

1. To be specified in the station authorization.
2. For Power limitations see Section 89.651
3. The output power of a transmitter on any authorized frequency in this service shall not exceed 250 watts (24 dBw).

* * * * *

13. A new Section 91.116 is added to read as follows:

§91.116 Frequencies in 806 to 821, 851 to 866 MHz bands.

For criteria governing the use of frequencies in the 806 to 821 and 851 to 866 MHz bands see Part 89, Subpart S.

PART 93 - LAND TRANSPORTATION RADIO SERVICES

14. In §93.102(a), the table is amended to read as follows:

§93.102 Frequency stability.

(a) ***

Frequency Range	All Fixed and Base Stations	All Mobile Stations	
		Over 3 watts	3 watts or less
MHz	Percent	Percent	Percent
Below 25	.01	.01	.02
25 to 50	.002	.002	.005
50 to 450	(1) .0005	.0005	.005
450 to 470	(2, 4) .00025	.0005	(2) .0005
470 to 512	.00025	.0005	.0005
806 to 821	.00015	.00025	.00025
851 to 866	.00015	.00025	.00025
950 to 1427	(3)	(3)	(3)
1427 to 1435	(5) .03	.03	.03
Above 1435	(3)	(3)	(3)

* * * * *

15. In §93.103, paragraph (a) is amended and paragraph (c) is added to read as follows:

§93.103 Types of emission.

(a) Except as provided in paragraphs (b) and (c) of this section, stations in these services will be authorized to use only A3 or F3 emission for radiotelephony. The authorization to use A3 or F3 emission will be construed to include the use of tone signals or signalling devices whose sole function is to establish and maintain communication between stations.

* * * * *

(c) Operation in the frequency bands 806 to 821 and 851 to 866 MHz is limited to F3 emission.

16. In §93.104(b)(2), the table is amended to read as follows:

§93.104 Emission limitations.

* * * * *

(b) ***

(2) ***

Frequency Band (MHz)	Authorized Bandwidth (kHz)	Frequency Deviation (kHz)
25 to 50	20	5
50 to 150	(1) 20	(1) 5
150 to 450	20	5
470 to 512	(2) 20	(3) 5
806 to 821	20	5
851 to 866	20	5
Above 866	(4)	(4)

* * * * *

17. In §93.105, paragraphs, (f) and (h) are amended to read as follows:

§93.105 Modulation requirements.

* * * * *

(f) Each transmitter which is operated on a frequency in the bands 450 to 512, 806 to 821, and 851 to 866 MHz and which is provided with a modulation limiter in accordance with the provisions of paragraph (c) of this section shall also be equipped with an audio low-pass filter in accordance with the provisions of paragraph (g) or (h) of this section.

* * * * *

(h) For stations authorized in the 450-470 MHz band on or after November 1, 1967, and for all stations authorized in the 470-512, 806 to 821, and 851 to 866 MHz bands, the audio low-pass filter required by the provisions of the preceeding paragraph of this section shall be installed between the modulation limiter and the modulated stage and, at audio frequencies between 3 kHz and 20 kHz, shall have an attenuation greater than the attenuation of 1 kHz at least:

$$60 \log_{10} (f/3) \text{ decibels}$$

Where "f" is the audio frequency in kHz. At audio frequencies above 20 kHz, the attenuation shall be at least 50 decibels greater than the attenuation at 1 kHz.

* * * * *

18. In §93.106(b), the table is amended to read as follows:

§93.106 Power and antenna height.

* * * * *

(b) ***

Frequency Range (MHz)	Maximum plate power input to the final radio freq. stage (watts)	Maximum effective radiated power (watts)
30 to 100	500	
100 to 470	(1) 120	
470 to 512		1000
806 to 821		(4)
851 to 866	(5)	(4)
Above 950	(3)	

1. In the frequency band 450-470 MHz maximum plate power input in excess of 120 watts but not in excess of 600 watts may be authorized in accordance with the provision of Subpart E of this part, upon submission of the required showings.
2. [Reserved].
3. As specified in §93.111.
4. For power limitations see Section 89.651.
5. The output power of a transmitter on any authorized frequency in this service shall not exceed 250 watts (24 dBw).

* * * * *

19. A new Section 93.116 is added to read as follows:

§93.116 Frequencies in the 806 to 821 and 851 to 866 MHz bands.

For criteria governing the use of frequencies in the 806 to 821 and 851 to 866 MHz bands see Part 89, Subpart S.

APPENDIX C

GUIDELINES UNDER WHICH DEVELOPMENTAL AUTHORIZATIONS FOR CELLULAR SYSYTEMS IN THE 806-947 MHz FREQUENCY BANDS WILL BE ISSUED

I. ELIGIBILITY

Developmental authorizations for cellular systems in the 806-947 MHz frequency band will be issued only to existing and proposed wireline communication common carriers who are legally, financially and otherwise qualified to conduct experimentation for the development of engineering, operational data and techniques directly related to the establishment of a high capacity mobile telephone system which is based upon a cellular concept and regulated under Part 21 of the Commission's Rules.

II. SCOPE OF SERVICE

Developmental authorizations will be issued for development of a high capacity mobile telephone system, including provisions for mobile telephone and automatic dispatch service to be governed by Part 21 of the Rules and Regulations.

III. ADHERENCE TO PROGRAM OF RESEARCH AND DEVELOPMENT

The program of research and development, as stated by an applicant in the application for construction permit or license or stated in the instrument of station authorization, shall be substantially adhered to unless the licensee is otherwise authorized by the Commission.

IV. TERMS OF GRANT :GENERAL LIMITATIONS

a. Developmental authorizations shall normally be issued for one year or longer as the Commission may deem appropriate in any particular case, and shall be subject to cancellation without a hearing by the Commission at any time upon notice to the licensee.

b. Where some phases of the developmental program are not covered by the General Rules of the Commission or by Part 21 of the Rules, the Commission may specify supplemental or additional requirements or conditions in each case as it may deem necessary in the public interest, convenience or necessity.

c. Frequencies allocated to the service toward which such development is directed will be assigned for developmental operation on a one system per market area basis.

d. Only one developmental system will be authorized any single applicant.

e. No interference shall be caused to the regular services of stations operating in accordance with the Commission's Table of Frequency Allocations (2.106 of the Rules and Regulations).

f. All systems shall be designed for nationwide compatibility for roamer operation.

g. The rendition of communication service for hire is not permitted unless specifically authorized by the Commission.

h. The grant of a developmental authorization carries with it no assurance that the developmental program, if successful, will be authorized on a permanent basis.

V. SUPPLEMENTARY SHOWING REQUIRED

a. Authorizations for development of a cellular system will be issued only upon a showing that the applicant has a definite program of research and development, the details of which shall be set forth, having reasonable promise of substantial contribution to these services within the term of such authorization. In addition to showing that the applicant is financially qualified or that adequate provision has been made to underwrite the costs of the proposed venture, a specific showing should be made as to the factors which the applicant believes qualify him technically to conduct the research and development program, including a description of the nature and extent of engineering facilities which applicant has available for such purpose.

b. Expiring developmental authorizations may be renewed only upon the applicant's compliance with the objectives of the authorization sought to be renewed and upon a factual showing that further progress in the program of research and development requires further radio transmission and that the public interest, convenience or necessity would be served by renewal of such authorization.

VI. DEVELOPMENTAL REPORT REQUIRED

a. Upon completion of the program of research and development, or, in any event, upon the expiration of the instrument of station authorization under which such investigations were permitted, or at such times during the term of the station authorization as the Commission may deem necessary to evaluate the progress of the developmental program, the licensee shall submit, in duplicate, a comprehensive report on the following items, in the order designated:

1. Report on the various phases of the project which were investigated.

2. Total number of hours of operation on the frequencies assigned.

3. Copies of any publication on the project.

4. A listing of any patents applied for, including copies of any patents issued as a consequence of the activities carried forth under the authorization.

5. Detailed analysis of the result obtained.

6. Any other pertinent information.

b. In addition to the information required by paragraph (a) of this section, the developmental report of a station authorized for the development of a proposed radio service shall include comprehensive information on the following items:

1. Probable public support and methods of its determination.

2. Practicability of service operations.

3. Interference encountered.

4. Pertinent information relative to merits of the proposed service.

5. Propagation characteristics of frequencies used, particularly with respect to the service objective.

6. Frequencies, if any, believed to be more suitable and reasons therefore.

7. Type of signals or communications employed in the experimental work.

c. Normally, developmental reports will be made a part of the Commission's public records. However, an applicant may request that the Commission withhold from the public certain reports and associated material relative to the accomplishments achieved under developmental authorization, and, if its appears that such information should be withheld, the Commission will so direct.

G

REMARKS OF

WALTER SUTTER, ASSISTANT DIRECTOR

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT

AT THE

AWARDS LUNCHEON
IEEE VEHICULAR TECHNICAL CONFERENCE

SHERATON-CLEVELAND HOTEL
CLEVELAND, OHIO

DECEMBER 4, 1973

GOOD AFTERNOON, MR. KINNEY. THANK YOU FOR THAT ELABORATE INTRODUCTION. TO BOB, THE MEMBERS AND GUESTS OF THE IEEE VEHICULAR GROUP, I EXPRESS MY DEEP APPRECIATION FOR THE OPPORTUNITY TO BE WITH YOU TODAY AND TO BRING SOME HOPEFULLY INTERESTING REMARKS CONCERNING OTP ON LAND MOBILE. NONE OF OUR ACTIVITIES HAVE BEEN IN FACT MORE INTERESTING OR EXCITING THAN THE POLICY ISSUES INVOLVED WITH THE ALLOCATION OF FREQUENCIES IN THE 900 MHz BAND.

DOCKET 18262 PROVED A VERY INTERESTING TASK, FOR WITHIN THIS POLICY ISSUE, WE FOUND EVERY THORNY ELEMENT OF POLICY PRESENTLY VISIBLE IN ANY OF THE COMMUNICATIONS FIELDS THAT WE ARE NOW OVERSEEING: COMPETITION VS. MONOPOLY, CROSS SUBSIDIZATION, ANTITRUST MATTERS, FEDERAL VS. STATE JURISDICTION, REGULATION VS. NON-REGULATION, EXCESS FREQUENCY ASSIGNMENTS, ECONOMIC AND SPECTRUM EFFICIENCY. THE POLICY STATEMENT MADE BY OTP WAS, IN OUR MINDS, A FAIR POLICY TO

ALL PARTICIPANTS -- ONE THAT PUT "YOU" THE CONSUMER IN THE DRIVER'S SEAT -- ONE WHICH CAN PROVIDE THE USERS OF MOBILE COMMUNICATIONS WITH THE WIDEST POSSIBLE CHOICE OF SERVICE, AND ONE WHICH PROVIDES THE NECESSARY INCENTIVES TO ALLOW EACH OF THESE VARIOUS SYSTEMS TO SURFACE AND TO GROW IF YOU, THE CONSUMER SO DICTATE.

IT WAS OUR FIRM BELIEF THAT THE CONSUMER MUST, IN THE FINAL ANALYSIS, BE THE PERSON WHO DETERMINES THE FREQUENCY ALLOCATIONS WITHIN THE 900 BAND. IT WOULD BE DISASTROUS IF THE SEVEN COMMISSIONERS TOOK IT UPON THEMSELVES, WITH THE INFORMATION PRESENTLY BEFORE THEM, TO DETERMINE EXACTLY HOW MUCH OF EACH SERVICE, IN THE NEXT 20 YEARS, THE CONSUMER WISHES TO PURCHASE FOR LAND MOBILE OPERATION. WE WELL RECOGNIZE THAT THERE ARE TIMES WHEN THE SEVEN COMMISSIONERS MUST FACE THE ISSUES SQUARELY AND MAKE FINAL DETERMINATIONS.

HOWEVER, WHERE THE FACTS ARE VAGUE, AND WHERE TECHNICAL AND ECONOMIC MATTERS PERMIT, THE COMMISSION SHOULD INSTITUTE AN ON-GOING PROGRAM WHICH WOULD ALLOCATE FREQUENCIES IN ACCORDANCE WITH ACTUAL AND NOT NECESSARILY PROJECTED CONSUMER DEMAND. IN ESSENCE, OUR POLICY COVERED FOUR BASIC POINTS: (1) THE REJECTION OF A PROPOSED NATIONAL INTEGRATED MOBILE TELEPHONE SYSTEM; (2) THE ENCOURAGEMENT OF FREE AND OPEN COMPETITION; (3) THE ESTABLISHMENT OF THREE SERVICES FOR THE CONSUMER TO SELECT FROM AND; (4) A LARGE, DEDICATED RESERVE. I WOULD LIKE TO BRIEFLY COVER THESE FOUR POINTS.

OTP WAS UNABLE TO FIND ANY COMPELLING REASONS WHY A COMMITMENT SHOULD BE MADE, AT THIS TIME, TO A NATIONAL, INTEGRATED, MOBILE TELEPHONE SYSTEM AT 900 MHz. SPECTRUM CONGESTION IS, AFTER ALL, ESSENTIALLY LIMITED TO ONLY THE LARGEST POPULATION CENTERS. THE REMAINDER OF THE COUNTRY

IS NOT PARTICULARLY DEPENDENT UPON 900 MHz TECHNOLOGY FOR FREQUENCY RELIEF. IN THE LESS DENSELY POPULATED SECTIONS OF THIS COUNTRY, EFFICIENT MTS SYSTEMS AT LOWER FREQUENCIES, OR EMPLOYING DIFFERENT TECHNOLOGIES THAN THAT REQUIRED FOR LARGER CITIES, WOULD PROBABLY PROVE MORE COST-EFFECTIVE.

ADDITIONALLY, THE DEMAND ESTIMATES AVAILABLE TO US, AS WELL AS THE FCC, FOR INTER-CITY MTS SERVICE (THE ROAMER) AS OPPOSED TO INTRA-CITY ARE QUESTIONABLE TO SAY THE LEAST. THIS, COUPLED WITH THE FACT THAT THERE ARE NO APPARENT ECONOMIES OF SCALE OR OTHER TECHNICAL CONSIDERATIONS THAT WOULD SEEM TO DICTATE THE NECESSITY FOR SINGLE OWNERSHIP OF A NATIONWIDE MTS SYSTEM, LEADS US TO BELIEVE THAT GROWTH OF MOBILE SYSTEMS CAN OCCUR WITHOUT A TOTAL NATIONAL COMMITMENT AT THIS PARTICULAR TIME.

THE SECOND MAJOR POINT IN OTP'S POLICY CONCERNED THE PRINCIPLE OF "OPEN COMPETITION." IT IS OUR OPINION THAT FAIR, OPEN-ENTRY COMPETITION IN THE PROVISION OF ALL MOBILE COMMUNICATIONS SERVICES WILL LEAD TO MORE DIVERSE AND INNOVATIVE SERVICE OFFERINGS THAT WILL CREATE A HEALTHY COMPETITIVE MARKETPLACE. BY CREATING AN ENVIRONMENT WHICH WILL ACCOMMODATE NUMEROUS COMPETITIVE SUPPLIERS, THE MULTIPLICITY OF COMPETING SYSTEMS, OR AT LEAST THE POTENTIAL THEREFOR, WILL ASSURE COMPETITIVE PRICING AND OBVIATE THE NEED FOR BURDENSOME RATE REGULATION.

I MUST EMPHASIZE THE WORD <u>FAIR</u> IN CONJUNCTION WITH THIS PRINCIPLE OF COMPETITION. REGULATED OR CONSTRAINED

COMPETITION IS UNFAIR, NO POTENTIAL COMPETITOR SHOULD BE PRECLUDED, BY REGULATION, FROM THE PROVISION OF SERVICE IN ANY SPECIFIC MARKET.

THIS LEADS US TO OUR THIRD MAIN POINT WHICH ESSENTIALLY SAYS THAT THE CONSUMER SHOULD BE OFFERED A THIRD CHOICE AS TO WHAT TYPE OF SYSTEM OR SERVICES HE WISHES TO PURCHASE. PRESENTLY, THE CONSUMER MAY CHOOSE BETWEEN MTS PROVIDED BY COMMON CARRIERS OR A PRIVATELY-OWNED SYSTEM. THE NEWLY PROPOSED MULTI-USER TRUNKED DISPATCH SYSTEM PROMISES TO OFFER HIM A THIRD CHOICE. IF A PARTICULAR USER'S NEEDS ARE SUCH THAT COMMON CARRIER SERVICE GIVES HIM MORE CAPABILITY, COVERAGE, ETC., THAN HE REALLY NEEDS, AND HE DOES NOT HAVE THE CAPITAL TO INVEST OR CHOOSES NOT TO INVEST IN A

PRIVATELY-OWNED DISPATCH SYSTEM, HE MAY CHOOSE TO SUBSCRIBE TO A MULTI-USER TRUNKED DISPATCH SYSTEM WHICH MAY BE TAILORED MORE TO HIS INDIVIDUAL NEEDS.

THE FOURTH MAIN POINT OF OTP POLICY IS CONCERNED WITH THE MAINTENANCE OF A DEDICATED RESERVE FREQUENCIES POOL. THE 115 MHZ OF NEW SPECTRUM TO BE ADDED IS SUFFICIENTLY LARGE WHEN COMPARED TO THE EXISTING 42 MHZ, THAT A TOTAL COMMITMENT OF THE ENTIRE 115 MHZ IS NOT NECESSARY AT THIS TIME. THE DEMAND ESTIMATES FOR THE VARIOUS SERVICES AND PROPOSED SYSTEMS ARE SUFFICIENTLY UNCERTAIN THAT MAINTAINING A RESERVE POOL IS PRUDENT. BY MAINTAINING A RESERVE, THE FCC RETAINS THE OPTION TO ALLOCATE, AT A FUTURE TIME, TO THOSE SERVICES THAT ARE EITHER EXISTING, AND/OR TO NEW AND YET UNFORESEEN SERVICES, WHICH CLEARLY DEMONSTRATE THE NEED BASED ON CONSUMER ACCEPTANCE.

LET ME NOW TURN MY ATTENTION DIRECTLY TO THE MOST CONTROVERSIAL ISSUE IN THE DOCKET. THE ONE THAT HAS

ENVELOPED THE MOBILE COMMUNITY IN A BITTER BATTLE. JUST HOW MUCH SPECTRUM SHOULD THE NEW CELLULAR MTS SYSTEM BE ALLOCATED? FOR ONCE THAT DECISION IS MADE, THE OTHER POLICY ISSUES SEEM TO FALL GENERALLY INTO FOCUS. YOU MAY ASK WHY WE ARE SO CONCERNED WITH THE MTS FREQUENCY ALLOCATION WHEN WE DO NOT SEEM AS CONCERNED ABOUT HOW MUCH PRIVATE SYSTEMS ARE ALLOCATED. BELIEVE ME, WE ARE CONCERNED WITH EACH AND EVERY ONE OF THE ALLOCATIONS EQUALLY WITHIN THIS BAND. HOWEVER, THE OPERATIONAL AND TECHNICAL REQUIREMENTS FOR AN EFFECTIVE CELLULAR SYSTEM OF THE TYPE AND MAGNITUDE PROPOSED BY THE BELL SYSTEM OR OTHERS WHO SUBMITTED INFORMATION FOR THIS DOCKET, COULD REQUIRE, IF ALLOCATIONS ARE NOT HANDLED CORRECTLY, A TREMENDOUS OVER-ALLOCATION OF FREQUENCIES AT THE BEGINNING FAR IN ADVANCE OF THEIR UTILIZATION BY THE GENERAL PUBLIC. UNDER THESE CONDITIONS, WE COULD SERIOUSLY AFFECT THE TOTAL SUCCESS OF THIS PARTICULAR BAND BY RESERVING

FREQUENCIES WHICH WOULD NEVER BE EFFICIENTLY UTILIZED. IN THE 40 MHZ ALLOCATION MADE TO BASICALLY DISPATCH TYPE SYSTEMS, THERE IS NO OVER-ALLOCATION AT ANY PARTICULAR MOMENT IN TIME SINCE FREQUENCIES ARE ASSIGNED TO CUSTOMERS ON AN INDIVIDUAL BASIS AS NEED IS DEMONSTRATED. THEREFORE, TO PROTECT THE CONSUMER AND TO PROVIDE MORE EFFICIENT UTILIZATION OF THE BAND, SOME COMPROMISE POSITION HAD TO BE REACHED TO PREVENT OVER-ALLOCATION TO THE CELLULAR TYPE SYSTEMS BUT AT THE SAME TIME PROVIDE A MEANS TO ENCOURAGE THE DEVELOPMENT OF THAT SYSTEM SO THAT IT CAN BE BROUGHT TO THE MARKETPLACE IN ORDER FOR THE CONSUMER TO JUDGE ITS ACCEPTABILITY AND USEFULNESS.

BECAUSE 115 MHZ CONSTITUTES THREE TIMES THE PRESENT ALLOCATION, ONE CAN FALSELY CONDLUDE THAT WE NOW HAVE AN ALMOST UNLIMITED RESOURCE AVAILABLE TO US. BY REVIEWING HISTORY, WE RECOGNIZE THAT THIS INDUSTRY HAS SUSTAINED A TREMENDOUS GROWTH DURING THE PAST 30 YEARS AND IT IS

PREDICTED TO CONTINUE THIS GROWTH AS RADIO BECOMES MORE AN INTEGRAL PART OF OUR BUSINESS AND PERSONAL LIVES. WE SEE NO REASON WHY A RADIO OR TELEPHONE IN EVERY CAR IS NOT A PRACTICAL FORECAST. THEREFORE, WE MUST BE PRUDENT IN OUR ASSIGNMENT OF FREQUENCIES TO MAKE THE MAXIMUM USE OF THIS RESOURCE SO THE CONSUMER CAN ALWAYS OBTAIN THE SERVICES HE DESIRES. WE SHOULD REMEMBER THAT WE NEED TO PLAN NOW FOR THE NEXT FREQUENCY CONGESTION PROBLEM. THE ONLY UNKNOWN IS THE EXACT DATE WHEN THE PROBLEM WILL AGAIN BECOME CRITICAL. THEREFORE, DISCRETION NOW IN THE ASSIGNMENT OF FREQUENCIES WITHIN THE 900 BAND WILL OBVIOUSLY HELP TO DELAY THE ARRIVAL OF THIS NEXT CRISIS.

HISTORICALLY, THERE HAVE BEEN TWO BROAD BASIC SERVICES OFFERED TO THE CONSUMER IN THE MOBILE RADIO FIELD: A PRIVATE SYSTEM, OR A WIRELINE COMMON CARRIER OR RCC SYSTEM. PREVIOUSLY, WE HAVE ALLOCATED LESS THAN 5% OF OUR MOBILE CHANNELS TO THE COMMON CARRIER, AND OVER 95% TO THE PRIVATE USER. WITH SUCH AN ALLOCATION, PRIVATE DISPATCH SYSTEMS

FLOURISHED. INDUSTRY MET THE CHALLENGE BY EVER-INCREASING PRODUCT PERFORMANCE TO SQUEEZE MORE AND MORE USERS INTO THE LIMITED 40 MHz THAT HAVE BEEN ALLOCATED TO THIS INDUSTRY OVER THE LAST 30 YEARS. WITHOUT A DOUBT, THROUGH THE EFFORTS OF THE FCC, THE INDUSTRY ITSELF, THE CONSUMER, AND THE INDUSTRY FREQUENCY COORDINATORS, ONE HAS TO CONCLUDE THAT DISPATCH SYSTEMS HAVE BEEN MOST SUCCESSFUL FOR INDUSTRY AND THE CONSUMER ALIKE.

ONE CANNOT VOTE THE SAME OVERWHELMING AWARD FOR SUCCESS TO THE IMPLEMENTERS OF THE COMMON CARRIER SERVICES. I AM NOT INTIMATING THAT THEY HAVE FAILED; I AM ONLY SAYING THAT, BECAUSE OF GENERALLY HIGH TARIFFS AND THE SHORTAGE OF FREQUENCIES, THIS MARKETPLACE HAS NOT BEEN THOROUGHLY TESTED. WE KNOW THAT THE RCC'S AND THE WIRELINE CARRIERS HAVE PROVIDED EXCELLENT SERVICE IN A LARGE NUMBER OF AREAS AND THAT A SIGNIFICANT PORTION OF OUR CONSUMER MARKETPLACE DESIRES THIS TYPE OF SERVICE. WE KNOW THAT TODAY THERE ARE A RELATIVELY LARGE NUMBER OF HELD ORDERS IN THE LARGE

METROPOLITAN AREAS WHERE FREQUENCY CONGESTION PREVENTS THE ASSIGNMENT OF NEW CUSTOMERS TO THIS SERVICE. BUT IT IS A FAR CRY FROM WHAT WE CAN ACTUALLY SEE IN THE MARKETPLACE TODAY TO THE PROJECTIONS OF 10 MILLION CONSUMERS SUBSCRIBING TO AN MTS SERVICE 20 YEARS HENCE. WE WOULD DO THE GENERAL PUBLIC AN INJUSTICE IF, IN THE ALLOCATION OF FREQUENCIES IN THE 900 BAND, WE PROJECTED WITH A GREAT DEAL OF CERTAINTY THAT THERE WOULD BE WITHOUT ANY DOUBT, 3, 5, 7, OR 9 MILLION ANXIOUS SUBSCRIBERS IN THE YEAR 2000 FOR THIS SERVICE.

ONE MUST ALSO CONSIDER, THAT WHILE BELL LABS AND OTHERS HAVE SHOWN THROUGH EXPERIMENTAL DATA THUS FAR SUBMITTED THAT THE CELLULAR TECHNOLOGY HOLDS MUCH PROMISE, THERE ARE STILL POTENTIAL TECHNICAL HURDLES SUCH AS CELLULAR PROPAGATION, OVERALL SYSTEM COMPUTER CONTROL, VEHICLE LOCATION, AND THE PROBLEMS ASSOCIATED WITH THE AUTOMATIC HAND-OFF THAT MUST BE OVERCOME. IF THESE PROBLEMS ARE NOT SOLVED BY ECONOMICAL METHODS, IT WOULD CAST SERIOUS DOUBT UPON THE FINAL PRICE OF THE

SERVICE OFFERING AND THEREFORE SERIOUSLY UNDERMINE FINAL CUSTOMER ACCEPTANCE.

DIFFICULT AS IT IS TO PROJECT THE DESIRES OF CONSUMERS TWENTY YEARS HENCE WITH ONLY TWO OPTIONS, THE PROPOSED ESTABLISHMENT OF MULTI-USER TRUNKED DISPATCH SYSTEMS (A THIRD ALTERNATIVE) MAKES THE MARKET PROJECTIONS THAT MUCH MORE DIFFICULT. I RECOGNIZE THAT THERE ARE TIMES, HOWEVER, THAT A PRESIDENT OF A COMPANY, AN FCC COMMISSIONER OR YOU IN THE AUDIENCE, MUST FACE THIS CHALLENGE SQUARELY AND PREDICT TO THE BEST OF YOUR ABILITY, THE FUTURE. BUT NO ONE PROJECTS THE FUTURE SO FAR IN ADVANCE WITHOUT SOME CONTINGENCY PLAN OR PLANS. AND THAT, MEMBERS OF IEEE, IS WHAT OUR POLICY REALLY DOES: IT ATTEMPTS NOT TO FORECAST THE FUTURE IN CONCRETE; IT DOES NOT TRY TO TELL THE CONSUMER THAT, WHILE HE HIMSELF DOES NOT KNOW TODAY WHAT HE WANTS IN THE FUTURE, WE HAVE THE ABILITY TO PROJECT FOR HIM. OUR POLICY, THEREFORE,

RELIEVES THE SEVEN FCC COMMISSIONERS FROM THE BURDEN OF PROJECTING ACCURATELY YOUR DESIRES FOR EACH OF THE SERVICES SO FAR IN ADVANCE OF WHEN IN FACT YOUR OWN MIND IS UNDECIDED. (LOOK WHAT THE FCC DID TO LARGE SPECTRUM ALLOCATIONS FOR UHF TELEVISION.) HOW MUCH OF IT IS UNUSED TODAY?

HOWEVER, WHEN CONSIDERING THIS CONTINGENCY PLAN WHICH LEAVES A LARGE AMOUNT OF FREQUENCY UNALLOCATED AND THEREFORE INJECTING A CERTAIN AMOUNT OF INDECISION WITHIN THE POLICY, THE GOVERNMENT HAS AN OBLIGATION TO PROVIDE SPECIFIC ASSURANCES WHICH WILL IN FACT ENCOURAGE INDUSTRY TO INVEST SUBSTANTIALLY IN THE NEW, INNOVATIVE SYSTEM AND EQUIPMENT DESIGNS FOR THIS BAND. THESE ASSURANCES MUST CLEARLY SHOW, IF A PARTICULAR

SYSTEM MEETS ITS TECHNICAL GOALS SUCCESSFULLY, IF IT IS ECONOMICALLY SOUND, AND IF THE PUBLIC CLEARLY DEMANDS THIS SERVICE, THAT FUTURE GOVERNMENT ALLOCATIONS AND REGULATIONS WILL NOT HINDER OR PREVENT THE SUCCESSFUL EXPLOITATION OF THE MARKETPLACE. THEREFORE, WHILE WE WANT TO LIMIT THE INITIAL FREQUENCY ALLOCATION TO MTS SYSTEMS, WE STILL WISH TO PROVIDE A MEANS WHEREBY ALL ORGANIZATIONS PROVIDING MOBILE TELEPHONE SERVICE WILL BE ABLE TO ACCESS FREQUENCIES WITH MINIMUM DELAY AND MINIMAL REGULATORY REVIEW SHOULD THIS ACTION BE DEEMED NECESSARY.

THERE WILL BE, IN THE YEAR 2000, A FINITE NUMBER OF CONSUMERS WHO WISH TO MAKE USE OF MOBILE RADIO TO ENHANCE THEIR PERSONAL OR BUSINESS LIVES. THE COMPETING SERVICES SHOULD NOW BE LINED UP AT THE STARTING GATE WITH EQUAL OPPORTUNITY TO ACCESS THIS

FINITE MARKET; AND WHEN THE CONSUMER DECIDES HOW HE WISHES TO DIVIDE HIS PARTICIPATION, THAT SERVICE OR THOSE SERVICES SHOULD HAVE THE ABILITY TO GROW AS NEEDED.

AT FIRST GLANCE, ONE WOULD CONCLUDE THAT WE HAVE SHORT-CHANGED THE WIRELINE COMMON CARRIERS WITH THE PROPOSED ALLOCATION OF ONLY 14 MHz. FOURTEEN WAS NOT NECESSARILY AN ARBITRARY FIGURE ON OUR PART, BUT IT WAS BASED ON A BELL TECHNICAL REPORT WHICH INDICATED THAT THE CITY OF PHILADELPHIA, THEIR CHOSEN EXAMPLE, WOULD REQUIRE ONLY 13 MHz TO TEST THE INITIAL SYSTEM, THE EQUIPMENT, AND THE ACCEPTANCE OF THEIR PRODUCT BY THE GENERAL PUBLIC.

THIS INITIAL SYSTEM WOULD HAVE THE CAPACITY TO SERVE APPROXIMATELY 5000 MOBILE UNITS. IN PASSING, LET ME NOTE THAT THIS FIGURE WOULD JUMP TO 8000 IF 25 KHz CHANNEL SPACING AND/OR IF FREQUENCY OFFSET WERE USED VS. THE PROPOSED 40 KHz. AT THIS POINT, THE SYSTEM COULD EXPAND BY EITHER SUBDIVIDING THE CELLS, OR BY THE ADDITION OF SMALL INCREMENTS OF SPECTRUM, AS NEEDED.

CONSIDER, IF YOU WILL, THE FACT THAT IN PHILADELPHIA, TODAY, BELL SERVES ONLY ABOUT 1200 IMTS SUBSCRIBERS AND HAS HELD ORDERS FOR APPROXIMATELY 1700 MORE. THEY HAVE PROJECTED IN PHILADELPHIA A TOTAL MARKET OF BETWEEN 130 AND 400 THOUSAND SUBSCRIBERS BY THE YEAR 2000. IF THE FREQUENCIES WERE AVAILABLE, AND THE PRICE MORE COMPETITIVE, COULD THE MARKET JUMP FROM 1200 TO 3000 TO 400 THOUSAND? OR, LOOKING NATIONALLY, CAN THE MARKET JUMP FROM 75,000 MOBILES TO 10 MILLION? SUPPOSE FOR THE MOMENT THE LOWER BELL PROJECTION OF 2.5 MILLION TURNS OUT TO BE ACCURATE. THIS WOULD REQUIRE ONLY 15 OR 24 MHZ TO SERVE THE ENTIRE MARKET. IT IS OUR CONTENTION THAT FACTS ARE NOT AVAILABLE TO MAKE A SOLID PROJECTION OF MARKET DEMAND OR FREQUENCY REQUIREMENTS TODAY, AND THEREFORE A FULL DEDICATED BAND IS NOT CALLED FOR.

I HAVE MENTIONED THAT THE GOVERNMENT HAS CERTAIN DEFINITE RESPONSIBILITIES WHEN WRITING A POLICY THAT PROVIDES THIS DEGREE OF FLEXIBILITY. THEY MUST PROVIDE INDUSTRY WITH CLEAR INCENTIVES TO PROCEED WITH LOGICAL GROWTH PATTERNS. WE RECOGNIZE THAT IF, IN THE FINAL ANALYSIS, 800 CHANNELS ARE TO BE REQUIRED EVENTUALLY FOR THE FULL IMPLEMENTATION, THE DESIGNERS MUST KNOW WHERE THESE 800 CHANNELS WILL BE INITIALLY LOCATED WITHIN THE FREQUENCY SPECTRUM IN ORDER THAT THE EQUIPMENT MAY BE DESIGNED AND BUILT NOW FOR FULL CHANNEL CAPACITY. THE CONSUMER COULD BE BADLY HURT, AS WELL AS THE ECONOMIC VIABILITY OF THE ENTIRE MARKETPLACE IF THIS WERE NOT DONE. IT WAS INHERENT, THEREFORE, IN OUR POLICY THAT A BLOCK OF SUFFICIENT SIZE BE PROVIDED ADJACENT TO THE 14 MHZ INITIALLY ALLOCATED TO PERMIT EXPANSION UP TO THE FULL 800 CHANNELS IF REQUIRED. WHILE THIS SPECIAL ALLOCATION IS NOT FIRMLY DEDICATED FOREVER TO THE WIRELINE CARRIERS, IN EACH MARKET AREA, THE LANGUAGE WOULD BE SUCH THAT, WITHIN A REASONABLE TIME LIMIT, THERE WOULD BE NO DOUBT THAT IT WOULD BE MADE AVAILABLE IF AND WHEN THE MARKETPLACE REQUIRES IT.

IT WAS, THEREFORE, OUR CONCLUSION, AS WE STATED IN OUR POLICY, THAT 14 MHz WAS SUFFICIENT TO PROVIDE FOR INITIAL START-UP SYSTEMS, WITH THE PROVISO THAT ADDITIONAL SPECTRUM WILL BE MADE AVAILABLE UPON DEMONSTRATED NEED. THIS CONTINGENCY PLAN INSERTS A DECISION POINT IN THE ALLOCATION PROCESS OF THE FCC WHICH ALLOWS THEM TO ASSESS ACTUAL DEMAND DATA -- NOT MERELY PROJECTIONS -- AND, THEREFORE, TO MORE INTELLIGENTLY DECIDE IF MORE SPECTRUM SHOULD BE ALLOCATED. IF THE CUSTOMER AND MARKET RESPONSE IS HIGH, THE FCC SHOULD HAVE NO PROBLEM IN RAPIDLY ARRIVING AT A DECISION TO ALLOCATE ADDITIONAL SPECTRUM.

IT MUST BE RECOGNIZED ALSO THAT, IF THIS ECONOMIC EXPERIMENT IS TO BE MEANINGFUL, THE BELL SYSTEM MUST MARKET ITS SERVICE IN THE INITIAL SYSTEM AS THOUGH IT WOULD ACHIEVE PLANNED CAPACITY. THE PRICE OF THE SERVICE IS SO IMPORTANT FOR CONSUMER ACCEPTANCE THAT IT MUST BE INITIALLY OFFERED IN THE TESTING ENVIRONMENT AT THE EVENTUAL PROJECTED TARIFF CHARGE. IT IS, OF COURSE, STANDARD PRACTICE IN ALL INDUSTRIES THAT, WHEN NEW PRODUCTS ARE BROUGHT TO THE MARKETPLACE, THEY ARE SOLD INITIALLY AT A PRICE BASED ON FUTURE PROJECTED VOLUME LEVELS. THEREFORE, IF THE FCC DOES EVENTUALLY ACCEPT OTP'S CONTINGENCY PLAN, THEY SHOULD ACCEPT THIS BASIC PRICING PRINCIPLE ALSO.

OUR POLICY ALSO AVOIDED A TOTAL DEFINITIVE FREQUENCY ALLOCATION FOR THE 800 CHANNELS. OR, TO SAY IT ANOTHER WAY, WE DID NOT WISH TO TAKE ISSUE WITH THE 40 KHz CHANNELS VS. THE 25 KHz CHANNELS SINCE WE DO NOT BELIEVE THAT SUFFICIENT EVIDENCE HAS BEEN GATHERED ON WHICH A FINAL DECISION CAN BE MADE. WE DO ACKNOWLEDGE THAT THE DATA SUBMITTED TO THE FCC MAKE THE CHANNEL WIDTH A CONTROVERSIAL ISSUE. WE ALSO ACKNOWLEDGE THAT SUFFICIENT DATA HAVE BEEN PRESENTED WHICH SHOW THAT THERE MAY BE SEVERAL TECHNICAL MEANS TO REDUCE THE CHANNEL'S BANDWIDTH AND THEREFORE SUBSTANTIALLY REDUCE THE TOTAL ALLOCATIONS REQUIRED FOR 800 CHANNEL MOBILE TELEPHONE SERVICE. TWENTY FIVE KC

WITH OR WITHOUT FREQUENCY OFFSET SHOULD BE THOROUGHLY REVIEWED AND NOT JUST CASUALLY SET ASIDE AS"AN OLD CONCEPT." IT IS, THEREFORE, OUR SUGGESTION, AS STATED IN THE POLICY, THAT THE COMMISSION HOLD TECHNICAL AND BUSINESS REVIEWS ON THIS SUBJECT SO THAT A DECISION CAN BE MADE FORTHRIGHTLY BEFORE THE INITIAL ALLOCATIONS HAVE BEEN MADE TO THE MOBILE TELEPHONE SERVICE.

I INCLUDED ABOVE THE WORDS "BUSINESS REVIEW" FOR I BELIEVE THAT THE CHANNEL BANDWIDTH IS NOT NECESSARILY ONLY A TECHNICAL DECISION. BECAUSE OF THE SIGNIFICANT DIFFERENCE BETWEEN THE REQUIREMENTS OF 64 MHz AND 40 MHz, A BUSINESS DECISION (A PRACTICAL, ECONOMICAL, TECHNICAL PERFORMANCE TRADEOFF) MUST BE MADE WHICH DETERMINES THE ACTUAL OPERATING CHARACTERISTICS IN THE MTS MARKETPLACE. ONE CANNOT LOSE SIGHT OF THE 24 MHz DIFFERENTIAL. IT IS, IN FACT, 60% OF WHAT THE ENTIRE MOBILE INDUSTRY HAS BEEN ALLOCATED TO IT DURING ITS ENTIRE EXISTENCE.

LET ME NOW SAY A WORD ABOUT THE COMMON USER SHARED TRUNK SYSTEMS. THE OTP POLICY URGES THE COMMISSION TO SERIOUSLY CONSIDER SUCH SYSTEMS. IT IS OUR BELIEF THAT COMPETITIVE SHARED TRUNKED SYSTEMS WITHIN THE MAJOR METROPOLITAN AREAS WILL PERMIT THE SMALL BUSINESS USERS TO HAVE A THIRD CHOICE BETWEEN A PRIVATE DISPATCH SYSTEM COMPLETELY UNDER HIS CONTROL AND A MOBILE TELEPHONE SYSTEM OFFERING A MORE DIVERSIFIED SERVICE. IT IS OUR BELIEF THAT A HIGHLY COMPETITIVE MARKETPLACE CAN BE ESTABLISHED TO WIDEN THE CHOICE OF THE SMALL USER SO THAT HE CAN BETTER OBTAIN THE SERVICE, AT THE RIGHT PRICE, AND UNDER THE RIGHT CONDITIONS IN ACCORDANCE WITH HIS OWN INDIVIDUAL NEEDS.

WHILE THIS NEW SERVICE CONCEPT DOES PROVIDE SERVICES FOR HIRE TO MULTIPLE, NONASSOCIATED USERS, AND THEREFORE DOES PROVIDE COMMON CARRIER OR COMMON CARRIAGE FACILITIES, WE SEE NO NEED FOR EXCLUSIVE FRANCHISES TO BE AWARDED WITHIN A CITY. AND THEREFORE, WITHOUT EXCLUSIVITY, THERE IS NO REASON FOR FULL REGULATION. IN ADDITION, WE HAVE RECOMMENDED, IN ORDER TO DIMINISH POSSIBLE ANTI-COMPETITIVE PRACTICES ON THE PART OF THE MANUFACTURERS AND/OR COMMON USER SYSTEM OPERATORS, THAT SOME STANDARDS ALLOWING INTEROPERABILITY OF MOBILES BETWEEN SYSTEMS BE ESTABLISHED. IT IS OUR HOPE THAT THE INDUSTRY WILL ACCEPT THIS CHALLENGE AND ESTABLISH ITS OWN STANDARDS SO THAT, IN THE FUTURE, THE FCC

OR THE DEPARTMENT OF JUSTICE WILL NOT HAVE TO INTERVENE IN ORDER TO KEEP THIS MARKETPLACE COMPETITIVE.

WE BELIEVE THAT ALL POTENTIAL USERS OF DISPATCH COMMUNICATIONS SHOULD BE ENCOURAGED TO USE THE MULTI-USER SHARED TRUNKED SYSTEMS. OBVIOUSLY, PRIVATE SYSTEMS SHOULD BE AUTHORIZED FOR THOSE WHO REQUIRE POSITIVE CONTROL OF THEIR OWN COMMUNICATIONS OR WHO HAVE A VALID PUBLIC SAFETY MISSION WHICH REQUIRES THIS CONTROL. IN CERTAIN AREAS AND CERTAIN SITUATIONS, WE WOULD, OBVIOUSLY, CONTINUE TO ENCOURAGE COMMUNITY REPEATER SYSTEMS SINCE THEY HAVE SERVED INDUSTRY SO WELL IN THE PAST. BUT, AS A PASSING NOTE, WE DO BELIEVE THAT, IN THE AREA OF LARGE, INDUSTRIAL COMPANIES OR SMALL MUNICIPAL GOVERNMENTS, THE FCC SHOULD ENCOURAGE THE USE OF

TRUNKED SYSTEMS EVEN THOUGH THEY MAY BE EXCLUSIVE TO A PARTICULAR COMPANY OR A PARTICULAR SUBURBAN OR URBAN AREA. TRUNKED SYSTEMS CAN BE MUCH MORE SPECTRALLY EFFICIENT AND PROVIDE A HIGHER DEGREE OF SERVICE THAN AN EQUIVALENT AMOUNT OF SINGLE PRIVATE CHANNEL OPERATIONS. IT IS CONCEIVABLE THAT SMALL COMMUNITIES SURROUNDING LARGE METROPOLITAN AREAS COULD ACTUALLY INCORPORATE THEIR NEEDS INTO ONE OVERALL SHARED TRUNKED SYSTEM AND REMARKABLY INCREASE THEIR SYSTEMS PERFORMANCE, AS WELL AS SPECTRUM EFFICIENCY.

OUR POLICY OBVIOUSLY RECOGNIZES THE POSSIBLE CONFRONTATION THAT EXISTS BETWEEN THE OTP POLICY AND THE FEDERAL OR STATE JURISDICTION. IT IS CENTRAL TO OUR POLICY THAT THE NON-REGULATED ENVIRONMENT BE PRESERVED IN ORDER TO ALLOW COMPETITIVE MARKET ACTIVITY. THEREFORE, IT WAS OUR SUGGESTION THAT IT MAY BE NECESSARY FOR FEDERAL PREEMPTION TO ASSURE THAT THE COMMON USER SHARED SYSTEM IN GENERAL

AND, IN PARTICULAR, THE MOBILE TELEPHONE SERVICES OPERATED BY RCC'S OR THEIR SUBSIDIARIES WITHIN THE 40 MHz ALLOCATION, ARE NOT SUBJECT TO RATE REGULATION BY FEDERAL OR STATE JURISDICTIONS. WE FACE A SIMILAR ISSUE OF FEDERAL VS. STATE REGULATION IN THE SPECIALIZED CARRIER AND THE INTERCONNECT MARKETS TODAY. THEREFORE, IT IS NOT JUST AN ISSUE UNIQUELY ASSOCIATED TO THE LAND MOBILE MARKET.

ONE CANNOT LEAVE THE DISCUSSION OF THIS POLICY WITHOUT A WORD ABOUT THE EXISTING RADIO COMMON CARRIERS. HISTORICALLY, THEY HAVE BEEN FRANCHISED IN AREAS AND, IN MANY CASES, SUBJECT TO STATE REGULATION. WE SEE NO REASON WHY MTS SERVICES CANNOT BE PROVIDED IN A COMPETITIVE ENVIRONMENT; AND THERE ARE NO COMPELLING REASONS WHY THERE SHOULD BE ANY MONOPOLY OR EXCLUSIVE FRANCHISE AREAS ASSIGNED. WITH THIS THOUGHT IN MIND, WE RECOMMEND THAT MOBILE TELEPHONE SERVICES PROVIDED BY OTHER THAN WIRELINE CARRIERS BE ALLOCATED

TO THE 40 MHz BAND WHICH HAS STRANGELY BECOME KNOWN, SINCE OUR POLICY DECLARATION, AS THE COMPETITIVE BAND. WE SEE NO REASON WHY RCC's OR OTHER NEW INSTITUTIONS WILL NOT BE ABLE TO OFFER MTS SERVICE IN ADDITION TO THE WIRELINE CARRIERS AND THE MULTI-USER SHARED TRUNKED SYSTEMS, IN COMPETITON IN THE MARKETPLACE. AS INDICATED, OUR POLICY ALSO PERMITS ADJACENT RESERVE FREQUENCIES SO THAT THE SAME TYPE OF CONTINGENCY PLAN CAN BE OFFERED TO CELLULAR SYSTEMS IN THIS BAND AS WAS OFFERED TO THE WIRELINE CARRIERS. OTP DOES NOT RECOMMEND THAT THE 40 MHz COMPETITIVE BAND BE SUBDIVIDED INTO INDUSTRIAL OR USER-TYPE ALLOCATIONS AS HAS BEEN DONE IN THE OTHER MOBILE BANDS BECAUSE IT HAS PROVEN TO BE VERY INEFFICIENT, NOR HAVE WE ATTEMPTED TO DIVIDE IT BETWEEN PRIVATE, COMMON USER, OR MOBILE TELEPHONE SYSTEMS. WE MUST LEAVE SOMETHING FOR THE FCC TO DO.

IN CONCLUSION, LET ME SAY THAT IT IS OUR FIRM BELIEF THAT OUR POLICY IS SOUND AND THAT IT WILL PROVIDE THE WIDEST FLEXIBILITY IN SERVING THE PUBLIC INTEREST. IT IS ALSO OUR BELIEF THAT OUR POLICY PROVIDES THE NECESSARY INCENTIVES FOR INDUSTRY TO TAKE UP THE CHALLENGE THAT WILL, THROUGH COMPETITION AND TECHNICAL INNOVATION, CONTINUE TO EXPAND THE RANGE OF MOBILE COMMUNICATIONS SERVICES TO THE USING PUBLIC IN A TIMELY AND EQUITABLE MANNER. IN ADDITION, IT IS OUR HOPE THAT THE EFFICIENCIES GAINED THROUGH THESE NEW SYSTEMS WILL ALLOW ALL WHO WANT OR NEED MOBILE COMMUNICATIONS SERVICES TO BE WELL SERVED THROUGH THE TURN OF THE CENTURY WITHOUT ADDITIONAL SPECTRUM.

THANK YOU.

H

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504

FCC
The Expert

ASSISTANT DIRECTOR

February 25, 1974

Mr. Raymond E. Spence
Chief Engineer
Federal Communications Commission
1919 M Street, N. W.
Washington, D. C. 20554

Dear Ray:

We have read and evaluated the draft paper entitled, "Joint Discussion of the FCC Regional Frequency Management System" received February 21, 1974, as well as other material prepared subsequent to the Office of Telecommunications (OT) report entitled "Policy Implications of the Regional Frequency Management System." We are encouraged by the proposed changes to the monitoring and AFAM programs and many of the concerns expressed in the OT report have been mitigated by them. However, even with these changes, we still have certain reservations regarding the Regional Frequency Management System. It should be emphasized, however, that these remaining reservations are not in regard to the overall merits of the regional frequency management concept, but whether the current system has been sufficiently refined and proven to warrant further expansion to other centers at this time.

Succinctly stated, we feel that the ultimate effectiveness of the system has not yet been clearly demonstrated at the user level and therefore such expansion is not warranted. Specifically, we continue to recommend that all monitoring and computer resources be concentrated in the Chicago area to (1) refine the data gathering requirements/costs and (2) to demonstrate the efficacy of the AFAM procedures. We do support, as we did in our joint review report, the start of collection of Form 425 license data from users in San Francisco or other selected site, anticipating the eventual verification of the Chicago system. While there have been significant improvements of recent origin, the recommendations made

previously still, in effect, state our current opinion. If the Commission feels that the design of additional monitoring vans will not be made obsolete by changes in procedures based on further monitoring in Chicago and if the purchase of a third van at this time is necessitated by lead time or budget considerations, then we would support the immediate procurement of such a van for eventual use in gathering monitoring data in San Francisco.

This recommendation is based on the following considerations. With regard to the monitoring data, we are in general agreement with the SRI estimates of the number of samples needed to characterize properly a mobile radio channel in "all dimensions except the times at which the peak or minimum values occur." We remain unconvinced that performance during the busy hour is not an important parameter to the user for we are confident that further data will show statistically significant diurnal variations in occupancy. We fully support the intention of gathering more data to answer this latter question and, at the same time, refine the data gathering requirements.

With regard to the AFAM program, we are convinced that AFAM-type procedures can eventually be developed which will be a significant improvement over current coordinator assignments. We still do not believe that the AFAM procedures as now implemented have proven themselves in the field, nor do we believe that the technical concerns expressed in the OT paper have been adequately answered. In view of (1) the remaining uncertainties in the data requirements and the proposed and unevaluated modifications to the monitoring plan (specifically the change from a 10 ft. to a 70 ft. high antenna) and, (2) the lack of extensive field checks of the AFAM program results as related to actual installed and operating systems, we must reluctantly reach the conclusion that further expansion should be delayed and all efforts be concentrated on alleviating these concerns in a convincing fashion. I reiterate that we are not saying that the cost/effectiveness of the Regional Frequency Management System will not be demonstrated eventually, but merely that it has not yet been done.

I would also like to take this opportunity to congratulate you and the Spectrum Management Task Force for the obvious dedication shown in the development of such a large and complex system. We all are anxious for the time when today's potential benefits will actually be available to the land mobile radio community and other users of the spectrum resource tomorrow.

Sincerely,

Walter E. Sutter

Dale Hatfield

A

SUMMARY CHRONOLOGY -- CLASS E CITIZENS BAND

1. February 5, 1971: EIA petitions FCC to establish new Class E Citizens Band Service. Several months of briefings followed, involving industry representatives (E.F. Johnson Co., G.E., Motorola, etc.), FCC, OTP, and House Commerce Committee Staff.

2. July 12, 1971: Chairman Burch requests views of OTP reallocating entire 220-225 MHz band for primary non-Government use (landmobile, citizens band, etc....).

3. August 19, 1971: OTP tells Burch that the band 223-225 MHz could, with certain limitations, be made available on shared basis for Citizens Band use, otherwise requested reallocation is not feasible.

4. January 12, 1972: FCC forwards to OTP draft Notice of Proposed Rule Making which proposed that the band 224-225 MHz be made available on a shared basis for CB operations. The sharing involved was, of course, with amateur (220-224 MHz) and DOD radar operations in the 220-225 MHz band. Amateurs currently operate between 220-225 MHz on a secondary basis to Government radars.

5. March 29, 1972: OTP letter to Burch supports establishing new radio service using two megahertz (223-225 MHz) of space offered by OTP in August 1971. It was pointed out that 80 FM radio channels could be made available for a General Public Radio Service, having as its objectives the satisfaction of currently unfulfilled communications needs--travelers, sportsmen, hobbyists, and quasi-business activities.

6. June 12, 1973: FCC issues NPRM (Docket 19759) to create a new class of Citizens Band Radio Services (Class E). For reasons internal to the FCC staff, only one megahertz (224-225 MHz) of the two megahertz proposed by OTP was offered for Class E use by the NPRM.

7. July 5, 1973: Debate that heretofore had largely been below the surface begins to polarize. Powerful and vocal spokesmen on behalf of Amateur interests made known their objections. The theme was along the lines of why should an undisciplined CB service be rewarded with additional spectrum at the expense of a highly disciplined service.

8. June 1974: DOD raises newly unearthed concerns (classified) over the allocation of spectrum to Class E Citizens Band Service. Tests and compatibility studies initiated to determine if arrangements OTP previously agreed upon can still be supported.

9. September 18, 1974: OTP letter to DOD poses several options for selecting best means of satisfying the requirements involved (material classified).

10. December 27, 1974: OTP letter to FCC says that after reconsideration and discussion with DOD, allocation of CB should be 222-224 MHz. List of other conditions attached to letter.

Summary on Class E Citizens Band

There are about 300,000 amateurs in the United States and they are already allocated numerous frequency bands for their use. There are literally millions of citizens who are not "amateurs" but, having communications requirements, should not be denied the use of radio. Industry believes this to be a potential $300M to $500M per year market, with over a million users

standing in line right now. OTP's advocacy has been for a new disciplined General Public Radio Service to meet this demand--not for an extension of the present undisciplined CB service. On merit, the public interest in favor of such a new service outweighs the amateur interest in the 2 MHz of spectrum involved. The FCC in its NPRM did not adopt OTP's suggestion for a "General" service, preferring to continue to call it "Citizens Band."

While the amateurs are very vocal in their claims for the 220-MHz band, they overlook the fact that they are in the band on a sufferance basis to begin with. Prior to 1959 the several bands needed for U.S. and NATO military radar operations could not, for security reasons, be coordinated as such in an international forum. The ploy was to describe several of these bands as amateur with the tacit understanding that the allocation would serve as a "front" for radar operations. It was not until the 1959 ITU WARC that the wraps were taken off and the Radiolocation (RADAR) Service was established. Memories are undoubtedly dimmed by the passage of time, but the fact is that the amateurs would not be in the 220-225 MHz band at all if it had not been for the military.

In response to an FCC initiative, OTP has made an offer of primary Government spectrum (shared secondarily by the amateurs) to the FCC to meet a valid requirement for access to telecommunications techniques on the part of millions of citizens. Not only will millions of potential users benefit operationally, but American industry is ready to go and will benefit from this new market (significantly, one for which the Japanese are not yet tooled up). The burden is on the FCC to act. In any event, the matter should be handled in such a a manner that OTP does not get blamed for demise of a valuable service, should such an eventuality arise.

B

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
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Amendment of Part 95 and Part 15 of the)
Commission's Rules Concerning the Allo-)
cation and Assignment of Frequencies for)
Unlicensed Communication, Class D Citi-)
zens Radio Service and a New Proposed)
Class E Citizens Radio Service)

PETITION FOR PROPOSED RULEMAKING OF THE CITIZENS RADIO SERVICE, INDUSTRIAL ELECTRONICS DIVISION, ELECTRONIC INDUSTRIES ASSOCIATION

Respectfully submitted,

W. I. Thomas - Chairman
Citizens Radio Section
Industrial Electronics Division
Electronic Industries Association

John Sodolski
Staff Vice President
Industrial Electronics Division
Electronic Industries Association

RM-1747

February 5, 1971

Washington, D.C. 20554

In the Matter of)
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Amendment of Part 95 and Part 15 of the)
Commission's Rules Concerning the Allo-)
cation and Assignment of Frequencies for)
Unlicensed Communication, Class D Citi-)
zens Radio Service and a New Proposed)
Class E Citizens Radio Service)

PETITION FOR PROPOSED RULEMAKING OF THE CITIZENS RADIO SECTION, INDUSTRIAL ELECTRONICS DIVISION, ELECTRONIC INDUSTRIES ASSOCIATION

There has been demonstrated a strong, current and growing need for personal two-way radio communications for both safety and convenience of individual citizens in conducting their daily activities of both personal and business nature. This need initially was served by the establishment of Class D Citizens Radio Service in 1958, providing twenty-three crystal controlled channels with 10 KC spacing in the 27 MHz band. In the establishment of the Class D Citizens Radio Service, the Commission correctly recognized the need and right of individual citizens to have use of a portion of the R. F. Spectrum to conduct their affairs for convenience and safety via personal two-way radio. The technical limitation of 27 MHz and the limited number of channels made available have prevented the Class D Citizens Radio Service from meeting its total objective. We have learned much concerning the public's needs for personal two-way radio communications, even with these limiting factors. We can now more completely define and more adequately serve this requirement for personal two-way service.

1. CITIZENS NEED FOR PERSONAL TWO-WAY RADIO

In our mobile society today, we have an ever-increasing need for personal two-way radio communication from moving vehicles and in remote areas where land line communications facilities are not available. The primary need is for short range communications (within ten miles). The cost of equipment must be kept low for the greatest benefit to the greatest number of citizens. The service must offer the greatest flexibility of use so that the citizen may avail himself to this service in all his activities, whether he be in his home or automobile or on a fishing or camping excursion.

The Class D Citizens Radio Service, with 900,000 active licensed operators, has shown that low cost equipment owned and operated by the user provides the most satisfactory service.

II. JUSTIFICATION FOR EXPANSION OF PERSONAL RADIO SERVICE

The benefits of personal ownership and operation of Citizens Two-Way Radio have been proved over and over again in the number of public assistance acts that have been performed on the Class D Citizens Radio Service throughout the country. The examples of assistance, both for safety and convenience, that have been rendered to the general public by Class D Citizens Radio operators is far greater per license than any other radio service except the Public Safety Agencies themselves. There are countless examples of cooperation with law enforcement agencies and other local agencies by the Class D Citizens Radio Operators in providing assistance in time of major and minor emergency that arise every day in communities throughout the country. The cost of providing this benefit to our population could not possibly be met by any practical means other than personal ownership and operation of Citizens Personal Two-Way Radio equipment.

III. REQUIREMENTS FOR IMPROVING PERSONAL TWO-WAY COMMUNICATIONS SERVICE

A. Operating regulations must be simple to understand and easy to administer. Operating procedures must be established to provide a high degree of self-regulation so that a minimum of cost is required for enforcement.

B. Equipment must be low initial cost and require a minimum of service expense.

C. Flexibility of operation must be provided so the maximum utilization of frequency can be obtained. The service must provide a satisfactory number of channels for local operation so that open channel space can be selected freely by the operator. Operating guidelines must be established so that maximum utilization can be obtained with the least confusion and interference.

D. Proper location in the frequency spectrum must be made to minimize the technical operating problem, short range communications in all types of terrain and populated areas must be accomplished with minimum interference due to man-made or natural interference.

E. Licensing procedures must be simplified to permit efficient handling of the large numbers of licensing that are required for this personal radio service.

The original establishment of the Citizens Radio Service by the FCC and subsequent establishment of the Class D Citizens Radio Service was to "provide the broadest possible public use and benefit of the frequency spectrum of necessary business and personal communications". The following factors concerning allocation of frequencies in the Class D Radio Service.

1. Technical atmospheric (skip) conditions make the Class D Citizens (27 MHz) band more conducive to long distance amateur type operation than the short range communications to which the operation is restricted.

2. R.F. noise, both man-made and atmospheric, coupled with low power and low antenna height restrictions, limit the range of Class D Citizens (27 MHz) band in metropolitan areas to the point of questionable operational effectiveness for its intended purpose.

3. Overcrowded conditions on the 23 channels of the 27 MHz Class D Citizens Radio Service, together with the above factors, has degraded the Citizens Radio Service to a level of ineffectiveness in many areas.

A new "Class E Service" is proposed as the best possible solution to provide the U.S. Citizens with properly regulated frequency spectrum for "personal communications".

A new Class E Citizens Radio Service is requested to be established between 220 and 222 MHz. The current Amateur Radio Service Frequency allocation of 220 to 225 should be changed to 222 MHz through 225 MHz which would provide ample room for amateur operation in this seldom used band of frequency.

This new Class E Citizens Radio Service should then be established by specified channels covering the 220 to 222 MHz range. As a guideline in establishing technical and operating parameters, it is recommended that the VHF Marine regulation be referred to as an excellent example of providing the greatest use to the general public of the limited frequency spectrum available to satisfy the growing need for more short range "personal communications".

The following regulations for operation are recommended with the basic objective of providing communications for the mobile public for convenience and safety up to a reliable range of ten to twenty miles.

A. Power output to antenna limit of twenty-five watts with special public safety agencies permitted to license a base station at one-hundred watts output to antenna when using this band to assist in public convenience or necessity for safety.

B. Antenna height limit of twenty feet above the nearest man-made or natural object within 500 yards; or sixty feet above the existing terrain (whichever is higher). Licensees should be individually responsible to meet Part 17 of FCC Rules and Part 77 of the FAA rules so that geographic coordinates need not be checked out on each application.

C. Frequency assignments are requested as follows:

Transmission of FM voice only with 25 KC spacing. Crystal controlled transmission only. 80 channels assigned as follows:

Channel		Frequency
1	mobile to same license	220.000
2	mobile to same license	220.025
3	mobile to same license	220.050
4	mobile to same license	220.075
5	mobile to same license	220.100
6	mobile to same license	220.125
7	mobile to same license	220.150
8	mobile to same license	220.175
9	emergency use only per Class D Channel 9	220.200
10	mobile to same license	220.225
11	mobile general calling for contact only; must change to alternate channel for message	220.250.
12	travel assistance use only mobile general calling permitted	220.275
13	travel assistance use only mobile general calling permitted	220.300
14	weather advisory use general calling permitted	220.325
15	traffic advisory use general calling permitted	220.350
16	mobile to unit of same or different license	220.375
17	mobile to unit of same or different license	220.400
18	mobile to unit of same or different license	220.425
19	mobile to unit of same or different license	220.450
20	mobile to unit of same or different license	220.475
21	mobile general calling for contact only; must change to alternate channel for message	220.500

Channel		Frequency
22	mobile to unit of same or different license	220.525
23	mobile to unit of same or different license	220.550
24	mobile to unit of same or different license	220.575
25	mobile to unit of same or different license	220.600
26	mobile to unit of same or different license	220.625
27	mobile to unit of same or different license	220.650
28	mobile to unit of same or different license	220.675
29	mobile to unit of same or different license	220.700
30	mobile to unit of same or different license	220.725
31	mobile to unit of same or different license	220.750
32	mobile to unit of same or different license	220.775
33	mobile to unit of same or different license	220.800
34	mobile to unit of same or different license	220.825
35	mobile to unit of same or different license	220.850
36	for units of the same or different license	220.875
37	for units of the same or different license	220.900
38	for units of the same or different license	220.925
39	for units of the same or different license	220.950
40	for units of the same or different license	220.975
41	for units of the same or different license	221.000
42	for units of the same or different license	221.025
43	for units of the same or different license	221.050
44	for units of the same or different license	221.075
45	For units of the same or different license; limited to contact only; units must change to alternate channel for message	221.100
46	limited to units of same license; for business communications only.	221.125
47	limited to units of same license; for business communications only	221.150
48	limited to units of same license; for business communications only	221.175
49	limited to units of same license; for business communications only	221.200
50	limited to units of same license; for business communications only	221.225
51	limited to units of same license; for business communications only	221.250
52	limited to units of same license; for business communications only	221.275
53	limited to units of same license; for business communications only	221.300

Channel		Frequency
54	limited to units of same license; for business communications only	221.325
55	limited to units of same license; limited to contact only; units must change to alternate channel for message	221.350
56	marine use only	221.375
57	marine use only	221.400
58	marine use only; limit of 1 watt	221.425
59	marine use only; limit of 1 watt	221.450
60	marine use only; limit of 1 watt	221.475
61	local use of units with same call sign; limit of 1 watt	221.500
62	local use of units with same call sign; limit of 1 watt	221.525
63	local use of units with same call sign; limit of 1 watt	221.550
64	local use of units with same call sign; limit of 1 watt	221.575
65	local use of units with same call sign; limit of 1 watt	221.600
66	in plant use only; limit of 1 watt	221.625
67	in plant use only; limit of 1 watt	221.650
68	in plant use only; limit of 1 watt	221.675
69	in plant use only; limit of 1 watt	221.700
70	in plant use only; limit of 1 watt	221.725
71	local traffic control use only; for a limit of 1 watt	221.750
72	local traffic control use only; for a limit of 1 watt	221.775
73	local traffic control use only; for a limit of 1 watt	221.800
74	local traffic control use only; for a limit of 1 watt	221.825
75	local traffic control use only; for a limit of 1 watt	221.850
76	road condition information only; power limit of 1 watt TX audio call signs	221.875
77	road condition information only; power limit of 1 watt TX audio call signs	221.900
78	road condition information only; power limit of 1 watt TX audio call signs	221.925
79	road condition information only; power limit of 1 watt TX audio call signs	221.950
80	road condition information only; power limit of 1 watt TX audio call signs	221.975

It is recommended that all transceiver equipment be required to have a switch cutting power to one watt transmit to the antenna. It is further recommended that squelch control be permitted only on Channels 1 through 50 with all channels permitting only voice communications.

Licensing on Class E Citizens Radio Service should be established so that each transmitter have an individual license with a license fee of $3.00 for each transmitter, valid for years. A provision should be made that license applicant may be granted the same license identification number he is using on other equipment within the service. An exception to this rule would be a license may be granted on a no-charge basis for any authorized Public Service Agency.

The manufacturer would be held responsible to include a short form Class E Citizens license application with the owner's manual of each set and the dealer held responsible for assuring that an application is passed on to the purchasers of the transceivers at the time of sale of new and used equipment to a user.

To simplify licensing procedure in the case of individuals, a short form license application (included with each set) may be used to self-assign call numbers which require no response from the Commission. A sample short form licensing procedure is attached.

Further control of illegal or improper equipment sale and operation is established by requiring the Manufacturer and Dealer to certify that the equipment, when sold, complies with the applicable regulation.

It is urged that the Commission move with haste to provide this much-needed rulemaking for the benefit of all citizens and their growing requirement for personal two-way radio communications for convenience and safety.

Respectfully submitted,

W. I. Thomas

W. I. Thomas - Chairman
Citizens Radio Section
Industrial Electronics Division
Electronic Industries Association

WIT/kd

Attachment

John Sodolski, Staff Vice President
Industrial Electronics Division
Electronic Industries Association

February 5, 1971

Note: Association, Partnership, Government Agency or Corporation license may be assigned by filing FCC Form 505 (revised to include Class E)

This temporary self-assignment station call sign may be used immediately. If no notification from the FCC received in 30 days, license will become permanent.

List license call by State of permanent residence plus last 6 numbers of owner's Social Security number.

Date Application Mailed: ______

= =

. Name of Applicant

Last ______
First ______
Middle ______

1C. Birthplace and Date

City ______
State ______
Month Day Year ______

B. Permanent Mail Address

Street ______
City ______
State Zip ______

If different from above, give location where licensee may be located at time of application:

______

. CHECK ONE.

☐ New license; no previous sets registered

☐ Station add-on license; total number of transceivers in use now ______

☐ Station replacement; no change in number of transceivers in use

. Is the transmitter being licensed crystal controlled for one or more of the 80 Class E Citizens Channels? (If no, attach letter of explanation) ______

. Will applicant own this radio equipment? (If no, attach letter of explanation.) ______

. Will any other persons other than applicant or members of his immediate family living in the same household or his employees operate the station? (if yes, attach a separate sheet listing the names and relationship of all such persons and give a detailed reason for their operation of your station.) ______

Radio Class E Service and will not use the equipment for the exchange of chit chat, idle conversation or discussion of equipment as a hobby.

The Applicant certifies that within ten (10) years previous to this date of this application, he has not been convicted in a Federal, State or Local Court of any crime for which the penalty imposed a fine of $500.00 or more, or an imprisonment of six (6) months or more.

(a) The Applicant has (or has ordered from the Government Printing Office) a current copy of the Commission's rules governing the Citizens Radio Service.

(b) The Applicant waives any claim to the use of any particular frequency as against the regulatory power of the United States because of the previous use of same, whether by license or otherwise

(c) The Applicant accepts full responsibility for the operation of and will retain control of any citizens radio station licensed to him pursuant to this application.

(d) The station will be operated in full accordance with the applicable law and the current rules of the Federal Communications Commission.

(e) The said station will not be used for any purpose contrary to Federal, State or Local law.

(f) The Applicant will have unlimited access to the radio equipment and effective measures will be taken to prevent its use by unauthorized persons.

(g) The statements in this application are true, complete and correct to the best of my knowledge and belief and are made in good faith.

_____ (Signature) _____ (Date)

e MANUFACTURER, by signing, certifies:

That transceiver Model Number _____ Serial Number _____ complies in all respects FCC rules and regulations governing equipment for use on Class E Citizens Radio at time of shipment r manufacturing facilities located at: _____

_____
(Signature of Officer of Corporation or Individual Responsible for Manufacturer)

OTE: If equipment is being sold in used condition, certification by first or second class technician must be made in place of Manufacturer certification that equipment meets all applicable FCC rules and regulations governing Class E Citizens Radio equipment.

e SELLER, by signing, certifies:

That no alterations were made to reference equipment and that no equipment sold as a part of the ass E Citizens Radio System that is not in compliance with applicable FCC rules and regulations governg equipment for use on Class E Citizens Radio Service.

_____ (Date) _____ (Signature of Seller) _____ State Resale Permit Number

_____ (Address of Seller)

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D. C. 20554

JUL 12 1971

IN REPLY REFER TO:

6300

The Honorable Clay T. Whitehead
Director
Office of Telecommunications Policy
Executive Office of the President
Washington, D. C. 20504

Dear Dr. Whitehead:

The Commission has before it several petitions which seek the allocation of additional frequency spectrum for specific uses. Such requests involve new allocations to alleviate requirements for land mobile, citizens band, radio positioning and location, and other similar purposes. In order that such requests may be appropriately accommodated, your views are requested in regard the feasibility of the reallocation of the 220-225 MHz band for non-government primary use.

The Commission, at this time, does not have any definite plan for sub-allocating the above band; however, the urgent needs of the land mobile services the citizens radio service, and others would be thoroughly considered before a final determination is made. Accordingly, the Commission is desirous of ascertaining the availability of the 220-225 MHz band for use in resolving these critical communication requirements.

An early reply, at your convenience, would be appreciated.

Sincerely,

Dean Burch
Chairman

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF TELECOMMUNICATIONS POLICY
WASHINGTON, D.C. 20504

DIRECTOR

August 19, 1971

Honorable Dean Burch
Chairman
Federal Communications Commission
Washington, D.C. 20554

Dear Mr. Burch:

After reviewing Government usage of the 220-225 MHz band, I have concluded that the reallocation action proposed in your letter of July 12, 1971 is not feasible at this time.

The Department of Defense has a continuing need for spectrum in the vicinity of 200 MHz in support of radiolocation operations, many with high power, at several sites in the continental United States and aboard naval vessels. Reassessment of the matter in the 1975-1980 time frame would seem appropriate, depending on advances in technology and the nature of defense requirements at that time.

Realizing, however, the increasing interest in expansion of the Citizen's Band Service, I believe that some sharing to accommodate additional operations of this type is practicable. Subject to certain caveats, 2 MHz of the 220-225 MHz band (i.e., 223-225 MHz) could be made available on a shared basis for Citizen's Band use. Such use would, of course, have to be on a secondary basis to the radiolocation operations of the Department of Defense and Citizen's Band users would need to be cautioned of the possibility of receiving interference from such operations, particularly in coastal, North Central, and the Northwestern areas of the United States.

If the foregoing appears to the Commission to be worthy of pursuit, perhaps Messrs. Spence and Dean of our respective staffs could treat the details involved.

Sincerely,

Clay T. Whitehead

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D. C. 20554

January 12, 1972

IN REPLY REFER TO:

6310

Mr. Wilfred Dean, Jr.
Assistant Director, Frequency Management
Office of Telecommunications Policy
Washington, D. C. 20504

Dear Will:

Reference is made to a letter from the Director, OTP to the Chairman, FCC dated August 25, 1971 and subsequent correspondence related to a possible allocation in the band 223-225 MHz to the Citizen's Radio Service.

We have prepared a draft Notice of Proposed Rule Making in this matter, a copy of which is enclosed for your information. This draft has not been sufficiently coordinated within the Commission to warrant introduction to the IRAC at this time.

One area of concern to us is the necessity to apply a restriction to Citizen's Service operations similar to that applied to amateur operations under footnote NG 13. In view of the secondary status and the low power requirement for the Citizen's Service, we would hope that no specific restrictions would be required.

We would appreciate the position of your office relative to the necessity for footnoting Citizen's Service operations at 225 MHz with a geographic restriction in Texas and New Mexico.

Sincerely yours,

C. Phyll Horne

C. Phyll Horne
Assistant Chief Engineer in Charge of
Frequency Allocation and Treaty Division

Enclosure

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. .C. 20554

In the Matter of	)	
	)	
Amendment of Part 2 of the Commission's Rules concerning the allocation of frequencies to licensees to the Class D Citizens Radio Service.	)	DOCKET NO. RM-1747

NOTICE OF PROPOSED RULE MAKING

Adopted: Released:

By the Commission:

1. Notice is hereby given in the above captioned matter.

2. The Citizens Radio Service was established by the Commission in 1945, (Docket No. 6651) as a radio communication service of fixed, land, and mobile stations intended for short distance personal or business communications (Class A), and for radio signaling and control of remote devices by radio (Classes B and C). Due to lack of suitable low cost equipment the service grew slowly and reached a total of only 40,000 licensees by 1958. At that time it was decided to establish a Class D Citizens Service in the 27 MHz region to permit voice communications of a general or business nature. Although not ideally suited to the short-distance concept of the Citizens Radio Service because of its sporadic long distance transmission characteristics, the 27 MHz was allocated for such use since this portion of the radio spectrum was undesired by others in the land mobile group. Interference must be accepted from Industrial, Scientific and Medical equipment to which this band is primarily allocated and from harmonics from high powered transmitters operating in the HF band. It was expected that equipment operating in the 27 MHz band could be produced at considerably less expense than equipment operating in VHF or UHF bands. Growth was phenomenal and the number of licensees increased from 49,000 in 1959 to 887,000 in 1970.

3. The 27 MHz Class D Citizens band is divided into twenty-three channels with seven channels authorized for communications between units of different stations and one channel to be used solely for emergency communications involving the immediate safety of life of individuals or the immediate protection of property or communications necessary to render assistance to a motorist. A wide variety of communications was initially permitted in the Class D Citizens Radio Service. As the number of licensees increased, however, so did complaints against the

use of the service for the transmission of long duration base-to-base messages, hobby type communications, out of band operations, technical violations such as use of high powered amplifiers, and general pollution of the airways. This resulted in certain prohibitions against the Class D service including: (1) communications as a hobby or diversion; (2) transmission of obscene, indecent or profane words, language or meaning; (3) communications not directed to specific stations or persons; (4) advertising or soliciting the sale of any goods or services; (5) transmission of music, whistling, sound effects or any material for amusement or entertainment purposes; (6) communication about the technical performance of equipment; (7) relaying messages for a person other than the licensee or member of his immediate family.

4. Non-licensed Part 15 devices operate on the same frequencies as those used by Class D Citizens stations. Examples of these restricted radiation devices (100 milliwatts or less) are: walkie-talkies, phonograph oscillators, radio controlled models. Unlike Class D Citizens stations, the Part 15 device may be used to transmit any type of message including hobby communications and the operator is not required to identify himself with a call sign. Interference is common between Part 15 devices and Class D stations. Certain ISM equipment such as industrial heaters and diathermy machines, which use radio waves but are not used for communications, also operate on the same frequencies as those used by Class D stations and can cause interference to these stations. The ISM allocation in this band is world-wide and in accord with long standing international agreements.

5. The Commission has been examining a number of proposals with a view toward reducing violations of the Class D rules and relieving the causes of public complaints against the service. Some of the more potentially viable of these include: (1) strengthening the enforcement program with increased manpower and technical facilities; (2) authorizing hobby communications, with some specific allocation for this purpose; (3) requiring more stringent qualifications for Class D licensing; (4) allocating other frequencies to specific types of Class D licensees; (5) limiting Part 15 devices to certain channels in the 27 MHz band or assigning them to frequencies in another part of the spectrum; (6) instituting compulsory equipment type approval procedures and revising equipment technical requirements; (7) establishing calling channels in the Class D service; (8) improving the education program for the public on characteristics and use of the Citizens Radio Service; (9) abolishing the Class D Citizens Radio Service. Each of these proposals offers some possibility of improvement in the ability of the Commission to carry out its regulatory responsibility. Each proposal will be considered in the light of unique administrative and technical factors affecting its potential contribution to the overall problem. This proceeding, however, will address only the possibility of allocating additional frequencies for requirements not adequately being met in the Class D Service.

(3) authoring a new class in the Amateur service which will not require a code proficiency demonstration as a criterion for licensin

6. The Commission has been petitioned to establish a new Class E Citizens Radio Service in the band 220-222 MHz (EIA proposal, RM-1747). The band 220-225 MHz is currently allocated internationally to the Amateur and Radiolocation services on a coequal basis. Nationally, however, Radiolocation is the primary service and the Amateur service has secondary status. The latter service is further constrained by footnote NG 13 to the national Table of Frequency Allocations specifying that in an area in Texas and New Mexico about 175 miles wide and 110 miles in latitude centered essentially on the White Sands Missile Range, normal amateur operations are not permitted in the band between 5 AM and 6 PM, Monday through Friday. In view of the Government use of the band for radiolocation, the Commission has inquired as to the band being shared with some form of Citizens Radio Service operations. We have been advised by the Director of the Office of Telecommunications Policy that sharing to accommodate additional operations of the Citizens Radio Service would be practicable in the band 223-225 MHz. However, such use would be subject to the possibility of receiving interference from radiolocation operations, particularly in coastal, North Central and the Northwestern areas of the United States.

7. Factors in favor of additional allocation to the Citizens Radio Service are the following: (1) propagation characteristics at 225 MHz are more applicable to the short range (normal ten miles or less) requirement of this service; (2) the unusually high concentration of Commission licensees in the 27 MHz Class D band (47% of all radio stations authorized by the Commission on June 30, 1970, were Class D Citizens Radio Service licensees sharing only 230 kHz of the spectrum with an estimated several million Part 15 devices); (3) enforcement of a satisfactory service at 225 MHz, which will require new applications for licenses and new equipment for operations, can be made immediately more [effective] rigorous

8. Factors weighing against allocation of new spectrum at 225 MHz are the following: (1) cleaning up the problems at 27 MHz will only be affected to the extent that there will be some fewer operators in the band; (2) the Commission has been informed by one source that 90% of present Citizens Band users say the Class D allocation is adequate for their purposes or would be if illegal operations were ceased; (3) Amateur users of the band 220-225 MHz cannot be expected to favor the reduction of this band in favor of another service.

9. The Commission is persuaded that the balance is in favor of some increased allocation. Therefore, the band 224-225 MHz is proposed for a Class E Citizens Radio Service. In general, we anticipate that transmissions will be crystal controlled, FM voice on 25 kHz channels. The band proposed can accommodate 40 channels at this spacing. It should be borne in mind that no channel, even those designated for "emergency" purposes, can be given a greater

degree of protection than that now provided for channel 9, Class D. The power and antenna characteristics will be such as to provide adequate local coverage (up to ten miles under normal circumstances). It is proposed that type approval will be required for equipment to be operated in the Class E service. The specific details of this service including the necessary changes to Part 95 of the Commission's Rules will be developed after a review of the comments received in response to this Notice. The proposed amendment of Section 2.106 (Table of Frequency Allocations) is given in the Appendix.

10. Action herein is being taken pursuant to authority contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

11. Pursuant to applicable procedures set out in Section 1.415 of the Commission's Rules, interested parties may file comments on or before , and reply comments on or before . All relevant and timely comments and reply comments will be considered before final action is taken in this proceeding. The Commission, additionally, in reaching a decision in this proceeding, may also take into account other relevant information before it.

12. In accordance with the provisions of Section 1.419 of the Commission's Rules, an original and 14 copies of all comments, replies, pleadings, briefs, or other documents shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple
Secretary

Attachment: Appendix

APPENDIX

Part 2 of Chapter 7 of Title 47 of the Code of Federal Regulations is amended as follows:

1. §2.106 [amended]

United States		Federal Communications Commission				
Band (MHz)	Allocation	Band (MHz)	Service	Class of Station		
5	6	7	8	9	10	11
**	**	**	**	**		**
220-224	G, NG. US34	220-224	Amateur NG13	Amateur		AMATEUR
224-225	G, NG. (US121)	224-225	Citizens (NG68)	Fixed Land Mobile		
**	**	**	**	**		**

2. NG13 is amended to change the pertinent band limits from 220-225 MHz to 220-224 MHz.

3. A new footnote NF68 is added in appropriate numerical sequence to read as follows:

NG68 In those portions of the States of Texas and New Mexico in the area bounded on the south by parallel 31° 53' N, on the east by longitude 105° 40' W., on the north by parallel 33° 24' N. and on the west by longitude 106° 40' W., the frequency band 224-225 MHz is not available for use by Class E Citizens Radio Service stations between the hours of 0500 and 1800 local time Monday through Friday, inclusive, of each week.

4. US34 is amended to change the pertinent band limits from 220-225 MHz to 220-224 MHz.

5. A new footnote US121 is added in appropriate numerical sequence to read as follows:

US121 The only non-Government service permitted in the band 224-225 MHz is the Class E Citizens Radio Service. The Class E Citizens Radio Service shall not cause harmful interference to the radiolocation service.

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504

March 29, 1972

DIRECTOR

Honorable Dean Burch
Chairman
Federal Communications Commission
Washington, D.C. 20554

Dear Mr. Chairman:

By letter of August 19, 1971, I advised that the band 223-225 MHz could, with certain limitations, be made available on a shared basis for Citizens Band use. By letter of January 12, 1972, your staff requested comments on a draft Notice of Proposed Rule Making on this matter and asked for a review of the necessity for a geographic restriction in the Texas and New Mexico areas. I have attached a statement of the restrictions necessary for military reasons.

In view of the many non-Government interests (citizens band, radio amateurs, and business radio) vying for use of this spectrum resource, we feel that favorable consideration should be given to establishing a new radio service. For example, using the two megahertz of spectrum offered by my letter of August 19, 1971, eighty FM radio channels could be made available for a General Public Radio Service, having as its prime objective the satisfaction of many currently unfulfilled communication needs of a nation on the move--travelers, sportsmen, hobbyists, and quasi-business activities. Propagation characteristics of 225 MHz, coupled with carefully developed FCC rules, could afford a high fidelity, orderly communications service, responsive to the needs and interests of the private citizen. Additionally, estimates of the industrial activity contribution of such a service suggest a market size as large as 300 to 500 million dollars per year.

While the spectrum involved (223-225 MHz) is allocated currently to the Radio Amateur Service, in addition to Government Radiolocation, the three megahertz remaining (220-223) would seem adequate for current and likely future radio amateur operations. Radio amateurs could continue to use the 223-225 MHz band provided they complied with the rules applicable to the new radio service. Although we are greatly reluctant to reduce any frequency allocations now devoted to amateur use, we feel the large public need for this new radio service justifies this action.

In summary, there is a need for a disciplined radio service responsive to the needs of the general public and, properly handled, such a service could be provided responsive to the needs of all potential users.

We look forward to working further with you on this matter.

Sincerely,

Clay T. Whitehead

Enclosure

R4 3/6/72

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

REPLY TO ATTN OF: PRCF

SUBJECT: Citizens Radio Service Operations in the 220-225 MHz Band

TO: Mr. W. Dean, Jr.

1. Several months ago when the military departments reviewed the FCC proposal for allocating a portion of the 220-225 MHz band to CRS operations, comments were based on limited impact information immediately available. Urgency of the FCC requirement was apparent. Assistance to the FCC was necessary to the limit that current military operational needs would permit. Since first consideration of the proposal, additional investigation and study have been accomplished to determine beyond reasonable doubt what impact unrestricted CRS operations would have on military test ranges.

2. Proposed CRS operations represent a significant interference hazard to military test operations in the vicinity of WSMR, NMex and part of the Gulf test range in northwest Florida. It has been determined that unrestricted CRS operations within interference radius of these important test areas will totally impair acquisition of certain vital test data. CRS communications will result in much greater density of spectrum use much closer to instrumented test areas than is normally experienced with amateur activities. Unless protective restrictions are imposed to prohibit CRS operations from these areas, resulting interference is expected to require expensive adjustments in instrumentation.

3. In view of CRS history of undisciplined operations, uncontrolled sharing of the frequency resource under consideration is not feasible. It is imperative that existing caveats applicable to the 220-225 MHz band be retained for CRS operations. In addition, a note similar to NG 13 must be imposed against CRS operations in Gulf and Franklin Counties, Florida and their contiguous water areas extending 30 miles into the Gulf of Mexico. This will provide minimum acceptable protection for active off shore test operations adjacent to these counties. A proposed footnote similar to NG 13 is as follows:

> NG In those portions of the States of Texas and New Mexico in the area bounded on the south by parallel 31° 53' N, on the east by longitude 105° 40' W, on the north by parallel 33° 24' N and on the west by longitude 106° 40' W and in the State of

Florida the counties of Gulf and Franklin and the contiguous water areas of the Gulf of Mexico extending to 30 miles off shore, the frequency band 224-225 MHz is not available for use by class E citizen Radio Service stations between the hours of 0500 and 1800 local time Monday through Friday inclusive, of each week.

William R. Sell

WILLIAM R. SELL, Colonel, USAF
Chairman, J/FP

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504

DEPUTY DIRECTOR

December 27, 1974

Honorable Richard E. Wiley
Chairman
Federal Communications Commission
Washington, D.C. 20554

Dear Dick:

As you know, the proposed reallocation of the band 223-225 MHz for a new Class E Citizens Radio Service has been under reconsideration within the Executive Branch primarily in view of potential interference to established Government radio services in the same and adjacent portions of the radio spectrum.

Based on a recent engineering analysis and a spectrum planning review, we believe that the potential interference problem is manageable and not therefore an obstacle to establishment of the proposed service. We have concluded however that certain conditions should be applied to ensure compatibility between the Citizens Radio Service and Federal Government operations in the vicinity of 225 MHz. (See Enclosure 1).

We also reviewed the rationale in support of this new proposed radio service, and have reaffirmed our earlier view that there is a definite need for a disciplined radio service responsive to the needs and interests of the private citizen which establishment of the Class E service would satisfy. For example, using the two megahertz of spectrum offered, eighty FM radio channels could be made available to meet many of the currently unfilled communications needs of a nation on the move.

Estimates of the industrial activity contribution of such a service suggest a market size approaching half a billion dollars per year ... an additional matter to be considered carefully in light of the current economic situation.

As noted in our March 29, 1972 letter, this office continues to support the mission and objectives of the Amateur Radio Service and we have, therefore once again, carefully considered the Amateurs' objections to Class E. In this particular instance, however, we feel that a larger public need for radio justifies the foregoing reallocation. The fact remains that amateurs could continue to use the band involved, provided they complied with the rules applicable to the new radio service.

In view of the delay already inherent in this proceeding, it is urged that every consideration be given to expeditious action on this matter by the Commission.

Sincerely,

John Eger
Acting Director

Enclosure

Conditions Applicable to Sharing Between the Citizens Radio Service and Government Operations in the Vicinity of 225 MHz

- The allocation for the Citizens Radio Service should be accommodated between 222-224 MHz. ✓
- This service should not be authorized earlier than May 1, 1975.
- The provisions of Footnotes NG68 and US121 as modified, should be enforced strictly.
- The effective radiated power permitted in this service should not exceed 50 watts for mobile stations and 400 watts for base and r peater stations.

Additionally, and pursuant to earlier inputs from the Interdepartment Radio Advisory Committee, it is recommended that;

- Three 25 kHz channels be designated for Government use in the 222-224 MHz band; two for exclusive Government use and one for Government/non-Government intercommunications only;
- The above individual channels be separated 300 to 500 kHz, with no more than 1 MHz between the highest and lowest channel;
- The use of these channels be essentially as now allowed on the 27 MHz Government Short-Distance Low-Powered Channels pursuant to the provisions of Section 4.2.1 of the OTP Manual.

Enclosure 1