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-Technology Analysis
Research Corporation

May 18, 1990

50 -DSS-PLCA-90; S2105
49 -DSS-PLCA-90; S2106

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, N.W., Suite 222
Washington, D.C. 20554

RECEIVED
JUN 5 1990
Domestic Facilities Division
Satellite Radio Branch

ATTN: Ms. Cecily C. Holiday
Chief, Satellite Radio Branch

RE: Satellite Sound Broadcasting Radio Service

Dear Ms. Searcy:

Transmitted herewith, on behalf of Satellite CD Radio, Inc., are an original and four (4) copies of a "Petition for Rulemaking" to establish and allocate frequencies for a new CD-quality radio service, and an original and nine (9) copies of applications to construct, launch, and operate a two-satellite system to provide a satellite CD-quality radio service. Also attached is a check for $39,600.00 to cover the filing fees for these applications.

If additional information is required concerning this matter, please communicate with this office.

Very truly yours,

SATELLITE CD RADIO, INC.

Peter Dolan
President

Enclosures

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BEFORE THE

Federal Communications Commission

WASHINGTON, D.C. 20554

In the Matter of the Petition of	)	
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For Amendment Of Section 2.106 And Part 25 Of The Commission's Rules To Establish A Satellite And Terrestrial CD Quality Broadcasting Service	)	

PETITION FOR RULEMAKING

Peter Dolan
President

SATELLITE CD RADIO, INC.
Techworld Plaza, Suite 750
Washington, D.C. 20001-8000
(202) 408-0080

May 18, 1990

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PETITION FOR RULEMAKING

Pursuant to Section 1.401 of the Commission's Rules,1/ Satellite CD Radio, Inc., a Delaware corporation (hereafter "CD Radio, Inc."), hereby petitions the Commission to establish a new digital, CD-quality radio service in the bands from 1460-1530 MHz which would be provided in part by satellites (complemented by terrestrial repeaters) and in part by a new terrestrial radio service whose licensees would be current AM and FM broadcasters.

Under CD Radio Inc.'s proposal, nearly every broadcast licensee will be able to operate in a local, 34-channel-capacity, CD-quality aural broadcast service. At the same time, a new 66 channel CD-quality satellite radio service will be made possible as well, resulting in the provision of 100 new, broadcast channels. The proposed "CD Radio Service", as well as CD

1/ 47 C.F.R. §1.401 (1987).

Radio, Inc.'s technical and operational proposals, are explained in detail below and in CD Radio Inc.'s Satellite System Proposal and Applications, which are being filed simultaneously herewith.

For the reasons expressed in this Petition, CD Radio, Inc. requests the Federal Communications Commission ("FCC" or "Commission") to amend its table of allocations and adopt the policies and procedures described herein in order to initiate the rapid development of a state-of-the-art and needed new communications service for the American public.

I. OVERVIEW AND EXECUTIVE SUMMARY OF THE PROPOSED SERVICE

CD Radio, Inc. proposes that the Commission allocate frequencies for a new, digital, "CD quality" broadcast radio service. As envisioned, the service would have both a national/regional component and a local service component.

National/regional programming would be delivered via satellite transmissions, with terrestrial repeaters being used in metropolitan areas on an as-needed basis to compensate for the effects of shadowing.2/ It is envisioned that the programm-

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2/ CD Radio, Inc. is simultaneously applying for authority to construct, launch, and operate a two-satellite system to provide this service. Since there is not enough capacity for more than one such satellite radio system, CD Radio, Inc. is proposing that a consortium be formed of eligible

ing delivered over the satellite facilities will be supplied by existing broadcast stations that choose to operate as radio "superstations" analogous to the existing television superstations now delivered to cable television systems.

Local entertainment and information programming would be delivered through terrestrial transmission facilities licensed to existing radio broadcasters. Under the allocation proposed below, a digital broadcast channel assignment could be made to most existing radio broadcast licensees. This approach would provide local terrestrial broadcasters with an effective transition to high quality, 21st century digital technology, and furthers the Commission's statutory goals of localism and encouraging new technologies.

The encoding and transmission technology proposed for both the satellite and terrestrial facilities has been developed by Dolby Laboratories, Inc., a highly regarded, U.S. based, audio technology firm. The system employs a frequency division access transmission scheme that fits well with both the satellite and terrestrial components of the proposal. The encoding system is a highly innovative scheme by which 720 kB/s of CD quality stereo audio is compressed into 128 kB/s.

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applicants to construct, launch and operate the system.

A 70 MHz allocation in the 1460-1530 MHz band is proposed for this new service. This band is currently allocated for aeronautical telemetry and is used primarily for flight test operations. As discussed below, the proposed allocation would still leave flight test operations a total of 70 MHz in most relevant areas. Moreover, this service has recently received a new allocation of 80 MHz. Therefore, the allocation proposed below should produce only minimal dislocative effects for existing users.

II. NEED FOR THE SERVICE

A. An Allocation Of Spectrum For A CD Radio System, Including Terrestrial Repeaters, Is In The Public Interest And Is Within The FCC's Mandate To Encourage Larger, More Effective, and Efficient Use Of The Spectrum

An allocation of spectrum for the proposed CD radio system would promote several important public interest objectives. First, it would establish the next technological progression for aural broadcast services. The proposed digital broadcast radio service promises far greater quality and a much larger portfolio of services than that attainable from today's analog-based transmission system. Moreover, the proposal would produce these

benefits while preserving the fabric of local broadcasting which is at the cornerstone of broadcast regulation. The proposal would also provide radio broadcasts that are national or regional in nature, thereby filling a requirement in a highly mobile society for a high-quality, broadcast radio service.

Second, because it represents the vanguard of similar services anticipated throughout the world, the proposal offers a real chance to contribute positively to America's trade imbalance. The technology proposed below has been developed by Dolby Laboratories, Inc., a highly respected, U.S. based, technology firm. Prompt action by the Commission on this proposal could result in this technology establishing a standard for other systems throughout the world.

Finally, the proposal below includes a dedicated emergency channel which could be used as a high technology Emergency Broadcast System. With a dedicated channel, the listening public would always be available to state and federal officials in time of emergency.

B. A CD Radio System Is A Highly Efficient Means Of Providing Universal Access to Compact Disk Quality Radio Programming

As demonstrated in Appendix 1 hereto, compact-disk quality audio is here to stay. CD sales now far outpace sales of long play (LP) records, and are quickly closing in on sales of audio cassette tapes. CD radio is being delivered via cable-TV to select homes. A large nationwide roll-out of compact-disk radio, via cable TV, is expected by the summer of 1990. CD radio quality is the best that the human ear can detect. Eventually, non-CD quality radio will appear as primitive as Edison's wax cylinder recordings.

One of the areas in which the most dramatic improvements in sound quality reception is possible is in automobiles. The United States has become an increasingly mobile society. As urban areas expand, more and more individuals cannot listen to the same radio station as they commute across larger areas as a part of their daily activities. Furthermore, the amount of time people spend in their cars is expected to continue to increase. Radio signals are subject to fade-ins and fade-outs within a defined coverage area. Coupled with the congestion and interference problems continually experienced with AM/FM bands, mobile radio reception clearly has vast room for improvement.

The proposed CD radio system will provide mobile audiences with the clearest and most consistent signal ever heard. Moreover, since CD Radio, Inc.'s proposed system is national in extent, no disruption of program reception will be experienced as the mobile audience commutes between distant points.

CD quality radio can be made available on a spectrum-efficient basis to everyone, whether or not they are part of a cable-TV neighborhood. The technology proposed by CD Radio, Inc. herein would require the sharing of only 60 MHz of bandwidth. Remarkably, it squeezes the 1.4 Mb/s data rate of conventional CD sound into about one-sixth the normal bandwidth. This is among the most spectrum-efficient modulation methods for compact-disk quality radio that have been developed.

The CD Radio, Inc. system could serve as an alternative to AM clear channel stations. Both CD Radio, Inc. and clear channel stations will provide a regional service. As the Commission has recognized through institution of rulemaking proceedings, however, the AM service has suffered a large decline in its audience due, at least in part, to technical deficiencies. See First Report and Order, in MM Docket No. 88-376, 4 FCC Rcd 3835 (1989); Notice of Inquiry in MM Docket No. 87-267, 2 FCC Rcd 5014 (1987). CD Radio, Inc.'s proposed system would provide a high-quality, regional-service alternative for

AM clear channel stations. Further, CD Radio, Inc.'s service would not be subject to the decrease in service area that AM clear channel stations suffer during the day. Finally, CD Radio, Inc.'s system would provide to the AM broadcaster a much-needed additional opportunity to provide a high quality signal. Consequently, the AM broadcaster could develop an additional revenue stream which would allow his AM broadcast station to remain viable. Thus, adoption of CD Radio, Inc.'s proposal would both promote diversity and further the Commission's initiatives to aid the AM broadcast service.

1. CD Radio, Inc.'s System Architecture. CD Radio, Inc.'s proposed satellite system architecture consists of:

- Two 6000-watt geostationary satellites for U.S. coverage which are expected to be built by Ford, General Electric, or Hughes and which will be launched by a launch vehicle construction company such as General Dynamics, Martin Marietta, or McDonnell Douglas;
- A large number of urban-area terrestrial repeaters;
- An earth station for feeder links and for telemetry, telecommand and control;
- High-quality terrestrial and satellite links (ISDN/optic fiber) for delivery of CD radio programming from various studios to the feeder link earth station;
- Millions of low-cost satellite CD radio receivers in homes, commercial establishments and vehicles.

This system is in addition to the new, stand-alone terrestrial broadcast system which is also being proposed herein.

2. Operation of CD Radio, Inc.'s System. The information flow for the satellite CD radio system is schematically described in Figure 1. Most existing terrestrial broadcasters will be able to transmit a CD quality signal over their own facilities. On a national or regional basis, scores of radio stations would also be able to act as "superstations." These stations would send their CD quality radio programming via high-quality links into CD Radio, Inc.'s feeder link station. At this station, front-end multiplexing equipment will route each incoming signal to a pre-designated satellite uplink channel. For example, a top radio station in Denver may serve Denver with a local CD radio facility and also operate on CD Radio, Inc.'s Channel 20. In this case, that radio station's programming would immediately be uplinked into Channel 20 upon its receipt at CD Radio, Inc.'s feeder link station.

There will be two satellites in CD Radio, Inc's system. Each satellite will be linked with an operating feeder link transmitting chain (transmiter, antenna, etc.), and will share a back-up chain. Standby phone lines will also connect the feeder link station to the radio stations' studios. The satellites will receive the channels of CD-quality radio programming at 30

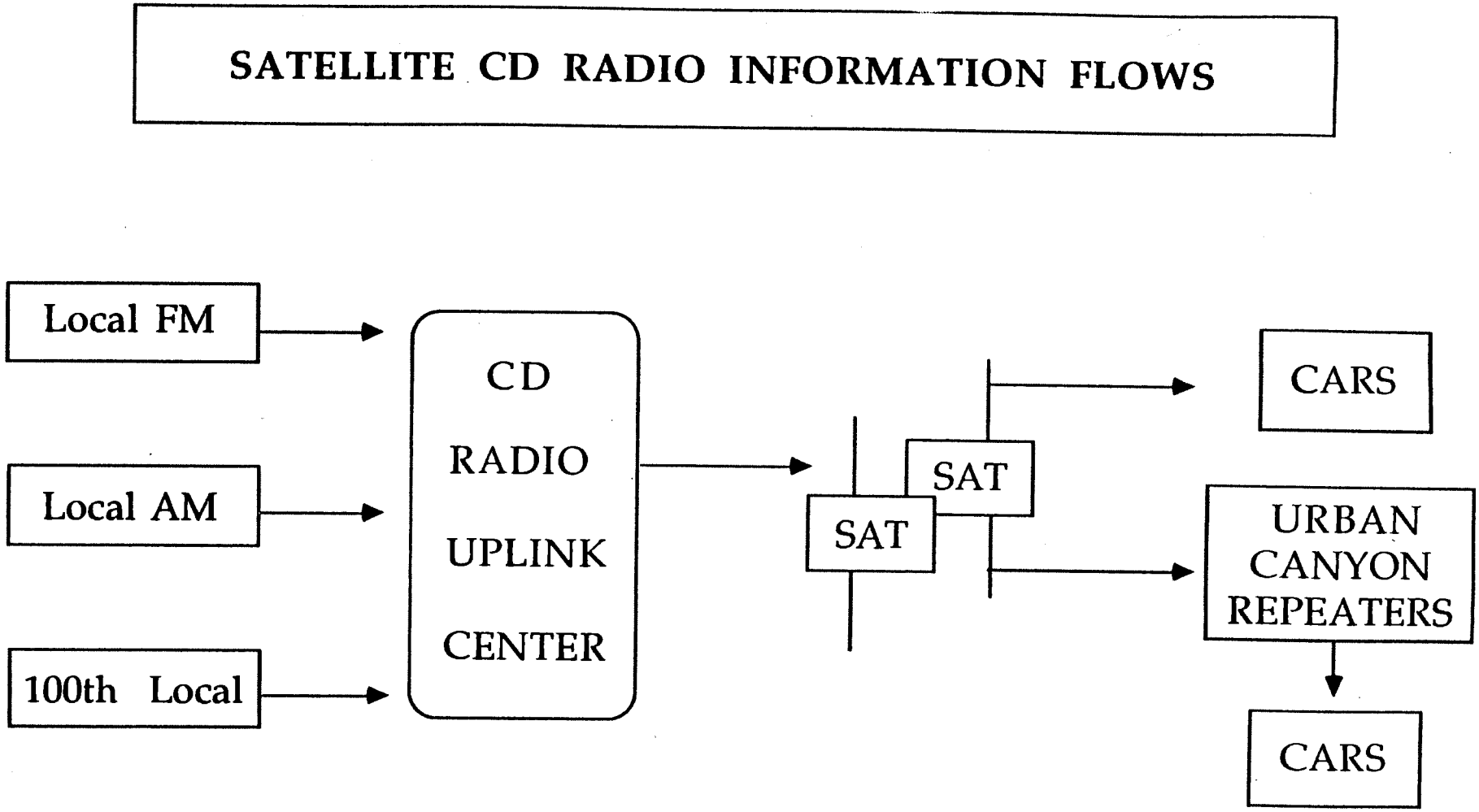

Figure 1. Satellite
CD Radio Information
Flows

GHz (Ka band), amplify the signals, and then beam the channels to earth in the 1470-1530 MHz band.

A network of ground repeaters in urban areas will also receive the channels broadcast via satellite. These terrestrial repeaters will simulcast the satellite signal, i.e., transmit the same channels of CD quality programming as does the satellite using the same unique audio processing, thus compensating as needed for any shadowing in "urban canyons." (See Appendix 2.) User radios will automatically select the stronger of the satellite signal and the terrestrial signal carrying the same program. For simplicity, Channel "20" on all three satellite beams of the satellite will also be Channel "20" on the terrestrial repeater, even though the actual frequencies for those transmissions will be different.

Characteristics of user radios are discussed in CCIR Report 995-1(F), attached as Appendix 3 hereto. Receiver characteristics should be freely published allowing any manufacturer to supply user equipment. However, the Commission should require that any unit manufactured also contain additional capability to receive AM and FM signals. This concept of CD Radio receivers being built to an "all-channel" standard is schematically shown in Figure 2.

ALL-CHANNEL CD RADIO RECEIVER

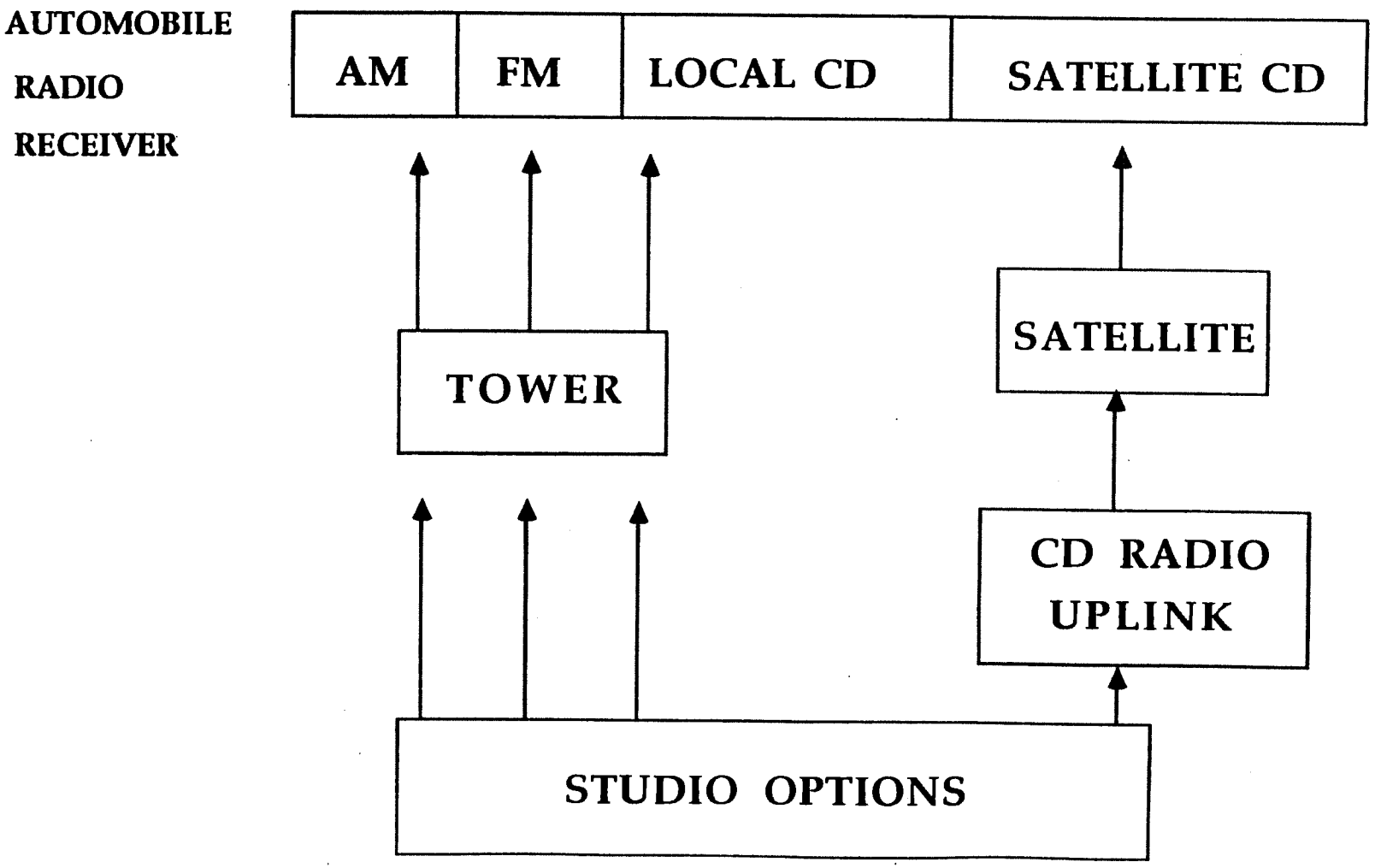

Figure 2. All-Channel CD
Radio Receiver

3. Flexibility and Spectrum Efficiency of CD Radio, Inc.'s System. CD Radio, Inc.'s proposed system will be extraordinarily flexible in its ability to transmit an array of CD-quality programming. It will also be especially spectrum efficient in enabling both satellite and terrestrial "repeater" transmitters to share the same frequency band without mutual interference.

With respect to flexibility, programming can be heard via CD Radio, Inc.'s system throughout the United States. Local stations, regional or national stations, and new special interest stations, can all be flexibly accommodated in CD Radio, Inc.'s concept. With respect to spectrum efficiency, as explained below, under CD Radio, Inc.'s proposal, no existing users need to wholly vacate their frequency bands. CD Radio, Inc.'s concept efficiently shares its frequency band for both satellite and terrestrial transmissions with existing aeronautical telemetry links in the 1460-1530 MHz band.

4. Commercial Aspects of the CD Radio, Inc. System. CD Radio, Inc.'s system will be an exemplary case of successful space commercialization. The United States has invested many billions of dollars in the development of a space technology infrastructure, but the payoffs have been few and far between. CD Radio, Inc.'s commercial focus augurs well for it

to join the ranks of successful commercial space programs such as those of Orbital Sciences and Geostar Corporation.

Further, the introduction of CD Radio, Inc.'s proposed system would help to improve the United States' balance of trade. United States companies will lead in the area of satellite sound broadcasting, leapfrogging the European Broadcasting Union. Thus, it may be expected that CD Radio, Inc. would be successful in exporting its new technology and, thus, in contributing to a favorable balance of trade, in much the same way that Geostar Corporation has succeeded in exporting its technology.

C. All Communication Functions Performed by CD Radio, Inc.'s System Have Been Deemed to be in the Public Interest, Convenience and Necessity.

Since each of the individual services provided by CD Radio, Inc.'s system are in the public interest, convenience and necessity, the allocation of frequencies to the system is well justified.

1. CD Quality Radio Transmissions. The FCC has a long history of working to improve the quality of America's broadcast transmission networks. FM Radio, TV Stereo, NTSC-II, and HDTV (in process) are among the quality-improvement actions adopted

by the FCC in furtherance the public interest, convenience and necessity. The creation of the world's first CD-quality radio broadcasting system is wholly consistent with the Commission's many previous actions aimed at qualitative improvements in telecommunications.

2. Emergency Access Channel. CD Radio, Inc. will set aside one channel for use as an emergency access chanel. This channel could become a part of the Emergency Broadcast System, and be used for local, regional, or national emergencies. CD Radio, Inc. receivers will have the ability to tune in the emergency access channel upon receipt of a coded digital signal.

The Emergency Access Channel may be invaluable in many cases of distress. The Commission has long held that emergency channels directly implement the Communication Act's mandate that the frequency spectrum be used first and foremost to promote public safety.

3. Spectrum for Existing Terrestrial Broadcasters to Transition to the Digital Age. The CD Radio, Inc. system is designed to complement, not displace, existing terrestrial broadcasters. For years, radio broadcasters have been looking toward advances in digital technology as offering a technological leap forward in aural quality. The CD Radio proposal will

provide this opportunity. The spectrum plan includes channels for local terrestrial station operators to permit transmissions in a digital mode. As increasing number of consumer CD Radios are available, more and more broadcasters will be interested in digital feeds. CD Radio thus offers today a transition into the technology of the next century.

At the same time, the instant proposal is fully consistent with the doctrine of localism.3/ In addition to the nationwide channels (which are also available to existing broadcasters), the system includes local stations: 10.2 MHz in urban areas and 4.2 MHz outside major cities. CD Radio's plan thus will continue to ensure that American communities receive the quality of radio services upon which they have come to rely.

III. THE PUBLIC INTEREST REQUIRES THAT THE FREQUENCY BAND 1470-1530 MHz BE ALLOCATED FOR THE CD RADIO, INC. DOWNLINKS

In this section of the Petition, the particular public interest benefits of using the 1470-1530 MHz band for satellite sound broadcasting are described.

3/ See 47 U.S.C. §307(b) (1988).

A. Particular Public Interest Benefits of 1470-1530 MHz As A Primary Allocation To Digital Satellite Broadcasting.

CCIR studies have indicated that frequencies in the range 500 to 2000 MHz would be preferable for the implementation of the Broadcasting-Satellite Service (Sound). The forthcoming 1992 ITU World Administrative Radio Conference (WARC-92) has been requested to seek an allocation in the range 500 to 3000 MHz for this service.

After a careful search, CD Radio, Inc. has identified the band 1459.8-1530 MHz as one which is in the narrower range considered preferable by the CCIR which could be allocated to the Satellite Broadcasting Service (Sound) and to the terrestrial Broadcasting Service without seriously affecting existing radiocommunication services in the band.

The band proposed by CD Radio, Inc. for these new services is within the 95 MHz wide band 1435-1530 MHz now allocated domestically to Mobile (Aeronautical telemetering) for government and non-government use.

Most aeronautical telemetry operations occur at the test ranges of the military services (e.g. Patuxent Naval Air Station, Eglund AFB, Wright-Patterson, Hanscom Field, and

Edwards AFB, etc.). Most of these facilities are in remote, sparsely settled parts of the country. Telemetry systems are also used at the factories of aircraft manufacturers (e.g. Boeing, Lear Jet, Cessna, etc.) and by other contractors to the military services. In total, there may be a thousand users in the United States, only a fraction of whom have need of the band at any time. Older equipment uses crystals for frequency control and selection within the band, which limits its flexibility. However, the use of frequency synthesizers is becoming widespread. The band is channelized into one Megahertz assignments, but bandwidths of 1, 3 and even 5 MHz are used for specific telemetry links. Typically, use of a particular frequency at a particular location is now scheduled well in advance to prevent interference with other users.

Several factors lead to the conclusion that a portion of this band could be used for additional services without serious adverse impact:

Another band, 2310 - 2390 MHz (80 MHz wide), was allocated internationally (RR 751) and domestically (US 276) in 1979 for this same purpose, but there are no operational systems in the band, and, to our knowledge, none are planned;

No error correction techniques are used on the typical telemetering systems operating in this band. The use of such techniques, common in the systems of many other services, and even required because of crowding in other parts of the band and in the allocations of other services, would permit re-use of the same

frequencies at much closer distances. Aeronautical telemetering systems are now protected on an exclusive, co-channel basis to a radius of 600 miles. This represents a profligate use of spectrum not countenanced elsewhere in today's interference-limited environment. Use of more modern telecommunications techniques would enable aeronautical telemetering systems to reduce their spectrum requirements.

The recently announced decrease in military spending will undoubtedly decrease the need for aeronautical telemetering in future years.

The spectrum reallocation proposals of CD Radio, Inc. are predicated on the continued exclusive use of the 24.8 MHz wide band 1435-1459 MHz by Mobile (Aeronautical telemetering), and the shared use of most of the rest of the remaining 70 MHz by aeronautical telemetry and satellite and terrestrial broadcasting.

B. Public Interest Basis for Authorization of Shared Use of the Ka-band for Uplinks to the Satellite, Fully Within the Existing Fixed Satellite Service Allocation at Ka Band.

CD Radio, Inc.'s planned Ka-band was selected for CD Radio, Inc.'s uplink because it is technically suitable, conforms with the ITU Table of Allocations, and completely unused, except for the upcoming Advanced Communications Technology Satellite (ACTS). No interference whatsoever will occur to ACTS, nor to any other Ka-band satellite likely to be launched.

CD Radio, Inc.'s planned Ka-band feeder link site in Montrose, Colorado, has an extremely dry climate. Adequate power is available since Montrose is an aggregator of power for

a large multi-state region. Back-up facilities will also be provided.

IV. REGULATORY CLASSIFICATION

For the reasons set forth below, CD Radio, Inc. proposes that the CD radio satellite system operator/licensee be regulated on a private carrier basis and that the purchasers of CD radio channels be subject to Title III regulation. In addition, terrestrial broadcasters licensed to operate separate systems in the band should be subject to minimal licensing and regulatory requirements.

A. The CD Radio Satellite System Operator/ Licensee Should Be Regulated On A Private Carrier Basis.

1. The CD Radio Satellite System Operator/Licensee Would Be A Private Carrier From A Legal Standpoint. Operation of the CD radio satellite system on a private carrier basis would be fully consistent with the two-part test established in NARUC I 4/ for determining whether a service may be provided on a private carrier basis:

4/ National Ass'n of Reg. Util. Com'rs v. FCC, 525 F.2d 630 (D.C. Cir.), cert denied, 425 U.S. 992 (1976).

> The key factor is that the operator offer indiscriminate service to whatever public its service may legally and practically be of use. In making this determination, we must inquire, first, whether, there will be any legal compulsion thus to serve indifferently, and if not, second, whether there are reasons implicit in the nature of . . . operations to expect an indifferent holding out to the eligible user public.5/

Among the factors that the court cited as being indicative of whether an entity is holding itself out to serve the public indiscriminately are whether "its practice is to make individualized decisions, in particular cases, whether and on what terms to deal,"6/ whether it enters into medium-to-long term contractual relationships, whether it has a relatively stable clientele, and whether it is concerned about operational compatibility among customers.7/

With respect to the first part of the test, the CD radio satellite system operator should be under no "legal compulsion" to serve the public indiscriminately because competitive services are available.8/ These competitive services include CD

5/ Id. at 642.

6/ Id. at 641.

7/ Id. at 643.

8/ See Notice of Proposed Rule Making, Gen. Dkt. Nos. 84-689 and 84-690, 49 Fed. Reg. 36512, 36518 (Sept. 18, 1984)(the Commission noted that the ancillary messaging feature of radiodetermination satellite service does not give rise to a legal compulsion to serve the public indiscriminately because competitive message services exist.)

radio systems licensed to terrestrial broadcasters, terrestrial radio stations, cable digital radio systems, and non-radio media (e.g., CD players). Moreover, the fact that CD Radio, Inc. intends to sell all of its channels to different programmers will insure a diversity of CD radio program offerings.

The Commission has previously imposed common carrier obligations on satellite systems only where all available spectrum has been assigned to a single licensee.9/ This would not be the case here because, as explained above, CD Radio, Inc. proposes to divide the 1460-1530 MHz band in a manner that would set aside spectrum solely for terrestrial broadcasters who wish to operate their own CD radio system. Thus, thus the CD radio satellite system operator will face both intra-modal and inter-modal competition.

As to the second part of the test, there is no reason to expect the operator/licensee to hold itself out as providing service indiscriminately because the nature of CD radio satellite service is such that the operator will be virtually constrained to provide the service on a private carrier basis. In order to make the service successful, the operator will have

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9/ See, e.g., Second Report and Order, Gen. Dkt. No. 84-1234, 2 FCC Rcd 485, 490 (1987)(imposing non-dominant common carrier regulation in the mobile satellite service because only one license was to be granted).

to rely on market judgment in selecting the mix of CD radio channel operators. Thus, the CD radio satellite operator will not offer service on an indiscriminate basis. It will make individualized decisions whether to deal with each potential customer and it can be expected to vary the contractual arrangements from one customer to another. Indeed, it is not inconceivable that the operator would enter into 100 unique arrangements in this regard.

The fact that channels would be sold is also indicative of private carriage because it will result in a stable client base with long term contractual relationships. Finally, because the system operator will want to ensure the right mix of channel operators, customer compatibility will be a concern which, as noted above, is another indicator of private carriage.

2. The CD Radio Satellite System Operator/Licensee Would Not Be Engaged in Broadcasting. Under the operational scenario proposed by CD Radio, Inc., the system operator/licensee would merely act to provide an "antenna farm in the sky" for use by broadcasters. It would sell channels to third parties and, therefore, it would exercise no control over the content of the CD radio satellite transmissions. As such, the system operator/licensee would not itself be engaged in the "dissemination of radio communications intended to be received by the

public, directly or by the intermediary of relay stations"10/ and, thus, could not itself be considered a "broadcaster."

Rather, the system operator would be acting as a passive conduit for the transmission of programming material by others. At the same time, however, the system operator would be exercising business judgment in terms of deciding which program providers should be given access to its channels. Private carriage would be the regulatory mode most consistent with this type of operation.

3. Private Carrier Regulation Would Best Serve The Public Interest From A Policy Standpoint. Since regulation is merely a substitute for competition, it follows that there is no need for burdensome regulation in a competitive market. Indeed, as competition has taken hold in many of the segments of the telecommunications industry in this country, it has become Commission policy to rely on marketplace forces instead of regulation whenever possible.

To some extent, the Commission can rely on marketplace forces to "regulate" the type of satellite sound broadcasting service proposed herein. As noted above, the CD radio satellite system operator/licensee will face competition both from

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10/ 47 U.S.C. § 153(o)(1982).

competing systems licensed to terrestrial broadcasters in the 1460-1530 MHz band and from substitute services such as terrestrial radio stations, cable digital radio systems, and non-radio media (e.g., CD players). In view of such competition, not only is there no reason to impose common carrier obligations on the system operator, there is little or no need for economic regulation of any sort.

Indeed, given these marketplace alternatives, the CD radio satellite system operator/licensee will need maximum regulatory flexibility in order to provide a viable competitive service. The CD radio satellite system operator would be at a significant competitive disadvantage vis-a-vis its competitors if it were subject to common carrier regulation because, unlike its competitors who would not be subject to such regulation, it would have no control over the mix of programming provided over its system, it could be forced to disclose potentially sensitive information about its operations without having access to similar information about its competitors, and it could be forced to comply with potentially burdensome regulations. Obviously, the public is not well served when regulation interferes with the development of a fully competitive market.

Finally, private carrier regulation would be consistent with Commission policy allowing the sale of transponders on a non-

common carrier basis.11/ Indeed, the satellite industry has flourished as a result of this policy. It is particularly important to allow private transponder sales while the satellite sound broadcasting industry is in its nascent stages because its growth will be retarded if businessmen are not given the maximum degree of flexibility in structuring their deals.

B. The Purchasers of CD Radio Satellite Channels Will Be Subject To Title III Regulation.

1. No Additional Broadcasting Regulation Is Necessary For Purchasers of CD Radio Satellite Channels. CD Radio, Inc. believes that additional Title III regulation will not be needed for purchasers of CD satellite radio channels, except for local terrestrial radio broadcast transmitters and licenses for any radio facilities used in transmitting programming to the earth station. CD Radio, Inc. expects that the vast majority of CD radio satellite channel purchasers will be existing AM and FM terrestrial broadcasters seeking superstation status. Since this class of customers will already be subject to the full panoply of broadcast regulation, there is no reason to re-regulate them as superstations. In fact, to re-regulate them

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11/ Domestic Fixed-Satellite Transponder Sales, Memorandum Opinion, Order and Authorization, CC Dkt. No. 82-45, 90 F.C.C.2d 1238 (1982), aff'd Wold Communications, Inc. v. FCC, 735 F.2d 1465 (D.C.Cir. 1984).

would be inconsistent with the Commission's regulatory treatment of television superstations.

CD Radio, Inc. also anticipates that a number of CD radio satellite channel purchasers will be non-broadcasters providing subscription or pay-per-listen, services. Subscription service users could, for example, insert "smart cards" into their radio receivers in order to decode the CD radio signal. In National Ass'n for Better Broadcasting v. F.C.C., 849 F.2d 665 (D.C.Cir. 1988), the court upheld the Commission's determination that subscription television and direct broadcast satellite services were not "broadcasting services" subject to the Communications Act. In light of this decision, it is questionable whether any degree of broadcast-type regulation is appropriate for CD radio satellite channel owners providing service on a subscription basis.

C. Terrestrial Broadcasters Licensed In Band 1459.8-1470.0 MHz Should Be Subject To Minimal Licensing and Regulatory Requirements.

As explained elsewhere herein, CD Radio, Inc. proposes that the 10.2 MHz of spectrum from 1459.8 MHz to 1470.0 MHz be allocated for competing terrestrial CD radio satellite systems that would be licensed to terrestrial radio broadcasters. CD Radio, Inc. proposes that only existing broadcasters should be

eligible for licensing in this portion of the band and that, assuming spectrum is available, AM and FM terrestrial broadcasters should be eligible for automatic assignment if certain minimum technical requirements are met (e.g., requirements relating to power, antenna height and directionality).

In terms of regulatory requirements, CD Radio, Inc. proposes that terrestrial broadcasters licensed to operate in this band should not be subject to more than minimal additional regulations since they are already subject to broadcast regulation.

V. SPECTRUM ALLOCATIONS

The domestic Table of Allocations, contained in Section 2.106 of the Commission's Rules, allocates the band 1435-1530 MHz for Mobile (aeronautical telemetering) services on a primary basis. The public interest would be served by modifying the aeronautical telemetry in a portion of that band from 1459.8-1530 MHz, in a way that will permit a new terrestrial broadcast service, to operate in that band, as well as a new broadcasting-satellite (sound) service, while preserving aeronautical telemetry use within the band.

Under CD Radio, Inc.'s proposal, 60 MHz of this band, from 1470-1530 MHz, would be allocated on a primary basis to the Broadcasting-Satellite (Sound) Service (BSS-Sound). The same 60 MHz band would also be allocated on a secondary basis the Broadcasting Service (BS) for the terrestrial repeaters where line-of-sight service from the satellite is blocked (i.e., in urban canyons). Moreover, the same 60 MHz band would also be allocated on a secondary basis to Mobile (aeronautical telemetry). Footnotes would limit Mobile use in this band to areas outside major metropolitan areas.

Sharing in this band between aeronautical telemetry and BSS-Sound would be achieved as follows. The 60 MHZ of spectrum will be subdivided into three sub-bands, 19.8 MHz wide. Each BSS-Sound satellite will have three beams, each covering one-third of the country,12/ using one of the three 19.8 MHz sub-bands.

In this 60 MHz band, terrestrial repeaters would only operate in urban areas, simulcasting the satellite radio channels to provide service in "urban canyons." They will operate using a second of the three sub-bands different from the sub-band in which the satellite operates. Receivers will

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12/ Thus, there will be an Eastern regional, Central regional, and Western regional beam.

continuously compare the signal strength of the satellite signal with that of the associated terrestrial channel carrying the same program, and will automatically select the stronger of the two in much the same way as receivers in mobile cellular systems now select the strongest of the base stations reaching it.

Outside the urban areas, the two 19.8 MHz sub-bands not being used by the satellite beam would be available for aeronautical telemetry service. This dovetails with existing telemetry uses as flight testing rarely takes place in major urban areas. Accordingly, the new CD radio service represents a "good fit" between broadcasters and aerospace companies.

The band 1459.8-1470.0 MHz - CD Radio, Inc. further proposes that a 10.2 MHz segment of that band, from 1459.8 to 1470.0 MHz, be allocated for a new local terrestrial radio broadcast service providing a CD-quality digital radio service which would be competitive with, and independent of, the satellite radio service that CD Radio, Inc. proposes to offer.

CD Radio, Inc. proposes that, in the 6 MHz band segment between 1459.8 and 1465.8 MHz, this terrestrial radio service be permitted only within urban areas, and that outside urban areas it continue to be used, as before, by aeronautical telemetry.

CD Radio, Inc. proposes that the 4.2 MHz from 1465.8 to 1470 MHz be allocated both in urban and rural areas for a new terrestrial digital CD-quality radio service, and that the aeronautical telemetry service allocation be deleted from this

VI. THE PUBLIC INTEREST REQUIRES EXPEDITED PROCESSING

Any delay beyond one year in final approval of CD Radio, Inc.'s application will impede the initiation of a new service which will develop the commercial potential of space. Obviously, expedited processing would bring a new service to the public as quickly as possible, thus creating a public benefit.13/ Furthermore, delay could endanger the realization of the benefit, as it would impede CD Radio, Inc.'s ability to finance the proposed construction. The introduction of any new technology carries with it a certain amount of risk which increases an innovator's difficulty in finding financing. Any considerable processing delay adds additional uncertainties and risks which may cause the financial community to take a negative view of the project. The potential for conditions to change in the interim between the filing of an application and final grant increases as the delay increases, and thus any commitment to finance a project becomes more speculative. Therefore, in order to ensure that construction of CD Radio, Inc.'s proposed system will be

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13/ See 47 U.S.C. §157 (1988).

feasible at the time that the Commission grants authority to construct, it is important that the Commission act as quickly as possible.

Additionally, any delay beyond one year in granting approval of CD Radio, Inc.'s proposal will impair the chances that this proposed spectrum usage will be adopted by the 1992 WARC. The United States is now formulating its position for the 1992 WARC. In order to be successful in having its views adopted at the WARC, it will be necessary for the United States to brief other nations' delegations prior to the beginning of the conference. The time available for such efforts between now and 1992 is limited. Therefore, the frequency requirements for the United States must be set as soon as possible. Accordingly, it also is essential that the Commission act promptly to allocate the requested frequency so that CD Radio, Inc. satellite audio broadcasting system can be under construction by the time of the WARC. Taking action on CD Radio, Inc.'s proposal will allow the United States to determine the extent of its spectrum requirements more confidently and to approach the conference with a firm position.

A. Parallel Processing Of The Petition For Rulemaking To Allot Frequencies And The Application To Construct The System Will Best Serve The Public Interest

As noted above, speed in implementing CD Radio, Inc.'s proposed system is crucial. Processing CD Radio Inc.'s petition for rulemaking and its application in parallel, that is, by accepting CD Radio, Inc.'s application and placing it on public notice at the same time, will enable CD Radio, Inc.'s system to begin construction at the earliest possible date. Consequently, the public would receive a new service more quickly. Additionally, CD Radio, Inc. would face a more certain financial climate which would help to ensure that its proposal could actually be implemented.

Furthermore, the requested allocation decision is interdependent with the radio license application. In order to understand the concepts set forth in the petition for rulemaking, it is necessary to refer to the description of their practical implementation, as set forth in the license application. In order to evaluate the wisdom of allocating spectrum as requested, the Commission must examine precisely how that spectrum will be used. Additionally, sequential processing would be wasteful of the Commission's valuable time and scarce resources. It would be administratively inefficient to examine CD Radio, Inc.'s proposal twice, as sequential processing would require.

Moreover, the Commission has previously recognized the benefits of conducting rulemaking proceedings in parallel with the acceptance and processing of satellite system applications and has traditionally adopted this approach with such applications. For example, in its Notice of Proposed Rule Making in General Docket No. 84-1234, 50 Fed. Reg. 8149 (February 28, 1985), the Commission not only proposed to allocate spectrum for MSS and to establish licensing procedures and regulatory and technical policies for MSS but also decided to accept and process applications for an MSS system. The Commission reasoned that the rulemaking proceeding and the applications, considered together, would enable it "to determine the extent of any necessary regulation of this service." Id. at 5160.

Similarly, the Commission's Notice of Proposed Rule Making (49 Fed. Reg. 36512 (September 18, 1984)) proposing to allocate frequencies for a radiodetermination satellite service (RDSS) and to establish associated licensing policies and procedures was accompanied by a public notice accepting Geostar Corporation's application for filing and inviting the submission of other applications. FCC 84-320, Report No. DS-305. In its Second Report and Order in this proceeding, the Commission explained that it had "crafted parallel rulemaking and licensing proceedings in an effort to expedite the introduction of this new technology and service to the public and to ensure that any

rules and policies adopted would reflect concrete proposals for these innovative systems." Satellite Communications, 104 F.C.C.2d 650, 652 (1986).

Similar benefits would be realized through parallel rulemaking and licensing proceedings in the instant case. As with MSS, an understanding of CD Radio's precise proposal, as expressed in its application, is crucial to an understanding of what types of regulation of its proposed system would be required. Further, as in Satellite Communications, it is important to the development of appropriate rules and policies for the new service proposed by CD Radio that the Commission have an understanding of the concrete implementation of this innovative system.

Other examples of situations in which the Commission has followed a parallel licensing and rulemaking include the Commission's acceptance for filing and processing of applications for authority to establish international satellite systems separate from Inmarsat prior to completion of the rulemaking proceeding establishing that such a service would be permitted. International Communications, 101 F.C.C.2d 1046, 1163 (1985). On the same day that it adopted an order in the rulemaking proceeding, the Commission also granted three applications and deferred action on three others. Id.; International Satellite,

Inc., 101 F.C.C.2d 1201 (1985); Orion Satellite Corp., 101 F.C.C.2d 1302 (1985); Pan American Satellite Corp., 101 F.C.C.2d 1318 (1985); RCA American Communications, Inc., 101 F.C.C.2d 1342 (1985); Cygnus Satellite Corp., 101 F.C.C.2d 989 (1985).

Likewise, during the pendency of its rulemaking to permit international aeronautical mobile satellite services via INMARSAT, the Commission accepted applications for filing. Communications Satellite Corporation, 4 FCC Rcd 2488 (1989). Similarly, in the domestic fixed satellite service, the Commission concluded a rulemaking proceeding which reduced orbital spacings to 2° and simultaneously granted a new group of satellite authorizations. Domestic Fixed Satellite Service, 93 F.C.C.2d 1260 (1983). After establishing the subsequent processing group of applicants and completing a detailed review of these pending applications, the Commission concluded that a rulemaking was necessary to clarify its financial qualification and satellite utilization requirements. Licensing of Space Stations in the Domestic Fixed Satellite Service, FCC 85-238 (released May 7, 1985). At the same time, applicants were given the opportunity to supplement their applications to ensure that they contained all required information. Subsequently, the Commission, on the same date, both adopted final rules and authorized satellite proposals submitted by those entities which demonstrated compliance with the applicable qualification

standards. Domestic Fixed Satellite Service Space Station Licensing, 58 R.R.2d 1267, 1268 (1985). Thus, it is clear that parallel processing of a petition for rulemaking and a license application is hardly a novel approach to the Commission.

Moreover, the United States Court of Appeals for the D.C. Circuit has approved this type of procedure. The Court noted that the Commission "is free to choose to announce rules of general applicability in the context of an individual licensing proceeding." National Ass'n of Broadcasters v. F.C.C., 740 F.2d 1190, 1222 (D.C. Cir. 1984). In approving the Commission's decision to accept applications in the Direct Broadcast Satellite service while conducting a rule making proceeding examining the creation of such a service, the Court noted:

> First, the Commission stated that a concrete, demonstrated U.S. commitment to DBS would bolster United States' claims for adequate DBS frequencies and orbital slots at RARC-83. Second, given the long lead time necessary for satellite construction and launch, procedural delay might have frustrated realization of the "substantial public interest in expeditious development of direct broadcast satellite technology" that has already been recognized by this court.

Id. (citation omitted). The Court concluded that the Commission's procedure had not denied any interested party the opportunity to be heard.

Considerations similar to those expressed in the DBS proceeding apply in the instant proceeding. As then, the United States must now prepare for an international conference which will allocate frequencies. Further, procedural delay would frustrate the public interest in the expeditious implementation of a high quality, wide coverage radio service. Therefore, the Commission should process CD Radio, Inc.'s petition for rulemaking and application in parallel.

B. Any Competing Applicants Should Form A Consortium With CD Radio

Because of the nationwide coverage of CD Radio, Inc.'s proposed system, it is clear that its system could accommodate only one licensee. The available spectrum is not sufficient to accommodate two such systems. Additionally, it would not be feasible to attempt to split the band. Consequently, as no further bandwidth is available, it is clear that only one entity could be licensed to provide the proposed service. CD Radio, Inc. also recognizes the probability that other entities will file competing applications in response to a Commission issuance of a public notice inviting comment and the submission of other applications. The process of choosing among competing applicants could create considerable administrative delay. In order to expedite the award of a license, CD Radio proposes that the Commission adopt the approach that it took in its Second

Report and Order in General Docket 84-1234, 2 FCC Rcd 485 (1987), in which the Commission directed all of the competing applicants to form a consortium which would become the licensee. In that case, the Commission found that the "consortium approach will permit maximum participation by qualified applicants, and the development of a service that is most responsive to the requirements of the various end users targeted by the different applicants." Id. at 487. Further, the Commission found that use of a consortium would result in speedier institution of service to the public. Id. Similar benefits would be realized if the Commission adopted a consortium approach in the instant case.

Additionally, in order to ensure that the participants in the consortium are serious and financially qualified, the Commission should require a five million dollar deposit into an escrow account. As the Commission noted in the Second Report and Order, participation in the consortium should be conditioned on the applicant's ability and willingness to help finance the system from the outset. To further ensure that all applicants participating in the consortium are fully committed to going forward with constructing, launching, and operating the proposed system, the Commission should require all applicants to submit applications for complete authority to implement the proposed

system, including applications to construct and to launch and operate, together with the requisite filing fees.

In view of the above considerations, CD Radio suggests that the Commission adopt the following expedited processing schedule:

RECOMMENDED DATE	OBJECTIVE/ACTION
JUNE 1990	Issue a Public Notice Which Requests Comment on the CD Radio, Inc. Filings, and Requests Submission of any Other Applications to be Considered Simultaneously, Both in 30 Days.
SEPT 1990	Issue a Notice of Proposed Rulemaking to (i) Create a local and Satellite Sound Broadcasting Service at 1460-1530 MHz, and (ii) to Require the Formation of a Consortium Among the Simultaneous Applicants on the Basis of Equal Founding Shares for Equal Founding Investors. Issue a Notice to the Simultaneous Applicants Requiring Establishment of a $5 Million Escrow Letter in Favor of the Consortium, to Demonstrate Financial Qualification.
NOV 1990	Those Applicants Able to Secure a $5 Million Escrow Form a "CD Radio Consortium", Based on Equal Ownership and Equal Board Control, and So Advise the FCC.
FEB 1991	The FCC Can Legally Adopt a Report and Order (i) effecting the frequency allocation, (ii) authorizing a CD Radio Consortium to hold a license, so long as all of the previously escrowed funds are reported to the FCC to be

unconditionally committed to the satellite sound broadcasting project. Any non-follow through on the escrow will not be entitled to co-hold the FCC license.

VII. A PIONEER'S PREFERENCE IS WARRANTED IN THIS INSTANCE.

The Commission recently has proposed the establishment of procedures to provide a preference to applicants proposing an allocation for new services. Notice of Proposed Rulemaking, FCC 90-141 (released April 27, 1990). The Commission stated that such a system would be similar to a patent or copyright and is "warranted in order to encourage entrepreneurs and venture capitalists to invest time and money in new services and any related technologies, just as inventors and authors are rewarded for their efforts." Id. at 1-2. The Commission recognized that its current procedures, which provide no preference to an innovator, might have a chilling effect on the development and introduction of new communications services. Id. at 1. As described above, CD Radio's proposed system is a novel service that would meet hitherto unmet needs for high quality radio sound and nationwide service. It differs significantly in these respects from current broadcast services, and CD Radio does not merely propose to utilize a different portion of the spectrum to provide a service that is already provided elsewhere.

Accordingly, CD Radio would be entitled to a pioneer's preference under the Commission's proposed new rules.

Furthermore, in situations such as the instant one, in which the service would warrant only a single licensee, the Commission stated that it is "inclined to grant the preference only to the first party filing a petition for rule making." Id. at 2. Under CD Radio's proposal, however, a consortium would be the eventual licensee, and the Commission would make no comparative evaluation of the applicants. Accordingly, merely awarding comparative credit to CD Radio would provide it with no benefit.

Therefore, CD Radio proposes that the Commission establish a procedure whereby a pioneer which becomes part of a consortium would, at the time the consortium was granted a license, receive an 80 percent rebate of the funds which it had deposited in the escrow account. This practice would further the stated objective of the pioneer's preference, namely, "to encourage innovators, including individuals, small businesses, and large corporations, to develop new technologies." Id. at 3. Moreover, such a system would mirror the typical workings of business. Often, an entrepreneur will have an innovative idea but only a small amount of capital. Accordingly, he attracts investors who will contribute a greater percentage of capital to