Industrial Telecommunications Association, Inc.

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JAN 21 1997
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

January 21, 1997

Mr. William F. Caton
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: PR Docket No. 92-235; Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them

Notice of *Ex Parte* Presentation

Dear Mr. Caton:

On this date, the Industrial Telecommunications Association, Inc. ("ITA") delivered the enclosed letter and Frequency Table Blueprint to Michele C. Farquhar, Chief of the Wireless Telecommunications Bureau, for consideration in the above-referenced rule making proceeding.

In accordance with Section 1.1206(a)(1) of the Commission's Rules, I am submitting the original and four copies of this letter for inclusion in the official files for PR Docket 92-235.

Very truly yours,

Mark E. Crosby
President and CEO

Enclosures

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Telephone Maintenance Frequency Advisory Committee

CICS
Council of Independent Communication Suppliers

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CERTIFICATE OF SERVICE

I, Barbara J. Levermann, do hereby certify that on the 21st day of January 1997, I forwarded to the parties listed below a copy of the foregoing letter and Frequency Table Blueprint prepared by the Industrial Telecommunications Association, Inc., by first-class mail, postage pre-paid:

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January 21, 1997

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Michele C. Farquhar, Esq.
Chief, Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, N.W., Room 5002
Washington, D.C. 20554

Re: Proposed Technical Blueprint for Frequency Use Limitations in the Post-refarming Environment

Dear Ms. Farquhar:

With the adoption of the December 23, 1996, *Memorandum Opinion and Order* in the Private Land Mobile "refarming" proceeding, the FCC has made great strides toward resolving virtually all of the outstanding technical issues in this proceeding. Now that the Commission has settled on a channel plan based on 7.5 kHz spacing in the 150-174 MHz band and 6.25 kHz spacing in the 421-512 MHz range, it is feasible to develop detailed frequency utilization plans for all of the refarmed spectrum.

In the interest of helping to make the refarmed frequencies available promptly for use by private land mobile applicants, ITA has prepared a "Consolidated Frequency Table" (Enclosure A) and, where appropriate, recommended associated limitations (Enclosure B).

Introduction

For the most part, the proposed blueprint represents strictly a recitation of existing frequency limitations, as modified by the decisions reached to date in the refarming proceeding. The blueprint is intended to be a technical translation or adaptation of the pre-refarming frequency limitations to the post-refarming environment. In that sense, the blueprint attempts to be strictly a technical, non-judgmental document. There is, however, one exception to this approach. To present a plan that is representative of the future environment, it was necessary to make certain assumptions regarding the consolidation of radio services.

The most significant assumptions incorporated into the blueprint are as follows:

... / ...

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First, the decisions promulgated in the June 15, 1995 *First Report and Order and Further Notice of Proposed Rule Making*, as modified by the December 23, 1996 *Memorandum Opinion and Order*, will remain intact and unchanged.

Second, in the interest of promoting greater efficiency in the use of the spectrum allocated for the private land mobile radio services, the Commission will consolidate radio services.

Third, in the post-refarming environment, there will be two distinct service pools, a Private Wireless ("PW") pool and a Public Safety ("PS") pool.

Fourth, in the interest of preserving the integrity of railroad operations, the Commission will adopt special provisions to segregate existing railroad frequencies.

Fifth, aside from the special provisions adopted for railroad operations and other limited exemptions for activities such as operations at commercial airports, slave locomotives, central station protection, oil spill cleanup and other emergency response operations, non-public safety entities eligible under Part 90 would generally have unrestricted access to frequencies in the Private Wireless pool.

Sixth, within the Private Wireless pool, the Commission will identify specific frequencies for low-power operations to preserve low-power systems from interference from new full-power systems.

Seventh, all public safety eligibles will have unrestricted access, for the most part, to the frequencies included in the Public Safety pool.

With the foregoing points serving as an introduction, we present the following summary description of the proposed technical blueprint.

What the Blueprint Is

The blueprint is a comprehensive listing of the current Part 90 frequencies allocated for private land mobile use in the 150-174 MHz, 421-430 MHz and 450-470 MHz bands. The starting point for preparation of the blueprint was the frequency listing that previously appeared in Section 90.555 of the Rules. However, the blueprint expands upon the Section 90.555 listing in several important respects, most notably by incorporating the 12.5 kHz, 7.5 kHz and 6.25 kHz channels created in the refarming proceeding and by attempting to depict all relevant post-refarming frequency limitations.

Derivation of the Post-refarming Frequency Limitations

In deriving the post-refarming frequency limitations, we examined all of the pre-refarming limitations and identified the limitations that, in our view, appeared to be either unnecessary or redundant once consolidation of the radio services has been completed. We then eliminated these redundant limitations, retaining those limitations that appeared to have

continuing validity. In the case of frequencies having narrowly circumscribed uses, such as the oil spill containment or radio control/telemetry operations, we have generally repeated the same limitation in the blueprint.

Background of Two-pool Structure

ITA was one of several parties that recommended the consolidation of the private land mobile radio services into two pools. In their "Joint Pool Consolidation Proposal" filed November 20, 1995, in the refarming proceeding, ITA, the Personal Communications Industry Association (PCIA), the Alliance of Motion Picture and Television Producers (AMPTP), the Newspaper Association of America (NAA) and the Telephone Maintenance Frequency Advisory Committee (TELFAC) stated the case for two pools.[1]

These parties found that the two-pool approach would maximize spectrum efficiencies by eliminating artificial distinctions and cumbersome barriers among the existing radio services. The parties noted that the new digital technologies do not discriminate among the various uses of private land mobile. Further, the parties maintained that, since technology does not discriminate among users, neither should the Rules.

The two-pool concept will also obviate the need for the costly and cumbersome concurrence process among the certified frequency coordinators. At present, when an applicant seeks to access frequencies allocated to another radio service under the interservice sharing process, the applicant's "home" coordinator must obtain the concurrence of the coordinator having responsibility for the desired frequency. A similar concurrence process is required when frequencies are shared among several different radio services. Under a two-pool structure, and with the electronic transfer of pertinent data among coordinators once a system has been coordinated, there would be no need for inter-coordinator concurrences.[2]

For these reasons, the parties recommended two pools, "public service" and "public safety." We have found, however, that using the terms "public service" and "public safety" would present confusion in computer coding. If the pools were to be coded using their initial characters, the codes would appear as "PS" for both pools. Accordingly, ITA prefers the use of the terms "Private Wireless" and "Public Safety," resulting in the corresponding codes "PW" and "PS."

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[1] A copy of the "Joint Pool Consolidation Proposal" is provided as Enclosure D of this filing.

[2] Some coordinators seek to preserve the inter-coordinator concurrence process even after consolidation of the radio services. ITA urges the Commission to reject this view. Requiring frequency coordinators to maintain the concurrence process in the modern era, with the abundant benefits of near-instantaneous electronic exchange of data, would impose unnecessary costs and inexcusably handicap the long-awaited benefits of refarming. See ITA's previous letter on this subject, dated January 6, 1997 (Enclosure D).

Definitions of "Private Wireless Services" and "Public Safety Services"

The current definitions contained in Part 90, Section 90.7, do not define either "private wireless services" or "public safety services." We recommend that appropriate definitions for each term be included in Section 90.7. We believe the following terms accurately convey the essence of these terms:

> Private Wireless Services — The radio service classification encompassing all land mobile telecommunications systems operated by or through industrial, business, educational, philanthropic or ecclesiastical organizations engaged in serving the public welfare or producing goods and services for public consumption. Included in this service classification are radio systems used to serve the internal telecommunications requirements of electric and other power utilities, producers and transporters of petroleum and natural gas products, entities engaged in manufacturing products from timber, producers of film and video programming or events, newspapers, construction, mining and agricultural entities, manufacturers, telephone common carriers, providers of emergency automobile care, entities engaged in the commercial transportation of persons and goods by rail and motorized vehicles, and operators of other commercial, educational, philanthropic or ecclesiastical organizations or institutions.[3]
>
> Public Safety Services — The radio service classification encompassing all land mobile telecommunications systems operated by or through entities at the state or local level, or by privately funded entities, that are engaged in protecting the public's right to preservation of life, property and natural resources and in serving the public welfare. Included in this service classification are radio systems licensed to and operated by police and fire departments, state and local governments, highway maintenance and forestry-conservation agencies, providers of medical care and special emergency medical services, rescue organizations, providers of services to handicapped persons, veterinarians, disaster relief organizations, operators of school buses, and beach patrols.[4]

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[3] The term "Private Wireless Services" is intended to encompass all entities currently eligible under Subparts D and E of Part 90.

[4] This definition is adapted from the definitions used by the Commission in its *Notice of Proposed Rule Making* (FCC 96-155), WT Docket No. 96-86, "In the Matter of The Development of Operational, Technical, and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010," adopted April 5, 1996. The term "Public Safety Services" is intended to encompass all entities currently eligible under Subparts B and C of Part 90.

LMCC "Protected Service Area" Concept

The Land Mobile Communications Council ("LMCC") has advocated the concept of "Protected Service Areas" ("PSAs") as a means of ensuring that the licensees of intensively used private wireless and public safety systems would have the option of developing a protected zone around their radio systems.[5] Under the concept proposed by LMCC, the protected zone would be based on a licensee's required service radius. Licensees would have to earn PSA status by demonstrating compliance with specified loading or utilization requirements. Under LMCC's plan, all incumbent licensees would have a six-month transition period after the effective date of radio service consolidation to file requests for PSAs.

Special Provisions to Protect Railroad Operations [Limitation 16]

ITA believes there is validity to the arguments made by the railroad industry for special provisions to ensure the integrity of railroad operations. At the same time, however, it seems clear that the forthcoming decades will not witness any significant track expansion in the U.S. or growth in the number of railroads companies. Nonetheless, ITA recognizes that, similar to virtually all private wireless licensees, a portion of the railroad communications function is dedicated to pure "safety" functions. Railroad operations are more sophisticated in the modern era, and perhaps these operations require an initial period of time for transition to new technologies.

We propose, therefore, a two-pronged approach to accommodate the special needs of the railroads:

First, within the top 50 urbanized areas, we recommend that all of the pre-refarming railroad frequencies and all of the narrowband channels created from those existing frequencies be reserved for railroad use for a period of five years. To effectuate this provision, the frequency coordinators could define a 50-mile radius around the center of each of the top 50 metropolitan areas and design their computer software to restrict licensing within these areas on the railroad frequencies to railroad companies. This restriction would extend for a period of five years from the effective date of the consolidation decision, or until approximately March 2002. In cases where non-railroad operations have been licensed on the frequencies designated for railroad use, the Frequency Table Limitations provide that all such operations licensed as of January 1, 1997, would be permitted to continue in operation indefinitely, regardless of whether such transmissions overlap the 37 dBμ contours (for 150-174 MHz) or the 39 dBμ contours (for 421-512 MHz) of existing or future railroad systems.

Second, in areas outside the top 50 urban centers, ITA recommends that all existing railroad transmitter sites licensed as of the effective date of the consolidation decision be

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[5] LMCC initially proposed the concept of "Protected Service Areas" in its comments filed November 20, 1995, in the refarming proceeding. A copy of these comments is provided as Enclosure D of this filing.

treated as PSAs and protected at the appropriate contours. For frequencies in the 150-174 MHz band, frequency coordinators would protect the existing sites within the applicable 37 dBμ contour. For frequencies in the 421-512 MHz range, coordinators would protect the existing sites within the applicable 39 dBμ contour. These contours would be computed on the basis of the actual technical parameters of each station. As with the special provisions for railroad frequencies in the top 50 metropolitan areas, the provisions according PSA status to railroad facilities outside the top 50 urban areas would extend for a period of five years from the effective date of the consolidation decision.

From a practical standpoint, these special provisions for the railroad frequencies make good sense in terms of frequency coordination. No professional coordinator will ever act intentionally to create a hazardous or harmful operating environment. Coordinators, of necessity, will take precautions to avoid the installation of radio systems in areas adjacent to a railroad's PSA. Such precautions will promote a sound spectrum use environment and maximize licensee satisfaction, factors that remain two of the strongest motivations for every professional frequency coordinator.

Special Provisions for Airport Operations [Limitation 28]

Under the current rules, there are 40 frequency pairs in the 460/465 MHz range that are reserved for operations by commercial air transportation carriers within 50 miles of the referenced coordinates for 98 metropolitan areas served by one or more commercial airports. In recognition of the extensive communications capability required to supply and service airline carriers, the blueprint preserves the existing prohibition on non-airline use of the 40 designated frequency pairs within 50 miles of the specified localities.

Identification of Fifty 12.5 kHz Frequency Pairs for Low-power Coordinated Use in the 450-470 MHz Band in Urban Areas [Limitation 35]

The LMCC recently established a working group to recommend the ideal approach for licensing and regulation of low-power frequencies. The working group has not yet completed its work. However, it seems likely that the working group will recommend two distinct low-power pools. One pool, consisting of a select group of low-power frequencies and limited to the top 50 metropolitan areas, would be subject to frequency coordination. The other pool, available in all areas of the country, would consist of a different group of low-power frequencies and would not be subject to formal frequency coordination.

We have incorporated the key elements of the tentative LMCC plan into our recommended approach for low-power operations. As with the LMCC plan, we propose that specific frequencies be designated for low-power coordinated use in urban areas. The framework for this low-power coordinated pool is outlined in the three paragraphs immediately following. The framework for the low-power uncoordinated frequencies is outlined under the next textual heading.

The pool of low-power coordinated frequencies would be used to accommodate low-power users who require some degree of protection at particular sites, such as manufacturing plants and in campus environments. Stations licensed on the designated low-power

coordinated frequencies would be limited to a maximum effective radiated power (ERP) of 5 watts for mobile/portable units operating within a 50-mile radius of the 50 largest urban areas. Base stations licensed on these frequencies would be limited to 20 watts ERP and an antenna height of 100 feet above ground within a 50-mile radius of the top 50 urban areas.

For sites 50 or more miles outside the top 50 urban areas, full-power operations conforming to the power and antenna height limits in Section 90.205 would be permitted. This arrangement would protect low-power systems from full-power operations within a 35-mile radius of the largest urban areas but would provide the flexibility for full-power systems on the designated low-power channels in less urbanized areas without the need for waivers. For both low- and full-power operations, regardless of location, site-specific coordination and licensing would be required.

The appropriate technical constraints for the coordinated low-power channels are contained in limitation 35 accompanying the blueprint. We recommend that the same low-power limitation be applied to the 6.25 kHz channels immediately above and below the 12.5 kHz coordinated low-power channels. In the event that the LMCC does adopt final recommendations for low-power operations, and if the number of frequencies identified in the LMCC plan varies from the approach recommended above, ITA would anticipate no adverse consequences if the Commission conformed the rules for low-power operations to reflect the final LMCC recommendations.

Identification of Twenty-five 12.5 kHz Frequency Pairs for Low-power Itinerant (Uncoordinated) Use in the 450-470 MHz Band [Limitation 36]

The blueprint also identifies twenty-five 12.5 kHz frequency pairs in the 450-470 MHz band for low-power itinerant operations. Operations on these frequencies would not be subject to frequency coordination, but systems established on these frequencies would have to be licensed.

The pool of low-power itinerant frequencies would typically be used to accommodate licensees who require low-power operations in the context of a small business, such as electricians and plumbers. All transmitters operating on the designated low-power itinerant frequencies would be classified as mobile stations and limited to a maximum ERP of 5 watts. New type acceptance grants for transmitters operating on these frequencies would specify that the units must be capable of operation only on the low-power uncoordinated channels.

The appropriate technical constraints for the itinerant uncoordinated low-power channels are contained in limitation 36 accompanying the blueprint. We recommend that the same low-power limitation be applied to the 6.25 kHz channels immediately above and below the 12.5 kHz itinerant low-power channels. As with the coordinated low-power channels, if the number of frequencies identified in the LMCC plan for low-power itinerant use varies from the approach detailed above, the Commission could easily conform the low-power rules to the LMCC recommendations.

Emergency Response Channels [Limitation 14]

The blueprint includes specific frequencies to accommodate the requirements of oil and pipeline companies, utilities and others for emergency response communications. To satisfy this special need, the blueprint redesignates eight frequency pairs now set forth in Section 90.283 of the Rules for shared maritime/industrial use, for exclusive emergency response communication requirements. The use of these frequencies under Part 90 will be limited to stations used in coordinating and controlling the response to man-made and natural disasters, including oil spills, emergencies at power plants and in refineries, earthquakes and similar situations. This reservation will provide sorely needed relief for a long-standing need. In our view, these frequencies would be ideal for emergency response use because, to date, there have been no assignments made to either maritime or industrial users.

Public Safety Pool Frequencies

The proposed blueprint is not intended to serve as substantive comment on the structure of the Public Safety pool. With respect to the public safety frequencies, ITA's intent was simply to identify all the frequencies currently allocated for the various public safety services and preserve these channels, including the derivative narrowband channels, for public safety use. The Consolidated Frequency Table reflects this approach.

470-512 MHz Band [Limitation 41]

For the private land mobile bands at 150-174 MHz and 450-470 MHz, the distribution of frequencies between the distinct PW and PS service pools is both orderly and logical. By contrast, in the 470-512 MHz band, it is impossible to establish a clear demarcation between the frequencies used for public safety systems and the frequencies used for other private wireless operations. The 470-512 MHz allocation is an intricate and somewhat erratic distribution of frequencies to a variety of different service classifications in eleven different metropolitan areas.[6] At present, there are four different service pools in the band.[7]

With respect to 470-512 MHz, the logic of a two-pool approach breaks down because of the erratic distribution of frequencies among the existing public safety and non-public

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[6] The FCC's rules allocate 470-512 MHz for private land mobile use in thirteen urban areas. However, due to difficulties in reaching agreement with Canadian authorities regarding use of 470-512 MHz in Detroit and Cleveland, the frequencies are actually used only in eleven areas.

[7] In most of the eleven cities in which the 470-512 MHz frequencies are available under Part 90, the frequencies are distributed among eight service pools. There is a Public Safety Pool, four pools consisting of various industrial radio services, two pools for land transportation services and a General Access Pool.

safety services.[8] For this reason, ITA believes it is appropriate to consolidate all of the available 470-512 MHz frequencies into a single pool. The 470-512 MHz pool would encompass all of the currently available 470-512 MHz frequencies for each of the eleven cities, regardless of whether the frequencies are used for public safety or non-public safety purposes.

In view of the current diverse allocation pattern for the 470-512 MHz frequencies, the alternative of a single pool encompassing all existing public safety and non-public safety frequencies represents the only approach that could be easily implemented and administered. With respect to existing and future assignments in the 470-512 MHz pool, we recommend that the Commission and the coordinators continue to apply the assignment rules currently contained in Subpart L, Part 90.

We have elected not to include the 470-512 MHz frequencies in the enclosed frequency table. Rather, we have simply indicated by footnote (limitation 41) that the 470-512 MHz frequencies will be available for assignment to all Part 90 eligibles, subject to the technical provisions of Subpart L. Insofar as identification of the particular frequencies available for assignment in each of the eleven cities, Subpart L provides a wealth of detail. To the extent that a frequency listing for 470-512 MHz would merely repeat this detail, we did not see any need to provide an aggregate listing of frequencies in the blueprint.

Consolidation of 30-50 MHz and 72-76 MHz

In the course of analyzing the current allocations and preparing the blueprint, we considered the best approach for the 30-50 MHz and 72-76 MHz bands. Although these frequency bands were not included in the channel-splitting phase of the refarming proceeding, we believe they should be included for purposes of service consolidation.

Preserving the present allocation scheme for 30-50 MHz and 72-76 MHz would require the Commission to maintain eligibility rules relevant to each of the twenty individual radio services. Conversely, consolidating the frequencies would introduce the efficiencies of consolidation to the lower bands and would promote uniformity in regulations. After careful consideration, we conclude that it is appropriate to include 30-50 MHz and 72-76 MHz in the consolidation effort. Though the enclosed blueprint does not attempt to depict the post-consolidation frequency listing for 30-50 MHz and 72-76 MHz, ITA does recommend that these bands be included in the consolidation effort.

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[8] Frequencies in the General Access Pool at 470-512 MHz are specifically designated as reserve frequencies to be used after all frequencies allocated to in a given service pool have been substantially loaded. Additionally, by operation of Section 90.311(b)(1), any frequencies in the various service pools that are unassigned in any one of the eleven cities are considered to be available in the General Access Pool. Over time, these provisions have produced an unpredictable allocation pattern for 470-512 MHz; *e.g.*, the same frequency may be used for public safety systems in one area and industrial systems in another area.

Conclusion

In this document and the accompanying frequency blueprint, ITA has attempted to develop a practical framework for consolidation of the existing private land mobile radio services. The blueprint, together with the associated frequency limitations, is intended as a technical plan for adapting the pre-refarming land mobile services to the post-refarming environment.

ITA offers this plan in the hope of advancing the refarming effort and expediting the implementation of the long-awaited benefits of this proceeding. The blueprint may perhaps not accommodate, to sufficient degree, all of the critical communications requirements of the private wireless and public safety communities. We would encourage and welcome suggestions for refining the blueprint from all sources, both within the Commission and within the industry. It is our sincere hope that the proposed blueprint, with any subsequent refinements, will work to the benefit of all users of private wireless and public safety land mobile systems and help bring closure to the refarming proceeding.

Respectfully submitted,

Mark E. Crosby
President and CEO

Enclosures

cc: The Secretary
Rudolfo M. Baca
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Frequency Advisory Committees

Enclosures

Tab A: Consolidated Frequency Table for 150-174 MHz, 421-430 MHz and 450-470 MHz.

Tab B: Frequency Table Limitations

Tab C: Top 50 Urbanized Areas

Tab D: Relevant Filings in PR Docket No. 92-235:

- November 20, 1995, Joint Pool Consolidation Proposal filed by ITA, PCIA, AMPTP, NAA and TELFAC
- November 20, 1995, Comments of the Land Mobile Communications Council Proposing the Concept of "Protected Service Areas"
- January 6, 1997, Ex Parte Response to the Concerns Raised by the "Coalition of Industrial and Land Transportation Radio Users"

Enclosure A

Consolidated Frequency Table

VHF 7.5 khz FREQUENCIES

150.7750	PS	MOBILE	PS		
150.7825			PS		
150.7900	PS	MOBILE	PS		
150.7975			PS		
150.8150	IB,LA	IB USE LIMITED TO PR, VI	PW		
150.8300	IB,LA	IB USE LIMITED TO PR, VI/PAGING ONLY	PW	PAGING OPERATIONS PR & VI ONLY	1, 32
150.8450	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.8525			PW		19
150.8600	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.8675			PW		19
150.8750	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.8825			PW		19
150.8900	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.8975			PW		19
150.9050	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.9200	IB,LA	IB USE LIMITED TO PR, VI/PAGING ONLY	PW	PAGING OPERATIONS PR & VI ONLY	1, 32
150.9350	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.9425			PW		19
150.9500	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.9575			PW		19
150.9650	IB, LA	IB USE LIMITED TO PR, VI	PW		
150.9725			PW	PRIMARY OIL SPILL CONTAINMENT	2, 19
150.9800	IP	PRIMARY OIL SPILL CONTAINMENT	PW	PRIMARY OIL SPILL CONTAINMENT	2
150.9875			PW	PRIMARY OIL SPILL CONTAINMENT	2, 19
150.9950	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.0025			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.0100	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.0175			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.0250	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.0325			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.0400	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.0475			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.0550	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3

VHF 7.5 khz FREQUENCIES

151.0700	PH, IB	IB USE LIMITED TO PR, VI/PAGING ONLY	PS, PW	PAGING/PW USE LIMITED TO PR/ VI	1,3,32
151.0850	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.0925			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1000	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1075			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1150	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1225			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1300	PH, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1375			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1450	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1525			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1600	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1675			PS, PW	PW USE LIMITED TO PR & VI	3, 19
151.1750	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.1900	PO, IB	IB USE LIMITED TO PR, VI/PAGING ONLY	PS, PW	PAGING/PW USE LIMITED TO PR/ VI	1,3,32
151.2050	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2125			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2200	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2275			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2350	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2425			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2500	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2575			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2650	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2725			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2800	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.2875			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.2950	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3100	PO, IB	IB USE LIMITED TO PR, VI/PAGING ONLY	PS, PW	PAGING/PW USE LIMITED TO PR/ VI	1,3,32
151.3250	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3325			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.3400	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3475			PS, PW	PW USE LIMITED TO PR & VI	3,19

VHF 7.5 khz FREQUENCIES

151.3550	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3625			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.3700	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3775			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.3850	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.3925			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4000	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4075			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4150	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4225			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4300	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4375			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4450	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4525			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4600	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4675			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4750	PO, IB	IB USE LIMITED TO PR, VI	PS, PW	PW USE LIMITED TO PR & VI	3
151.4825			PS, PW	PW USE LIMITED TO PR & VI	3,19
151.4900	PO, IS	SEE SPECIAL SHARING AGREEMENT OF 10/8/75	PS		4
151.4975			PS		
151.5050	IS	ITINERANT	PW	ITINERANT	5
151.5125			PW		19
151.5190	IS		PW		
151.5275			PW		19
151.5350	IS		PW		
151.5425			PW		19
151.5500	IS		PW		
151.5575			PW		19
151.5650	IS		PW		
151.5725			PW		19
151.5800	IS		PW		
151.5875			PW		19
151.5950	IS		PW		
151.6025			PW		19
151.6250	IB	ITINERANT EXCEPT WITHIN A 35 MIRA OF DETROIT	PW	ITINERANT EXCEPT 35 MI DETROIT	6
151.6400			PW		11
151.6475			PW		19

VHF 7.5 khz FREQUENCIES

151.6550	IB	MAXIMUM POWER 110 W	PW		
151.6625			PW		19
151.6700	IB		PW		19
151.6775			PW		19
151.6850	IB	MAXIMUM POWER 110 W	PW		
151.7000	IB	ITINERANT EXCEPT WITHIN A 35 MIRA OF DETROIT	PW	ITINERANT EXCEPT 35 MI DETROIT	6,19,33
151.7150	IB	MAXIMUM POWER 110 W	PW		
151.7225			PW		19
151.7300	IB		PW		19
151.7375			PW		
151.7450	IB	MAXIMUM POWER 110 W	PW		19
151.7600	IB	ITINERANT EXCEPT WITHIN A 35 MIRA OF DETROIT	PW	ITINERANT EXCEPT 35 MI DETROIT	6,19,33
151.7750	IB	MAXIMUM POWER 110 W	PW		
151.7825			PW		19
151.7900	IB		PW		19
151.7975			PW		19
151.8050	IB	MAXIMUM POWER 110 W	PW		
151.8200		MOBILE ONLY	PW	MOBILE ONLY/LOW POWER	7,19
151.8350	IB	MAXIMUM POWER 110 W	PW		
151.8425			PW		19
151.8500	IB		PW		19
151.8575			PW		19
151.8650	IB	MAXIMUM POWER 110 W	PW		
151.8800	IB	MOBILE ONLY	PW	MOBILE ONLY/LOW POWER	7,19
151.8950	IB	MAXIMUM POWER 110 W	PW		
151.9025			PW		19
151.9100	IB		PW		19
151.9175			PW		19
151.9250	IB		PW		
151.9400	IB	MOBILE ONLY	PW	MOBILE ONLY/LOW POWER	7,19

VHF 7.5 khz FREQUENCIES

151.9550	IB		PW		
151.9625			PW		19
151.9700			PW		19
151.9775			PW		19
151.9850	IT	COMMUNICATIONS COMMON CARRIER	PW		
151.9925			PW		11
152.0075	PS	ONE-WAY PAGING	PS		
152.2625			PW		11
152.2700	LX		PW		
152.2775			PW		19
152.2850	LX		PW		
152.2925			PW		19
152.3000	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.3075			PW		19
152.3150	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.3225			PW		19
152.3300	LX		PW		
152.3375			PW		19
152.3450	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.3525			PW		19
152.3600	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.3675			PW		19
152.3750	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.3825			PW		19
152.3900	LX		PW		
152.3975			PW		19
152.4050	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.4125			PW		19
152.4200	IB, LX	LX USE INSIDE, IB USE OUTSIDE SMA'S OF 50,000	PW	URBAN AREA RESTRICTIONS	8
152.4275			PW		19
152.4350	LX		PW		
152.4425			PW		19
152.4500	LX		PW		
152.4575			PW		19
152.4650	IF, IS, LX		PW		

VHF 7.5 khz FREQUENCIES

152.4800	IF, IS, IB	IB ONE-WAY PAGING	PW	ONE-WAY PAGING	9,32
152.8625			PW		11
152.8700	IM, IS		PW		
152.8775			PW		19
152.8850	IS		PW		
152.8925			PW		19
152.9000	IM, IS		PW		
152.9075			PW		19
152.9150	IS		PW		
152.9225			PW		19
152.9300	IM, IS		PW		
152.9375			PW		19
152.9450	IS		PW		
152.9525			PW		19
152.9600	IM, IS		PW		
152.9675			PW		19
152.9750	IS		PW		
152.9825			PW		19
152.9900	IM, IS		PW		
152.9975			PW		19
153.0050	IS		PW		
153.0125			PW		19
153.0200	IM, IS		PW		
153.0275			PW		19
153.0350	IP, IS		PW		
153.0425			PW		19
153.0500	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.0575			PW		19
153.0650	IP, IF, IX		PW		
153.0725			PW		19
153.0800	IP, IF, IX		PW		
153.0875			PW		19
153.0950	IP, IF, IX		PW		
153.1025			PW		19
153.1100	IP, IF, IX		PW		
153.1175			PW		19
153.1250	IP, IF, IX, IS	IS USE RESTRICTED	PW		

VHF 7.5 khz FREQUENCIES

153.1325			PW		19
153.1400	IP, IF, IX		PW		
153.1475			PW		19
153.1550	IP, IF, IX		PW		
153.1625			PW		19
153.1700	IP, IF, IX		PW		
153.1775			PW		19
153.1850	IP, IF, IX		PW		
153.1825			PW		19
153.2000	IP, IF, IX		PW		
153.2075			PW		19
153.2150	IP, IF, IX		PW		
153.2225			PW		19
153.2300	IP, IF, IX		PW		
153.2375			PW		19
153.2450	IP, IF, IX		PW		
153.2525			PW		19
153.2600	IP, IF, IX		PW		
153.2675			PW		19
153.2750	IP, IF, IX		PW		
153.2825			PW		19
153.2900	IP, IF, IX		PW		
153.2975			PW		19
153.3050	IP, IF, IX		PW		
153.3125			PW		19
153.3200	IP, IF, IX		PW		
153.3275			PW		19
153.3350	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.3425			PW		19
153.3500	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.3575			PW		19
153.3650	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.3725			PW		19
153.3800	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.3875			PW		19
153.3950	IP, IF, IX, IS	IS USE RESTRICTED	PW		
153.4025			PW		19
153.4100	IW		PW		
153.4175			PW		19

VHF 7.5 khz FREQUENCIES

153.4250	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.4325			PW		19
153.4400	IW, IP, IF	NOT AVAILABLE TO IW IN STATES OF AR, LA & TX	PW		
153.4475			PW		19
153.4550	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.4625			PW		19
153.4700	IW		PW		
153.4775			PW		19
153.4850	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.4925			PW		19
153.5000	IW, IP, IF	NOT AVAILABLE TO IW IN STATES OF AR, LA & TX	PW		
153.5075			PW		19
153.5150	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.5225			PW		19
153.5300	IW		PW		
153.5375			PW		19
153.5450	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.5525			PW		19
153.5600	IW, IP, IF	NOT AVAILABLE TO IW IN STATES OF AR, LA & TX	PW		
153.5675			PW		19
153.5750	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.5825			PW		19
153.5900	IW		PW		
153.5975			PW		19
153.6050	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.6125			PW		19
153.6200	IW, IP, IF	NOT AVAILABLE TO IW IN STATES OF AR, LA & TX	PW		
153.6275			PW		19
153.6350	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.6425			PW		19
153.6500	IW		PW		
153.6575			PW		19
153.6650	IW, IP, IF	SHARED WITH IF,IP IN STATES OF AR, LA, OK & TX	PW		
153.6725			PW		19
153.6800	IW, IP, IF	NOT AVAILABLE TO IW IN STATES OF AR, LA & TX	PW		
153.6875			PW		19
153.6950	IW		PW		
153.7025			PW		19
153.7100	IW		PW		