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Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D.C. 20554

May 28, 1998

In the Matter of:

An Allocation of Spectrum for the
Private Mobile Radio Services

RM-9267

TO: The Commission

TRANSMITTAL LETTER

Transmitted herewith are an original and nine (9) copies of "COMMENTS IN PARTIAL OPPOSITION TO SPECTRUM REALLOCATION DEMANDS IN THE PETITION OF THE LAND MOBILE COMMUNICATIONS COUNCIL" to be entered in the above-styled rulemaking proceeding RM-9267. I hereby certify that these documents are being deposited with the United States Postal Service on May 28, 1998, in an envelope as "Express Mail Post Office to Addressee," mailing label no. EE640496235US, with postage paid, addressed to Office of the Secretary, Federal Communications Commission, Room 222, 1919 M Street NW, Washington, D.C. 20554.



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TO: The Commission

**COMMENTS IN PARTIAL OPPOSITION
TO
SPECTRUM REALLOCATION DEMANDS
IN THE PETITION OF
THE LAND MOBILE COMMUNICATIONS COUNCIL**

Executive Summary

The Land Mobile Communications Council (LMCC) has demanded in its petition that a substantial quantity of spectrum in the 70 cm band presently allocated for secondary use to the amateur radio service be immediately reallocated so that the private mobile radio service becomes the primary users of the band. The demanded immediate spectrum reallocation is in excess of that which LMCC's own analysis indicates is necessary. Amateurs presently heavily occupy and yet coexist in relative harmony with the government radiolocation service in the 70 cm band, but such coexistence would be impossible with PMRS users, due to the nature of service anticipated by LMCC.

Amateurs, who perform substantial amounts of public service, and who are prohibited by law from receiving payment for their services, would be required to expend substantial sums of money to accommodate the LMCC demand, if such accommodation is even possible or practical. Much public service work will be impeded by the constriction of frequencies for amateur auxiliary stations, and amateur television will become impossible on 70 cm even if amateurs continue as secondary users of the demanded frequencies. If the spectrum demanded for immediate reallocation is, in fact, necessary for PMRS use, it should be reallocated from spectrum not presently allocated to the amateur radio service. Regardless of the disposition of the 70 cm band, however, additional new primary or exclusive amateur allocations in the 25-50 MHz range should be considered in view of LMCC's admission of the unsuitability of present PMRS allocations in this range, and of amateur's proven ability to use and exploit the very features of these frequencies that LMCC asserts makes them unusable.

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Authorization to file comment

1. This Comment in Partial Opposition to Spectrum Reallocation Demands in the Petition of the Land Mobile Communications Council ("LMCC") is in response to the Petition for Rule Making RM-9267 (and henceforth, referred to as "Petition") filed by LMCC. This Statement is filed pursuant to 47 C.F.R. § 1.419(b).

Statement of Affiliation

2. The views expressed in this Statement, although likely to be shared by many members of the general public and by the amateur radio community, are solely those of the undersigned. The undersigned has been a licensed amateur radio operator since 1968 and now holds extra class amateur license N0AL. The undersigned also holds a General Radiotelephone License, originally issued by the Commission as a First Class Radiotelephone License in 1969, and is presently a member of several amateur radio organizations, including the American Radio Relay League, the Suburban Radio Club (of St. Louis, Missouri), the Monsanto Amateur Radio Association (of St. Louis, Missouri), St. Louis Repeater, Inc., St. Louis County RACES¹ and St. Louis County ARES², but has never been an officer of any of these organizations and does not claim nor undertake to represent any of these organizations or their members other than himself. Three of these organizations operate repeater stations in the 2-meter, 1.25-meter, and 70-centimeter

¹RACES is the Radio Amateur Civil Emergency Service. See 47 C.F.R. §§ 97.3(a)(35), 97.5(b)(4), and especially 97.407.

²ARES is the Amateur Radio Emergency Service, a voluntary organization of amateur radio operators that provides various types of emergency and other public service communication functions.

bands, including stations on frequencies requested for reallocation by LMCC. It is also believed that these organizations operate auxiliary link stations. The undersigned is the owner of recently purchased equipment, the usefulness of which would be adversely affected and made to require factory reprogramming if the LMCC petition were granted.

LMCC's Petition should be subjected to special scrutiny because its excessive spectrum request at the expense of the amateur radio service is not supported by its own study

3. LMCC admits that, as a result of its own studies, the Private Mobile Radio Service (PMRS) has an immediate need for only 15 MHz of spectrum (Petition ¶67). Notwithstanding that assertion, LMCC demands an immediate reallocation, for primary use by the PRMS, of more than 20 MHz of spectrum (Petition ¶74, especially the first two bulleted items therein). Most of the demanded spectrum (420-430 MHz and 440-450 MHz) is with the 70 cm band currently assigned to, and heavily used by, the amateur radio service on a secondary basis.³ LMCC also requests additional spectrum for immediate/mid-term needs, to be allocated from other bands. Even according to LMCC's own spectrum requirements analysis⁴, the amount of spectrum requested for immediate reallocation -- even that solely within the amateur radio 70 cm band -- is in excess of that required *by their own studies*. Because LMCC has demanded immediate reallocation of spectrum in excess of that which they, by their own admission, immediately require, the

³47 C.F.R. § 97.301.

⁴The undersigned, in principle, is not opposed to allocation of additional spectrum for PRMS use, unless that spectrum is at the expense of amateur radio operators. However, it is suggested that a study conducted by an independent agency other than LMCC and not financed by LMCC may be necessary to objectively evaluate the LMCC findings. In any event, the undersigned doubts that such a study would be possible in the short comment period for responding to this rulemaking petition.

hardships that would be suffered by those who would be displaced by their proposed reallocation should be given enhanced consideration in this proceeding.

Amateurs heavily utilize the 70 cm band

4. The amateur radio allocations that are being requested by LMCC are subject to what is known as a "band plan." The American Radio Relay League (ARRL) has adopted band plans specifying modes of operation to be used at various frequencies within amateur bands. These band plans are voluntarily followed by amateur radio operators.⁵ This band plan, listed in the 1998-1999 Edition of "The ARRL Repeater Directory," at pages 48-49, provides frequencies for (a) amateur television operation at 420.00-426.00 MHz, with 421.25 MHz video carrier, shared with control links and experimental use; (b) amateur television simplex operation at 426.00-432.00 MHz, with 427.25 MHz video carrier; (c) various weak-signal modes, included earth-moon-earth (EME) operation, at 432.00-433.00; (d) auxiliary/repeater links at 433.00-435.00 MHz; (e) amateur satellite operation only at 435.00-438.00 MHz⁶; (f) amateur television repeater input at 438.00-444.00 MHz with 439.250 MHz video carrier, shared with repeater links; (g) repeater inputs and outputs at 442.00-445.00 MHz (as a local option⁷); (h) auxiliary and control links, repeaters, and simplex operation at 445.00-447.00 MHz

⁵ By coincidence, amateur band plans are currently the subject of another, totally separate FCC rulemaking petition, RM-9259. Possibly, the need for this petition arose, directly or indirectly, from crowding within presently assigned amateur spectrum.

⁶The 435.00-438.00 MHz frequency band is an internationally-recognized amateur satellite band. See international note 664 at 47 C.F.R. § 2.106 and § 97.207(c)(2). The ARRL band plan obviously acknowledges and protects this service.

⁷Some frequencies overlap at least in part because of variations in local use. In some areas, portions of the 420-450 MHz band, most notably 420-430 MHz as a part of WARC-79, has already been removed from amateur service by the Commission.

(as a local option); (i) a national simplex frequency at 446.00 MHz; and (j) repeater inputs and outputs at 447.00-450.00 MHz (as a local option). Packet radio channels are also provided according to the band plan at discrete frequencies from 430.05-431.025 MHz and at 440.975-441.075 MHz.

5. The 420-450 MHz band has become one of the most heavily populated amateur radio bands. In the 440-450 MHz FM voice repeater segment alone, the 1998-1999 edition of "The ARRL Repeater Directory" contains 158 pages of listings, each page listing approximately 35 to 50 or more different repeaters. There is thus an estimated total of 6,500 FM voice repeaters.⁸ This total does *not* include not data, packet, or amateur television repeaters in the 440-450 MHz segment or elsewhere in the 70 cm band. Also, the listings in the ARRL Repeater Directory do not include many private systems, including repeaters, remote bases, and auxiliary control and link channels in properly coordinated operation on authorized frequencies⁹, nor are the large numbers of individual amateurs using any of the listed or unlisted systems documented. This lack of documentation has occurred, at least in part, because frequencies used in the amateur radio service are not assigned for exclusive use by the FCC.¹⁰ Thus, no formal record is made of the use of various frequencies by individual amateurs, as opposed to repeater operators and club groups. Therefore, the listings in the ARRL Repeater Directory, while of some use in reflecting the occupancy of the band, are by no means a complete list of the users occupying the 70 cm (or other) bands listed.

⁸Due to the limited response time permitted for this rulemaking petition, the undersigned has not undertaken to count each listing individually and has resorted to making what is believed to be a very reasonable, and possibly conservative, approximation.

⁹ See note to listings in ARRL Repeater Directory at page 24.

6. In addition to the 440-450 MHz subband, the 420-430 MHz subband is also heavily used. ARRL Repeater Directory listings show approximately 100 amateur television repeaters of standard 6 MHz TV channels having an input or an output frequency in the 420-430 MHz subband.¹¹ However, as noted above, the ARRL Repeater Directory listings reflect only part of the total usage of the bands listed. Aside from the ARRL Repeater Directory's omission of lists of *users* of these amateur television repeaters, the ARRL band plan provides for simplex operation where repeaters are not coordinated and also provides for experimental modes in the 420-430 MHz band. The number of stations in simplex and experimental operation is beyond the scope of the listings in the ARRL Repeater Directory, and thus is unknown to the undersigned. However, these users must be considered to ascertain the true occupation of this subband and the costs of relocation. Furthermore, amateur operation includes modes such as CW and SSB that is often conducted with equipment employing variable frequency oscillators (VFOs) or their equivalents, and which is subject to being shifted to different frequencies, depending upon the needs of the communication desired. Even though these users may, perhaps, readily shift frequencies away from the affected subbands, they would still cause crowding with other users currently occupying other subbands.

¹⁰ 47 C.F.R. § 97.101(b)

¹¹Some amateur television repeaters are listed multiple times. These repeaters appear to have multiple input frequencies, and have been included only once in the estimate of the total.

Movement of the amateur population from the portions of the 70 cm band demanded for PMRS use would place a heavy financial burden on individual amateur operators and be contrary to the public interest

7. Requiring a move from 440-450 MHz even to another portion of the 70 cm band would be costly to large numbers of amateur radio operators. It is believed by the undersigned (which should be confirmed by the Commission's own records) that there are approximately 600,000 amateur radio operators in the United States. Many of these operators hold technician class licenses, and are thus forbidden to operate on amateur frequency bands below 50 MHz.¹² Many technician class operators use all or a portion of the 70 cm band. In addition, many licensees holding higher class licenses operate in the 70 cm band by choice, because of the propagation characteristics of this band, its usefulness for local communications, the small sizes of antennas required¹³, and also because of the marginally lesser danger from RF radiation of emissions in the 70 cm band than in the 2 meter (144-148 MHz) and other bands.¹⁴ Many operators (such as the undersigned) use recently-purchased, dual-band, hand-held radios that are now commonly available, such as the Yaesu FT50R. This model, as do many others, are programmed in firmware to automatically provide repeater offsets in the 440-450 MHz band according to the ARRL band plan.¹⁵ No repeater offsets are programmed into any other portion of the

¹² 47 C.F.R. § 97.301.

¹³The modest antenna size required for reliable communications on the 420-450 MHz band is particularly noteworthy because of the inability of many amateur radio operators to operate on lower frequency bands due to private property covenants and restrictions.

¹⁴Higher power is permitted on the 70 cm amateur band than on the 2 meter (144-148 MHz) amateur band before a routine RF safety evaluation is required (Supplement B to OET Bulletin 65).

¹⁵Because most repeater operation in the amateur 440-450 MHz band uses 5 MHz offsets between input and output frequencies, with those repeaters having outputs above 446

420-450 MHz band (indeed, it does not operate over the full range of this band), because the band plan does not call for FM voice repeaters in the other band segments. If amateur repeater operation is forced to vacate the 440-450 MHz band, or if sharing arrangements with narrowband FM commercial operation is not feasible, much existing equipment will have to be serviced by the factory to change these firmware or hardware-programmed band plans.

8. Loss of effective use of 420-430 MHz and 440-450 MHz may also be devastating to amateur radio auxiliary station service. Much (perhaps a majority) of all of the spectrum that is practical to employ for amateur auxiliary station service¹⁶ falls within the subbands of the 70 cm spectrum demanded by LMCC. Amateur auxiliary operation is authorized *only* on 222.15-225.00 MHz¹⁷, 420.00-431.00 MHz, 433.00-435.00 MHz, 438.00-450.00 MHz, and amateur frequencies above 902.00 MHz, where interference to

MHz having inputs 5 MHz below the outputs and those having outputs below 446 MHz having inputs 5 MHz above the outputs, as the radio is tuned, it can automatically provide the proper offset, either for transmitting above or below the repeater's output frequency. This saves considerable time when finding emergency channels, because it is not necessary to manually set two frequencies for operation. In addition, it makes operation in a vehicle much safer, because it is not necessary for the operator to make additional adjustments (that might otherwise distract his attention from driving) for transmit frequency offset and direction once a repeater is tuned in.

¹⁶An auxiliary station is an amateur station, other than in a message forwarding system, that is transmitting communications point-to-point within a system of cooperating amateur stations. 47 C.F.R. § 97.3(a)(7).

¹⁷The 220.00-222.00 MHz portion of this band was reallocated away from the amateur radio service in 1988 by the Commission. Much, if not most, of the remaining spectrum is used by repeaters. In addition to this reallocation, 1215-1240 MHz was removed from the amateur service in 1982, and 2310-2390 MHz was removed from the amateur service in 1983.

other services is not created.¹⁸ Frequencies in the 902.00-928.00 MHz band are subject to providing protection for industrial, scientific and medical devices, automatic vehicle monitoring systems, and government stations, which are believed to operate in all but 6 MHz of this band.¹⁹ Although the 1240-1300 MHz band is available for use for auxiliary and amateur television services, it has been reported that 20 MHz of this band may be reallocated to civilian satellite positioning services,²⁰ and 1260-1270 MHz is allocated to the amateur satellite service (see international note 664 to the allocation table in 37 C.F.R. § 2.106), and so is not reasonably available for the amateur auxiliary service. Higher frequencies above 2 GHz are available,²¹ but, as noted in the LMCC Petition at ¶68, such frequencies suffer from a substantial increase in propagation loss, reduced maximum safe transmitter power levels, and increased difficulty in creating small, low cost products, such as those used by amateurs. The most practical frequencies for amateur auxiliary service are thus 420.00-431.00, 433.00-435.00, and 438.00-450.00 MHz. Only 5 MHz of these 27 MHz of frequencies is outside of the bands demanded by the LMCC Petition. Amateur auxiliary links within the bands demanded by LMCC provide, among other things, remote receivers for repeaters in other bands (including the amateur 2-meter band) that increase the effective communication range for low power mobile and hand-held

¹⁸47 C.F.R. 97.201(b). Coordinated operation is encouraged by Commission rules, 47 C.F.R. § 97.201(c). Interference to stations in other services is prohibited in accordance with the sharing requirements of 47 C.F.R. § 97.301.

¹⁹See the note to the 902-928 MHz band plan in the ARRL Repeater Directory at page 51.

²⁰See "1.2 GHz Threat" in "ARRL Letter," vol. 14, no. 15, April 10, 1998, available as <http://www.arrl.org/arrlletter/98/980410> on the Internet's World Wide Web. As noted above, the frequencies 1215-1240 were also reallocated by the Commission away from the amateur radio service in 1983.

²¹Even above 2 GHz, however, the Commission has reallocated a whopping 80 MHz of the 2300-2450 MHz amateur radio band away from the amateur service as noted above.

stations. The increased range not only increases the ability of the amateur service to perform public service, it also reduces the need for individual operators of these stations to use high-power equipment, which serves to reduce RF radiation exposure to amateur radio operators, their families, and the general public. LMCC has not disclosed how effective sharing of these auxiliary link frequencies might be accomplished if the requested reallocation were granted. Without protection from the proposed narrow band commercial services proposed within the 70 cm amateur band by LMCC, it is respectfully submitted that *no* amateur auxiliary service will be feasible in the reallocated bands. The alternative frequencies remaining in the 70 cm band will be overcrowded due to relocation of present repeaters, and frequencies in other bands will either be unavailable, impractical, or costly to implement.

Amateur radio has been able to provide a significant public service through a compatible sharing arrangement that would be destroyed by reassignment of frequencies to PMRS use

9. Amateur radio operators provide significant public service using their allocated VHF and UHF bands.²² They do so without pay, and provide and pay for their own equipment, because they are forbidden to provide communications for hire for

²²See, for example, "Amateur Radio at Pasadena's Rose Parade," page 30, and "Hams Brave Ice Storms, Typhoon" and "Hams Commended for Rescue Effort," both in "Happenings," and all three in QST, March, 1998; "Hams Weather West Coast Rains, Ice" in "Happenings" at page 81, QST, April, 1998; "Hams Help in Aftermath of Florida Tornadoes" in "Happenings," page 74, QST, May, 1998; and "Bad Tornadoes Bring Out Best in Hams" in "Happenings," page 63, QST, June 1998. The St. Louis County Emergency Operations Center sponsors a RACES net for storm spotters, in which the undersigned is active. One of the alternate frequencies for this net is a repeater at 442.10 MHz. The National Weather Service St. Louis office (in Weldon Springs, MO) relies upon a 2-meter repeater having remote receivers that are relayed to the 2-meter repeater

material compensation, direct or indirect, paid or promised, for such communications.²³ Moreover, they must pass license tests of varying difficulty to earn the right to use their frequencies.²⁴ There is no age limit for obtaining a license.²⁵ Also, there are many physically handicapped amateur radio operators, and at least one organization specifically dedicated to them.²⁶

10. Although amateur radio is secondary to the government radiolocation service in the 420-450 MHz band and protects this service, this sharing arrangement has permitted the growth and even the flourishing of the amateur service in this band, as is shown by the listing of repeater stations, in the ARRL Repeater Directory.²⁷ LMCC proposes to replace the government radiolocation service as the primary user of this band, maintaining amateur service only on a secondary basis.²⁸ However, LMCC has not stated how effective co-existence with secondary users could be accomplished. In fact, the Petition appears to suggest that such co-existence would be difficult, if not impossible. LMCC has admitted in its petition that the reason for their asserted need for the 420-430 and 440-450 MHz bands is for "traditional voice and low speed data applications."²⁹ Such use is incompatible with existing amateur FM repeater use, and would disrupt all amateur

transmitter by links in the 440 MHz band for information from radio amateurs concerning storms such as the tornado that passed near St. Charles, MO on May 23, 1998.

²³ 47 C.F.R. § 97.113(a)(2).

²⁴ 47 C.F.R. § 97.501, 97.503.

²⁵ It has recently been reported that a five-year-old has obtained a technician plus license. See "Youngest Hams in the U.S.?", appearing in "ARRL Letter Online," available at <http://www.arrl.org.arrlletter/98/9803020> on the World Wide Web of the Internet.

²⁶ Courage Handi-Ham System, 3915 Golden Valley Road, Golden Valley, Minnesota 55422.

²⁷ As noted earlier, this listing is only indicative of high occupancy, because the ARRL Repeater Directory is of limited scope and lists only certain types of amateur stations.

²⁸ Petition ¶ 73.

television transmissions in which the proposed narrowband use would occur. Moreover, LMCC's proposed use would be primarily in large metropolitan areas where amateur radio service in the proposed bands (except north of Line A³⁰) is heaviest,³¹ and thus would be most subject to displacement or exclusion.

11. LMCC asserts without proof or analysis that "the 430-440 MHz sub-band is more important to amateurs for use in emerging technologies such as links with spacecraft and amateur television applications," but that "[a]mateur applications in the 420-430/440-450 MHz should remain secondary to PMRS." LMCC has acknowledged that a "constriction" of the amateur radio service would occur as a result of their proposal, but propose that only 10 MHz be returned, in two non-contiguous 5 MHz segments, 1390-1395 MHz and 1427-1432 MHz.

The "alternatives" proposed by LMCC for amateurs are unrealistic, and their "advantages" to amateurs are unlikely to materialize

12. LMCC has apparently performed no study of the amateur radio service or of the displacement of that service that would occur as the result of reassignment of the 420-430/440-450 MHz bands to PMRS on a primary basis, of the expense that individual amateur radio operators would incur as the result of such reassignment, of the ability of amateurs to perform public service, or of the potential for increased exposure to RF radiation that may occur during the performance of public service functions to amateur radio operators, their families, or the general public as a result of the displacement of the

²⁹ Petition ¶ 73.

³⁰ See 47 C.F.R. §§ 97.3(a)(27), 97.303(f)(1).

amateur radio auxiliary service. Also, if the LMCC petition for reassignment of 420-430/440-450 MHz were to be favorably acted upon by the Commission, amateur television operation, which now occupies frequencies in the 420-430 MHz range, would not be possible at all in the 70 cm band, even if 420-430 and 440-450 MHz were continued to be shared by LMCC with the amateur service,³² because the LMCC's narrowband carriers would destroy all possibility of normal video reception. Such operation would have to be moved, at the sole, unreimbursed expense of individual amateurs, to frequencies above 902 MHz, if any are available as a result of other sharing arrangements.³³ Moreover, the 1390-1395 MHz and 1427-1432 MHz bands proposed by LMCC for reallocation to the amateur service in recognition of the constriction that would occur in the amateur service³⁴ are non-contiguous, and are simply not wide enough for standard 6 MHz amateur television operation. In addition, these higher band segments suffer from the same problems for amateurs that LMCC asserts exists for them - lack of available equipment, inability of existing equipment to be retuned to these frequencies because the bands are not contiguous with existing bands, and a higher cost of equipment manufacture.

³¹ Petition ¶¶ 25-30.

³²LMCC does not cite any way this sharing can be accomplished, or any instance where it has been done. The reallocation of 420-430 MHz to land mobile use above Line A has been done by a wholesale deletion of this band from the amateur service in this region. 47 C.F.R. § 97.303(f)(1).

³³It is interesting to note that, where 421-430 MHz has been reallocated in three major cities north of Line A, there are *no* television repeaters on *any* band operating in at least the largest two of these cities, Detroit and Cleveland, according to the ARRL Repeater Directory.

³⁴Petition ¶ 78

13. The so-called "advantages" that LMCC asserts for amateurs as a result of reassignment of 420-430/440-450 MHz are extremely unlikely ever to be realized. LMCC asserts that, "to the extent that new PMRS advanced services are implemented here [in the 420-430/440-450 MHz bands], equipment availability and technology would benefit amateurs pursuing such applications as compressed video television in the 430-440 MHz band." Petition, ¶ 73. However, LMCC has provided no data on how many amateurs are pursuing such activities, or whether the displaced amateur activity is more important than the proposed "advantage." Moreover, one reason for the LMCC's demand for the *immediate* reallocation of the 420-430 and 440-450 MHz bands is that they are so conveniently close to their present allocation as to allow present equipment to be used at minimum expense,³⁵ and "the most urgent need for PMRS is the more traditional voice and low speed data applications ..."³⁶ Therefore, it is highly unlikely that this alleged "benefit" will ever be seen by amateur radio operators. Even if the alleged "benefit" were to materialize, the undersigned asserts that the displacement of thousands of repeaters, and links for repeaters operating not only on 70 cm, but on lower amateur radio bands as well, to satisfy LMCC's petition would wreak havoc not just on the bands reassigned for PMRS use, but on *all* of amateur radio's VHF and UHF bands, where most local community service and emergency communications occur.

³⁵ Petition ¶ 72

³⁶ Petition ¶ 73

The savings to be realized by PMRS users, including those of large corporations, will be obtained at the financial expense of individual amateurs who are forbidden by law from recouping their losses

14. While some amateur uses of the 440-450 MHz band perhaps could be moved to 430-440 MHz or elsewhere, it is respectfully submitted that any such movement would exact a considerable financial cost on the amateur service. Although LMCC asserts that PMRS services are not used by their members for profit-making purposes, many of the asserted uses are in furtherance of profit-making activities or at least in furtherance of a business purpose. As noted above, amateur radio operators, on the other hand, are forbidden by law to receive *any* remuneration, direct or indirect, for their services. The public services provided by amateurs are provided at their own personal expense, with their own personal equipment, strictly as volunteers, with *no hope of ever recovering their expenses for their equipment or their time*. Any cost required by the relocation of tens or hundreds of thousands of amateurs away from the bands reallocated under LMCC's demand would unfairly be borne directly by individual amateur radio operators, with no hope of recovery. These costs may include, but are not limited to, payment for additional telephone lines to replace radio links for remote repeater receivers, links, and auxiliary stations; retuning or replacement of equipment for control links rendered unusable; inability to relocate planned and paid-for repeaters due to frequency crowding; and required factory reprogramming of base station, mobile and hand-held radios having preprogrammed offsets only for the 440-450 MHz band plan and/or which operate only in the 440-450 MHz repeater portion of the band to accommodate new, yet-to-be-determined frequencies in the 430-440 MHz band, or

elsewhere, if such is even possible. It will be impossible to reprogram amateur television equipment without actually replacing the transmitter with a transmitter for a different band. Certainly, Fortune 500 companies and top 10 industrial companies³⁷ such as Amoco³⁸ could recover the expense of new radio equipment through increases in prices of their goods or services or through savings that result in increased profits. However, it is inequitable for these savings to be gained at the expense of individual amateurs, many of whom are children or young adults, and some of whom are handicapped -- all of whom have studied diligently and voluntarily to pass license exams of varying difficulty,³⁹ and many of whom perform public service without any hope of ever receiving any compensation other than the satisfaction of their hobby. If any service is to be displaced or saddled with impractical sharing arrangements, it should be one that is provided by law with access to the resources to defend itself, or a band in which all members of the public must share in the costs of relocation equally, such as a band allocated solely for government use.⁴⁰

³⁷Petition ¶ 4

³⁸Petition ¶ 7

³⁹At least a technician class license is required for use of the 70 cm amateur band. 47 C.F.R. § 97.301. This is a test of intermediate difficulty. 47 C.F.R. § 97.503.

⁴⁰ Possibly, some equipment presently used in amateur radio service (although not "homebrew" equipment) might be permitted for use in a new 70 cm PRMS service, but the sale of such used amateur equipment to PMRS users is likely only to represent an unearned windfall to commercial users at the expense of amateurs.

If the Commission decides that additional PMRS spectrum is needed, it should come from sources other than primary and secondary amateur radio allocations

15. Unlike many commercial services, the Commission does not keep detailed records of the frequencies that are actually used on a day-to-day basis by amateur radio operators, nor are statistics readily available (at least to the undersigned) for the ages of amateur radio operators or for the number of handicapped amateur radio operators. Because of the significant impact that is likely to occur to these groups if the LMCC proposal to reallocate portions of the 70 cm amateur band for PMRS use, however, it is respectfully submitted that considerable additional time for study of this impact is needed. However, in view of adverse impacts to the amateur service that can readily be anticipated, it is submitted that the Commission should instead consider reallocation of other bands, such as in the 225-406 and 406-420 MHz bands, to satisfy LMCC's needs.

Bands considered "useless" by LMCC in its petition should be reallocated to the amateur service

16. In addition to the above, it is also requested that the Commission consider reallocation of spectrum in the 25-50 MHz bands presently allocated to the land mobile service for amateur use on a primary basis as part of this proceeding irrespective of the disposition of the 420-430/440-450 MHz bands. Such reallocation should be given high priority if any additional spectrum is allocated for PMRS use, since it can be expected from the LMCC petition that present PMRS allocations at 25-50 MHz will be vacated for

more usable spectrum.⁴¹ Present private land mobile allocations in the 25-50 MHz band should be studied to determine whether, in view of the LMCC's comments, their continued assignment for PMRS use is in the public interest, convenience, or necessity. If not, reassignment to the amateur radio service would be appropriate, because many of the asserted disadvantages of this band, such as their susceptibility to interference from long-range signals⁴² can and would be turned into advantages by the amateur service. For many decades, amateur radio operators have successfully operated on nearby short wave and VHF bands subject to many of the same disadvantages asserted by LMCC of the 25-50 MHz allocations. More recently, amateurs have successfully operated FM repeaters across the country with narrow input/output separations within the 29.51-29.69 MHz subband of the amateur 10 meter band. In a number of locations, all possible repeater frequencies in this subband are now occupied, and means have been employed to reduce interference between repeaters in distant states, and/or to advantageously use the propagation characteristics of this band.⁴³

17. Inasmuch as their usefulness as presently allocated has been put into question by LMCC's petition, the assignment of additional frequencies in the 25-50 MHz band for exclusive or primary amateur use would be of great benefit to amateur radio operators and advance the public interest. Allocation of frequencies at various ranges starting at slightly above 30 MHz would allow amateurs to conduct propagation studies that are not currently possible because of the wide gap between present amateur

⁴¹ LMCC's petition states that the VHF low band is "basically not usable in urban areas" and suffers from various other disadvantages for PMRS service. Petition ¶ 25.

⁴² Petition ¶ 25.

⁴³ See ARRL Repeater Directory, 1998-1998 Edition, pages 89-94.

allocations (29.7 to 50.0 MHz, a gap of over 20 MHz). Furthermore, many technician operators who have not passed a Morse code test and who are thus forbidden from operating below 30 MHz could, on these bands, be allowed to regularly experience long-distance propagation at frequencies slightly above 30 MHz (at least during those periods of solar activity where such propagation is favored on higher-frequency HF bands). The low VHF band would also provide suitable spectrum for expanded long-range repeater service, particularly in areas of the country where 6 meter amateur service (50-54 MHz) is likely to cause interference to television channel 2 on television sets of poor engineering design and in rural areas served by distant stations operating on channel 2.⁴⁴ Moreover, in view of the large amount of spectrum deleted in the amateur service since the 1980s, reassignment of additional spectrum to the amateur service at this time would restore confidence in those who have worked hard to earn their privileges and who donate their time and equipment to voluntary public service. Such reassignment would go a long way towards restoring confidence that their contributions are, in fact, appreciated and valued by the Commission. Without such confidence, it is probable that individuals will no longer choose to expend the effort to train themselves to be amateur radio operators, or to invest sums of money purchasing, or considerable time in constructing, equipment needed to perform public service, when it is clear that the frequencies they have worked for may disappear, and the equipment they have purchased or constructed may become obsolete or useless, on short notice.

⁴⁴ Even though the advent of all- or nearly all-UHF digital television may reduce the problem of 50 MHz interference to analog channel 2 television, it may be more than a

Summary and conclusion

18. For the above reasons, it is respectfully requested that the Commission deny the petition of LMCC to the extent that it requests reallocation of the frequency bands 420-430 MHz and 440-450 MHz from government radiolocation use to PMRS use on a primary basis, that the Commission consider other frequencies not presently allocated to the amateur service on either a primary or secondary basis for reallocation to PMRS use, that the Commission conduct further study and collect additional data concerning the financial burden of any proposed reallocation on the amateur radio service, and that the Commission consider the allocation of spectrum in the 25-50 MHz band for possible reallocation to the amateur radio service on a primary or exclusive basis.

Respectfully submitted,



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decade before all analog television broadcasts cease.