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Federal Communications Commission  
Office of the Secretary

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

In the Matter of )  
 )  
Amendment of Parts 2 and 97 of )  
the Commission's Rules Regarding )  
an Allocation of the 216-220 MHz )  
Band for the Amateur Services )

RM-7747

To: The Commission

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REPLY COMMENTS OF THE  
AMERICAN RADIO RELAY LEAGUE, INCORPORATED

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## SUMMARY

The American Radio Relay League, Incorporated submits its reply to those comments filed in response to the League's petition for rule making seeking a secondary, non-interference allocation of the 216-220 MHz band to the Amateur Radio Service.

The comments filed in response to the petition were generally favorable. Notable among these were the comments of the National Communications System of the Department of Defense. NCS supported the allocation, noting that it would to some extent substitute for the loss to the Amateur Service of the 220-222 MHz band, thus to enhance the participation of the Amateur Service in National Security and Emergency Preparedness functions.

The comments of Waterway Communications, Inc. are favorable, and represent a cooperative effort to allow coordinated shared use of the band between AMTS operations and amateur users. It is Watercom's conclusion that, with appropriate safeguards, and adequate separations between the two uses, amateurs can utilize the band without causing harmful interference to AMTS operations. Mandatory coordination, with the League as the database manager and coordinating entity, is key to Watercom's support of the League's proposal, and the League agrees.

The only entity opposing the allocation is Maximum Service Television, which submitted an unsupported critique of a portion of the League's engineering materials, and suggested that allocations should not be made in bands adjacent to television channels. MSTV essentially seeks to establish guard bands, a uniquely wasteful allocation practice. MSTV's other arguments have been already rejected by the Commission with respect to this band in particular, in other proceedings, and are in this proceeding no more substantive.

Overall, the comments are favorable, and the Commission should proceed with the issuance of a Notice of Proposed Rule Making at an early date.

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To: The Commission

REPLY COMMENTS OF THE  
AMERICAN RADIO RELAY LEAGUE, INCORPORATED

The American Radio Relay League, Incorporated (the League), respectfully submits its reply to certain comments filed in response to the Public Notice, Report No. 1850, released June 24, 1991. In continued support of the proposed allocation of the 216-220 MHz band for fixed-station amateur radio operation on a secondary, non-interference basis to existing users, the League states as follows:

I. Supporting Comments From Radio Amateurs

1. A number of individual radio amateurs filed comments in response to the League's petition. Those commenters uniformly support the proposed replacement allocation, which seeks to mitigate the loss of the 220-222 MHz band to the Amateur Service, which adversely affected the packet radio national data network. For example, the July 23, 1991 comments of Robert R. Adams (which were written before the Amateur Radio Service was excluded from that segment) state, in part, as follows:

The Ohio packet network currently makes extensive use of the frequencies 220.52, 221.11, and 223.70 MHz. The first two of these frequencies must be relinquished as a result of the reallocation of the 220-222 MHz segment. With the relatively narrow bandwidth required by our current operation, primarily at 4800 bps, we will be able to accommodate this activity in the remaining 222-225 MHz segment. However, efficient emergency communications require that we provide higher data rates. We are currently operating a portion of the network at 9600 bps, and plan to progress to still higher rates...The higher data rates require greater bandwidths, and it appears that it will be extremely difficult, if not impossible, to accommodate such new activity along with that which is already well established in the remaining 222-225 MHz band.

2. Amateurs in other areas are affected to an even greater extent. The node-to-node packet radio links in the 223 MHz band in the populous portions of the northeastern United States are overcrowded, and the data communications are slowed significantly. Conversely, the comments of the New Hampshire Office of Emergency Management in this proceeding note that more populous portions of New Hampshire, Vermont and Maine are separated by rural areas, and that the propagation characteristics of the 216-220 MHz band are required for the long haul packet links which cannot be accommodated at 222-225 MHz:

Installation of intermediate digital communications stations is difficult, if not impossible, due to legal and/or environmental restrictions. In some cases, sites that are otherwise suitable locations for such digital packet radio systems are, at present, inaccessible due to the remoteness of those sites. One of the few answers to the problem is the use of the long haul propagation characteristics of the 216-220 MHz band. Those characteristics do not exist on the higher frequency bands...available to the Amateur Service.

3. Those comments note further that the possibility of establishing high-speed data links is non-existent, due to existing

repeater operations at 222-225 MHz, and as such, plans for future expansion of the digital communications network have been delayed due to the loss of the 220-222 MHz band. Access to 216-220 MHz would allow such expansion. Other comments note similar difficulties in reestablishing packet operation above 222 MHz, and the resulting preclusion of all efforts to initiate high-speed packet inter-city links.<sup>1</sup>

## II. Supporting Comments of the National Communications System

4. Supporting comments were also filed by the Manager of the National Communications System, Department of Defense (NCS), on or about July 24, 1991. Those comments conclude that the League's petition for a secondary, non-interference allocation at 216-220 MHz for fixed, point-to-point amateur operation, coordinated in advance by the League, "provides a reasoned and technically viable alternative to the loss of the amateur capability to assist in NS/EP (National Security/Emergency Preparedness) functions that resulted from the actions taken in Docket 87-14." These comments note that the Department of Defense had previously urged the retention by the Amateur Radio Service of the 220-222 MHz band, in view of the value of amateur radio operators as a resource to be utilized by the NCS in carrying out its NS/EP responsibilities, and because the loss of that segment would "substantially diminish" the present level of amateur capability to participate in NS/EP

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<sup>1</sup> See, e.g. the comments of the Valley Emergency Radio Association, filed October 23, 1991.

functions, and would "greatly limit" future services. Because that reallocation has now occurred, the NCS "supports the Petition for Rulemaking filed by the ARRL in that it would, should the proposed rules be adopted, restore at least some of the ability of the amateur radio operators to assist in NS/EP functions that was taken away as a result of Docket 87-14."

5. Key to the National Communications System's confidence in the viability of the League's petition is that the proposed allocation at 216-220 MHz would be limited to operation at fixed points, with certain frequency and geographical limitations, and would be made on a non-interference, coordinated basis with respect to existing and proposed services in that same band. Because the League is willing to coordinate, through database management and contact with representatives of other services, any amateur operation in the band, and will assist in resolving any interference problems that may arise, NCS notes that "any administrative burden that might otherwise be imposed on the Commission will be greatly alleviated." The NCS comment is prescient, in that the League and Waterway Communication System, Inc. (Watercom) have already conferred on the proper arrangements for distance separations and coordination requirements for amateur operation at 216-220 MHz which would sufficiently protect all AMTS operations in the band, as is more fully discussed below.

### III. Supporting Comments of Watercom

6. Other than the supporting comments of amateur radio operators and groups, and of NCS, the only comments filed were from

Watercom and the Association of Maximum Service Television, Inc. (MSTV).<sup>2</sup>

7. The comments of Watercom represent a commitment to pursue technical sharing criteria between the League's and Watercom's technical staff, which discussions have commenced and which are ongoing. Watercom's comments initially take issue with the League's engineering analysis of the separation necessary to protect AMTS stations from interference from co-channel and adjacent channel amateur stations, but conclude that "with appropriate separations between AMTS operations and Amateur Service stations, the Amateurs can utilize 216-220 MHz band frequencies without causing harmful interference to AMTS operations" (Watercom comments, at 3).

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<sup>2</sup> The League is aware of a petition, RM-7784, filed July 30, 1991 by Pronet, Inc., which seeks a secondary allocation of three, 8 kHz channels at 216-220 MHz for electronic tracking, now done under Part 5 in the band, and under Part 90 in other bands. Pronet has not submitted comments in response to the League's petition, and it is assumed therefore that Pronet has no substantive objection to the Amateur Radio allocation proposed by the League. It would not appear that the League's proposal and that of Pronet are necessarily mutually exclusive. The League is, however, in

8. This conclusion of Watercom is dependent on the League's establishment of a mandatory frequency coordination process, which Watercom suggests should be handled by the League. The League initially suggested that mandatory coordination could be avoided by an amateur licensee if that licensee chose instead to provide his or her own detailed engineering analysis, establishing that a particular installation would create no interference to television channel 13 viewing, nor to AMTS or other co-channel or adjacent channel users in the band. Self-certification may well be, as Watercom asserts, unworkable in this context.

9. The League agrees with Watercom that mandatory coordination is desirable, and is willing to perform all necessary database management, administration, and technical coordination functions with Watercom and other industry representatives, at no cost, to insure that all amateur operation at 216-220 MHz is coordinated in advance of commencement of operation. The League will also participate in resolution of any actual interference problems which arise despite the coordination. Watercom notes that amateurs are a well-identified and homogenous group,<sup>3</sup> and that the League should be the single point of contact for such coordination, as it "generally has been recognized as representative of the Amateur

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<sup>3</sup> To this the League would add that the Amateur Radio Service is essentially self-regulating, and rule compliant in the extreme. Frequency coordination is not new in the Amateur Radio Service, and the success of voluntary band planning has overall been good. There is every reason to believe that amateurs will comply with all coordination requirements for fixed-station operation in the 216-220 MHz band, and that there will be no enforcement burden of any magnitude whatsoever created by the allocation.

community at large", and urges that "the interests of all parties will best be served by establishing an effective, mandatory frequency coordination process managed by the ARRL" (Watercom comments, at 5). The League supports the suggestions of Watercom, and believes that agreement will be reached with respect to all coordination details in advance of commencement of any amateur operations in the band.

#### IV. Comments of MSTV

10. The only opposing comment in response to the League's petition was filed by MSTV. Typical of the reflexive reaction of MSTV to any proposal involving the 216-220 MHz band,<sup>4</sup> MSTV here expresses the same concern about potential interference to television channel 13 as it has with respect to virtually all other proposals<sup>5</sup> for use of the band: that the League's proposal creates

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<sup>4</sup> MSTV risks loss of credibility by the repeated crying of "wolf" to any such proposals. The Commission has already determined that as a matter of policy, it will not preclude adjacent band allocations based on mere speculation as to the potential for interference to television reception. See, e.g. Resolution of Interference Between UHF Channels 14 and 69 and Adjacent Channel Land Mobile Operations, 2 FCC Rcd. 7328, 7331 (1987); and the First Report and Order in the AMTS proceeding, Docket 88-372, 6 FCC Rcd. 437, 439 (1991). The Commission also states that interference is generally non-existent from adjacent channel private land mobile stations to television reception; interference, if any, would in fact be suffered by the land mobile user.

<sup>5</sup> Anomalously, however, MSTV has essentially acceded to the proposal of TV Answer, Inc. to establish an interactive video data service in the 216-220 MHz band, which would involve the IVDS transmitters to be co-located with television receivers. (See, the comments and reply comments of MSTV in Docket 91-2, filed June 10

the possibility of interference to adjacent band television channel 13 operation.

11. MSTV first describes the 216-220 MHz band as a "major spectrum battleground" involving IVDS and AMTS as the "principal warriors" and in that inflammatory manner attempts to play one

is not factual. AMTS operations occur in direct proximity to numerous channel 13 allocations, most notably St. Louis, Missouri. There is even less potential for interference to television viewers from the League's proposal for fixed amateur operation than there is from mobile facilities, as fixed operations utilize directional antennas. All amateur use will be coordinated, and coordination will not be granted to any amateur radio licensee if that proposal will not meet the calculated protection criteria.

13. MSTV attempts to discredit the League's empirical tests of television receivers submitted with the petition, but offers no technical analysis itself to justify its own conclusion that there is a significant interference potential to Channel 13 television viewers. All that was concluded from the empirical study, which in fact was conducted in accordance with the procedures used in the 1975 FCC Laboratory Division Study of interference to television channels 11 and 13 from transmitters operating at 216-225 MHz.<sup>7</sup> There is no suggestion that the Commission's model used for the League's tests was flawed when the Commission used it in 1975, and no indication that the procedures have been discredited since.

14. Neither does MSTV address at all the calculations of Atlantic Research Corporation's ARC Professional Service Group, C3I Systems Division, which show that co-site operation of television receivers and amateur transmitters at the Grade B contour of a

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<sup>7</sup> See, Davis & Middlekamp, "Interference to TV Channels 11 and 13 from Transmitters Operating at 216-225 MHz", project No. 2299-71 (1975).

channel 13 television station is possible, given the selectivity characteristics of the receivers;<sup>8</sup> and that within the Grade A contour, amateur operation to 216 MHz should be possible. Contrary to MSTV's unsupported assertion, it is not necessary to perform additional tests because the signal levels and signal-to-interference ratios that are needed for television reception are known. Propagation models are used to estimate the path loss for proposed uses. To suggest that such is not possible suggests that the propagation models are inaccurate, which flies in the face of normal engineering practice. In essence, MSTV is suggesting that any engineering analysis, to be believed, must be tested in the field. For good reason, the Commission has never operated that way. The League has established, prima facie, that coordinated, non-interference amateur operation at 216-220 MHz is possible, and that the League is willing to perform all coordination activities. If an amateur fixed station is coordinated and it causes interference to television viewers, which is unlikely, the amateur operation will be discontinued unless and until steps are taken to eliminate the interference. MSTV's ideal, the establishment of guard bands adjacent to television broadcasting channels, is a luxury unavailable to the television broadcasting service, due to pressure on the radio spectrum. In fact, the bands adjacent to each of the television channels are allocated to other services. Experience with operation in these other services (including the Amateur

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<sup>8</sup> See the League's Petition, at 24, 25; Compatibility Assessment (Exhibit B) at 9.

Service at 50-54 MHz) has shown that any incidental interference which may exist in specific cases can be resolved.<sup>9</sup> There is, and the League's compatibility analysis demonstrates this, no significant potential for interference from amateur 216-220 MHz operation.

15. All engineering calculations aside, the proposed allocation is a secondary, non-interference allocation, and the unfounded fears of interference of MSTV are superfluous by definition. All amateur stations are identified at intervals of ten minutes, and the League, as the sole database administrator and coordinator will know the exact location, telephone number and system configuration of every station operating at 216-220 MHz. If any interference is caused in fact to channel 13 television viewers, the amateur station would have to remedy it or discontinue operation, as television broadcasting is a primary user in the adjacent band. That requirement would apply no matter what the results of the Commission's Advanced Television proceedings may be. The suggestion that there may be some ATV standard adopted in the future which may or may not have some impact on users of adjacent frequency bands is hardly grounds for restriction of the allocation status in four megahertz adjacent to a television band, and the

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<sup>9</sup> Further, as noted in the League's Petition, the Commission has recognized that private land mobile stations have, for years, operated on frequencies adjacent to TV Channels 14 and 69, without adverse effect on TV reception. See, the First Report and Order in Docket 88-371, 6 FCC Rcd. 437, 439 (1991), and there have been no reports of interference from AMTS operations to television channel 13 viewers.

Commission has so determined.<sup>10</sup> Such an allocation standard has not only already been rejected by the Commission, it would to any reasonable person skilled in frequency allocations be obviously, stunningly wasteful. Similarly conjectural is the assumption that there will be a significant increase of channel 13 allocations throughout the country after authorization of an ATV system. Even if that were true, it provides no justification for preclusion of amateur operation in the adjacent band.

16. MSTV, alone in its opposition to the proposed amateur allocation, suggests that the Commission should not be "stampeded" by the League into a "precipitous and highly risky" allocation. It is difficult to determine the source of MSTV's overly strident characterization. Certainly nothing in MSTV's comments justifies it. The League merely filed a petition, supported by engineering data, at the Commission's invitation to do so, and at the recommendation of the Chairman of the Government Information, Justice and Agriculture Subcommittee of the House Government Operations Committee that the Commission allocate replacement

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<sup>10</sup> In the AMTS First Report and Order, supra, the Commission dismissed this exact argument:

Broadcasters also argue that future Advanced Television (ATV) will be particularly sensitive to interference. AMST Comments at 16. Since ATV is to be accommodated within spectrum allocated to the broadcasting service, not maritime mobile service, this should not be a concern. As discussed...above, the rules provide that no harmful interference be caused to television reception by AMTS. See Advanced Television Systems, 3 FCC Rcd. 6520, 6521, 6530 (1988).

6 FCC Rcd. at 439.

spectrum for that lost to the Amateur Service at 220-222 MHz. That is what the League has sought, and is proposing the least intrusive method of mitigating its loss. The allocation proposes no

~~disruption to the Amateur Service by the allocation of more~~

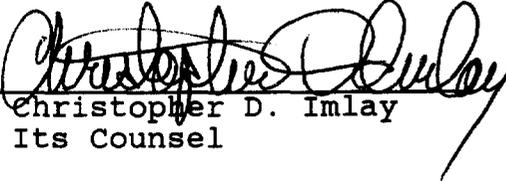
Therefore, the foregoing considered, the American Radio Relay League, Incorporated respectfully requests that the Commission issue a Notice of Proposed Rule Making, as herein discussed.

Respectfully submitted,

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November 7, 1991

CERTIFICATE OF SERVICE

I, Margaret A. Ford, Office Manager of the law firm of Booth, Freret & Imlay, do hereby certify that copies of the foregoing REPLY COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED were mailed this 7th day of November, 1991, to the offices of the following:

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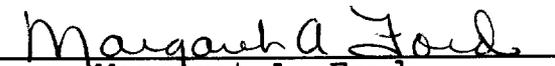
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