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

MAR 26 1991

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of:

Telocator Petition For )  
Rulemaking to Amend Part 22 of )  
the Commission's Rules Concerning ) RM - 7617 ✓  
The Use of 930-931 MHz For An )  
Advanced Messaging Service )

TELOCATOR REPLY COMMENTS

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List A B C D E

TABLE OF CONTENTS

	<u>Page</u>
I. SUMMARY . . . . .	1
II. THE COMMENTS SUPPORT A RULEMAKING TO ALLOW USE OF 930-931 MHz FOR ADVANCED MESSAGING SERVICES . . . . .	3
A. The Parties Commenting Are Representative Of The Entire Mobile Communications Industry . . . . .	3
B. There Is A Substantial Untapped Public Demand For Advanced Messaging Services . . . . .	5
C. New And Needed Advanced Messaging Services Cannot Emerge Without An Allocation of 930-931 MHz . . . . .	7
D. The 930-931 MHz Band Is Ideal For Deploying Advanced Messaging Services . . . . .	10
E. The Need For Prompt Commission Action Is Highlighted by the Rapid Proliferation of Small, Portable Computing Devices . . . . .	12
III. THE COMMENTS CONFIRM TELOCATOR'S VIEW THAT 930-931 MHz IS INAPPROPRIATE FOR CT-2 OR LOW EARTH ORBIT SYSTEMS . . . . .	13
IV. CONCLUSION . . . . .	15

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REPLY COMMENTS OF TELOCATOR

Telocator, by its attorneys, hereby submits its Reply to Comments filed concerning Telocator's Petition for Rulemaking to allow use of 930-931 MHz for a new Advanced Messaging Service ("AMS").<sup>1</sup> Telocator believes that the overwhelming industry support for all aspects of Telocator's Petition is a mandate for the Commission to initiate promptly the requested rulemaking and bring the benefits of AMS to the American public. As documented in the comments, AMS offers an exciting and pressing opportunity for deployment of the next generation of messaging services that marry advanced wireless capabilities with advanced computer technologies.

I. SUMMARY

Telocator's Petition for Rulemaking to allow use of 930-931 MHz for AMS clearly has been well received by the industry as a whole. The major trade associations, as well

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<sup>1</sup> See Public Notice Rpt No. 1836 (Feb. 7, 1991).

as manufacturers and independent providers, have supported AMS as a necessary and needed step for the messaging industry. As Telocator documents below, commenters also have agreed that the virtual explosion in computer technology has provided substantial opportunities by creating a vast market for specialized and advanced services.

Commenting carriers and manufacturers do not believe that overlaying digital AMS systems on current paging systems is practical or desirable. The comments indicate that if the next generation of messaging services is to be deployed, new spectrum is required. And, for a variety of reasons, including market economies and consistency with the Commission's allocation policies, the 930-931 MHz band is ideal for AMS.

In its Petition, Telocator extensively addressed possible uses of the 930-931 MHz spectrum band for CT-2 and low earth orbit ("LEO") satellite services. The Petition excerpted relevant comments from both the Commission's PCS Inquiry and the WARC-92 proceeding, and demonstrated that 930-931 MHz was even deemed unsuitable for CT-2 and LEO services by the respective service proponents themselves. Telocator believes this remains a valid conclusion in light of the absence of substantive comment here by either CT-2 or LEO providers.

Accordingly, in view of the public interest benefits documented in its Petition and the responsive comments,

Telocator respectfully requests that the Commission promptly initiate a rulemaking to grant AMS carriers access to the 930-931 MHz band. This action will allow important progress in the deployment of the next generation of messaging services for our country.

II. THE COMMENTS SUPPORT A RULEMAKING TO ALLOW USE OF 930-931 MHz FOR ADVANCED MESSAGING SERVICES

Telocator is gratified at the widespread industry support of both its AMS concept and the need for a rulemaking to allow access to the 930-931 MHz channels by AMS carriers. The parties commenting, whether providers, manufacturers, or trade associations, have nearly universally agreed that the time has arrived for deploying a future generation of messaging services.<sup>2</sup> In particular, the commenters concur that (1) there is a substantial untapped public demand for AMS, (2) AMS can not be realistically superimposed upon existing paging allocations, and (3) the 930-931 MHz band is ideally suited for AMS from economic, technical, and spectrum management perspectives.

A. The Parties Commenting Are Representative Of The Entire Mobile Communications Industry

Significantly, and indicative of the widespread support for Telocator's Petition, all major land mobile

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<sup>2</sup> The comments of the only party objecting to aspects of Telocator's proposal, Northern Telecom, are treated at Section II, infra.

communications trade associations filed comments calling for the use of 930-931 MHz for AMS. The Land Mobile Communications Council ("LMCC"), an umbrella trade association for land mobile radio interests, states:

Because this band is now necessary to continue the successful development of paging, and because the use of this band for AMS is entirely consistent with the Commission's spectrum planning for the future requirements of paging, LMCC supports allowing AMS operators access to 930-931 MHz channels.<sup>3</sup>

Consequently, LMCC "urges the Commission to institute a rulemaking to allow the use of 930-931 MHz for AMS."<sup>4</sup>

The National Association of Business and Educational Radio ("NABER") also "agrees that now . . . is an appropriate time for the Commission to release the final portion of spectrum allocated for paging service."<sup>5</sup> In conjunction

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<sup>3</sup> LMCC at 4.

<sup>4</sup> LMCC at 5.

<sup>5</sup> NABER at 3. Telocator notes that NABER's comments seem to suggest that AMS could serve as a reserve for additional conventional PCP channels. To that extent Telocator and NABER differ. AMS should be granted access to new spectrum because, among other things, it requires a different technical foundation from conventional paging. AMS is envisioned as a digital, high speed information system and use should be appropriately so used.

Further, Telocator sees no basis for NABER's request for a 50/50 division of AMS channels between common carriers and private carriers. As envisioned, AMS would be aimed at a broad public market rather than large private users who already have access to spectrum for their individualized needs. See, e.g., Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Public Land Mobile Service, 3 FCC Rcd 5287

with Telocator, the trade associations filing in this proceeding collectively represent support by the vast majority of the land mobile community.

B. There Is A Substantial Untapped Public Demand For Advanced Messaging Services

There also is near uniform consensus among the parties commenting that significant pent-up demand exists for next generation paging services, attributable to factors like public need for enhanced, specialized, and complementary services.<sup>6</sup> Commenters indicated both that users are requesting a variety of advanced features today, and that demand is expected to grow explosively for the foreseeable future.

Metriplex, for example, notes that "[c]ustomers . . . are increasingly asking for the transmission of graphics and other types of information requiring high data rates," including customer requests "to integrate laptop and 'palmtop' computers with fixed database and library services over wide geographic areas. . ."<sup>7</sup> Mobile Telecommunications Technology Corporation ("Mtel"), for its part, notes that "purchasers of one-way communications services have become

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(1988), recon. denied, 4 FCC Rcd 6407 (1989).

<sup>6</sup> Several commenters, like Telocator, noted the prospective potential of AMS to complement and benefit PCS systems. MCC at 2; Mtel at 2 n.4.

<sup>7</sup> Metriplex at 1-2.

more sophisticated, and they have rapidly absorbed the 'advanced' features introduced by providers to date."<sup>8</sup>

McCaw Cellular Communications, Inc. ("McCaw") also concurs that "increasingly more sophisticated paging services are being offered and subscribed to by customers."<sup>9</sup>

Equipment manufacturers like Minilec and Real Time Strategies also testify as to the demand for advanced services. Minilec differentiates "call alert" paging from services like its "Ready Talker," a high capacity portable voice messaging unit, and states that "[i]ndustry response to our Ready Talker concept was overwhelmingly positive."<sup>10</sup> Real Time Strategies ("RTS") also produces an AMS class device, which they state will "even further increase the penetration of alphanumeric pagers."<sup>11</sup>

By far the most comprehensive analysis of demand, however, was submitted by Motorola. In addition to

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<sup>8</sup> MTel at 2. As examples, MTel cites the demand for nationwide and regional services, alphanumeric services, and even "conventional" voice services lacking the convenience of store and replay. MTel at 2-3.

<sup>9</sup> McCaw at 1-2. Specifically, McCaw cites the success of its paging system developed for The Goodwill Games, "designed to use alphanumeric paging receivers to dispatch event result information immediately to reporters wherever they were. . ." McCaw at 3. Based on the substantial demand McCaw witnessed for such services, McCaw is "currently investigating the possibility of implementing additional services which would fit under the [AMS] category." Id.

<sup>10</sup> Minilec at 2.

<sup>11</sup> RTS at 2.

testimonial support, Motorola has provided an exhaustive numerical quantification of demand for AMS projected to the year 2000, based on growth estimated by independent market analysts for analogous markets and technical feasibility limitations.<sup>12</sup> The results of Motorola's analysis are telling. By the year 1995, a 1 MHz allocation will be inadequate to serve AMS demand in large cities, and, by the year 2000, demand will constitute over 250 equivalent channels in New York, with remaining major metropolitan areas easily exhausting the 1 MHz allocation.<sup>13</sup> Spectrum allocated to AMS will obviously not lie fallow.

C. New And Needed Advanced Messaging Services Cannot Emerge Without An Allocation of 930-931 MHz

The parties commenting in this proceeding have provided a lengthy list of offerings requested by the public. These services, currently under development with existing technology, include:

- ° Alphanumeric paging operating in conjunction with database services to provide integrated information delivery mechanisms;
- ° Voice storage and forwarding systems;
- ° Electronic mail systems, for both conventional and data applications;
- ° Telemetry of industrial plant process control data;

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<sup>12</sup> Motorola at 9, fig. 4.

<sup>13</sup> Motorola at 10-11 & fig. 5.

- Rapid response medical data telemetry;
- Integrated messaging and radio positioning; and
- Graphics and facsimile services.

In order to bring these services to the public, however, the commenters agree that new spectrum is required. For a variety of reasons, existing paging allocations simply will not support the demands imposed by next generation one-way services.

First, as numerous commenters have indicated, spectrum congestion problems existing in conventional paging bands would stifle the introduction of AMS at a minimum, and totally preclude AMS at worst. MCC states, for example:

The largest paging markets already suffer from a lack of frequencies for existing paging service, and simply have no space for these new services. . . we have reached the limits as to accommodating increased growth through additional spectrum use efficiencies.<sup>14</sup>

Mtel, for its part, states that "[i]t is beyond question that there is substantial congestion within presently allocated paging bands that would preclude the introduction of AMS."<sup>15</sup>

Second, commenters point to technical difficulties that would be engendered by integrating existing paging systems with AMS applications. Motorola states:

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<sup>14</sup> MCC at 2.

<sup>15</sup> Mtel at 4.

[AMS is] expected to operate at a multiple of four or more times the bit rate of 1200 BPS POCSAG. With these higher bit rates, the air propagation delay differentials from the transmitters will leave only a few microseconds tolerance for transmission differentials. Additional variances from current paging systems may be caused by new modulation methods, new design strategies, closer sites, and other factors associated with higher speed AMS signalling technology.<sup>16</sup>

These fears have largely been borne out by the practical experiences of providers that have attempted to integrate AMS systems with conventional systems. Metriplex, for example, provides advanced alphanumeric information services and attempted to overlay its systems on current paging systems. Metriplex indicates that such integration "causes system overload due to system design, modulation techniques, and conflict with conventional radio paging techniques (e.g. accuracy of synchronization, message queue management, and control techniques)."<sup>17</sup>

Another provider, McCaw, created an advanced alphanumeric information messaging system for use at the Goodwill Games to allow the immediate dispatch of event results to the international press corps covering the sporting event. McCaw indicates that the technical success with its Goodwill Games AMS system was largely due to the fact that the 900 MHz frequency was not being used for

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<sup>16</sup> Motorola at 13

<sup>17</sup> Metriplex at 2.

conventional paging, and the McCaw system was able to transmit 256 characters, as opposed to the standard of 80 characters.<sup>18</sup>

Finally, Motorola concludes, quite validly, that "the system changes to implement AMS technology would be so drastic that prudent system operators would understandably decline to modify existing paging systems."<sup>19</sup> Consequently, the existence of a substantial base of conventional users makes it difficult to accommodate a new generation of services not only in terms of channel space, but also in terms of providers' costs in creating dual-purpose schemes, and the difficulties engendered by radically different technical foundations.

D. The 930-931 MHz Band Is Ideal For Deploying Advanced Messaging Services

Commenters in this proceeding have also agreed with Telocator that the "advanced technology" paging reserve is an ideal spectrum band in which to deploy AMS. Not only is this 1 MHz consistent with the Commission's previous spectrum allocation planning, it also would allow providers economic

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<sup>18</sup> McCaw at 4 n.5.

<sup>19</sup> Motorola at 13. See also Minilec at 2-3 (stating "[o]ur analog voice compression yielded a 400% improvement in efficiency over any pre-existing voice product, yet this was still deemed insufficient to overcome the problems associated with mixing formats on any given channel").

efficiencies critical to assuring the short term viability of AMS for innovators.

A number of commenters have specifically referenced the Commission's order reserving the 930-931 MHz band for "advanced technology" paging.<sup>20</sup> Universally, these commenters agree that the AMS concept is wholly consistent with the Commission's original purposes in 1982, but updated to reflect the technical advances voluntarily incorporated into conventional paging systems.

There also are economic efficiencies to be gained by deploying AMS below 1 GHz that strongly argue for allowing providers to initiate AMS services in the 930-931 MHz band. The "advanced paging" reserve, as an initial matter, is a one-way allocation between two paging allocations, a factor that will "greatly facilitate[] the rapid [deployment] of products and services by saving both time and money which must be devoted to research and development."<sup>21</sup> As Motorola notes, one-way services -- even advanced one-way services -- are positioned as a "lowest cost service," and forcing AMS into spectrum above 1 GHz may be attended with severe cost penalties.<sup>22</sup> Recognizing, of course, that AMS may well be expanded to such frequencies in the future, Motorola explains "[t]his spectrum is needed today for the development of

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<sup>20</sup> LMCC at 3, Mtel at 3-4.

<sup>21</sup> Motorola at 12.

<sup>22</sup> Motorola at 12.

technologies . . . at affordable prices . . . which can then be passed on to higher bands when costs will have been reduced by the public's expanded use."<sup>23</sup>

The commenters make it clear that AMS services are in the public interest, and that there has been a significant ground swell of interest in obtaining and developing enhanced and specialized one-way services. As they almost all agree, the regulatory course that will foster economic deployment of AMS is allowing access to the 930-931 MHz band.

E. The Need For Prompt Commission Action Is Highlighted by the Rapid Proliferation of Small, Portable Computing Devices

Echoing Telocator's Petition, a number of parties commented on the recent advances in the portable computer market as a driving force for AMS applications. Motorola, in fact, has used Dataquest figures to show exponential growth in the numbers of these devices.<sup>24</sup> Telocator believes that these trends highlight the need for prompt Commission action on its petition.

The miniaturization of the computer, at its most basic level, is an attempt to untether the user from the office environment.<sup>25</sup> Yet, computing is rarely done in a void and

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<sup>23</sup> Id.

<sup>24</sup> Motorola at 4, fig. 1.

<sup>25</sup> The uses for these devices have also been documented in a number of recent articles. The March 18, 1991, Business Week cover story, for example, describes the

users will require wireless interfaces in order to use portable computers effectively. Telocator believes that a large segment of these users' needs can be satisfied economically by AMS.

Although the tetherless office concept is not new, in the words of AT&T's manager of information technology, "all of a sudden, the technology came together."<sup>26</sup> In effect, what has lagged behind is the RF technology to support a mobile office. AMS, by providing low cost e-mail and other data delivery services over broad areas, could substantially fill this void. And, AMS is capable of providing these services now. All AMS requires is a 1 MHz investment of spectrum.

III. THE COMMENTS CONFIRM TELOCATOR'S VIEW THAT 930-931 MHz IS INAPPROPRIATE FOR CT-2 OR LOW EARTH ORBIT SYSTEMS

In its Petition, Telocator extensively addressed possible uses of the 930-931 MHz spectrum band for CT-2 and low earth orbit ("LEO") satellite services. The Petition excerpted relevant comments from both the Commission's PCS

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explosive growth of portable and laptop computers. Among other things, this article discusses a recent AT&T experimental program where over 10,000 salespeople will be equipped with a "mobile office" -- a laptop with a modem and a cellular telephone. Business Week, No. 3204 p. 118, 124 (March 18, 1991).

<sup>26</sup> Id.

Inquiry<sup>27</sup> and the WARC-92 proceeding,<sup>28</sup> and demonstrated that 930-931 MHz was even deemed unsuitable for CT-2 and LEO services by the respective service proponents themselves.<sup>29</sup> Telocator believes this remains a valid conclusion in light of the absence of substantive comment here by either CT-2 or LEO providers.

Specifically, Telocator's Petition referenced the statements of numerous commenters in the PCS Inquiry relating to the proposal to allocate 930-931 MHz to CT-2 services. Based on these comments, Telocator noted "lukewarm support for such an allocation" but "widespread and well-founded opposition," and concluded that "the Commission's proposal to allocate three megahertz in the 900 MHz band will not provide a sound foundation for the future."<sup>30</sup> No CT-2 proponents other than NT have come forth to address Telocator's conclusions in this proceeding, and, in fact, NT merely seeks to clarify its prior statements about 930-931 MHz. In particular, NT has not opposed either the need for AMS

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<sup>27</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, 5 FCC Rcd 3995 (1990).

<sup>28</sup> An Inquiry Relating to Preparation for the International Telecommunication Union World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Second Notice of Inquiry, FCC 90-316 (October 2, 1990).

<sup>29</sup> Telocator Petition at 16-21 & App. A.

<sup>30</sup> Telocator Petition at 19.

services or the conclusion that 930-931 MHz is necessary for the deployment of AMS.

Telocator's Petition also addressed, among other things, the size, weight, and power implications of a LEO system operating at frequencies above 150 MHz, further noting that at least some of the LEO proponents have expressed a preference for alternative allocations. No LEO proponents have chosen to comment in this proceeding on Telocator's analysis. Accordingly, Telocator affirms its position that 930-931 MHz is wholly unsuitable for LEO applications.

Thus, in light of the documented benefits of AMS and the absence of any showing that 930-931 MHz is appropriate for either CT-2 or LEO use, Telocator submits that the public interest best would be served by a prompt rulemaking to give AMS providers access to 930-931 MHz channels.

#### IV. CONCLUSION

As documented in Telocator's original Petition, and in the comments of parties representing the gamut of land mobile communications interests, messaging services are on the brink of a profound leap forward. Uniformly, commenters have noted the substantial untapped demand for low-cost wireless services to complement and enhance new technologies, and the need for new spectrum to bring AMS to the public. Telocator, and the vast majority of parties commenting, also believe that the 930-931 MHz advanced paging reserve is the perfect

band in which to deploy AMS. Accordingly, Telocator respectfully requests, in light of the broad and strong support for its Petition, that the Commission promptly issue a notice of proposed rulemaking to grant AMS providers access to advanced paging reserve channels.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Eric DeSilva, hereby certify that on this 26th day of March, 1991, I caused a copy of the foregoing "Telocator Reply Comments" to be served on the following parties by First-Class Mail, postage prepaid:

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