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June 29, 1992

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

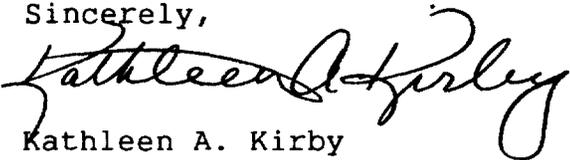
ORIGINAL
FILE

Re: Paging Network Request for a Pioneer's
Preference in ET Docket No. 92-100
File No. PP-84

Dear Ms. Searcy:

Transmitted herewith on behalf of Paging Network, Inc. are an original and five (5) copies of its Reply in the above-captioned proceeding.

Should any questions arise in connection with this filing, kindly contact the undersigned counsel directly,

Sincerely,

Kathleen A. Kirby

Enclosures

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BEFORE THE
Federal Communications Commission
WASHINGTON, D. C.

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OFFICE OF THE SECRETARY

In the Matter of)
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Paging Network, Inc.) ET Docket No. 92-100
)
Request for a Pioneer's) File No. PP-84
Preference For Pioneering the)
Ability for Spectrally)
Efficient, Cost Effective)
One-Way Voice Communications)
in the 930-931 MHz Band)

REPLY OF PAGING NETWORK, INC.

PAGING NETWORK, INC.

Judith St. Ledger-Roty
Kathleen A. Kirby

Its Attorneys
REED SMITH SHAW & McCLAY
1200 18th Street, N.W.
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(202) 457-6100

June 29, 1992

SUMMARY

On June 1, 1992, Paging Network, Inc. ("PageNet") filed with the Commission a Petition for a Pioneer's Preference to provide innovative VoiceNowSM services. Parties opposing PageNet's Petition attack it from every imaginable direction. However, the attacks are groundless, stemming oftentimes simply from a misreading of PageNet's proposal, a misunderstanding of the paging marketplace and of technological advancements which can be applied to voice paging services, or a misreading of Commission law as it applies to pioneer preferences.

PageNet is clearly deserving of a pioneer's preference. PageNet recognized that the market is demanding paging services with high information content and ease of use or, in other words, voice paging services. PageNet also realized that, in the absence of a technological breakthrough which would permit a significantly increased number of voice messages per channel, the service would never be economically viable. PageNet designed a system which fulfills both the users' and the carriers' requirements.

PageNet has unequivocally demonstrated the innovative nature of its VoiceNow Services. PageNet intends to deploy frequency reuse and voice compression techniques in its VoiceNow network to increase throughput over 22 times that of existing analog voice paging services. PageNet is the pioneer that understood the potential of these technologies, integrated their individual potential into a collective whole, and applied them to voice paging in order to achieve efficiencies which were never

before imagined. No one had previously contemplated frequency reuse to provide voice paging services; no one but PageNet has yet understood and overcome the hurdles associated with using low powered acknowledgment transmitters in an urban, interference-limited environment, without which the application of frequency reuse techniques would be impossible; no one had contemplated enhancing the efficiencies already achieved through frequency reuse with advanced voice compression techniques.

PageNet has applied these technologies, both singly and collectively, to the voice paging marketplace, making it possible for voice paging to be offered ubiquitously and at reasonable rates. PageNet has clearly demonstrated that it has designed an innovative, technically feasible means of offering spectrally efficient voice paging services. For its exemplary pioneering efforts, the Commission should grant PageNet a pioneer's preference as well as allocate the AMS spectrum in a manner which permits the provision of VoiceNow services expeditiously.

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To The Commission:

REPLY OF PAGING NETWORK, INC.

Paging Network, Inc. ("PageNet") hereby responds to the oppositions to PageNet's request for grant of a pioneer's preference.^{1/} Parties opposing PageNet's pioneer's preference

^{1/} Rather than conform to the procedural schedule set forth by the Commission for oppositions to pioneer's preferences, some parties have inappropriately filed comments in opposition to PageNet's pioneer's preference in replying to oppositions to their own pioneer preference requests. See, e.g., Reply Comments of MTel in ET Docket 92-100 filed June 16, 1992 ("MTel Reply Comments") at 16-17; Reply Comments of PacTel Paging in ET Docket 92-100, filed June 16, 1992 ("PacTel Reply Comments") at 6 n.10; Reply Comments of Echo Group in ET Docket 92-100, filed June 16, 1992 ("Echo Reply Comments") at 11-12; Reply Comments of Dial Page, L.P. in ET Docket 92-100, filed June 16, 1992 ("Dial Page Reply Comments") at 4; Reply Comments of PageMart, Inc. in ET Docket 92-100, filed June 16, 1992 ("PageMart Reply Comments"). In fact, despite devoting a substantial portion of its Reply Comments to attacking PageNet's Petition, see PageMart Reply Comments at 12-23, PageMart did not bother to include PageNet on its service list. PageNet's opposition hereby includes its

Continued on following page

request attack it from every imaginable direction. As PageNet demonstrates herein, the attacks on PageNet's qualifications to receive a pioneer's preference for VoiceNowSM are groundless, stemming oftentimes simply from a misreading of PageNet's proposal itself, a misunderstanding of the paging marketplace and of technological advancements which can be applied to voice paging services, or a misreading of Commission law as it applies to pioneer's preferences. As set forth below, PageNet's demonstration of entitlement to a pioneer's preference is in no way diminished by these challenges. PageNet urges the Commission to grant it a preference expeditiously.

I. PAGENET'S PROPOSAL TO OFFER VOICENOWSM SERVICE IS INDEED INNOVATIVE, WARRANTING A PIONEER'S PREFERENCE FOR PAGENET

PageNet has unequivocally demonstrated the innovative nature of VoiceNow Services. See PageNet Petition For Pioneer's Preference in ET Docket 92-100, filed June 1, 1992 ("PageNet Petition"). VoiceNow Services are light years ahead of existing voice paging services, and represent advances in voice paging technology which compare favorably to advances cellular services introduced in the two-way mobile communications market. The collective spectral efficiencies underlying VoiceNow will make it

Continued from previous page
response to those comments, as well as to the oppositions of MTel, Dial Page and PageMart filed June 19, 1992 in accordance with the Commission's procedural schedule. These pleadings collectively hereafter are referred to as "oppositions."

possible to offer extraordinary advances in throughput over conventional voice paging -- increases of over 22 times that of existing analog voice paging services. VoiceNow is indeed a breakthrough in voice paging, pioneered by PageNet.

Detractors of PageNet's request for a pioneer's preference argue that PageNet did not invent the concept of frequency reuse, or the voice compression techniques it intends to deploy in the network supporting VoiceNow Services. It follows, according to these entities, that PageNet is not entitled to a pioneer's preference. This argument is meritless.

PageNet has never claimed that it is the inventor of these technologies. It is not. PageNet is the pioneer that understood the potential of these technologies, integrated their individual potential into a collective whole, and applied them to voice paging in order to achieve efficiencies which were never before imagined. For the application, both singly and collectively, of these technologies to the voice paging marketplace, making it possible for voice paging to be offered ubiquitously and at reasonable rates, PageNet clearly deserves a pioneer's preference.

Furthermore, despite MTel's attempt to read into the pioneer preference criteria a requirement that applicants be inventors of the technology they propose, the Commission's criteria embrace no such requirement. The Commission's criteria are clear; "[the Commission] will consider the development of an innovative proposal to mean that the petitioner (or its predecessor-in-interest) has brought out the capabilities or possibilities of the technology or service or has brought them to a more advanced or

effective state." Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services, 6 FCC Rcd 3488, 3494 (1991) ("Preference Order"), amended on reconsideration, Memorandum Opinion and Order, FCC 92-57, 7 FCC Rcd 1808 (1992) ("Reconsideration Order").

PageNet's recognition and application of the advances achievable in voice paging through frequency reuse, voice compression and other advanced spectrally efficient technology, both singly and collectively, constitute "bringing out the capabilities and possibilities of technology . . . and . . . bringing them to a more advanced or effective state." Id. at 3494. No one had previously contemplated frequency reuse to provide voice paging services; no one but PageNet has yet understood and overcome the hurdles associated with using low powered acknowledgment transmitters in an urban, interference-limited environment, without which the application of frequency reuse techniques would be impossible; no one had contemplated enhancing the efficiencies already achieved through frequency reuse with advanced voice compression techniques. In fact, virtually all of the applicants who have commented negatively on PageNet's proposal had given up on ever providing voice paging services, apparently having concluded that it would never be possible to economically serve that market or because they perceived no demand for the comparatively primitive voice paging services it was previously possible to provide. See, e.g., Formal Opposition of MTel, ET Docket No. 92-100, filed June 19, 1992 ("MTel Formal Opposition") at 31.

PageNet, on the other hand, recognized that the market is demanding paging services with high information content and ease of use or, in other words, voice paging services.^{2/} PageNet also realized that, in the absence of a technological breakthrough which would permit a significantly increased number of voice messages per channel, the service would never be economically viable. PageNet designed a system which fulfills both the users' and the carriers' requirements. VoiceNow Services have high information content, and are as easy to use as placing an ordinary telephone call; even a child totally uninitiated to mobile services can use it. VoiceNow Services are spectrally efficient, permitting extraordinary increases in capacity, which in turn allows the service to be offered at price points potential customers find imminently reasonable. VoiceNow unqualifiedly brings out the capabilities of these spectrally efficient technologies, and brings them to a more effective state. It is incongruous to suggest otherwise.

It is equally incongruous to suggest that PageNet did not pioneer the innovation that makes VoiceNow Services possible.^{3/}

^{2/} As PageNet discusses in its Petition, it does not believe existing digital display or alphanumeric pagers comport with this requirement. See PageNet Petition at 10-11. Digital display pagers have limited information content delivery capability. Alphanumeric pagers are cumbersome to use, because of the means of data input, and are further limited by the need for live operator intermediaries. See PageNet Petition, Exhibit 1 (EMCI Study) at 12, 13.

^{3/} PageMart goes so far as to suggest that, with the exception of the fact that PageNet's system is designed for one-way rather than two-way communications (which PageMart characterizes as a deficiency in PageNet's proposal),
Continued on following page

Simultaneously with conducting internal market research, PageNet purposefully brought together a team of experts in their respective fields (e.g., frequency reuse, speech modulation and acknowledgment receiver technology) to assist PageNet's own team of engineers in designing and deploying a spectrally efficient voice paging system on a cost-effective basis. From PageNet's perspective, the employment of these experts more quickly allowed PageNet to focus on the innovative integration and application of these technologies into a voice paging environment.

The PageNet team designed a prototype VoiceNow system for Los Angeles. See PageNet Petition, Exhibit 3. This enabled engineers to consider the impact of various factors on the performance of VoiceNow without the need to build transmitters. Using this system as its model, PageNet's field engineers successfully worked to understand and compensate for difficulties inherent in sending signals from a low powered paging unit to an acknowledgment receiver. In sum, PageNet has invested enormous resources in

Continued from previous page

PageNet's system is a "complete carbon copy" of PageMart's PIMS. See Comments of PageMart, ET Docket No. 92-100, filed June 19, 1992 ("PageMart Comments") at 7. There are totally coincidental similarities in PageNet's and PageMart's proposals. Both rely on frequency reuse in order to obtain the spectral efficiencies critical to offering longer messages. Both rely on a 250 kHz allocation. But that is where the similarities stop. Their applications seek a preference for two totally different services. PageNet's network is designed to serve voice users, although data messaging could be accommodated on an ancillary basis. PageMart's network is designed to offer two-way data transfer services, and with no indication that it ever considered the provision of voice service, and that it could accommodate voice users on a spectrally efficient basis. PageNet's network is designed to provide one-way communications; PageMart's is designed to provide two-way communication.

research and development of its proposed system, in the hopes that consumers will be able to obtain high quality voice paging services, characterized by a high degree of information content and ease of use.

MTel makes numerous suggestions that the documentation provided by PageNet is somehow deficient. MTel implies the need to construct and operate an experimental system in order to prove up the feasibility of its proposal.^{4/} See, e.g., MTel Formal Opposition at 3. But the Commission has never taken such a position. The Commission requires that an applicant's showings ensure that a "preference applicant's proposed new service or technology is viable," Reconsideration Order at 1809, but recognizes that "significant technological and new service advances can be developed with little or no field testing required." Preference Order at 3493. In fact, the Commission has concluded that in a given case, "the marketability of a new service will be so apparent that no experiment is required." Id.

PageNet's documentation sets forth the system design, demonstrates its feasibility, and describes its efforts in areas (e.g., acknowledgment receiver capability) where hurdles have had

^{4/} That MTel would even infer the need to construct and operate a test system is surprising given MTel's own pioneer preference request, which makes clear that MTel has undertaken even less field work than PageNet. On June 1, MTel had not even begun construction of the three transmitters it proposes (all of which will be in an uncongested area which provides no information as to the ability to provide these services in metropolitan, interference limited areas). It is not scheduled to perform multi-tone modulation testing, for which it claims a preference, until August 1992, with reports of the results of some provided to the Commission sometime after that.

to be overcome in order to make its system feasible.^{5/} In sum, PageNet has demonstrated that it has designed a technically feasible means of offering spectrally efficient voice paging services at a price which will again make voice paging services available. This is a breakthrough of monumental proportions for which PageNet deserves a pioneer's preference. As stated in PageNet's Petition, it is prepared to construct and operate systems within 50 cities within the first year after grant of a license. PageNet Petition at 35.

II. PAGENET'S PROPOSAL WILL PROMOTE MULTIPLE, DIVERSE SERVICE OFFERINGS BY MULTIPLE PROVIDERS ON A SPECTRALLY EFFICIENT BASIS

Applicants opposing PageNet's pioneer's preference request often mischaracterize PageNet's request as precluding services other than voice paging from being provided over these frequencies. These applicants also claim that PageNet's request "forecloses too many opportunities to others" to provide these services, and that grant by the Commission of PageNet's proposal would be spectrally inefficient because of the amount of spectrum it would utilize. The following paragraphs address each of these mischaracterizations in order.

^{5/} Even in the absence of any of the design and experiment initiatives PageNet has completed or which are ongoing, however, PageNet believes it would be entitled to a preference because the marketability of VoiceNow is apparent.

A. PageNet's Proposal Can Accommodate a Mix of Advanced Services

PageNet has been quick to point out that it does not believe that voice paging services should be the only services permitted to be offered in this band. See PageNet Petition at 19. For example, it recognizes that acknowledgment paging capabilities may well offer data users added functionality which cannot be provided under existing allocations, and thus might appropriately be provided in this band. See PageNet Opposition to Pioneer Preference Requests in ET Docket No. 92-100, filed June 19, 1992, at 29. Furthermore, PageNet's proposal would not preclude the data and ground-to-air paging services some applicants propose if the Commission considers these advanced paging services. Id.

Unlike other applicants who attempt to preclude VoiceNow services from being offered in the AMS band by limiting the amount of spectrum awarded to each license to 25 kHz,^{6/} or defining advanced messaging services to exclude PageNet's proposal, see Pactel Reply Comments at 6 n.10, PageNet contemplates that a multitude of services would be provided to consumers. PageNet believes that ultimately the market, not any individual applicant or the Commission, must decide the mix of advanced services to be provided in this band. PageNet's only condition would be that

^{6/} See, e.g., Comments of Dial Page, L.P. in ET Docket 92-100, filed June 19, 1992 ("Dial Page Comments"); Pioneer's Preference Request of Skycell Corporation in ET Docket 92-100, filed June 1, 1992 (PP-85); Pioneer's Preference Request of Edwards/Montauk Telecommunications Company in ET Docket 92-100, filed June 1, 1992 (PP-83); Pioneer's Preference Request of Global Enhanced Messaging Venture in ET Docket 92-100 filed June 1, 1992 (PP-80).

the services be advanced; PageNet does not believe that basic plain old vanilla paging services which can be offered over existing paging allocations should be permitted here given the demand for these advanced services.

As noted, the four licensees in any given market would be free to provide all forms of advanced paging in response to marketplace demand; although PageNet sees a huge market for VoiceNow, others would be free to provide all forms of data communications including e-mail, facsimile, and lengthy computer files. The VoiceNow network design, in fact, provides the most spectrally efficient platform from which to launch such services.

Those who oppose PageNet's application on this basis in actuality oppose the fact that PageNet's allocation request will limit to four the number of licensees per market. These commenters prefer to divide up the spectrum among themselves. For example, Dial Page would have the Commission consider the grant to it of 25 kHz for an acknowledgment paging service, PacTel 25 kHz for its ground to air service, GEM 25 kHz for its facsimile service, Skycell 25 kHz for its specialized type of service, and PacTel 25 or 50 kHz for its data transmission service. See Dial Page Comments at 10 and 4 n.7.

The fact that each of these applicants could be awarded a pioneer's preference in the same markets and be licensed to provide service in the absence of proposals by PageNet, PageMart and Freeman (each of which believe that the spectrum needs to be allocated in blocks of channels) is totally irrelevant to the Commission's decisionmaking process. This is not a numbers game,

nor does the Commission benefit by simply choosing the proposals which allow the greatest number of applicants, regardless of merit, to get a preference. Just as the Commission's policies are to promote competition, not the interests of particular competitors,^{7/} the Commission's pioneer preference policies are intended to promote the broad interests of innovation, not applicants. The Commission should make its decision based on those factors it and most other applicants have embraced, including the development of innovative proposals for new or enhanced service which improve efficiencies, increase speed or quality of transmission, reduce the costs of providing service, and address unmet needs for the services proposed. See Preference Order at 3493.

**B. PageNet's Proposed Licensing Scheme
is Spectrally Efficient**

The argument that licensing AMS in blocks of channels rather than individual channels is somehow spectrally inefficient is similarly off-base, flying in the face of modern radio engineering. Spread spectrum modulation, a very promising and spectrally efficient technique, requires greater than 1 MHz for

^{7/} See, e.g., In the Matter of Separated Costs of Regulated Telephone Service from Costs of Nonregulated Activities, 2 FCC Rcd 6283, 6299 (1987) ("[The Commission has] declined . . . to base [its] regulatory activities solely on the basis of protecting individual competitors in the marketplace. [Its] efforts are directed toward providing equal opportunities for entrants to compete."); In re Applications of Modesto MDS Company et al., CC Docket 86-355, 1986 FCC LEXIS 2680 (1986) ("and that is what [the Commission is] looking for . . . the protection of competition, not competitors.")

implementation. Cellular radio systems, known for their spectral efficiency, utilize 30 MHz each. Similarly, the application of spectrally efficient technology to SMR systems also requires many channels for cost-effective implementation. Clearly, the assignment of spectrum in blocks greater than 25-50 kHz should not in any way be assumed spectrally inefficient.

PageNet's VoiceNow system requires 250 kHz to achieve its 22 time increase in spectral efficiency. The benefits of trunking and frequency reuse could not be achieved with less. No other proposal in this proceeding contemplates comparable advances in spectral efficiency. Systems limited to simulcast for messaging without the capability of frequency reuse are severely limited in the number of potential subscribers to be served. Clearly, the regulatory structure proposed by PageNet will encourage the most spectrally efficient advanced paging systems to serve the greatest number of subscribers.

The suggestion that the band somehow be carved up to maximize the number of pioneer's preferences granted is clearly not in the public interest. The idea of multiple incompatible technologies existing within 1 MHz is inconsistent with any concept of sane spectrum management. The success of advanced paging, like that of 929 MHz and 931 MHz paging, depends upon the mass production of pagers to an industry standard. PageNet's proposal for consistent licensing in the band will encourage exactly that.

Furthermore, the 25 kHz channelization within each licensee's block will enable the application of existing infrastructure and pager technology to advanced paging in its initial phases.

Service can thus be expedited and costs will be minimized. As the popularity of advanced paging grows, this compatibility with the adjacent bands can work in reverse and channels in the adjacent bands can be re-farmed to provide advanced paging services.

III. VOICENOW SHOULD BE OFFERED IN THE 930
MHZ BAND

PacTel argues that the Commission should limit services offered in the 930 MHz band to those that require no mobile to base transmissions. According to PacTel, the use of a return link magically transposes a one-way paging service into two-way mobile communications. See Reply Comments of PacTel Paging, ET Docket No. 92-100, filed June 16, 1992 ("PacTel Reply Comments") at 5 and n.7.

PacTel's argument appears crafted to serve only one interest -- PacTel's -- as it would exclude almost all other pioneer preference applicants from consideration. There is certainly no public interest objective to be served by its self-serving interpretation of the rules.

Its interpretation is plainly inconsistent with the Commission's intent in reserving the 930 band for advanced one-way paging services. Paging services are "one-way" services. That is, paging services offer the public one-way communications capability as opposed to, for example, cellular radio services, which offer instantaneous two-way communications services. Tone only, tone and voice, numeric, and alphanumeric paging services all constitute one-way communications services, consistent with

the definition. One-way data services also certainly fall within the ambit of paging services generally. It is for advances in the provision of these services that this spectrum was reserved.

PageNet's VoiceNow service is one such advance. The fact that its paging network deploys a return link from the paging unit to a receiver does not metamorphise its or anyone else's one-way paging services into two-way services. Return links must be deployed to alert the paging network as to the location of a paging subscriber where frequency reuse techniques are being deployed. This permits the paging system to send a one-way page to the appropriate pager over the appropriate frequency. Under these circumstances, from the paging customer's perspective, the paging service provided is identical to the service offered today.

Furthermore, "acknowledgment" capability per se, which adds functionality to existing paging services, also should not be excluded from being offered in this band. Acknowledgment capability as envisioned by Dial Page and others inform the person placing the page that the service requested (e.g., delivery of a page to a paging customer) has been performed. In that regard, it is like certified mail; the person sending the letter receives an acknowledgment that the letter was received by the addressee. In the absence of the underlying service, however, whether mail or paging, there would be nothing to acknowledge. It is thus not an independent service, but added functionality or a complement to existing services. Carriers desiring to deploy this added functionality certainly should not be precluded from doing so.

Among the many proposals which clearly do constitute one-way paging services, and thus are appropriate for consideration of a pioneer's preference for the 930 band, are PageNet's VoiceNow, PacTel's AAP and GAP, Dial Page's Acknowledgment Paging, MobileComm's "VIP Service," and Metriplex's "HDNAP." These and other qualifying proposals should be examined by the Commission against the pioneer's preference criteria to determine if any of them meet the Commission's thresholds for granting pioneer's preferences, and the 930 spectrum accordingly allocated, to fulfill the unmet needs of subscribers seeking advanced paging services.

IV. THERE IS A SUBSTANTIAL UNSERVED MARKET FOR VOICE PAGING SERVICES

**A. The Decline in Voice Paging
Subscribership Reflects Lack of
Availability and Lack of Quality
Services, Not Lack of Demand**

**1. Carriers Have Biased Consumers
Away From Voice Paging; Most in
Large Metropolitan Areas Do Not
Offer It**

In PageNet's pioneer's preference request, it demonstrates that the decline in the number of voice paging subscribers in metropolitan areas is directly attributable to the current spectral inefficiencies associated with transmission of voice messages, not to a diminution in demand for voice paging service. Incredulously, Dial Page and MTel claim that consumers do not want voice paging services. MTel states, for example, that the "well documented pattern of declining marketplace demand for

conventional voice paging service suggests little consumer interest in VoiceNow's core purpose." See MTel Formal Opposition at 4. These arguments are baseless, nor do MTel or Dial Page offer any support for their position.

Neither MTel nor Dial Page offers a shred of evidence in support of its claim that there is no demand for voice paging services, despite the fact that they claim it to be "well documented." Without a doubt, it is the diminution in supply of voice paging services in metropolitan areas which has caused subscribership to decline, not a diminution in demand, per se. As EMCI states:

based on the decline in the share of tone voice pagers, it may erroneously appear that, like tone-only pagers, demand for tone and voice pagers is also falling. However, an examination of pager trends by firm size indicates other forces [spectral inefficiencies] are the primary drivers in the decline of voice pagers (emphasis added).

EMCI Study at 7. EMCI goes on to state that:

The impact of supply considerations in voice pager services is evident when examining the decline in voice pager services over time by size of firm []. Large firms, which are most likely to operate in spectrum scarce environments, had virtually eliminated voice pager services by 1990. Small firms served the vast majority of their customers on voice pagers in 1987. These firms have followed the lead of the paging industry in promoting digital display services, but because they generally do not face capacity constraints, their share of tone voice pagers has remained at 50% and above in 1991 (emphasis added).

Id.

Carriers, perhaps with the limited exception of MTel and Dial Page, recognized as early as 1980 that the spectral inefficiencies associated with tone and voice paging was impeding the availability of service to the public. According to both Telocator and AT&T, in the very proceeding which reserved the 930 band for advanced paging, it was not practical to use the four remaining common carrier frequencies for tone/voice paging due to the relatively small number of users each frequency could accommodate.^{8/}

PageNet's Petition aptly demonstrates the potential demand. See PageNet Petition at 10-12, and Exhibits 1 and 2. Motorola, too, views the demand for voice paging to be astronomical. It has predicted that if system capacity constraints can be solved, the number of voice pagers could increase from less than 2.5 million nationwide to in excess of 18 million by the year 2000. Id. at 12. PageNet's own experience leads it to believe that Motorola's predictions are conservative.

^{8/} One-Way Signaling in the 900 MHz Band, Docket 80-183, FCC 80-183, FCC 80-231, Notice of Proposed Rulemaking, released May 8, 1980, 45 Fed. Reg. 32013 at ¶ 8 ("NPRM"). The Commission calculated that, at that time, 960 users could be accommodated on a 25 kHz channel. Id. at n.5, and Appendix B.

2. **Any Lack of Demand for
Conventional Voice Paging
Reflects the Poor Quality and
High Cost of Provision of that
Service, Not the Projected
Demand for VoiceNow**

PageNet is aware that factors other than spectral efficiencies and the concomitant lack of service availability have possibly contributed to a decline of voice paging services in smaller markets. As EMCI states, "the decline in voice pagers among smaller firms in smaller markets is due to a wider range of factors including higher infrastructure costs for voice pagers, and the lack of new voice pager products." EMCI Study at 7. Despite their attractiveness, conventional voice paging services have substantial impediments to use. The voice page is immediately broadcast to the paging user upon receipt. There is no ability to determine the most appropriate time to listen to the page and no ability to assure the privacy of communications.^{9/}

VoiceNow Services do not suffer from those limitations. With VoiceNow, the caller desiring to place a page will hear a personalized greeting followed by a beep, which signals the caller to leave his or her desired voice message.^{10/} The message is captured and recorded in the pager unit -- not by a remote storage

^{9/} The Commission has previously recognized this key defect in conventional tone and voice paging services. In considering the degree to which digital display pagers offer benefits over conventional pagers, it noted that "rather than receiving an intrusive voice message while in a meeting, for example, the user could simply read a message off the display. NPRM, 45 Fed. Reg. at 32015.

^{10/} A caller will have the option of leaving a digital display message instead, should he or she choose.

facility. After the caller leaves the message, the pager to which the message is sent will alert the paging customer that a message has been received. The paging customer can choose whether to listen to the message instantly, or wait to listen to the message at a more desirable time. The message will replicate the calling party's own voice, permitting intonation and inflection in the original message to be perceived by the person receiving the messages. When the paging customer desires to hear the message, he or she can simply press a button on the pager. A set number of messages (based on length) can be stored in the pager indefinitely and played back as desired. It can be offered on a highly spectrally efficient basis, at prices of \$15 to \$20 per month, including pager rental.

MTel suggests that subscribership in conventional voice paging may have declined because consumers moved to digital display pagers in search of greater functionality. MTel Formal Opposition at 32. In making this argument, MTel ignores the fact that digital display pagers have substantially less functionality even than conventional voice pagers. By definition, digital display pagers display only numbers, while voice pagers can receive any message which can be spoken. Subscribers have moved to services which offer less, not more functionality.^{11/} In the

^{11/} The move to digital display is also a function of price, which itself is a function of current subscriber capacity constraints. As Dial Page notes, its Company's "tone plus voice pagers utilize analog technology, which transmits the voice message itself over the paging frequency in uncompressed form." See Registration Statement of Dial Page, Inc. (Securities and Exchange Commission Form S-4) at 48,
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