frequency, even in adjacent zones.[44] Additionally, since all zones will operate on the same frequency, they can be subdivided to provide higher system capacity in a low cost incremental fashion as demand increases.

61. Kleiner, Perkins, Caufield, & Byers (KPCB), an investor in mobile communications, supports a pioneer's preference grant to Mtel. KPCB states that a healthy competitive marketplace will be achieved by authorizing efficient services, such as Mtel's, in modest amounts of spectrum.

62. A number of other parties neither support nor oppose Mtel's grant, but instead assert that they also deserve pioneer's preferences.[45] PageMart also argues that only service innovations should qualify for preferences and that Mtel's proposed grant is for a technology, not a service. PageNet similarly states that the Commission "seems more disposed toward rewarding 'invention,' rather than innovation." PageMart also asserts that even if Mtel merits a preference, the Commission is not limited by either its pioneer's preference rules nor regulatory policy to limit the number of preferences awarded. It contends that granting only one preference undermines the purpose of the pioneer's preference regulatory procedure because granting additional preferences would bring new services to the public more rapidly.

63. With regard to PageMart's and PageNet's arguments that service innovations rather than inventions should be recognized by award of pioneer's preferences, we note that our pioneer's preference rules specify that a preference may be awarded for innovative service or technology.[46] We proposed that Mtel be granted a preference both for its innovative service offering and its technical innovation that permits spectrally efficient delivery of both existing and new services to the public. We also agree with PageMart that more than one preference can be granted in a proceeding.[47] However, in our Tentative Decision

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[44] In cases in which a subscriber has moved or is in an overlap region, the message is transmitted nationwide.

[45] See, e.g. letter to the FCC Chairman dated August 12, 1992 filed jointly by PageNet and PageMart. See also Comments filed by Dial Page, Freeman Engineering, and Global.

[46] 47 C.F.R. § 1.402.

[47] Pioneer's Preference Report and Order, 6 FCC Rcd at 3495 (1991) ("If the Commission adopts rules that combine aspects of two or more applicants' proposals or rules that permit the use of two or more applicants' proposed technologies, we believe that more than one preference would be warranted.") Indeed, in our

we concluded, subject to further comment, that only Mtel qualifies for a preference for narrowband PCS and we affirm that decision here.

64. Three parties oppose granting Mtel a pioneer's preference on its merits: Arch, BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Enterprises, Inc. (BellSouth), and Florida Cellular. Additionally, BellSouth filed extensive comments attacking our underlying pioneer's preference rules, discussed infra.

65. With respect to the specifics of Mtel's proposal, BellSouth argues that it is not technologically innovative because multi-tone modulation techniques[48] were previously developed by others. BellSouth particularly points out that Mtel references books about MCM dated from 1968 to 1980. At the same time, BellSouth asserts that Mtel has not substantiated its claim to having developed innovative MCM technique and that the only data Mtel has provided are simulations by an outside laboratory that at the time of the Tentative Decision had not been validated. BellSouth also contends that even the simulations were not comprehensive and that factors such as Rayleigh fading and multipath delay were not taken into account. Florida Cellular also claims that Rayleigh fading has prevented achievement of acceptable bit error rates at 24 kbps. BellSouth additionally notes that the laboratory performing the simulations, MPR Teletech, stated that it was unable to analyze the performance of orthogonal carrier spacing,[49] which BellSouth claims is an important aspect of Mtel's technology.

66. BellSouth also argues that Mtel's "adaptive zoning"[50] is merely a variant on the technique used for registration of units in the cellular service. BellSouth states that Mtel's

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Tentative Decision on pioneer's preference requests filed in GEN Docket No. 90-314, supra, we initially determined to award three pioneer's preferences in the same service.

[48] MCM techniques modulate several subcarriers at a certain baud rate in a certain bandwidth to achieve more than one bit per baud interval.

[49] Mtel defines orthogonal carrier spacing as a technique where the data rate, in baud, is equal to the spacing, in hertz, between subcarriers.

[50] Mtel contends that "adaptive zoning" is a misnomer for Mtel's adaptive registration, which uses data acquired from the customer's usage patterns to locate portables and registers their locations in an efficient manner.

Contention Priority Oriented Demand Assignment (CPODA) technology[51] already is employed in the packet satellite service, but that Mtel refers to CPODA as one of its technological innovations. Florida Cellular asserts that Mtel's choice of the CPODA protocol over the ALOHA protocol[52] impairs Mtel's proposal because CPODA is more expensive and timing control and synchronization of the simulcast signal is more complex, requiring specialized equipment with timing constraints. Florida Cellular claims that Mtel's use of CPODA in its nationwide simulcast system would require tight control of synchronization of the network's transmitters and that the ALOHA protocol is more suited to the type of system Mtel proposes and requires very sophisticated and expensive equipment that will increase the price to the consumer.

67. Finally, BellSouth asserts that Mtel's NWN is more of a two-way mobile data service than a paging service, and claims that similar data services already are being provided more efficiently by BellSouth's affiliate RAM Mobile Data's Mobitex system. BellSouth claims that NWN requires 2.8 hertz to transmit a bit of data, whereas RAM's Mobitex requires only 1.6 hertz to transmit the same bit. Florida Cellular also asserts that NWN is not particularly spectrum efficient, arguing that while MCM permits increased throughput relative to paging technology currently used, this does not qualify as a significant communications innovation because: 1) Nippon Electric Corporation (NEC) has introduced paging technology with transmission rates in excess of 6250 bps in a 25 kHz channel; and 2) Reed Solomon (RS) and Bose Chaudrey (BCH)[53] forward error correction and data compression techniques have achieved greater spectral efficiency than Mtel's 0.36 b/Hz.

68. Mtel responds to each argument. With regard to MCM techniques, Mtel states that while these techniques are not new, they have not been previously implemented in a simulcast paging environment because of significant technical constraints. Mtel states that it is the first to invest the effort in developing

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[51] CPODA is a transmission protocol that Mtel has customized for its purposes. Mtel's version of CPODA has the channel request carry a description of the traffic the portable wishes to transmit, so the central scheduler can optimize the reverse channel assignment and not require packet-by-packet channel requests.

[52] The ALOHA protocol is similar to CPODA, but less complex. It is a time division technique in which bursts of data are sent on demand. If two different data transmissions overlap, each is repeated after a random time delay.

[53] RS and BCH are cyclic error correction coding schemes.

MCM so that it can be used for simulcast operation. Specifically, Mtel discusses its experimentation of the appropriate baud to use in order to avoid the problem of time delay spread of simulcast signals. Additionally, Mtel explains that to reduce levels of intersymbol interference it plans to use satellite distribution of data to transmitters and precise time synchronization of its transmitters to permit efficient MCM techniques in a simulcast environment.[54] Mtel also states that it refined its adaptive registration protocol to include the ability to dynamically change the registration capabilities of a portable based on its usage patterns. Additionally, Mtel states that its system would be the first application of CPODA in a personal messaging service and that Mtel customized CPODA for this purpose, including the transmission of a description of portable traffic so the central scheduler can optimize traffic assignments.

69. With regard to BellSouth's assertion that NWN is a data service and less efficient than Mobitex, Mtel argues that two-way mobile data systems like Mobitex are designed for real time interactive communications, whereas NWN is an advanced messaging service with two-way capabilities and is not real time. Mtel states that because its system is a simulcast operation it cannot achieve the same data rates as Mobitex.[55] It also asserts that its 24 kbps far exceeds the current 2.4 kbps data rates used in state-of-the-art paging systems and is almost double the rates of NEC and the European Radio Message Standard (ERMES)[56] in an equivalent bandwidth.[57] Mtel also contends that Florida Cellular mischaracterized NWN's spectral efficiency as 0.36 b/Hz, whereas its spectral efficiency actually is 0.48 b/Hz. Further, Mtel replies that the comparison of RS and BCH techniques to Mtel's technology is inappropriate because RS and BCH techniques are error control coding schemes that are independent of the transmission speed or the modulation scheme.

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[54] See Mtel Technical Feasibility Demonstration at 7, 8.

[55] Simulcast modulation techniques are more timing sensitive than non-simulcast techniques; therefore, the baud rate is usually slower to permit the simultaneous reception of more than one signal at a location without having the signals interfere with each other.

[56] ERMES is a European paging system that uses 4-level frequency shift keying to achieve a data rate of 6.25 kbps in a paging channel. NEC also achieves 6.25 kbps in a paging channel.

[57] In a 50 kHz channel ERMES' rate would be 12.5 kbps; NWN's is 24 kbps.

70. Mtel also argues that CPODA improves throughput over ALOHA, that systemwide synchronization is required for relatively short periods rather than constant global synchronization, and that its synchronization is simple to achieve because simulcast signals carry the same information and all mobiles lock to the simulcast signal once per cycle; therefore, signals need to be synchronized only for the duration of a single cycle. Mtel asserts that it has provided an exhaustive description of all components necessary for NWN in its technical feasibility demonstration, and in addition has demonstrated the economic feasibility of implementing NWN. According to Mtel, MPR Teletech predicts the wholesale cost of NWN modems to be $299 and portables to be $380, and two other equipment manufacturers have estimated wholesale costs for these devices to be under $300; further, NWN service will be less expensive than Mobitex.

71. Finally, regarding its technical showing, Mtel replies that the extensive computer modeling conducted by MPR Teletech was submitted as part of a comprehensive technical feasibility demonstration. Mtel argues that BellSouth does not contest the validity of the computer's validation and that BellSouth fails to demonstrate that the simulations were inadequate to satisfy the Commission's requirement to prove technical feasibility. With regard to Florida Cellular's assertion that the technical phenomenon of Rayleigh fading has prevented achievement of acceptable bit error rates at 24 kbps and BellSouth's assertion that Rayleigh fading was not considered in Mtel's computer simulation, Mtel responds that neither Florida Cellular nor any other party provides evidence or a study proving that 24 kbps could not be achieved. Mtel notes that since its original filing it has filed experimental data demonstrating the successful performance of MCM in a real world environment that includes the effects of all the technical phenomenon, such as Rayleigh fading and multipath delay.

72. Mtel's development of technology permitting attainment of 24 kbps data rates for a nationwide simulcast paging and messaging integrated service is a significant communications innovation of the sort the Commission established the pioneer's preference rules to recognize. Mtel has demonstrated the feasibility of its new spectrum-efficient technology and designed a system based upon it that permits using the same infrastructure to provide both substantially improved and more spectrum-efficient paging services and new one- and two-way messaging services. These demonstrated achievements fit squarely within our rules providing for a pioneer's preference in our licensing processes for an applicant that proposes a new service or use of an innovative technology to enhance an existing service and demonstrates the technical feasibility of its proposal, including

the underlying technology upon which it relies if that technology is new or innovative.[58]

73. Concerning the assertions that Mtel is not the inventor of the technologies used in its NWN service, we agree that Mtel did not invent the MCM concept, however, it has demonstrated its role as the innovator of these technologies for PCS.[59] To be eligible for a pioneer's preference the applicant is required to have "developed the capabilities or possibilities of the technology or service" or to have "brought them to a more advanced or effective state."[60] Mtel added significant development to MCM technology to enable it to be used in a simulcast paging and messaging environment. Mtel clearly is the pioneering developer of MCM for this service by virtue of it having solved significant technical engineering problems using MCM. Mtel's work permits it to use this technology in its proposed advanced paging and messaging service. Developing MCM technology so that it can be used to increase spectral efficiency and provide advanced paging and messaging service is innovative and worthy of a preference.

74. We also agree with Mtel that its proposed NWN is distinguishable from existing services and that its establishment would constitute a service not currently provided.[61] Specifically, NWN is substantially different from Mobitex. The Mobitex two-way mobile data system provides two-way communications in real time, whereas NWN is designed to store messages until a time slot is available for transmission. Additionally, Mobitex is designed around mobiles that send as well as receive lengthy data messages, whereas NWN has greater receiving capacity than mobile data transmission capacity. Finally, Mobitex is designed and implemented as an ancillary cellular service, whereas NWN is designed as a small-bandwidth nationwide simulcast paging and messaging service. For these reasons, BellSouth's comparison of the two is unconvincing.

75. We disagree with Florida Cellular's claim that NWN is not spectrally efficient and that achieving significantly greater throughput does not qualify as innovative. Increasing state-of-the-art simulcast data rates by a factor of ten, to 24 kbps, is both spectrum efficient and innovative. Additionally, Mtel has addressed the timing constraints of its system, justified its

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[58] 47 C.F.R. § 1.402(a).

[59] See Mtel Reply to Tentative Decision at 19.

[60] Id.

[61] See Mtel Reply to Tentative Decision at 17-20 and 23-25. See 47 C.F.R. § 1.402(a).

choice of the CPODA protocol over the ALOHA protocol, and justified its predicted cost to the public of this service. After an extensive opportunity for comment, the record contains no engineering support or other evidence that substantiates Florida Cellular's claims that a nationwide NWN system would be too complex to be provided at reasonable cost.

76. Finally, Mtel has demonstrated the technical feasibility of its technology and system. Mtel's development work has solved intersymbol interference problems and overcome fading problems that in the past have prevented multicarrier modulation use for simulcast messaging services in a cost efficient manner. Its preliminary field tests provide convincing evidence that 24 kbps paging and messaging service is technically feasible. In particular, no party has provided any study or other convincing demonstration that refutes Mtel's claim that its system provides acceptable bit error rates at 24 kbps.

77. For these reasons, we find that Mtel has demonstrated that its proposed NWN is innovative, spectrum efficient, and technically feasible. Its proposal builds on prior developments and brings them to a significantly more advanced and effective state. Mtel's proposal combines new technologies and modifies existing technologies, then utilizes these developments as the basis for its proposed NWN to provide services in a manner significantly more efficient than existing simulcast paging services. MCM permits transmitting pages and messages at a bit rate ten times that of existing simulcast paging systems and in an equivalent bandwidth. These achievements facilitate provision of a variety of new services to the public, including advanced messaging with acknowledgement, two-way messaging, and determination of subscriber location. Finally, Mtel's NWN proposal is consistent with and helped shape the rules adopted in this proceeding.[62] Accordingly, we grant a pioneer's preference to Mtel for a nationwide license of a 50 kHz unpaired block.[63]

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[62] See Id.

[63] Arch and Florida Cellular oppose grant to Mtel of a pioneer's preference that is nationwide in scope, arguing that Mtel's proposed service is not necessarily inherently nationwide. In our Tentative Decision, we addressed this issue, stating that "grant of a nationwide preference may be consistent with our underlying goal of promoting competition if our allocation and assignment rules provide multiple nationwide licenses in the 900 MHz band..." 7 FCC Rcd at 5736 (citing the Pioneer's Preference Report and Order, 6 FCC Rcd at 3495; Pioneer's Preference Recon. Order, 7 FCC Rcd at 1809). We are providing 11 channels for nationwide competitive narrowband services. Given this provision for the development of nationwide competition, we conclude that a nationwide preference is consistent with our goal of promoting a

Denial of Pioneer's Preferences

78. In the Tentative Decision in ET Docket No. 92-100 we proposed to deny twelve pioneer's preference requests filed in that docket. Additionally, six pioneer's preference requests tentatively denied in GEN Docket No. 90-314 propose PCS services in the 900 MHz range.[64] For the reasons set forth below, we will deny these 18 requests.[65] We note that parties filing 8 of these 18 requests did not respond to the tentative denial of their request.[66] Below we address each of these 18 requests.[67]

79. As we stated in the Tentative Decision, it is our intent to reward a party responsible for one or more significant innovations that relate to communications technology and service. Each requester must persuade us that its proposal is innovative, has merit, and that the requester is the original developer and proponent of the specific substantial innovation at issue. We have stated repeatedly that we do not grant pioneer's preferences casually.

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competitive market for these services. Mtel has experience in providing nationwide paging services, has designed its proposed system to be deployed nationwide, and provided evidence that there is a nationwide market for its services. Accordingly, we conclude that in this context granting a pioneer's preference to Mtel for an unpaired 50 kHz nationwide license is in the public interest.

[64] These proposals were considered separately at the tentative decision stage to prevent unnecessary confusion, see 7 FCC Rcd 5676 at para. 144 (1992).

[65] Dial Page, Echo Group, Freeman, Montauk, PacTel Paging, and PageMart filed petitions for reconsideration of the Commission's Tentative Decision. Because these adjudicative tentative decisions were not final, see 47 C.F.R. § 1.106 (1992), the petitions are not accepted but are treated as comments and are fully considered herein. Cf. 7 FCC RCd 7794, 7804 at n. 20 (1992).

[66] PacTel (PP-39), Skycell, Advanced Cordless Technologies, Inc. (ACT), Advanced Wireless Communications, Inc. (AWC), Dial Page (PP-11), Ericsson Business Communications, Inc. (Ericsson), NAC, Inc. (NAC), Radio Telecom and Technology, Inc. (RTT).

[67] The requests are addressed in the order they were accepted for comment and assigned a pioneer's preference request number.

80. We wish to caution against misinterpreting the meaning of a pioneer's preference denial. Whether or not an applicant receives a preference is based upon the criteria specified in our rules that require demonstration of innovation and feasibility, supra. The rules are not a substitute for the licensing process. Nor does grant of a preference guarantee success in the marketplace. Conversely, denial of a preference is not a negative judgement with regard to the propensity for success of the denied proposal. Rather, grants and denials of preferences are based upon the criteria of our pioneer's preference rules that principally address demonstrations of innovation and technical feasibility.

81. In this proceeding, as in others, at least some of the systems not receiving a preference nevertheless may be technically feasible and capable of competing in the marketplace. In these instances the denial may relate to a lack of specific technical innovation, lack of demonstrated feasibility at the time of our ruling, or to some other criterion specified in our pioneer's preference rules. Parties not receiving a preference remain eligible to receive licenses pursuant to the normal licensing process and we expect that some of these systems may be successfully implemented. This proceeding, in addressing proposed systems, only relates to applying to the proposed systems the criteria that govern award of pioneer's preferences.

82. Advanced Cordless Technologies, Inc. (PP-4). ACT proposes to provide a second generation cordless telephone (CT-2) type system. In its request, ACT acknowledges that its proposal is an application of British technology, but nevertheless contends that it deserves a preference because it was the first to propose any PCS service to the FCC. In the Tentative Decision in GEN Docket No. 90-314 we proposed to deny ACT a preference because we found that proposing merely to implement an existing CT-2-type service does not meet our threshold for innovativeness. We note that CT-2 already is developed and has been implemented in various parts of the world. We do not consider the introduction of an existing service to meet the criteria of our pioneer's preference rules. ACT did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed ACT's proposal. We deny ACT's pioneer's preference request for the reasons stated.

83. Advanced Wireless Communications, Inc. (PP-5). AWC proposes to use CT-2 technology on spectrum to be shared with the air-to-ground service in the 800 MHz band. As in the case of ACT (PP-4), supra, we also proposed to deny AWC a tentative preference because its CT-2 proposal does not meet our threshold for innovativeness. AWC did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed AWC's proposal. We deny AWC's pioneer's preference request for the reasons stated.

84. Dial Page, L.P. (PP-11). Dial Page proposes to provide cordless telephone services between buildings using equipment that operates in the 800 MHz band. In the Tentative Decision in GEN Docket No. 90-314 we proposed to deny Dial Page's request for failure to demonstrate the technical feasibility of its proposal. Additionally, Dial Page's proposed cordless phone operations fail to meet our threshold for innovativeness and propose use of spectrum outside the bands being allocated for narrowband PCS. Dial Page did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed Dial Page's proposal. We deny Dial Page's pioneer's preference request for the reasons stated.

85. NAC, Inc. (PP-14). NAC proposes a system it calls "Personal Network Access Communication System" (PNAC) that would use a wireless microcellular network to provide signalling and control of communications in connection with existing telecommunications networks. According to NAC, its PNAC system would route calls to the user's location and notify the user that a call has been forwarded. The user could take the call at a nearby phone, respond with a message, or store a message. NAC states that its PNAC system requires 250 kHz of spectrum and that voice communications are limited to existing communications systems.

86. In the Tentative Decision in GEN Docket No. 90-314 we proposed to deny NAC a preference because its technical showing did not demonstrate that it had developed the capabilities or possibilities of a specific identifiable PCS technology or that it had brought it to a more advanced or effective state. NAC did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed NAC's proposal. We deny NAC's pioneer's preference request for the reasons stated.

87. Dial Page, L.P. (PP-35). Dial Page proposes to integrate low power transmitters into existing paging receivers to provide an acknowledgement function indicating that a page was received by the user. Dial Page states that its technology also may be used for other automatic data applications, such as meter reading, telemetry control, and credit card verification. Dial Page claims that its "Digital Signal Processing Receiver," proposed to be used at its base stations to receive acknowledgements, provides improvement of four orders of magnitude in signal to noise ratio compared to conventional receiver techniques.

88. In the Tentative Decision in ET Docket 92-100 we proposed to deny Dial Page's pioneer's preference request because we did not consider the concept of acknowledgement paging itself to be innovative and because Dial Page had not demonstrated the

technical feasibility of its system.[68] In a petition for partial reconsideration, Dial Page argues that it was the first to propose acknowledgement paging and that it now has conducted over-the-air tests demonstrating technical feasibility.

89. While we now agree with Dial Page that it has demonstrated the technical feasibility of its proposal, Dial Page still has failed to demonstrate that its acknowledgement paging proposal, or any part thereof, is a significant innovation. Additionally, although unclear, it appears that Dial Page is comparing its digital receiver to conventional analog receivers, not to other digital receivers. Digital receivers commonly are used in other services but Dial Page does not address how its receiver differs from other digital receivers. We therefore find its receiver comparison statements unconvincing. Accordingly, for the reasons stated, we deny Dial Page's pioneer's preference request.

90. Echo Group L.P. (PP-36). Echo proposes a two-way mobile data radio service (MDRS). As proposed by Echo, MDRS would consist of five 5 kHz inbound packet data channels and five 5 kHz outbound packet data channels. Due to a request for confidentiality associated with Echo's June 1, 1992 progress report, the report was not considered at the time of the Tentative Decision and its pioneer's preference request was proposed to be denied for failure to demonstrate technical feasibility.[69]

91. During the initial comment period on Echo's request Mtel, PageNet, and PageMart all submitted comments arguing that MDRS was developed for cellular mobile data and private land mobile services already authorized to operate in the 220 and 900 MHz bands. These parties argue that a pioneer's preference for a PCS license should not be awarded based upon developments that preceded the pioneer's preference rules and initially were designed for implementation in services already authorized, not PCS. Mtel argues that because this technology was developed earlier for services already authorized, awarding a pioneer's preference to Echo would be counter to the Commission's objective

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[68] We erred in the Tentative Decision in asserting that Dial Page had not demonstrated the feasibility of its system.

[69] Echo resubmitted the portions of its report for which it had requested confidentiality on June 5, 1992, but at least one confidential marking remained. By the time it was clarified that confidentiality was no longer requested for any portion of the report, the Commission had not considered this document in its decision adopted on July 16, 1992. The report therefore is considered herein as if it had been available in its entirety on June 5, 1992.

of encouraging innovators to submit proposals that otherwise would not have been submitted. PageNet similarly asserts that MDRS encompasses the same types of two-way services as provided by existing wireless networks, but that MDRS would operate at lower transmission rates than similar existing systems.[70] In its reply comments Echo states that it developed the technology principally for two-way mobile data services in the 800 and 900 MHz range. Echo also asserts that "MDRS is primarily designed for 'bursty' data communications. Cellular, however, is primarily a voice service for which data has only recently been proposed...." Upon this basis, Echo reasons that its proposed service is significantly different from the cellular service.

92. In a petition for reconsideration of the Tentative Decision, Echo argues that it has demonstrated that MDRS is both innovative and feasible. It states that MDRS is a patented technology that permits transmission of high-speed data at low cost as a full duplex data messaging service. Echo adds that MDRS is more spectrum and cost efficient than other two-way data delivery systems. Echo maintains that Mtel's NWN is a single channel, simplex system that will not provide the real time two-way services that MDRS will provide.

93. We agree that MDRS as proposed by Echo is distinguishable from cellular voice services. However, we also agree with commenters that Echo does not differentiate its proposed two-way data service from the other two-way data services being provided or proposed in the cellular service.[71] Further, the record indicates that Echo has been developing its MDRS on land mobile and cellular frequencies in the 800 and 900 MHz bands. The services that Echo proposes are already permitted in these service bands. Notwithstanding this developmental history, Echo has not demonstrated the specific innovative development for which it is responsible that permits provision of MDRS services on PCS frequencies. Additionally, Echo has failed to demonstrate the innovativeness of its technology, given that two-way mobile data operations currently exist in the 800 and 900

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[70] See PageNet Opposition to pioneer's preference requests at 10.

[71] In its progress report submitted on June 1, 1992, Echo states that the recent decision by nine U.S. cellular carriers and IBM to offer only a higher-cost, higher data rate (up to 19.2 kbps) system increases the importance of granting a nationwide PCS frequency allocation to allow a competing service to be offered to users more interested in an efficient low-cost, lower data rate (2.4 to 9.6 kbps) system. While this argument is neutral with regard to the merits of its MDRS proposal, Echo does not directly address nor demonstrate why providing a competing service that is less efficient merits a pioneer's preference.

MHz bands and the technology relied upon for its proposal appears to consist of existing technologies. Accordingly, for these reasons we deny Echo's pioneer's preference request.

94. PacTel Paging (PP-38). PacTel proposes a broadly-defined "advanced architecture paging" (AAP) service which it describes as being intended to provide a high speed one-way unformatted bitstream of information without being limited or constrained by the nature or content of the information to be conveyed. According to PacTel, its open format scheme would permit a variety of services, including existing and advanced messaging and transmissions of graphics, video, E-mail, facsimile, digitized audio, and alphanumeric messages.[72] PacTel proposes to use FSK simulcast technology. It states that it has tested various baud rates and "that the simulcast limit may be increased to around 4800 baud in the near term,"[73] but also states that it is continuing to investigate other modulation techniques and continuing to attempt to achieve higher data rates.[74] For example, PacTel states that it plans to experiment with 4-level Binary Frequency Shift Keying (BFSK), Multi-tone FSK, orthogonal frequency division multiplexing, code division multiple access, Quadrature Phase Shift Keying (QPSK) and Quadrature Amplitude Modulation (QAM). In the Tentative Decision we found that it had not demonstrated with particularity its development of a methodology permitting transmission of the information with efficiencies and capacities that were innovative or unique.

95. PageMart and PageNet addressed PacTel's request. They assert that AAP does not employ frequency reuse and therefore would not have sufficient capacity to provide a viable service within the spectrum proposed for each license in this proceeding, would be inordinately expensive, and would not be spectrum efficient. Specifically, PageMart argues that PacTel's long message lengths and city-wide simulcasts without frequency reuse would provide service only to 5000 or fewer subscribers.[75] PageNet states that this limited capacity would force PacTel to charge high fees to relatively few subscribers to pay for infrastructure costs. Both parties argue that even if PacTel is successful in achieving a higher data rate for its system, its

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[72] See PacTel Request at 3.

[73] See PacTel June 16, 1992 AAP Reply Comments at 5.

[74] Id. at 6 and Attachment 1 at 1, 5. PacTel states that different modulation techniques will be considered at various baud rates to achieve up to 28.8 kbps in a 25 kHz channel.

[75] See PageMart Comment to the pioneer's preference requests at 21.

lack of frequency reuse would still result in an inefficient system.

96. Additionally, PageNet asserts that the design for AAP limits its efficiency and the services that can be provided because AAP lacks a return signal capability for acknowledgement. This prevents the confirmation of longer, more complex data messages. PageNet concludes that because other proposals offer two-way capabilities with high-volume data transmissions, users are not likely to choose AAP over these systems.

97. PacTel replies that AAP increases capacity and spectrum efficiency by increasing transmission baud rates to 4800 and by using advanced modulation techniques to achieve higher data rates.[76] In its Petition for Reconsideration, PacTel asserts that our comparison of its transmission capacity to that of others, and Mtel in particular, is inappropriate. PacTel argues that a proper analysis of the effective rate of data delivery requires consideration of several factors, including the baud rate, the manner in which the spectrum is subdivided, and the modulation and interleaving techniques used to increase the bit rate. We considered several factors in our analysis of the data rate PacTel proposes in its system design, including baud rates. While PacTel may have achieved high baud rates for its system, at the time of the Tentative Decision, PacTel had been testing multilevel FSK but had not chosen a modulation technique to implement these proposed higher baud rates, much less demonstrated that the rates could be implemented with advanced modulation techniques in a simulcast environment.

98. In its Petition of Reconsideration PacTel also argues that due to the abbreviated time schedule in this proceeding "the fact that an experimental program has not yet been completed should not be considered decisionally significant...."[77] We do not require that an experimental program be completed, rather we require only that some tentative results be reported to the Commission or that a paper technical feasibility showing be submitted so that from a technological standpoint the Commission may make an informed decision. In this case PacTel did not submit a cohesive system design, demonstrate the innovative features of the design, and PacTel's responsibility for bringing those innovations to fruition or for adapting the innovations for practical use. Rather, PacTel proposed a series of different ideas and plans without demonstrating what specific innovations had been developed by PacTel, as distinguished from general plans

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[76] See PacTel Paging Reply to pioneer's preference request at 4.

[77] See PacTel Petition for Reconsideration of Tentative Decision Denying Preference Request at 19, 20.

to experiment in the future with several promising technologies. Second, in PacTel's case the time schedule of this proceeding should not have hampered its ability to make the requisite technical showing inasmuch as it submitted its request for a pioneer's preference in November 1991 and subsequently submitted experimental reports to the Commission. Under these circumstances, PacTel had ample opportunity to make its showing.

99. We also agree with PageMart and PageNet that AAP is not spectrum efficient or innovative for other reasons. Lack of frequency reuse and lack of a return channel limit AAP's ability to provide advanced data services in a large geographic area. While PacTel proposes to provide regional service, its system does not provide for determining subscriber location, and therefore a message must be simulcast. However, simulcasting does not appear to be feasible because the system's capacity for regional service would be limited by our limitations on spectrum to be assigned to each licensee. Without support from an intelligent network infrastructure capable of providing frequency reuse or acknowledgement, PacTel's proposal does not demonstrate significantly increased spectrum efficiency or innovativeness.

100. Accordingly, as described above, we find that Pactel has not demonstrated its development of an innovative proposal that as a result of our allocation decisions made today is likely to lead to establishment of a service not currently provided or to a substantial enhancement to an existing service.[78] Therefore, we deny PacTel's pioneer's preference request.

101. PacTel Paging (PP-39). PacTel proposes a ground-to-air paging service to provide paging to passengers on aircraft. In the Tentative Decision we concluded that this proposal is not innovative because the technology already exists and other entities currently provide communications between the ground and aircraft. PacTel did not file comments to the Tentative Decision and no other party addressed PacTel's proposal. We find that delivering a page to a specific aircraft is not sufficiently innovative to warrant a preference. Accordingly, we deny PacTel's pioneer's preference request.

102. PageMart, Inc. (PP-40). PageMart proposes a two-way service that it names "Personal Information Messaging Service" (PIMS) which it describes as allowing portable, wireless delivery of lengthy text, graphic and facsimile messages, on a nationwide basis, using device-independent subscriber transceivers.[79]

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[78] 47 C.F.R. § 1.402.

[79] On June 16, 1992, Mtel filed a Formal Opposition to PageMart's pioneer's preference request. PageMart moved to strike this pleading as being untimely filed and replied to

PageMart claims that its PIMS proposal combines existing communication technologies into a new network design, centered on radiolocation and frequency reuse, that offers service advantages and cost reductions using existing components. PageMart proposes to use a total of 250 kilohertz - ten 25 kilohertz channels - to provide a non-interactive, non-real time data service that it states will have the capacity and functionality to support "every new application described by every applicant."[80]

103. In the Tentative Decision we proposed to deny PageMart's request for a preference, noting that it had not distinguished its proposal from existing systems using the same technologies and that it had stated that its planned experiments would enable it to confirm the feasibility of its system design but that report of these experiments was not received by the time the Commission considered the proposal. In its Petition for Partial Reconsideration, PageMart acknowledges that its proposal does not require development of new modulation schemes nor invention of new communications technologies, but argues that its overall system design, incorporating existing technologies, is innovative and deserving a preference.[81]

104. Responding to the Commission's tentative denial, PageMart argues that the tentative denial was based upon a "conclusion that PIMS is not 'technically feasible,' solely because PageMart has not yet submitted experimental test results..."[82] and in essence argues that its proposal incorporates only existing technologies the feasibility of which already is known. PageMart also argues that the information it submitted proved the system's feasibility, and that the Commission incorrectly required experimental results rather than construing its written submission to demonstrate technical feasibility.

105. Notwithstanding PageMart's interpretation, this Commission made no finding, implicit or explicit, with regard to whether PageMart's system may ultimately turn out to be feasible. The expressed basis for our decision was that PageMart had not met its burden of demonstrating the feasibility at this time of

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Mtel's Opposition on July 1, 1992. To formulate a decision based upon as much information as possible, we find it in the public interest to accept both Mtel's Opposition and PageMart's Reply as late-filed comments. The issues raised in both have been fully considered herein.

[80] PageMart Reply Comments at 2 (June 16, 1992).

[81] PageMart Petition for Partial Reconsideration at i, 12.

[82] PageMart at ii, 7.

its system,[83] and therefore we were unable to conclude that it had demonstrated the technical feasibility of its proposal as required by our rules. PageMart's own statement that its experiments will enable it to confirm the system's feasibility casts doubt on later assertions that combining various technologies into a new system to provide a multiplicity of services constitutes a significant "innovation" for purposes of our pioneer's preference rules, yet the technical feasibility of its system is self-evident.

106. We do not so readily accept that combining into a single system various technologies that individually are technically feasible necessarily will result in a new system that itself is technically feasible. In this context, we understood from PageMart's pleadings that it was conducting experiments to demonstrate the feasibility of its proposed system. Insofar as PageMart argues that our rules permit preliminary results of an experiment or a written technical showing to demonstrate technical feasibility, we agree. But after review of the record in this proceeding, we find that, as PageMart itself acknowledges, although the technical parts of PageMart's system already exist alone or within other systems it has neither demonstrated the technical feasibility of its entire proposed system or that its technical feasibility can be assumed. However, PageMart argues that the basis for its pioneer's preference request is not the innovativeness of these constituent parts, but rather, that its system treated as a whole is a new and innovative development. That being the case, PageMart has not demonstrated the technical feasibility of its system as a whole.

107. Beyond demonstrating technical feasibility, our rules require that an applicant demonstrate its development of a new service or technology and that it has developed the capabilities or possibilities of the technology or service or has brought them to a more advanced and effective state.[84] PageMart states that its claim to innovation is in the combining of existing technologies.[85] It states that its proposed system is based in

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[83] See 47 C.F.R. § 1.402(a) (1992); see also 6 FCC Rcd at 3494 (1991) ("An applicant for a pioneer's preference will have a significant burden to persuade the Commission that its proposal has sufficient merit").

[84] 47 C.F.R. 1.402 (1992).

[85] In its petition for reconsideration, PageMart states that we recognized the innovativeness of its proposal because we did not tentatively deny its request on those grounds. We made no finding on the innovativeness of PageMart's request in the Tentative Decision. Rather, for purposes of the Tentative

part upon cellular-type frequency reuse incorporating a four cell frequency reuse pattern with flexibility to use micro and pico cells and radiolocation. PageMart does not state what it contributed to this technology, if anything. Indeed, material filed by PageMart states that microcells with as small as 3-cell reuse have been accomplished in the cellular industry.[86] Other parties in this proceeding also proposed to use the cellular reuse plan and a method of radiolocation, and PageMart's system does not appear distinguishable from the others on this basis.

108. PageMart also proposes to not specify a protocol to permit carriage of a variety of services and to use existing technology and equipment to keep costs down. Both of these aspects of its system appear to be design choices which, however well founded in the overall scheme of services to be provided, do not demonstrate innovativeness that would qualify one for a pioneer's preference in our licensing process. Finally, PageMart proposes to use a Personal Computer Memory Card International Association (PCMCIA) for the radio link between its transmitters and a variety of equipment. Again, this may be a well founded design decision, but PageMart has not demonstrated what it has contributed to this technology, if anything, to permit use of such cards.

109. Accordingly, as described above, we find that PageMart has not demonstrated its development of an innovative proposal that as a result of our allocation decisions made today is likely to lead to establishment of a service not currently provided or to a substantial enhancement to an existing service.[87] Therefore, we deny PageMart's pioneer's preference request.

110. Ericsson Business Communications, Inc. (PP-53). Ericsson proposes voice and low speed data Business PCS services that it states would use a total of 8 MHz in the 940-948 MHz band. However, we are allocating only 3 MHz from the 901-902, 930-931, and 940-941 MHz bands for narrowband PCS services and this does not accommodate the service Ericsson proposes. Ericsson did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed Ericsson's proposal. We deny Ericsson's pioneer's preference request for the reasons stated.

Decision, having found that PageMart had not demonstrated the technical feasibility of its proposal, we did not go on to consider other bases. This should not be confused with a finding of innovativeness.

[86] See PageMart December 15, 1992 Supplemental Report App. A at 1.

[87] 47 C.F.R. § 1.402.

111. Radio Telecom and Technology, Inc. (PP-69). RTT proposes to use UHF television frequencies for PCS services. Because these frequencies are not under consideration for PCS, we cannot grant RTT a preference. RTT did not file comments to the Tentative Decision in GEN Docket No. 90-314 and no other party addressed RTT's proposal. We deny RTT's pioneer's preference request for the reasons stated.

112. Freeman Engineering Associates, Inc. (PP-79). Freeman submitted a general proposal to provide E-Mail, tone plus voice, tone only, digital readout, and alphanumeric simulcast paging services.[88] Freeman requests a series of 150 kHz channels, using advanced modulation techniques for its simulcast broadcasts. Additionally, Freeman requests a 56 kHz return channel for mobiles and a series of 56 kHz channels for base station communications. Freeman also proposes the use of multiple satellite receivers to receive the return communications from portables.

113. In the Tentative Decision, we proposed to deny Freeman's preference request because Freeman had not demonstrated the feasibility of its technology nor development of the capabilities or possibilities of a specific PCS technology or service. In comments to the Tentative Decision, Freeman states that its request sets forth a considerably more detailed explanation of the technical basis for its proposal than the Commission's tentative denial suggests. Specifically, Freeman contends that its proposal: a) allows the integration of multiple modes of operation on a single paging channel; b) envisions an extension of a local area network or public data network to transmit messages or data to portable computers; c) requires a series of 150 kHz channels using advanced modulation; d) requires digitization of the voice message to the pager; e) permits the text messaging service to be integrated in the same bit stream with conventional digital readout and tone alert services; f) permits a 56 kHz reverse channel to be used for mobile and fixed units to allow for response to incoming calls by the paging subscriber; g) permits the 56 kHz reverse channel to be synchronized with fixed station transmitting equipment; h) allows multiple satellite receivers to be used; and i) permits the 56 kHz channels to be used for transmissions from the base stations to the subscriber equipment to allow for the use of packet switching technology in conjunction with the paging system for wireless input of paging calls.

114. We find that Freeman's proposal requires a substantial amount of spectrum that is inconsistent with the rules adopted herein. Additionally, Freeman's proposal indicates the use of 150 baud simulcast equipment, which is slow and not spectrum

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[88] See Freeman Request at 4.

efficient or innovative. Accordingly, we deny Freeman's pioneer's preference request.

115. Global Enhanced Messaging Venture (PP-80). Global proposes an advanced messaging service (GEM) that it describes as transmitting messages at 6.25 kbps rates in a 25 kHz channel. According to Global, the paging device can receive tone-only, numeric, alphanumeric, and binary data over the air. The paging message also can notify the user that a large facsimile or other data message is being stored in the user's mailbox and that the user can connect Global's device to a telephone jack or payphone to receive the message or to send a message to the system. Global's proposal is essentially a two-way data service where the return link and larger out-going messages are sent by wireline. Global's proposed innovation appears to be the use of wireline communications in connection with advanced messaging to increase throughput of a messaging system without requiring more spectrum or higher data rates. The Tentative Decision proposed to deny Global for failure to demonstrate technical feasibility and failure to demonstrate the innovativeness of its proposal.

116. PageNet asserts that Global's GEM lacks innovation, arguing that having to connect to the landline telephone network to receive long messages and to acknowledge pages is functionally equivalent to today's paging environment that other advanced paging proposals are attempting to change. Mtel makes a similar observation. Mtel and PageMart assert that GEM consists of packaging an ERMES pager and a landline terminal. PageNet adds that GEM's proposed enhancements are related to the telephone network, not the radio frequency network, and therefore do not qualify for a PCS preference. PageNet adds that if a market for GEM type services should develop, existing paging systems could offer the service under current Commission rules.

117. Global replies that its proposal offers improvement over the error control and interleaving capabilities of the ERMES format, but that it has a patent pending and cannot release the details of the proprietary technology. Global claims that it is not repackaging ERMES technology, but is adding its own coding format, which is 30% more efficient than that of ERMES. Global further asserts that Mtel is merely experimenting with 50% compression techniques. Additionally, Global claims that other compression techniques are not comparable to that used for GEM and that other techniques achieve higher compression only when sending large messages.

118. Global states that its increase in transmission speed increases its spectrum efficiency. Global states that its use of 6.25 kbps data rates are much higher than current 2.4 kbps paging speeds and that its devices are pocket size and not "large and bulky" as PageMart asserts. Global also responds that it was recently formed and it has not made previous proposals similar to

GEM. Global contends that the only preexisting element of GEM is the use of the Pagentry device. It further contends that GEM entails nationwide channels to support nationwide simulcast service or multiregional service for subscribers that desire such service. However, Global states that it also would provide zoning and roaming capabilities to reach a subscriber through selective activation of network transmitters. It further states that sending response data by the landline network is an inconvenience today because there is no easy way to input data to the phone. By contrast, Global claims that its device is convenient to attach to the landline network.

119. Additionally, Global claims that we erroneously compared the throughput of GEM's 25 kHz channel to Mtel's 50 kHz channel. Further, Global asserts that we failed to analyze its technical showing as rigorously as the results of an experiment.[89]

120. We believe that connecting to the landline network to receive large messages and acknowledge pages essentially is what paging users do today, and therefore is not innovative. GEM's increase in transmission speed also lacks innovativeness. Finally, we are unable to determine the technical feasibility of GEM's claimed improvement over the error control and interleaving capabilities of the ERMES format because Global has not submitted the technical details of its claim.

121. Global states that it did not submit details of its work with compression rates because it decided to maintain confidentiality. Also, we note that Global stated in its reply comments that it would provide zoning and roaming capabilities through selective activation of network transmitters, but Global did not address this in its request and did not provide any detailed description. Further, creating a device that easily connects to the existing landline network does not qualify as an innovation leading to a pioneer's preference for a radio communication license.[90] Finally, the technologies we have been able to identify that are used in Global's proposal all are currently available and therefore Global has failed to demonstrate the innovativeness of its proposal. Accordingly, we deny Global's pioneer's preference request.

122. Metriplex, Inc. (PP-81). Metriplex proposes a service, named Hybrid Data Network with Acknowledgement Paging (HDNAP), to provide alphanumeric paging and data telemetry services with acknowledgement. As proposed by Metriplex, a total

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[89] See Global at 3.

[90] Cf. Report and Order, ET Docket No. 91-280, 8 FCC Rcd 1812, 1818 at para. 38 (1993).

of 50 kilohertz would be required for each channel, consisting of 25 kilohertz for transmission of information and a paired 25 kilohertz for transmission of an acknowledgement of receipt. Metriplex proposes allocating 20 channels totaling 1 megahertz to provide this service. In the Tentative Decision our proposal to deny Metriplex's request for a pioneer's preference was based upon its not having demonstrated the innovateness and technical feasibility of its proposal.

123. In comments that address the proposed denial, Metriplex argues that it has done significant market identification and technological development related to its proposal. It then goes on to propose that for a 3-year period we award a 50 kHz nationwide license to each applicant for a pioneer's preference in this proceeding. Metriplex argues that doing so would permit each applicant to implement its service proposals and that at the end of the 3-year period the Commission would decide whether to renew each license based upon a report to be submitted by each licensee.

124. With regard to Metriplex's proposal to provide its HDNAP service, we are unable to find that its proposed 2.5 kbps transmission of alphanumeric paging is innovative, inasmuch as paging services using 2.4 kbps technology already are in operation. Insofar as its proposal relates to adding an acknowledgement function on a separate channel, we note that others have proposed the same concept and that Metriplex does not address how, from a technical standpoint, this capability could be efficiently implemented given the constraints of low power, battery drain, and reception difficulties inherent in actual implementation of such a system. Thus we conclude that Metriplex has not demonstrated that its proposal is innovative nor demonstrated its feasibility within the meaning of the pioneer preference rules. Accordingly we deny the request of Metriplex for a pioneer's preference.

125. Insofar as Metriplex proposes changes to our pioneer's preference rules to permit permanent licensing subject to substantive evaluation at short renewal periods, we note that changes to the pioneer preference rules are not within the subjects addressed in this proceeding and therefore cannot be accomplished here. Furthermore, we note that some of the proposals for use of this spectrum would not be accommodated by assigning a pair of 25 kHz channels as proposed by Metriplex.

126. Mobile Communications Corporation of America (PP-82). MobileComm proposes a service its names "Verified Information Paging" (VIP) to provide one-way messaging, E-Mail, and other data with acknowledgement services.[91] As described by

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[91] See MobileComm Request at 2.

MobileComm, this service would be provided using a simulcast system transmitting an 8-level FSK signal in a 50 kHz channel with a data rate of 15 kbps. MobileComm's system also would provide a 12.5 kHz return channel for brief coded acknowledgements at a data rate of 1.2 kbps. VIP also would use autonomous registration to transmit messages from a specific serving base station and would broadcast nationwide if the user does not acknowledge receipt in the last known location. In the Tentative Decision we proposed to deny MobileComm's preference request for not having demonstrated the innovativeness nor the technical feasibility of its proposal.

127. During the initial comment period PageNet, PageMart and Mtel filed comments opposing grant of MobileComm's request. PageNet asserts that MobileComm's technical proposal remains in the conceptual phase, lacks technical network design, and features only ideas about potential network configurations.[92] PageMart asserts that MobileComm has failed to provide an adequate description of the system architecture it plans to utilize and that it is impossible to determine with any specificity what service and capabilities MobileComm plans to provide or to verify that MobileComm's claims for data transmission capability would actually work in a real-world messaging environment.[93]

128. Similarly, Mtel claims that MobileComm is vague in describing MobileComm's responsibility for developing the technology, noting that MobileComm only states that it has been working with a major equipment manufacturer to evaluate the suitability of a number of advanced modulation techniques. Mtel asserts that MobileComm's claimed demonstration of technical feasibility is limited to a statement by an expert consultant that 8-level FSK modulation is likely to be a reliable technique for its service. Mtel argues that the analysis upon which the expert based his advice was not provided and that the feasibility of other aspects of MobileComm's proposal have not been demonstrated.

129. Additionally, Mtel claims that the similarities between its system and that of MobileComm "are so extensive as to preclude any claim of innovation" by MobileComm. Mtel continues that comparison of key points in the two requests and the language to describe them shows that MobileComm's proposal "extends well beyond appropriation" and "is almost a clone of [Mtel's proposal], both technically and linguistically."[94]

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[92] See PageNet at 14.

[93] See PageMart at 5.

[94] Mtel's Opposition at 6.

Mtel follows these arguments with an extensive comparison of textual quotations from Mtel's and MobileComm's pleadings. Mtel concludes that the Commission should deny requests such as MobileComm's that duplicate previously disclosed innovations and do not contain any significant new contribution.[95] Mtel claims that there are only a few differences between the two proposals and that those demonstrate that Mtel's proposed system has greater capabilities.[96]

130. In reply, MobileComm claims that it has described the essential elements of its system architecture and that it has not provided the details of implementing this architecture (which it describes as protocols, coding schemes, and error detection and correction) because they are routine exercises in network design and engineering that it views as unrelated to its pioneer's preference request.[97] MobileComm also states that such information is not relevant to innovative spectrum usage or FCC regulatory policy.[98] Finally, MobileComm argues that its service is not conceptual and that it has identified specifically how it plans to provide its proposed service. This information, MobileComm contends, is sufficient for the Commission to conclude that MobileComm's proposal is innovative and technically feasible. It states that 8-level FSK modulation detection systems are well documented and that the resulting receiver sensitivity figures can be computed directly. Additionally, MobileComm states that preliminary test results indicate that 8-level FSK modulation can be utilized and that a consulting expert advised it that 8-level modulation is likely to be a reliable technique for data transmission in a simulcast system.[99] With regard to arguments that it has not disclosed sufficient information to permit analysis of the specific innovation claimed and the technical feasibility of its proposal, MobileComm states that its relationship with Glenayre Electronics, Inc. is governed by a confidentiality provision and therefore it cannot release its technical support information.

131. Finally, MobileComm asserts that its proposal is different than Mtel's because Mtel's proposed NWN is a two-way service, whereas VIP is proposed as a one-way service with

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[95] Mtel's pioneer's preference request was filed in November 1991, that of MobileComm in June 1992.

[96] See Mtel's Opposition at 2,3.

[97] See MobileComm's Consolidated Reply to Oppositions to Request for Pioneer's Preference at 2.

[98] Id. at 10.

[99] See MobileComm's Request for Pioneer's Preference at 14.

acknowledgement capability. To the extent that there are similarities between the two systems, MobileComm states that those are understandable because MobileComm has sought to fit its system within Mtel's proposed regulatory structure for three providers of generic nationwide messaging service.[100] Further, MobileComm claims that in a multipath environment its 8-level FSK modulation will permit the terminal unit to be more robust and sensitive than that of Mtel.[101]

132. MobileComm did not address the specifics of its system in comments or other filing after our tentative denial. Together with its affiliates BellSouth Corporation and BellSouth Enterprises, MobileComm did join in comments opposing, principally on legal grounds, various aspects of our pioneer's preference rules and their implementation. These issues are discussed separately.

133. Our rules require that each preference request contain, inter alia, a description of the service to be provided and the applicant's plan for implementing the service; and demonstrate that the applicant has developed the new service or technology. In deciding whether in our discretion to grant a preference, we consider this information and comments by other parties to determine, inter alia, whether the applicant has demonstrated that it is responsible for having developed an innovative proposal.[102] For us to make these determinations, the information submitted must include technical details specific enough for us to determine whether the proposal is innovative. MobileComm has not provided sufficient information for this purpose. In this regard, the details that we find lacking are design details unrelated to whether MobileComm has actually tested its system or otherwise analyzed its technical feasibility. The information required is that which would explain with specificity exactly how its proposed system would work and identify the innovation(s) claimed to justify award of a pioneer's preference under our rules.

134. MobileComm argues that it has not submitted certain information because it is not relevant to our regulatory purposes and is commonly known. Information in this category presumably would not include information relevant to determining innovativeness if it already is common knowledge. MobileComm also argues that it has not submitted certain information because MobileComm has agreed to maintain its confidentiality. Regardless of the reason why information has not been submitted,

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[100] See MobileComm at 3, 10, 13, 16.

[101] See MobileComm Comment to RM-7978 at 8.

[102] 47 C.F.R. § 1.402(a).