

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

**ORIGINAL  
FILE**

In the Matter of )  
 )  
Redevelopment of Spectrum to )  
Encourage Innovation in the )  
Use of New Telecommunications )  
Technologies )

ET Docket No. 92-9  
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**JUL 8 - 1992**

To: The Commission

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**REPLY COMMENTS OF ASSOCIATION  
OF AMERICAN RAILROADS**

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railroads and other industries have used reliably for more than a quarter of a century, have not been fully explored. Before proceeding with its 2 GHz reallocation proposal, the Commission must consider less disruptive alternatives, including spectrum sharing, making federal spectrum available, and reallocating the 2 GHz broadcast auxiliary service band and other frequencies outside the 2 GHz band for emerging technologies.

If emerging technologies are deployed in the 2 GHz band, the Commission must protect the fixed microwave facilities of the railroads and other users from interference. Fixed microwave service should not be downgraded to secondary status. In addition, microwave licensees should not be required to relocate their 2 GHz facilities unless they are guaranteed sufficiently reliable alternative spectrum or media and full compensation for displacement.

**II. THE COMMISSION SHOULD CONSIDER OTHER ALTERNATIVES THAT WOULD NOT INVOLVE REALLOCATION OF 2 GHz FIXED MICROWAVE USERS.**

The Commission's proposed reallocation of 2 GHz private fixed microwave frequencies for emerging technologies will impose an enormous burden on industries that form the national infrastructure and are critical to the nation's economic well being. See, e.g., Comments of AAR, the Large Public Power Council ("LPPC"), the American Petroleum Institute ("API"), the Edison Electric Institute ("EEI") and the Department of Energy. As the comments demonstrate, however, deployment of emerging technologies is possible without disrupting these critical

industries and threatening the safety and reliability of their operations. Other alternatives, including spectrum sharing and allocation of other frequencies for emerging technologies, have not been adequately explored. Indeed, the record supports AAR's earlier request that the Commission suspend its 2 GHz reallocation proposal until less disruptive alternatives are fully considered.<sup>2/</sup>

**A. Spectrum Sharing Technologies Require Further Study.**

The comments contain wide support for use of spectrum sharing as a means of permitting immediate deployment of emerging technologies such as personal communications services ("PCS") without requiring massive relocation of existing fixed microwave users. As McCaw Cellular Communications succinctly states, spectrum sharing offers a "best of both worlds" situation, preventing massive dislocation of existing microwave users and permitting rapid deployment of new services. Comments of McCaw at 20. See also Comments of Southwestern Bell at 3 ("[I]f spectrum sharing techniques prove successful, the potential need for an exclusive PCS spectrum allocation could be reduced and/or eliminated").

A wide range of parties, including PCS proponents and equipment manufacturers, states that emerging technologies can share spectrum with fixed microwave users. Numerous PCS

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<sup>2/</sup> AAR, LPPC and API "Petition to Suspend Proceeding," ET Docket 92-9, filed April 10, 1992.

companies, many of whom have filed pioneer's preference applications for their sharing technologies,<sup>3/</sup> claim that sharing is feasible:

- American Personal Communications ("APC") claims that its Frequency Agile Sharing Technology would permit immediate deployment of common carrier PCS in the 1850 - 1990 MHz band on a shared basis "without wholesale displacement of, or causing any harmful interference to, incumbent microwave users." Comments of APC at 4.
- TelLogic states that its studies indicate that PCS can be deployed on a shared basis without causing interference to microwave licensees. Comments of TelLogic.
- Associated PCN Company ("APCN") claims it "has developed and is in the process of testing and perfecting" a spectrum sharing technology for deployment of PCS that does not require relocation of incumbent microwave licensees. Comments of APCN at 6.
- Telocator claims that sharing between PCS and microwave users "will be possible." Comments of Telocator at 12. It states that the Telocator PCS Section Technical and Engineering Committee "is currently investigating" several sharing techniques and frequency avoidance approaches. Id. at 11.
- Impulse Telecommunications Corporation, a consulting and engineering firm, has concluded that spectrum sharing is technically and economically feasible. Comments of Impulse at 2.

The parties possibly most familiar with the actual state of sharing technologies -- telecommunications equipment manufacturers -- similarly claim that sharing between emerging technologies and microwave users is possible.

- SR Telecom Inc., a manufacturer of microwave systems used primarily in rural areas,

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<sup>3/</sup> McCaw points out that 24 of the 38 PCS pioneer's preference requests put on Public Notice in May 1992 involved sharing spectrum with existing 2 GHz licensees. Comments of McCaw at 24.

supports sharing of the band by different technologies. Comments of SR Telecom at 7.

- Spatial Communications, Inc. ("SCI") supports use of its Spatial Division Multiple Access ("SDMA") technology, which it says will permit PCS and microwave users to coexist in the 2 GHz band. Comments of SCI at 4.<sup>4/</sup>
- Rolm Systems points to the APC and Southwestern Bell sharing studies to support its view that few microwave licensees would have to move from the 2 GHz band. Comments of Rolm at 16.
- SCS Mobilecom, Inc., claims that its Broadband-CDMA ("B-CDMA") technology will facilitate sharing. Comments of SCS Mobilecom at 14.<sup>5/</sup>

The railroads and other incumbent microwave licensees in the 2 GHz band are greatly encouraged by the promise of spectrum sharing.<sup>6/</sup> Given the potential for spectrum sharing to eliminate the need to reallocate spectrum, the Commission should

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<sup>4/</sup> SCI supports use of its SDMA technology, which, using smart antennas and proprietary signal processing technology, separates signals based on their spatial location, as well as their frequency content. SDMA can locate, track, spatially demultiplex and spatially multiplex signals to and from multiple users -- enabling simultaneous co-channel transactions within a single area. Comments of SCI at 1. This technology will allow PCS and microwave users to coexist in the 2 GHz band. Id. at 4.

<sup>5/</sup> According to SCS Mobilecom, only if microwave users replace their existing systems with B-CDMA microwave systems, and employ SCS's Dynamic Capacity Allocation Monitoring system, can microwave users "remain on the band indefinitely and coexist with the PCS users with only a negligible impact on the capacity of the PCS system." Comments of SCS Mobilecom at 17-19.

<sup>6/</sup> Indeed, one of AAR's members, the Union Pacific Railroad Company, has entered into cooperative arrangements with various PCS experimenters for the purpose of evaluating frequency sharing possibilities and assessing interference potential in various operational settings.

immediately explore this alternative.<sup>7/</sup> No spectrum should be reallocated in this proceeding until the Commission studies the results of sharing tests and conducts any additional necessary tests. As the Public Safety Microwave Committee ("PSMC") stated, reallocating 2 GHz frequencies without first determining the feasibility of spectrum sharing "would be reckless and premature." Comments of PSMC at 22-23.<sup>8/</sup>

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7/ The Commission must determine whether spectrum sharing will permit long-term deployment of PCS without relocating existing licensees. Pacific Telesis Group claims that PCS studies by its Telesis Technologies Laboratory show that PCS can share spectrum with microwave users during an initial period, but as demand for PCS grows, "clear spectrum will be needed." Comments of Pacific Telesis at 8-11. Motorola, Inc., similarly states that spectrum sharing is only a short-term solution and that "[c]lear spectrum will be needed to realize the benefits of PCS." Comments of Motorola at 17. Among the many issues related to sharing that the Commission must explore are whether CDMA and avoidance technologies are required to facilitate sharing without interference and whether spectrum sharing by more than one PCS provider is feasible. Comments of Northern Telecom at 11-12.

8/ See also Comments of NYNEX Mobile Communications Company at 9-10 (the Commission should make no final determination on spectrum sharing until the results of spectrum sharing studies, conducted over extended periods, are available); Comments of Centel Corporation at 10 ("The Commission should carefully consider and thoroughly explore the wide range of spectrum sharing proposals before making a final decision to require the relocation of existing users"); Comments of McCaw at 25 ("Given the plethora of spectrum sharing opportunities now pending, the Commission would be remiss if it did not examine such issues before embarking on a forced relocation of 2 GHz licensees"); Comments of OCOM Corporation at 17 ("The Commission should further study the possibility of such shared use, or 'co-habitation,' prior to relocation of current microwave users forcibly or unnecessarily"); Comments of Southwestern Bell at i ("The Commission would better serve the public interest by waiting for the results of these [sharing] experiments before making a final and potentially irreversible spectrum reallocation (continued...)")

AAR wants to emphasize, however that emerging technologies should be permitted to share spectrum with fixed microwave licensees only if microwave licensees are guaranteed that their operations will not be subject to interference. As AAR discussed in its Comments, the railroads' communications facilities cannot tolerate interference without risking derailments and damage to life and property. Comments of AAR at 2, 28-29. Accordingly, the Commission should not authorize spectrum sharing on an experimental or permanent basis until conclusive evidence proves that fixed microwave systems will be protected from interference.

**B. Federal Spectrum Should Be Made Available.**

The commenters were nearly unanimous in urging the Commission to work with the National Telecommunications and Information Administration ("NTIA") to make federal spectrum available for emerging technologies and/or as a home for displaced fixed microwave licensees. PCS companies, equipment manufacturers, telephone and cellular common carriers, state and local governments, electric utilities, petroleum and pipeline companies, independent consultants and numerous other interested parties supported use of federal spectrum. The Commission appears to be isolated in its reluctance to aggressively pursue this alternative.

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8/ (...continued)

decision"); Comments of EEI at 19 ("Before the Commission reallocates the subject frequency spectrum, studies should be conducted to determine the extent to which existing and proposed services can co-exist").

NTIA currently is working with federal agencies to make underutilized federal spectrum available for fixed microwave licensees that cannot operate reliably at higher frequency bands. Comments of NTIA at 20-21.<sup>9/</sup> The Commission should evaluate the results of NTIA's study and include federal spectrum in its spectrum reserve plan.

In addition, AAR urges the Commission and NTIA not to foreclose the possibility of making federal spectrum available for emerging technologies. Comments of NTIA at 18. See Comments of AAR at 16-21. It is uncertain whether Congress will pass the "Emerging Telecommunications Technologies Act," a reason the Commission cited for not considering federal spectrum for emerging technologies. Accordingly, it is premature for the Commission to eliminate this alternative in this spectrum reallocation rulemaking.

**C. The 2 GHz Broadcast Auxiliary Band Should Be Reallocated Before the Private Fixed Microwave Bands.**

Many commenters asserted that it will be far less harmful to the public to reallocate the 1990-2110 MHz broadcast auxiliary service ("BAS") band, than the 2 GHz fixed microwave bands, for use by emerging technologies. The 120 MHz of spectrum in the BAS band meets the Commission's criteria for emerging technologies, and nothing in the comments filed by broadcasters justifies its

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<sup>9/</sup> Acting NTIA Administrator Thomas Sugrue testified on June 3, 1992, before the Senate Committee on Commerce, Science and Transportation that NTIA would conclude its study of spectrum use by federal agencies within 60 days.

outright elimination from reallocation. Indeed, the lack of any public policy justification for exempting the BAS band led at least one commenter to charge that the exemption was "politically motivated." Comments of National Rural Electric Cooperative Association ("NRECA") at 8.

According to broadcasters, the BAS band is used for providing live video of news, sports and entertainment events from remote locations. Comments of Scripps Howard Broadcasting at 1, and Comments of Capital Cities/ABC Inc. ("ABC") at 3. The band has been essential, according to ABC, for providing video from point-of-view cameras installed in America's Cup sailboats, in the headdress of an Olympic skater during closing ceremonies, in football players' helmets, and on members of racecar pit crews. Engineering Statement of Kenneth J. Brown at 2, attached to Comments of ABC.

While broadcasters' uses of the 2 GHz band do have some entertainment or social value, they stand in stark contrast to the vital public safety functions of communications systems the railroads and other fixed microwave licensees operate on the 2 GHz band. Comments of Questar Corporation at 13, Comments of API at 12. Some broadcasters point to the importance of the BAS band in bringing live video to the public of events such as the Los Angeles riots after the Rodney King verdict. See Comments of the National Association of Broadcasters, Radio-Television News Directors Association, etc. ("Joint Comments") at 6. But none claim that public safety would be threatened without such live

video. Even the Joint Commenters, who apparently represent those most familiar with broadcasters' news operations, do not attempt to compare BAS use with the far greater public interest applications of microwave users of the 2 GHz band.<sup>10/</sup>

In any event, reallocating the BAS band for emerging technologies would not spell the end of live news, sports and entertainment programming. BAS operations can be accommodated reliably at higher frequency bands. Comments of Motorola at 9 and Comments of NRECA at 8. In addition, broadcasters increasingly are using satellite transmissions as an alternative to terrestrial electronic newsgathering ("ENG") links. Comments of Motorola at 8, Comments of Questar at 13 and Comments of API at 12. Video compression technology also is reducing the amount of spectrum broadcasters need for ENG uses. Comments of Motorola at 9.

Even in the unlikely event that broadcasters would not be able to include live video segments in their news programming, the public would not be deprived of critical information. Broadcasters still could relay live audio reports without accompanying visuals. Reporters, who often do little more than use the scene of a "live" event as the backdrop for a standup

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<sup>10/</sup> The Commission has stated that "[r]adio services which are necessary for safety of life and property obviously deserve more consideration than those services which are more in the nature of conveniences or luxuries." See Comments of AAR at 12. The FCC has long recognized the public safety aspect of railroads' communications' operations and has authorized use of private systems to meet their high reliability needs. Id. at 18-19. No such recognition has been made of broadcasters' use of BAS frequencies.

report anyway, can obtain video prior to the broadcast and, if necessary, call the station with vital information and conduct on-the-air interviews from remote locations via the telephone.

Given the much greater impact of relocating fixed microwave operations, as compared to relocating BAS facilities, the Commission cannot justify special treatment for broadcasters. The evidence presented in the comments supports reallocation of the BAS band before the private fixed microwave band.

**D. Bands Other Than The 2 GHz Band Should Be Considered for Emerging Technologies.**

Comments filed in this proceeding and new developments in PCS technology do not support the Commission's predetermined selection of the 2 GHz band for deployment of emerging technologies. See Comments of AAR at 7-15. Evidence indicates that other bands may be better suited technologically for PCS and other new services than the 2 GHz band. Recent technological breakthroughs involving operation of PCS in the 28 GHz band could mark a turning point away from emphasis on the 2 GHz band. Suite 12 Group, a New York-based wireless entrepreneur, has applied for a pioneer's preference for a new PCS technology that operates on the 28 GHz band.<sup>11/</sup> Telecommunications engineers have hailed the technology as a "big development," and many PCS proponents

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<sup>11/</sup> Suite 12 Group Petition for Pioneer's Preference, Gen. Docket 90-314, filed May 4, 1992.

are exploring the technology.<sup>12/</sup> As a result of this technology, "the PCS arena could be thrown into considerable upheaval," the trade press reports.<sup>13/</sup>

In addition, AT&T is conducting PCS experiments on the 6 GHz band, a band which Hewlett Packard also endorses for PCS. Comments of Hewlett Packard at 6. Northern Telecom has suggested that the Commission consider the 900 MHz band for PCS. Comments of Northern Telecom at 13. Given these developments, it can hardly be said that the 2 GHz band is the best or the only appropriate spectrum location for PCS and other new technologies. Accordingly, the Commission should fully investigate potential deployment of PCS at other bands, including 900 MHz, 6 GHz and 28 GHz, before proceeding with its proposed 2 GHz spectrum reallocation.

**III. THE COMMISSION MUST PROTECT EXISTING MICROWAVE LICENSEES FROM INTERFERENCE.**

As the numerous comments filed by existing 2 GHz microwave licensees demonstrate, critical industries, including the railroads, utilize fixed microwave systems for vital safety and reliability functions. See, e.g., Comments of AAR at 2, 28-29; Comments of LPPC at 2-3. Because the reliability needs of these industries are so high, their private microwave systems can tolerate little, if any, interference. To date, they have been

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<sup>12/</sup> See attached Exhibit A, "Brooklyn Co. Looks to 28 GHz for PCS Use," Multichannel News, Vol. 13, No. 24 at 12.

<sup>13/</sup> Id.

protected from interference by careful frequency coordination using spectrum designated for private fixed microwave service on a primary basis.<sup>14/</sup>

The NPRM proposes downgrading 2 GHz fixed microwave service to secondary status at the end of a 10- to 15-year transition period, at which time licensees would be subject to interference from any other user in the band.<sup>15/</sup> During the transition period, emerging technology entities that have negotiated access to spectrum would be authorized to share spectrum with existing microwave users on a "co-primary" basis, the meaning of which the Commission has thus far failed to articulate. AAR urges the Commission to fully consider the railroads' and other microwave users' need for interference protection before enacting these proposals.

**A. Microwave Licensees Cannot Operate at Secondary Status.**

The Commission's proposal to downgrade 2 GHz fixed microwave service to secondary status after the transition period is, according to the Commission, supposed to be an incentive to incumbent licensees to relinquish 2 GHz spectrum to emerging technology entrants expeditiously. NPRM, 7 FCC Rcd at 1545.

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<sup>14/</sup> Section 94.63 of the Commission's Rules sets forth the requirements for frequency coordination between and among private operational fixed microwave facilities. 47 C.F.R. § 94.63.

<sup>15/</sup> Section 2.105(c) of the Commission's Rules states that stations in a "secondary" service are not entitled to interference protection from primary stations. 47 C.F.R. § 2.105(c).

Several PCS proponents have commented that the proposed duration of microwave licensees' "co-primary" status is too long and will not be adequate incentive for them to negotiate to allow new entrants use of desired spectrum. They have proposed downgrading the 2 GHz fixed microwave service to secondary status in as few as three years. Comments of PCNS-NY at 32. See also Comments of Time Warner Telecommunications at 15 (less than 10 years); Comments of AMSC Subsidiary at 9 (four years); and Comments of Cox Enterprises at 7-8 (seven years); Comments of TRX Transportation Telephone Company at 12 (seven years); and Comments of AT&T at 11-12 (after January 1, 1997).

Such proposals, like the Commission's proposal, demonstrate a fundamental misunderstanding of the 2 GHz incumbents' use of private microwave systems. Railroads, electric utilities, petroleum and natural gas pipeline companies, state and local governments and others use microwave systems for real-time operational functions. Even the slightest interference to these systems potentially can cause train derailments, power blackouts and other life-threatening disasters. Operating at secondary status after three years, seven years or 15 years is not acceptable; it is tantamount to a requirement that these users vacate the band entirely. In short, secondary status in the 2 GHz fixed microwave context means no status in the band whatsoever.

Comments of incumbent microwave licensees clearly demonstrate that no artificial "incentive" to negotiate is

necessary as long as adequately reliable alternative spectrum and full compensation for displacement costs are guaranteed. The depth of misunderstanding of incumbents' need for reliability is demonstrated by the Comments of PCNS-NY. It points to several letters of incumbents indicating a willingness to relocate 2 GHz microwave facilities, as long as they are guaranteed reliable alternatives and full compensation. Comments of PCNS-NY at 15-16, Appendix. At the same time, PCNS-NY states that secondary status is necessary because incumbents have no incentive to relocate. Id. at 12. These statements are inconsistent.

The more reasonable approach is to not fix any date at which microwave licensees automatically convert to secondary status, especially if no emerging technology has indicated an interest in the occupied spectrum. See, e.g., Comments of Southwestern Bell at 19; Comments of United Telephone Companies at 5; Comments of TelLogic at 10; Comments of Time Warner at 15-16; and Comments of Telocator at 3, 6. As APC stated, incumbent microwave users should have "indefinite incumbency" with "strict and effective interference protection" and be required to vacate the 2 GHz band only if:

- (1) asked to do so by a PCS licensee; (2) reliable frequencies are available in other bands; and (3) PCS licensees bear the full cost of relocation.

Comments of APC at 5.<sup>16/</sup>

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<sup>16/</sup> As long as this guarantee is extended to all incumbent microwave licensees, proposals to confer special status on microwave licensees in rural areas, where PCS is less likely to be deployed, are unnecessary. See Comments of Time

(continued...)

The Commission must recognize, as many PCS proponents have, that the primary concern of the railroads and other incumbent microwave licensees is to continue to operate their communications systems in a reliable manner and without the risk of interference. Incumbents have stated this position throughout this proceeding, and it remains their position today. Accordingly, AAR urges the Commission not to redesignate fixed microwave service to secondary status at any time.

**B. The Commission Should Fully Investigate Other Measures to Protect Microwave Licensees from Interference.**

As the Commission proceeds with its study of the feasibility of spectrum sharing, it also should consider the various proposals commenters suggested for protecting microwave licensees from interference. For instance, the Commission should consider use of an industry advisory committee to establish technical requirements and interference standards (Comments of Harris Corporation at 10) and use of regional frequency coordinating committees, consisting of both fixed microwave and PCS operators, to enforce interference standards. Comments of PSMC at 23. In addition, mandatory transmitter identification should be considered as a means of isolating the source of interference.

Id. These and all possible means of ensuring that private fixed

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16/ (...continued)

Warner at 14; Comments of API at 33; Comments of Rocky Mountain Telephone Association at 11-12; Comments of Harris Corporation at 5; and Comments of Nevada Public Service Commission at 3-4.

microwave users are protected from interference must be explored before emerging technologies are permitted to share spectrum with existing users.

**IV. Private Microwave Licensees Must Be Guaranteed a Sufficiently Reliable Alternative And Full Compensation Before Being Required to Relocate 2 GHz Facilities.**

AAR continues to oppose any forced relocation of fixed microwave licensees until they are guaranteed an adequately reliable alternative communications system<sup>17/</sup> and full compensation for displacement from the 2 GHz band.<sup>18/</sup> AAR Comments at 34-46. AAR agrees with parties who urged that no relocation be required until these guarantees are met. Comments of United Telephone at 6; Comments of APC at 16; Comments of Pacific Telesis at 17; and Comments of Comsearch at 11.

The Commission's NPRM lacked any details on a specific procedure for ensuring incumbent licensees that emerging

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<sup>17/</sup> The Comments cast considerable doubt on the Commission's conclusion that 2 GHz fixed microwave facilities can be accommodated reliably on the 4 and 6 GHz bands. Comsearch pointed out, for example, that the estimate by the FCC's Office of Engineering and Technology ("OET") of spectrum capacity in the higher bands was flawed. Comsearch's study of spectrum capacity in the Houston market, upon which OET relied, did not include licensees from the higher portion of the 2 GHz band. Comments of Comsearch at 4. Comsearch also confirmed the point AAR made (Comments of AAR at 36) that the presence of satellite earth stations makes the 4 GHz common carrier band unsuitable for fixed microwave facilities. Id. at 2 and Appendix A.

<sup>18/</sup> AAR is not opposed to individual licensees voluntarily agreeing to relocate their 2 GHz microwave facilities at any time as long as the alternative communications system is sufficiently reliable and the displacement costs are fully paid by the new technology entrant.

technology entrants will pay all direct and indirect costs of relocating 2 GHz licensees. As a result, the comments do not adequately discuss specific payment mechanisms and reliability guarantees. The Commission must issue a further notice, with specific proposed rules, so that an effective, workable compensation procedure can be implemented.<sup>19/</sup>

**V. If Unlicensed PCS Requires a Clear Band, It Should Not Be Deployed in the 2 GHz Band.**

A number of parties encouraged the Commission to provide clear spectrum for unlicensed PCS. Telocator said unlicensed services will "form a potentially significant part of the PCS marketplace" and must be allocated sufficient spectrum. Comments of Telocator at 14. AT&T agrees that the only way to create a viable environment for new unlicensed services such as advanced cordless telephones, wireless Key/PBX/Centrex stations, computers and local and wide area data networks, is to clear a portion of the spectrum. Comments of AT&T at 14-16. See also Comments of Apple Computer, Inc. at 3; Comments of Rose Communications at 8; Comments of Spectralink at 2; and Comments of Rolm at 8-9.

As discussed above, AAR is not outright opposed to spectrum sharing, even with unlicensed services, provided there is no risk

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<sup>19/</sup> Some parties have suggested procedures for facilitating relocation of existing microwave licensees. See Comments of APC; Comments of EEI at 23; Comments of TRX Transportation at 14; Comments of Ameritech at 11; and Comments of Rocky Mountain Telephone at 18. However, the Commission itself must present specific proposed rules upon which all parties can comment.

that such services may cause interference to fixed microwave operations. The comments make clear that a variety of wireless on-premise technologies that would be unlicensed still are under development. Accordingly, it is impossible to determine at this time whether interference-free sharing is possible. The fact that some parties emphatically state that unlicensed PCS requires a "clear band" indicates that sharing may not be possible.

If, after fully studying the issue, the Commission determines that these services do require a clear band, it should not permit their operation in the 2 GHz band. The Commission has unequivocally stated in the NPRM and in other public statements that it is not "clearing the band" in this proceeding as it has in other spectrum reallocation proceedings.<sup>20/</sup> Accordingly, it should not now reverse this position and clear any portion of the 2 GHz band for unlicensed PCS.

## **VI. CONCLUSION**

The comments highlight many uncertainties regarding the Commission's proposal to reallocate 2 GHz spectrum for emerging technologies. In addition, the record now supports immediate consideration of less disruptive alternatives to permit deployment of PCS and other new technologies. Before displacing the railroads' and other users' 2 GHz microwave facilities, the Commission must consider all alternative spectrum, as well as spectrum sharing. It must not authorize deployment of any new

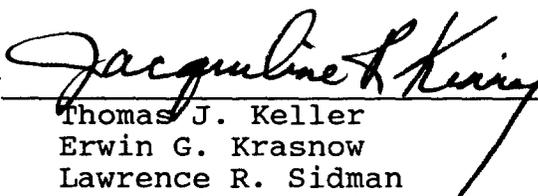
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<sup>20/</sup> NPRM, 7 FCC Rcd at 1545.

technologies in a manner that will cause interference to fixed microwave licensees. No fixed microwave licensee should be required to relocate its 2 GHz facilities unless sufficiently reliable spectrum or media is available and all displacement costs are paid.

Respectfully submitted,

**THE ASSOCIATION OF AMERICAN RAILROADS**

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**EXHIBIT A**

# Brooklyn Co. Looks to 28 GHz for PCS Use

By FRED DAWSON

The FCC has a new option to weigh in its effort to open spectrum for personal communications services.

The developer of television transmission technology operating at the unusually high microwave region of 28 GHz says it can also apply the technology for making low-power wireless phone connections in very small distribution areas such as are envisioned for PCS.

Suite 12 Group, which is set to launch a wireless multichannel television system in Brooklyn, N.Y., this summer, asked the commission for a "pioneer's preference" designation in connection with development of the PCS capability. The firm had already requested such a designation for its

group has a two-year license to operate a multichannel television system in New York City and has asked the FCC to allocate 2 GHz at 27.5-29.5 GHz for nationwide roll-out of "Multichannel Local Distribution Service" (MLDS), with two licensees operating at 1 GHz each per market (*Multichannel News*, Sept. 30, 1991, page 2).

Along with delivering high-quality TV signals across cells up to 12

miles in diameter, the system permits reuse of spectrum through reverse-polarization techniques for full-duplex telephony, data and interactive video. This capability is drawing the interest of the telephone industry and others who are looking for ways to implement wireless interactive services.

Suite 12 has been protective of the patented technology, which, by the testimony of virtually all who

have applied for wireless TV licenses at 28 GHz, is the only means of employing the bandwidth for such applications.

#### COMPANIES IMPRESSED

Nonetheless, companies willing to sign non-compete clauses have been allowed to take a look, and many of these interests have come away deeply impressed at the capabilities of the system.

"There's no doubt it works and works very well," said a leading cable engineer, asking not to be named. "The proof will be how they do once they're under way commercially. This could be a big development."

Another party who has paid a visit to Suite 12's Brooklyn operation is Rich Ford, mayor of Gustine, Calif., a town of about 4,000. **SEE BROOKLYN, PAGE 13**

If Suite 12's claims prove out, the PCS arena could be thrown into considerable upheaval.

use of 28-GHz transmission in higher-power cellular television and telephony.

Suite 12 said testing over the past year has demonstrated the technology is attractive for use in wireless local-area networks and as the "intrinsic backbone network for PCS."

"Each [microcellular] location with a transceiver (transmitter/receiver) can receive a signal from mobile transmitters and relay that signal to the central node [from which it also receives signals] by means of low power (10 to 200 milliwatts) without interfering with adjacent transceivers from the central node," Suite 12 said in its May filing at the FCC. Traffic would be sent from the central node to the central office of a local exchange carrier or other switching centers.

If Suite 12's claims prove out, as they have so far with regard to use of the technology in television distribution, the PCS arena could be thrown into considerable upheaval.

Owing to the lack of use of spectrum in the 28-GHz region — a consequence of the technical difficulties of operations at that level — its emergence as a viable alternative to the crowded spectrum levels now under consideration for PCS would be hard to ignore.

Already, sources report, telephone companies are showing a great deal of interest in the Suite 12 technology. Entities scouting its potential are said to include Bell Communications Research, BellSouth and U S West Inc.

Through its operating arm, Hye Crest Management, Suite 12 is about to launch the first commercial application of what it calls "CellularVision" in the Brighton Beach section of Brooklyn. The

## "OUR GOAL... TO M STAND-ALO SYSTEM USI TECHNOLO

Jerry Neal  
Senior Software Engineer  
Pioneer Communications of America  
Cable Systems Division

When Pioneer developed the Pioneer LaserDisc Universal System (PLUS), our goal was to simplify operations and increase revenue for the cable operator. We know that system automation and increased customer programming selection are both good economic moves.

So, we created PLUS to provide pre-programmed, uninterrupted entertainment. PLUS can control multiple pay-per-view channels of laserdisc players or autochangers. Laser technology translates into a durable maintenance-free, high quality video and audio program source. PLUS is backed by the reliability of Pioneer technology.

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# Paragon Suspends Two in Minneapolis Probe

By KIM MITCHELL  
Paragon Cable of Minneapolis has suspended two members of its sales management team for two weeks, as a result of a preliminary internal investigation prompted by allegations that the system engaged in discriminatory practices in low-income and minority neighborhoods.

Investigations by both the city Department of Telecommunications and Civil Rights Office are ongoing.

The city's cable officer, Carol Wold Sindi, said Paragon has complied with the city's demand for marketing records and other documents and said completing a preliminary investigation of the matter would take at least 30 days.

Although Paragon last week announced several steps it would take as a result of its preliminary investigation, conducted by outside legal counsel, Wold Sindi said those efforts would be "irrelevant to our in-

vestigation at this point."

"That's their interpretation of their own investigation," she said. "Our investigation has just begun."

The KBLCOM Inc.-owned system has denied any franchise commitments were broken and insisted that there was no intent to discriminate.

"At the same time, we take full responsibility, not only for the specific actions of employees but also for a working environment that enabled

those actions to occur," said Wayne Knighon, the system's general manager.

Knighon maintained that the system has a strong anti-discriminatory policy, both internally and in terms of serving the community. The system's internal investigation, still under way, indicates that the sales management staff did not intend to racially discriminate.

So why bother to suspend the two employees — a local director of

sales and sales manager?

The suspensions, with pay resulted from the system's acknowledgment that "certain communications and memos related to it were violations of our policy and we needed to take some action," Knighon told *Multichannel News*.

In addition to the suspensions, Paragon plans to offer a free installation promotion in the three ZIP codes where the alleged discriminatory practices took place, to "counteract any consumer perception that there has not been equitable marketing to those service areas," Knighon said. Additional internal training and outreach to community groups are also in the works.

The city investigation stemmed from a May *Minneapolis Star-Tribune* article that featured an internal memo describing one Minneapolis neighborhood as a "redline." The article quoted former salesmen as saying they were told to avoid selling in three areas of the city.

Paragon maintains that sales were brisk in the three ZIP codes in question, belying any discriminatory practices by the system. ■

## Brooklyn Co. Looks to 28 GHz For PCS Use

CONTINUED FROM PG. 12

people which is the first community to seek an FCC permit to operate a wireless television system at 28 GHz. Ford said his interest was prompted by a consultant hired by the town to explore alternatives to the local cable operation, which is owned by Tele-Communications, Inc.

Although the consultant overstated the system's capability — suggesting it could serve a 21-mile radius from a single transmitter — Ford said he and another city councilman found the Suite 12 technology to be very appealing.

"It's definitely cheaper than cable," he commented, "but we aren't sure we want to be investing in this under an experimental license. We'd be more interested if the FCC allocates the spectrum for commercial service, where it would be more of a mainstream technology."

The Competitive Cable Association has begun keeping members abreast of developments in the 28-GHz arena. At its meeting in Washington, D.C. in early April, the group distributed an advisory from the law firm of Farrow, Schidhouse & Willson, which has represented competitors to entrenched cable operators in a number of landmark court cases over the past several years.

PS&W noted in the advisory that over 200 entities have now filed for the type of experimental license granted to Suite 12 for New York City. The wave of "speculative filings" is under way "even though the 28-GHz band has not yet been formally made available for filing," the law firm commented. ■

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