

basis. ANS' proposal exploits this technology to ensure maximum available spectrum for displaced 2 GHz users.⁴⁶

Standards are being developed by industry groups that will facilitate this band sharing. ANS proposes application of the Part 21 frequency coordination standards for such co-primary use.⁴⁷

Path lengths -- Uneasiness with the propagation characteristics of the bands above 3 GHz and their impact upon path lengths and service reliability is pronounced. The potential repercussions from requiring displaced 2 GHz users to operate under a "blanket" waiver and accept existing path length requirements are significant.⁴⁸ The

microwave facilities in the 4 and 6 GHz bands have shorter maximum path lengths than operations in the 2 GHz bands. A

⁴⁶ An important ingredient in ANS' proposal is its reallocation of the 4 GHz band. ANS proposes reallocation of the 4 GHz band because its propagation and other technical attributes most closely approximate the characteristics of the 2 GHz band and thus would best serve the displaced users. Under this approach, over a 15-year transition period, 40 MHz at each band edge of the 4 GHz band would be reallocated on a primary basis for point-to-point microwave and on a secondary basis for satellite operation. In addition, this band would be rechannelized so low, medium, and high capacity systems would use it simultaneously. ANS Petition at 19. Certain parties question the availability of the 4 GHz band for displaced 2 GHz users because of the potential impact on satellite users. In particular, GTE urges that "any proposal to restructure the 4 GHz band must be thoroughly examined to ensure that such restructuring would not involve [any] adverse effects." GTE at 16. In its reply to comments on the ANS Petition, ANS will demonstrate that it shares GTE's concern and that its proposal will serve the best interests of all current 4 GHz users.

⁴⁷ See ANS Petition, Attachment 1 at Section 4.8. Several parties support ANS' co-primary template for the higher bands. See, e.g., Telesciences at 20; Huffman at 3; Harris at 7-9.

⁴⁸ Questar at 5; APPA at 12-13; IEEE - USA at 3-4; El Paso Natural Gas at 14; Rocky Mountain at 6; Comsearch at 7; OCOM at 3; NTCA at 4; Edison Electric at 13; UTC at 46-47; Harris at 3; USTA at 7; Interstate Natural Gas at 7.

path length over the maximum distance for a particular band will be subject to signal attenuation and reduced reliability....⁴⁹

In its Petition, ANS addresses this concern. It proposes introduction of minimum path length requirements applicable to the higher bands that are consistent with the unique long-distance needs of most current 2 GHz users. With co-primary use of the 4 and 6 GHz bands by common carrier and private op-fixed users, flexible and uniform path length requirements must be applied to both user classes. Thus, ANS proposes that the standards in Section 94.79 of the Commission's Rules replace the current inflexible Section 21.710 limitations for the common carrier bands. These new allocations would be applicable to both bands.⁵⁰

Loading requirements -- There are different system loading requirements for the 4 and 6 GHz common carrier bands and for the 6 GHz private op-fixed band. Pursuant to Section 21.710, the Commission requires a minimum system loading of 900 voice channels within 5 years or a minimum original data loading of 10 megabits per second for the 4 and 6 GHz common carrier bands. Under Section 21.122, a minimum of 1152 digitally encoded

⁴⁹ PSMC at 16. Under Section 21.710 of the Commission's Rules, the minimum allowable path length in the 2 GHz common carrier band is 5 kilometers (3.1 miles) and the minimum path length in the 4 and 6 GHz bands is 17 kilometers (10.6 miles). Similarly, Section 94.79 of the Commission's Rules prescribes a minimum path length of 17 kilometers for the 6 GHz private band. However, Section 94.79 of the Commission's Rules also permits shorter paths if the effective isotropic radiated power ("EIRP") of the transmitter is significantly reduced according to a specified formula. Application of this formula allows the use of 6 GHz on short paths when a very high reliability is required (e.g., public safety microwave systems, paths carrying nuclear power plant telemetry data or electronic fund transfer data for banks). ANS Petition, Attachment 1 at Section 4.7. This proposal also found support in the record of this proceeding. See Comsearch at 8.

⁵⁰ ANS Petition, Attachment 1 at Section 4.7.

voice channels for systems using the full authorized bandwidth is specified. There are currently no comparable system loading or spectral efficiency requirements for the upper 6 GHz private op-fixed band in FCC Part 94.

If the 4 and 6 GHz common carrier bands and the 6 GHz private band are to be shared by the same users, it is important to set uniform standards to promote spectrum conservation and to encourage balanced use of the bands. Consequently, ANS proposes specific, user-oriented loading requirements for common carrier and private op-fixed users operating in the bands above 3 GHz.⁵¹

The need to revise loading requirements for the emigrant 2 GHz users is recognized in several comments. For example, ALLTEL notes that most of its common carrier 2 GHz licensees and many of its prospective systems would not meet the "minimum loading requirements of the higher frequency bands."⁵²

Frequency coordination -- Another important factor in the "brave new world" of the higher bands, forgotten by the Commission in the NPRM, is the need to establish precise frequency coordination criteria. According to Ameritech, any relocation of 2 GHz users to the higher bands would "likely require significant coordination effort to avoid inefficient spectrum use in the proposed new environment."⁵³

⁵¹ ANS Petition, Attachment 1 at Section 4.5.

⁵² ALLTEL at 4. See also USTA at 6; APPA at 13. With the evolution to digital equipment, the need to retain any voice channel loading requirements is questionable.

⁵³ Ameritech at 6. See also NSMA at 4; OCOM at 4-5.

Removing the partitions in the higher bands so that common carriers and private fixed-op users could access all the spectrum on a co-primary basis necessitates uniform frequency coordination standards. In its Petition, ANS proposes to apply the Part 21 common carrier frequency coordination standards across-the-board since all the bands to be reallocated would be for common carriers except for the upper 6 GHz band.⁵⁴

Capacity -- Questions are raised whether there will be adequate capacity in the higher bands to accommodate the relocated 2 GHz users.⁵⁵ For example, Edison Electric states that the "Commission has not made a determination that there is adequate spectrum available with appropriate regulations in place to accommodate displaced 2 GHz licensees."⁵⁶

ANS' proposal addresses this problem. Increased capacity for both common carriers and private op-fixed users would be made available if ANS' co-primary eligibility proposal is adopted.⁵⁷ Common carriers would be able to access the 4 GHz and lower 6 GHz bands once again. They also would have access to an additional 350 MHz in the upper 6 GHz band and 100 MHz each in the 3.6 to 3.7 and the 10 GHz bands. Private op-fixed users would have access to an additional 2120 MHz of spectrum. Even though this additional spectrum capacity would result from permitting co-primary use of these bands, with the

⁵⁴ ANS Petition, Attachment 1 at Section 4.8.

⁵⁵ OET incorrectly concludes that adequate capacity in the higher bands exists. ANS at 19-23.

⁵⁶ Edison Electric at 13. See also UTC at 49-53.

⁵⁷ ANS Petition at 4.

sound channelization, frequency coordination and other standards ANS proposes, this sharing should be transparent to users.

4. Alternative frequency bands must be evaluated.

Complicating matters is the apparent availability of other frequency bands to accommodate either emerging technologies or displaced 2 GHz users.⁵⁸ Such alternative spectrum includes the 1.99-2.11 and 2.50-2.69 GHz bands allocated for commercial use and the 1.71-1.85 and 2.20-2.29 GHz bands allocated for government use.

It clearly is the overwhelming sentiment of most parties to this proceeding that the Commission's decision to eschew such alternate bands is incorrect and short-sighted. Many parties favor using the government band⁵⁹ or other bands⁶⁰ for the emerging technologies spectrum reserve so the 2 GHz users could remain untouched. Other parties favor allocating the government band for displaced 2 GHz users.⁶¹

⁵⁸ In its Petition, ANS also proposes reallocation of the 3.6 to 3.7 GHz band to accommodate displaced 2 GHz users. ANS Petition at 20-22. This band is allocated on a shared basis for government and non-government uses. Harris supports this approach as "potentially useful" for displaced 2 GHz licensees. Harris at 7-8.

⁵⁹ See, e.g., Atlantic City at 7; AGA at 2; Valero at 1; Questar at 14; Rocky Mountain at 14; SBC at 13; Telesciences at 14; GTE at 9-10; Edison Electric at 11; Montana Power at 3; Coastal at 5.

⁶⁰ See, e.g., CTIA at 8; Metropolitan Water at 11-13; Texas Gas at 4.

⁶¹ See, e.g., Citizens Utilities at 3-4; Rose at 15; Rolm at 20; Idaho Power at 1; TRX at 10-11; Telocator at 4, 9; COMSAT at 24; Enron at 8; API at 7-14. It should be noted that NTIA warns it is "unlikely" the government band will be available as a panacea for the reallocation dilemma. NTIA at 4.

These issues merit further analysis. Reallocation of the spectrum will be a long-term, complex process. All possible options must be considered in much more detail than is evident in Commission or OET studies.

III. ADDITIONAL COMMISSION RULEMAKINGS ARE NECESSARY

Review of the comments on the NPRM leads to an inescapable conclusion -- the Commission has not gone far enough in developing and supporting its proposed reallocation. A quantum level of additional data is needed to resolve whether a reallocation to accommodate emerging technologies is in the public interest, whether the 2 GHz band is the appropriate choice for such a reallocation, and whether the higher bands are suitable candidates for the potentially displaced 2 GHz users.⁶²

NTIA urges the Commission to proceed with additional rulemakings to capture these data:

The [NPRM] currently lack[s] the level of precision needed to ensure that existing users can operate easily and efficiently in the higher frequency bands to which they relocate.⁶³

⁶² One issue that generated widely diverse opinions was how to effectuate a transition plan for migrating 2 GHz users. Given the multitude of sins that the Commission must address before it can adopt any reallocation, further consideration of a transition plan should be deferred.

⁶³ NTIA at 16-17 (footnotes omitted).

Similarly, SBC is troubled by the fact that "the Commission simply does not have enough data at this time to fully evaluate the technical feasibility of such relocation and a more detailed factual investigation is both warranted and required."⁶⁴

Specifically, the record supports grant of ANS' Petition and the UTC Petition to assess fully how displaced 2 GHz users would operate in the higher bands. This bipartisan support comes primarily from the common carrier and private op-fixed 2 GHz users which would be pushed into the bands above 3 GHz. For example, one utility, Idaho Power, entreats the Commission to proceed as follows:

[I]f the Commission intends to proceed with reallocation of the 2 GHz band, Idaho Power urges the Commission to initiate a separate rulemaking to: (A) open the common carrier 4, 6 and 11 GHz microwave bands for use by private microwave users; and (B) rechannelize these common carrier microwave bands to accommodate private microwave systems to the degree that these bands could reliably be used by displaced 2 GHz users and new systems.⁶⁵

CONCLUSION

Out of chaos must come clarity. Unfortunately, the Commission's effort to stimulate the development of new technologies without adversely affecting existing 2 GHz users got off on the wrong foot. The record of this proceeding and related proceedings generally is

⁶⁴ SBC at 8. See also UTC at 52; API at 36-44; Telesciences at 4, 11; Questar at 10; GTE at 15, 19; NYNEX at 2; Edison Electric at 19; Fleet Call at 6; Harris at 9-10; DOE at 5; AAR at 7; Montana Power at 2; Coastal at 14.

⁶⁵ Idaho Power at 1. See also GTE at 19; Harris at 9-10; UTC at 52-53; APPA at 22-23; PSMC at 16; Telesciences at 19; Coastal at 15; Tacoma at 2; Sunflower at 2; Sho-Me at 4; Salt River at 1; Colorado at 2; PPC at 3; PacifiCorp at 2-3; Western at 3-4; Corn Belt at 2; Nebraska at 2.

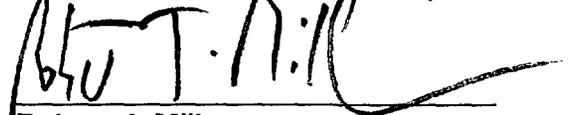
critical of the Commission's proposal because it does not completely evaluate the ramifications of the reallocation.

It is not too late, however, for the Commission to retrench and consider fully all the issues raised herein. Adoption of the NPRM is not in the public interest. A careful and deliberate assessment of the need for a spectrum reserve to oblige the international and domestic push towards PCS and the need to use the 2 GHz band for this reserve must commence immediately. Additional data related to these issues are necessary to support this assessment.

ANS' Petition is a vital part of this process. The proposals made therein are specific, are grounded on how 2 GHz users operate and how the higher bands are configured, and, most importantly, are necessary for the reallocation to succeed. For these reasons, ANS requests that the Commission continue to consider its Petition as a basic building block in its emerging technologies proceeding.

Respectfully submitted,

ALCATEL NETWORK SYSTEMS, INC.



Robert J. Miller
Gardere & Wynne, L.L.P.
A Registered Limited Liability
Partnership
1601 Elm Street, Suite 3000
Dallas, Texas 75201

Its Attorney

July 7, 1992

116191.03-67269/2

APPENDIX A

- **Alcatel Network Systems, Inc. ("ANS")**
- **Members of the Virginia, Maryland, and Delaware Association of Electric Cooperatives ("Virginia Coop")**
- **Advanced MobileComm, Inc.**
- **Alascom, Inc., Telephone Utilities of Eastern Oregon, Inc. and Telephone Utilities of Washington, Inc. ("Alascom")**
- **ALLTEL Companies ("ALLTEL")**
- **American Personal Communications ("APC")**
- **Ameritech**
- **AMSC Subsidiary Corporation**
- **Apple Computer Inc. ("Apple Computer")**
- **Arizona Public Service Company ("APS")**
- **Associated Builders and Contractors**
- **Associated PCN Company ("Associated PCN")**
- **Atlantic City Electric Company ("Atlantic City")**
- **AT&T**
- **Baltimore Gas and Electric Company ("Baltimore Gas")**
- **Basin Electric Power Cooperative**
- **BellSouth Corporation**
- **Bluegrass Cellular, Inc. ("Bluegrass Cellular")**
- **California Microwave, Inc.**
- **Capital Cities/ABC, Inc.**
- **CBS Inc.**
- **Institute of Electrical and Electronics Engineers, Inc. United States Activities (CCIP) ("IEEE - USA")**

- Cellular Telecommunications Industry Association ("CTIA")
- Cellwave, Inc.
- Centel Corporation ("Centel")
- Centerior Energy Corporation
- Central Power and Light Company ("Central Power")
- Century Telephone Enterprises, Inc. ("Century Telephone")
- Citizens Utilities Company
- Communications Satellite Corporation ("COMSAT")
- Comsearch
- Consolidated Edison Company of New York, Inc. ("ConEdison")
- Cooperative Power Association ("Cooperative")
- Corn Belt Cooperative ("Corn Belt")
- Cylink
- Edison Electric Institute ("Edison Electric")
- EDS Corporation
- El Paso Natural Gas Company ("El Paso Natural Gas")
- Enron Pipelines ("Enron")
- Ericsson Corporation ("Ericsson")
- Fleet Call, Inc. ("Fleet Call")
- GTE Service Corporation ("GTE")
- Harris Corporation-Farinon Division ("Harris")
- Hewlett-Packard Company ("H-P")

- **Huffman Communications, Cal Autofone and Radio Electronics Products Corp. ("Huffman")**
- **Idaho Power Company ("Idaho Power")**
- **Interactive Technologies, Inc. ("Interactive")**
- **IEEE 802 Local Area Network Standards Committee ("IEEE - LAN")**
- **International Mobile Machines Corporation**
- **Impulse Telecommunications Corporation ("Impulse")**
- **Interstate Natural Gas Association of America ("Interstate Natural Gas")**
- **JSM Tele-Page, Inc.**
- **KAMO Electric Cooperative, Inc. ("KAMO")**
- **Legislative Affairs Committee - Region 20**
- **Local Area Telecommunications, Inc.**
- **Los Angeles Department of Water and Power ("DWP")**
- **MCI Telecommunications ("MCI")**
- **Mega-Tel Cellular Limited Partnership**
- **Metropolitan Water District of Southern California ("Metropolitan Water")**
- **Millicom, Inc. ("Millicom")**
- **Miscellco Communications, Inc.**
- **MSTV**
- **Joint Comments of NAB, RTNDA, C-SPAN, AMST, and TBS**
- **National Broadcasting Company, Inc.**
- **National Rural Electric Cooperative Association**
- **National Spectrum Managers Association ("NSMA")**

- **National Telecommunications and Information Administration ("NTIA")**
- **National Telephone Cooperative Association ("NTCA")**
- **National Ocean Industries**
- **Nebraska Public Power District ("Nebraska")**
- **North American Telecommunications Association ("NATA")**
- **Northern Telecom Inc. ("Northern Telecom")**
- **NYNEX Mobile Communications Company ("NYNEX")**
- **OCOM**
- **Omnipoint Corporation, Oracle Data Publishing, Inc. and McCaw Cellular Communications, Inc.**
- **The Organization for the Protection and Advancement of Small Telephone Companies**
- **PacifiCorp**
- **Pacific Telesis Group ("PacTel")**
- **Personal Communications Network Service of New York, Inc. ("PCS/New York")**
- **Public Power Council ("PPC")**
- **Public Safety Microwave Committee ("PSMC")**
- **Public Service Telephone Company ("Public Service")**
- **Public Utilities Commission of the State of Colorado ("Colorado")**
- **Questar Corporation ("Questar")**
- **Steven R. Rivkin**
- **Rochester Telephone Corporation**
- **Rocky Mountain Telecommunications Association ("Rocky Mountain")**

- **Rolm Systems ("Rolm")**
- **Rose Communications, Inc. ("Rose")**
- **Chandos A. Rypinski**
- **Salt River Project ("Salt River")**
- **The City of San Diego**
- **SCS Mobilecom, Inc. ("SCS")**
- **Seattle City Light**
- **Sho-Me Power Electric Cooperative ("Sho-Me")**
- **Society of Broadcast Engineers, Incorporated**
- **Southwestern Bell Corporation ("SBC")**
- **Southwestern Electric Power Company ("SWEPCO")**
- **Spatial Communications, Inc.**
- **Spectralink Corporation ("Spectralink")**
- **United Telephone Companies**
- **SR Telecom, Inc.**
- **Sterling Cellular Limited Partnership**
- **Sunflower Electric Power Corporation ("Sunflower")**
- **Sunshine Cellular**
- **Tacoma Public Utilities ("Tacoma")**
- **Tarrant County Water Control and Improvement District Number One ("Tarrant County")**
- **Tel/Logic**
- **Telesciences, Inc. ("Telesciences")**

- **Telocator**
- **Texas Gas Transmission Corporation ("Texas Gas")**
- **Texas Wired Music, Inc. and Taft Broadcasting Company**
- **The American Gas Association ("AGA")**
- **The American Petroleum Institute ("API")**
- **The American Public Power Association ("APPA")**
- **The American Road and Transportation Builders Association**
- **The Association of American Railroads ("AAR")**
- **The Coastal Corporation**
- **The Large Public Power Council**
- **The Montana Power Company ("Montana Power")**
- **Time Warner Telecommunications Inc. ("Time Warner")**
- **The Wireless Cable Association International, Inc.**
- **TRX Transportation Telephone Company ("TRX")**
- **The United States Department of Energy ("DOE")**
- **United States Telephone Association ("USTA")**
- **United Telephone Companies**
- **Utilities Telecommunications Council ("UTC")**
- **Valero Transmission Company ("Valero")**
- **Western Resources, Inc. ("Western")**
- **Westinghouse Broadcasting Company, Inc.**
- **Wireless Information Networks Forum ("WINForum")**

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CERTIFICATE OF SERVICE

I, Becky Juricek, a secretary in the law firm of Gardere & Wynne, do hereby certify that the attached Reply Comments will be mailed first class, postage prepaid, the 8th day of July, 1992, to all parties of record.


Becky Juricek

July 7, 1992