

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

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In the Matter of)
)
ALCATEL NETWORK)
SYSTEMS, INC.)
)
Petition to Amend Parts 2,)
21, 25, and 94 of the)
Commission's Rules to)
Accommodate Common Carrier)
and Private Op-Fixed Microwave)
Systems in Bands Above 3 GHz)

RM-8004

ORIGINAL
FILE

COMMENTS

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Summary

Alcatel Network Systems, Inc. ("ANS") has petitioned the Commission to establish a rulemaking proceeding to consider technical issues that arise as a result of the Commission's proposal in Docket No. 92-9 to displace terrestrial microwave users of the 2 GHz band and establish a spectrum reserve in that band for emerging technologies. In its Petition, ANS proposes specific rule changes that are intended to address the requirements of those low and medium capacity common carrier and private microwave systems that are relocated to the high capacity bands above 3 GHz.

GTE is generally supportive of the concerns ANS raises in its Petition. If the Commission decides in Docket No. 92-9 to reallocate the 2 GHz band to new services, then the Commission must resolve the various technical and legal issues associated with relocating the displaced 2 GHz users into the higher frequency bands. In addressing these technical issues, the Commission should accord equal treatment to common carrier and private microwave users alike.

GTE has considerable problem with the specific rule changes that ANS suggests for the 4 GHz band. ANS' proposal to reallocate 80 MHz of this frequency range to the Fixed-Satellite Service on a secondary basis would create uncertainty in the market regarding the reliability and stability of satellite-based technologies. It would require satellite operators and users to make unreasonable,

unwarranted accommodations and thus does not serve the public interest. ANS' proposal to restructure the 4 GHz band is similarly problematic.

In considering changes to its technical rules to ensure that the displaced 2 GHz users are accommodated in the higher frequency bands, GTE recommends that the Commission focus on improving frequency reuse rather than on restructuring the bands. Accordingly, GTE believes it would be appropriate for the Commission to consider upgrading its antenna performance standards at this time.

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Figure 1

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COMMENTS

GTE Service Corporation, on behalf of its affiliated domestic telephone, satellite, and cellular companies ("GTE"), hereby submits its Comments on the Petition for Rulemaking ("Petition") filed by Alcatel Network Systems, Inc. ("ANS") that is captioned above.¹

BACKGROUND

ANS' Petition is an outgrowth of the Commission's recent efforts in ET Docket No. 92-9 to establish a spectrum reserve in the 2 GHz band for emerging technologies.² In its Petition, ANS asks that the Commission establish a rulemaking proceeding to consider technical issues that arise as a result of the Commission's proposal in Docket No. 92-9 to displace terrestrial microwave users of the 2 GHz

¹ Public Notice DA 92-705, released June 2, 1992.

² See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies (Notice of Proposed Rulemaking), FCC 92-20, released February 7, 1992 [hereinafter "Notice"].

band. As such, ANS' Petition is similar to the petition for rulemaking recently filed by the Utilities Telecommunications Council,³ but ANS' proposal is much more detailed. In its Petition, ANS proposes specific rule changes regarding technical matters such as band channelization, modulation efficiency standards, frequency coordination criteria and the like for the 4, 6, 10, and 11 GHz bands. The changes proposed are intended to address the requirements of those low and medium capacity common carrier and private microwave systems that are relocated to the high capacity bands above 3 GHz.⁴

Various subsidiaries of GTE Corporation operate numerous common carrier microwave stations in the 2 GHz band as well as in the 4, 6, 11, 18, and 23 GHz bands. In addition, GTE Spacenet Corporation ("GTE Spacenet") operates domestic fixed satellites that operate in C-band, meaning that GTE Spacenet's earth stations receive information from Spacenet's satellites in the 4 GHz range. Accordingly, GTE has a direct and vital interest in this proceeding.

GTE agrees with the premise on which ANS' Petition is based. The Commission must address and resolve the technical issues associated with relocating the 2 GHz users to higher frequency bands before reallocating the 2 GHz band to new users, if indeed the Commission decides in Docket No. 92-9 that such a reallocation is necessary and appropriate.

³ See Petition of the Utilities Telecommunications Council in RM-7981, Public Notice 22934, released May 1, 1992.

⁴ Petition at 2.

However, GTE takes issue with some of the rule changes ANS proposes in its Petition. As discussed below, the changes ANS proposes for the 4 GHz band will cause severe problems for C-band satellite users and thus would not serve the public interest. GTE also recommends that the Commission consider changes to its antenna performance standards so as to improve the level of frequency reuse in all bands above 3 GHz.

DISCUSSION

The Commission must resolve any technical issues associated with relocating the 2 GHz band users prior to any reallocation, and must deal with all 2 GHz users in an even-handed manner.

ANS argues at length in its Petition that the Commission "must not require removal of fixed microwave users from the 2 GHz band until it adopts specific rules governing their provision of service in other bands that are compatible with current operations."⁵ ANS contends that the Commission "is acting prematurely" in proposing to relocate the existing 2 GHz users without first deciding on what must be done in the higher bands to accommodate these users' requirements.⁶

GTE is generally supportive of the concerns ANS raises in its Petition. If the Commission is going to move the existing 2 GHz users to higher frequency bands to create the bandwidth necessary at 2 GHz to accommodate new

⁵ Id.

⁶ Id.

technologies, then the Commission must ensure that those higher frequency bands can accommodate all of the displaced 2 GHz users that require relocation to higher frequencies. Thus, it is incumbent on the Commission to address the specific technical and legal issues associated with relocation and make appropriate rule changes to deal with these matters. The Commission recently addressed concerns such as those advanced by ANS in a letter to Senator Hollings in which the Commission stated that it would be issuing a further Notice of Proposed Rulemaking in Docket No. 92-9 to address significant technical and operational issues raised in that docket.⁷ Thus, GTE is confident that the Commission will indeed address the concerns raised by ANS in its Petition at some point in the course of Docket No. 92-9.

Of greater concern to GTE is the manner in which the Commission addresses those specific technical issues associated with the relocation of the existing 2 GHz users. Private microwave users at 2 GHz have been very vocal about the ramifications of relocation. However, in addressing the technical issues associated with moving the existing 2 GHz users into higher frequency bands, the Commission should accord equal treatment to common carrier and private microwave users.⁸ The technical and operational issues that

⁷ Letter from the Office of the Chairman, FCC to Hon. Ernest P. Hollings, April 20, 1992, at 1.

⁸ This issue is of particular concern to GTE in light of two recent actions of the Commission regarding the ability of wireline telephone common carriers to provide certain

concern private microwave users at 2 GHz are substantially the same issues that affect common carrier users of this frequency band. Common carrier users operate their microwave stations to provide vital communications services to the public, and thus their use of the 2 GHz frequency band serves the public interest. As such, it would not be equitable nor would it serve the public interest to accord different rights and make different accommodation plans for common carrier and private 2 GHz users under these circumstances.

ANS' proposed rule changes for the 4 GHz band do not serve the public interest.

In its Petition, ANS proposes various changes to the technical rules governing those frequency bands that may receive those users who are displaced from the 2 GHz band if that band is reallocated for emerging technologies. Of

services in the private bands. On June 18, 1992, the Commission announced that it was denying GTE's petition for reconsideration of its decision to prohibit wireline telephone common carriers from holding nationwide commercial licenses in the 220-222 MHz band. See REQUIREMENTS FOR 220 MHZ NATIONWIDE LICENSEES MODIFIED (PR DOCKET 89-552), released June 18, 1992. One week later, the Commission announced that it was terminating its pending proceeding to allow wireline common carriers to hold Specialized Mobile Radio ("SMR") licenses. See FCC TERMINATES PROPOSAL TO ELIMINATE WIRELINE ELIGIBILITY RESTRICTION FOR SMRS (PR DOCKET NO. 86-3), Report No. DC-2143, released June 24, 1992. GTE has no objection to private carrier use of common carrier frequency bands, as long as the private carriers comply with established industry practices for the band in question. However, GTE believes that common carriers deserve the same consideration. The Commission's recent actions regarding wireline common carrier use of the SMR and 220-222 MHz bands suggest that this may not be the case.

particular interest to GTE are ANS' proposed changes to those rules that affect the 4 GHz band.

GTE has no problem with the idea of relocating existing 2 GHz users into the 4 GHz band, as long as the displaced 2 GHz users frequency coordinate and implement their systems in compliance with established industry practices for this frequency range. It is not realistic to assume that all displaced 2 GHz users will be able to move their services to alternative transmission media.⁹ Therefore, all possible higher frequency bands should be examined to identify those bands that can accommodate the displaced 2 GHz users. However, to use an old adage, Peter should not be robbed to pay Paul. The relocation of the existing 2 GHz users should

⁹ Obviously, no one transmission medium is suitable for all types of applications. At the same time, however, GTE takes issue with the manner in which ANS characterizes the availability, reliability, and cost of satellite capacity. ANS' statement that media such as satellites "do not provide fixed microwave users adequate reliability of or control over system performance," Petition at 12, is completely unsupported. Further, ANS' comment that most satellites are used for video transmission, Petition at 12, ignores reality. While there are some C-band satellites that are wholly or largely dedicated to video transmission, there are many other C-band or hybrid (4/6 GHz and 12/14 GHz) satellites on which C-band transmission capacity that is suitable for services other than analog video can be readily obtained. Thus, ANS' blanket assertion that "telephony bandwidth" is not readily available, Petition at 13, is simply untrue. GTE rejects ANS' assertion that "satellite bandwidth is prohibitively expensive," Petition at 13, for the same reasons. The price of a 10 MHz circuit can be obtained for less than the \$50,000 per month figure cited by ANS. There are a number of variables that determine the price of a given circuit. Thus, a \$50,000 figure for what amounts to approximately one-sixth of a wideband transponder cannot and should not be considered a "typical" price. In light of these facts, GTE submits that ANS' blanket statements regarding satellite availability, reliability, and capacity costs are without merit.

not harm the incumbent users of the higher bands. Unfortunately, the changes ANS suggests to the rules governing the 4 GHz band would lead to just such a result.

ANS recommends in its Petition that the 4 GHz band be made available for routine licensing in the Private Operational Fixed Microwave Service on a co-primary basis.¹⁰ GTE has no objection to such a proposal. However, ANS goes on to argue that the Commission should reallocate 80 MHz of the band to the Fixed-Satellite Service on a secondary basis over a 15-year transition period to promote "favorable frequency coordination between the fixed microwave and earth station users on this band."¹¹ This is completely unacceptable.

The 4 GHz band is presently shared on a co-equal basis between registered (receive-only) and licensed earth station services, on the one hand, and terrestrial common carrier services, on the other. In addition, unregistered receive-only earth station users operate in the band on a secondary basis. As ANS effectively recognizes in its Petition, the 4

¹⁰ Petition at 3.

¹¹ Petition at 19. ANS finds current frequency coordination in the 4 GHz band to be "highly problematic and relatively ineffective." *Id.* GTE strongly disagrees with ANS' unsupported assertion. GTE has found the frequency coordination process in the 4 GHz band to be effective and efficient. GTE notes that the recent OET study on spectrum usage suggests that the level of frequency reuse in these bands to be several times higher than the level of frequency reuse in the 6 GHz private carrier band. *See* Creating New Technology Bands for Emerging Telecommunications Technology, Office of Engineering and Technology, OET/TS 91-1, December, 1991 at 24.

GHz band is already very congested in many parts of the country.

If the Commission were to redesignate 80 MHz of the C-band as proposed, GTE believes that as a practical matter, terrestrial microwave use of that 80 MHz would severely restrict satellite and earth station operation in that segment of the spectrum. This is unreasonable. The 80 MHz that ANS would designate for secondary use constitutes 16 percent of the satellite band. As replacement C-band and hybrid satellites are launched, the reallocation of that 80 MHz would effectively leave satellite operators with 16 percent less C-band spectrum with which to market their services and thereby recoup their investment. Similarly, existing licensed and registered earth station operators have made a substantial investment in satellite technology. Their investment was based upon an understanding that their services would receive maximum protection from interference, an understanding that would be destroyed by ANS' proposal. The fact that ANS has suggested that the bandwidth be reallocated over a 15-year period does not really make ANS' proposal any more palatable. Satellites and earth station equipment may reach the end of their useful lives during that period. However, not all services can be transitioned to the 12/14 GHz band as ANS suggests,¹² since the band's susceptibility to rain attenuation makes the band undesirable in many parts of the country. Thus, the impact

¹² Petition at Attachment 1, p. 19.

of ANS' proposed reallocation is not as minimal as ANS suggests.¹³

But more importantly, proposed changes in policy of the magnitude of ANS' proposal tend to create uncertainties in the market regarding the reliability and stability of satellite-based technologies. Such policy changes harm the satellite industry in its efforts to compete with other service providers that employ different transmission media. ANS offers no valid justification in its Petition for its proposal to put satellite users on secondary status in 80 MHz of the 4 GHz band. Since ANS' recommendation would place a disproportionately high burden on the satellite industry and would not serve the public interest, GTE believes that it warrants no further consideration.

In its Petition, ANS also recommends that the 4 GHz band be restructured into channels of varying bandwidths.¹⁴ GTE has serious reservations about this aspect of ANS' proposal. GTE would have no objection if the band could be restructured in a manner that did not severely impact

¹³ The international implications of ANS' proposed reallocation must also be considered. For example, U.S. domestic satellites are not the only spacecraft that operate in the 4 GHz band in Region 2; Canadian and Mexican satellites are equipped with C-band capacity as well. If the Commission decides to adopt ANS' proposal regarding reallocation of a part of the 4 GHz range, then presumably satellite use in that part of the band will remain primary in border areas so that Canadian and Mexican operations can be accommodated. The Commission would have to address this and other similar issues in its bilateral negotiations with Canada, Mexico, and other countries.

¹⁴ Petition at Attachment 1, p. 19.

satellite users. However, at this point in its analysis, GTE doubts whether this is possible.

As ANS observes in its Petition, the 4 GHz band is currently channelized for wideband services. For terrestrial services, the band is split into 20 MHz channels. Since the early days of microwave communications, the frequency assignments of these channels have been standardized on one plan to permit optimum spectrum utilization with minimum risk of interference. Satellite channels ("transponders") are structured to take advantage of this standard frequency plan. Transponders in the 4 GHz band are usually 40 MHz wide. The center frequency of a transponder is always located in the guardband between the terrestrial microwave channels, and is 10 MHz removed from the center frequencies of the adjacent terrestrial channels. A portion of the terrestrial microwave and satellite channelization plans is portrayed in graphic form in Figure 1.

Thus, satellite services operating at the transponder center frequency will suffer the least amount of interference from terrestrial services, since they effectively operate in the guardband between the terrestrial channels and are 10 MHz away from the terrestrial channel center frequencies on either side. This benefit may be lost if the 4 GHz band is restructured as ANS proposes. Depending on how the new channels are set up, the transponder center frequencies may no longer correspond to

the guardbands between the terrestrial channels. But even if those guardbands are preserved, the 10 MHz offset from the center frequencies of the terrestrial channels will be lost to some extent. Presumably there will still be some offset, but it will not be as much.

This loss will create major problems for certain types of satellite services such as satellite broadcast (point-to-multipoint) systems, which typically involve the transmission of data from a central location to many receive-only terminals. These networks typically operate at the transponder center frequency to take advantage of the low terrestrial interference levels and thus maximize the number of receive-only terminals that have good reception in congested locations. Loss of the 10 MHz offset will make it more difficult to expand existing broadcast networks or establish new ones. That is because the increased levels of interference will make it more difficult to achieve adequate reception at receive-only terminals in frequency-congested areas. Satellite home TV reception would also be severely impacted for the same reason. In frequency-congested locations, these stations are often protected from terrestrial microwave interference only by the 10 MHz frequency offset advantage that is inherent in the terrestrial microwave frequency plan. Any revised frequency plan would result in less frequency offset and therefore in increased interference with TV reception.

Thus, it is not at all clear to GTE that the 4 GHz band can be restructured as proposed by ANS without having a severe impact on satellite users. For these reasons, it may be preferable to allow the displaced 2 GHz users to operate their narrowband services in the 4 GHz band within the currently established frequency plan. Although this may be perceived as an inefficient use of spectrum, any other alternative would adversely impact the provision of satellite services and, as noted above, the 4 GHz band is already subject to heavy use. GTE notes that ANS does not propose to restructure the 6 GHz private band to the same extent it proposes to restructure the 4 GHz common carrier band. The 6 GHz private band is currently structured for 10 MHz wide channel slots. The narrowband 5 MHz slots are overlaid at 10 MHz intervals, thus leaving a 5 GHz guardband between each narrowband channel assignment. This is not significantly different from what GTE is recommending for the 4 GHz band to protect satellite services from interference. The point is that while it may be necessary to restructure certain frequency bands to better accommodate the displaced 2 GHz users, such restructuring should be done selectively and with due consideration to all users.

The Commission should consider changes to its antenna performance standards to improve frequency reuse.

In considering changes to the technical standards for each of the higher frequency bands to which the displaced 2 GHz users may be relocated, GTE believes that the

Commission's focus should be on improving frequency reuse rather than on restructuring the bands. Increasing frequency reuse will enable more of the displaced 2 GHz users to be accommodated in appropriate bands and may mitigate the need to change all frequency plans. GTE believes that improved frequency reuse can best be accomplished through use of improved terrestrial antennas.

While ANS proposes to retain the existing antenna performance standards A and B for each band,¹⁵ GTE believes that this would be an appropriate time to upgrade these standards to reflect state-of-the-art technology. All new services, at least those in the 4 and 6 GHz common and private carrier bands, should be implemented using state-of-the-art antennas. Antennas in existing systems in these bands should be upgraded to the new standards if their use results in harmful interference or prevents the implementation of a new service. The antenna standards for other, currently less congested frequency bands should also be reviewed.

¹⁵ Petition at Attachment 1, p. 18.

CONCLUSION

ANS raises some valid concerns in its Petition. Clearly, the Commission must address those technical and legal issues associated with relocating the incumbent 2 GHz users to higher frequency bands before it makes any reallocation of the 2 GHz band. In addressing those issues, the Commission should accord equal treatment to all users, both private and common carrier alike.

However, GTE takes issue with several of ANS' proposals regarding rule changes in the 4 GHz band. As discussed herein, ANS' proposal to designate 80 MHz of the 4 GHz band as available for use in the Fixed-Satellite Service only on a secondary basis requires satellite operators and users to make unreasonable, unwarranted accommodations and thus does not serve the public interest. Similarly, it may not be possible to restructure the 4 GHz band as proposed by ANS without having a severe impact on satellite users. In considering changes to its technical rules to ensure that the displaced 2 GHz users are accommodated in the higher frequency bands, the Commission's focus should be on improving frequency reuse rather than on restructuring the frequency bands. Such a focus may better ensure that the needs of all users - common and private, narrowband and

wideband alike - are satisfied. Accordingly, GTE recommends that the Commission consider upgrading its antenna performance standards at this time.

Respectfully Submitted,

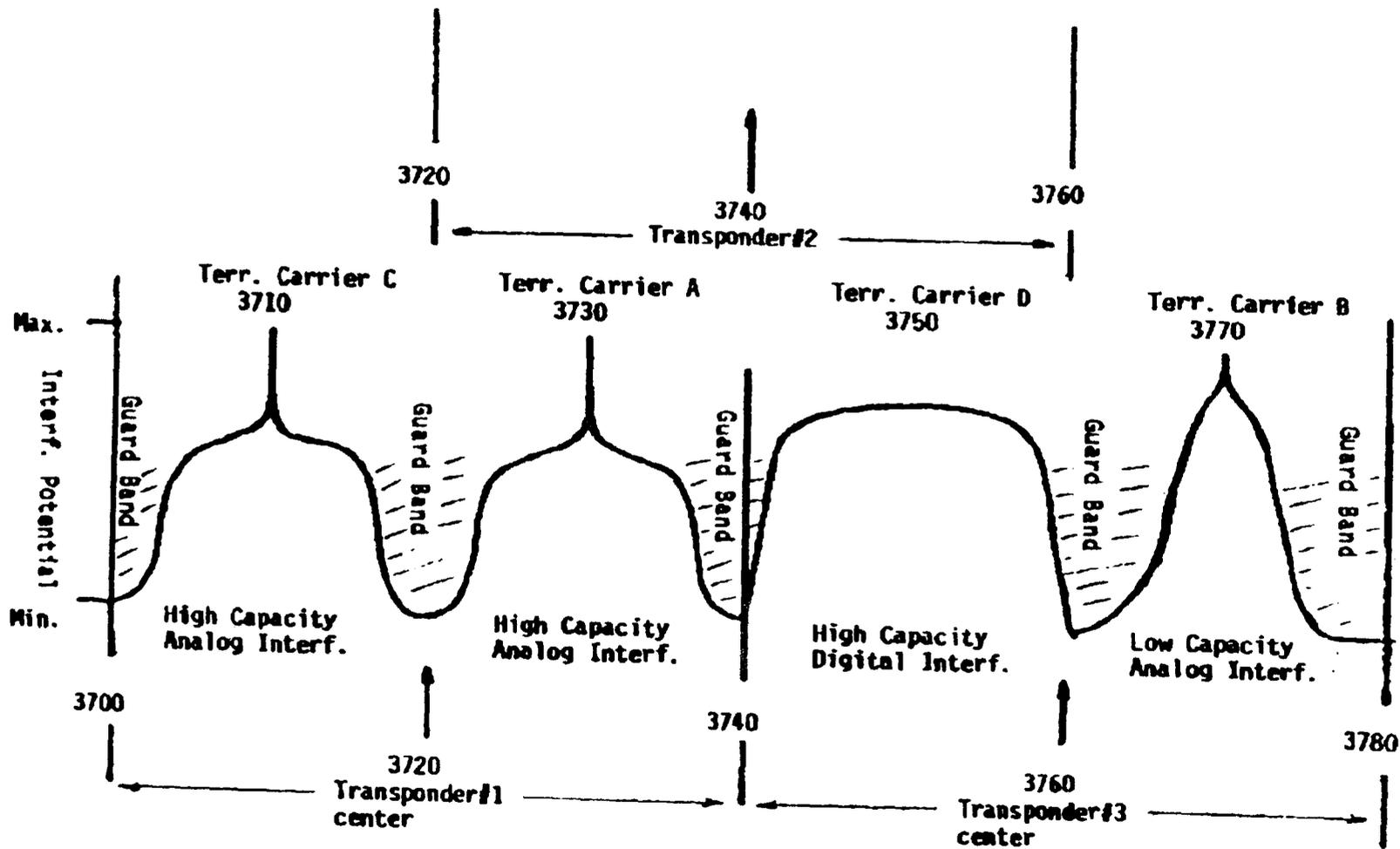
GTE Service Corporation
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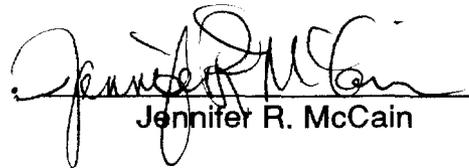
Transponder Interference Potential from Terrestrial Systems with various channel loading

Figure 1

Certificate of Service

I, Jennifer R. McCain, hereby certify that copies of the foregoing "Comments Of GTE" have been mailed by first class United States mail, postage prepaid, on the 2nd day of July, 1992 to the following parties:

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