Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Applications for Consent to the	)	
Transfer of Control of Licenses	)	
	)	
MediaOne Group, Inc.,	)	CS Docket No. 99-251
Transferor,	)	
	)	
To	)	
	)	
AT&T Corp.,	)	
Transferee.	)	

EX PARTE REPLY DECLARATION OF DALE E. VEENEMAN AND EVERTT H. WILLIAMS

1. My name is Dale E. Veeneman. I am the Principal Investigator for the Digital Subscriber Line Network Infrastructure Project conducted by the Wireline Access Technologies Department of GTE Laboratories Incorporated. My responsibilities at GTE Labs and qualifications for submitting this Reply Declaration are detailed in my opening Declaration submitted to the Commission on August 23, 1999.

2. My name is Evertt H. Williams, and I am the Vice President of National Data Market Management for GTE Service Corporation. My responsibilities at GTE Service Corporation and qualifications for submitting this Reply Declaration are likewise detailed in my opening Declaration submitted to the Commission on August 23, 1999.

3. We have been asked to review the claims made by AT&T and MediaOne in their Reply Comments submitted to the Commission on September 17, 1999, concerning the

technological and economic limitations on the competitive performance of DSL. In particular, we have been asked to review the Declaration of Kenneth A. Shulman (AShulman Declaration≅), which is attached as Appendix J to AT&T/MediaOne=s Reply Comments, and to respond to his observations on our opening Declaration.

4. The main premise of the Shulman Declaration is that Acurrent technological advancements≅ will solve any and all limitations on DSL deployment and that, as a result, Athere are no technological impediments that prevent DSL services from being deployed on a scale comparable to, or even more widespread than, cable modem services.≅ Shulman Declaration && 5-6. Based on this assertion, the Shulman Declaration credits the expectations of certain analysts that A90 to 95 percent of American homes will be DSL capable within the next five years.≅ *Id.* & 6. This conclusion is false and -- even if true -- irrelevant. The limitations we identified in our opening Declaration on the scope of DSL deployment -- a maximum range of 18,000 feet; the presence of bridged taps and loading coils on customer lines; and the costs associated with upgrading existing Digital Loop Carriers (DLCs) to support DSL -- are well recognized by carriers and industry analysts alike. Indeed, the Commission=s Cable Services Bureau in its recent *Broadband Today* report itself recognized that ADSL is currently limited to locations within a three-mile maximum loop from the central office.≅[1] Moreover, even if DSL will be able to reach 90 to 95 percent of American homes within five years, the majority of that

[1] Cable Services Bureau, *Broadband Today*, at 20 (Oct. 1999).

deployment will take place in the latter years. AT&T/MediaOne=s own sources confirm that this is the case.[2] Prior to that time, cable modems will maintain a significant head-start in the broadband access market, giving AT&T/MediaOne as the dominant provider an ample window of opportunity to consolidate its position of market power.

5. AT&T/MediaOne opens its discussion of DSL deployment by asserting that Athe only real limitation on DSL technology is the unwillingness of ILECs to make the necessary investments.≅ Reply at 80. The Shulman Declaration amplifies these statements by highlighting certain disadvantages of cable modem service, including the need to Aupgrade entire neighborhoods at a time to provide cable modem services to any single customer,≅ the fact that some customers may Aprefer DSL services for fear that the shared cable spectrum might compromise the[ir] privacy,≅ and the fact that cable bandwidth (because it is shared) Acould become congested during periods of peak use.≅ Shulman Declaration && 12-13. Despite these drawbacks, AT&T/MediaOne asserts, cable providers have continued to invest in cable modems; ILECs and other DSL providers should therefore be willing to invest the same amount of capital.

6. These arguments fundamentally misconceive the calculus that GTE must consider when deciding which markets to target with DSL service. GTE has never argued that DSL is an inferior technology to cable modems, but only that there are many locations where the service

[2] *See* Reply Comments at 82 n.244 (A[B]y year-end 2004, upwards of 90% of American households will be DSL capable.≅).

cannot economically be rolled out. When making this evaluation, GTE must weigh the potential revenue stream that will be generated by offering high-speed access and compare that stream to the cost of capital required to deploy the service. Only if the present value of the investment is positive and more favorable than other investments GTE could make with its limited resources (expanding its Internet backbone network, for example), will the company build out DSL service in a particular market.

7. AT&T/MediaOne=s observation that ADSL was devised in 1987, and its viability was tested >throughout the early 90s,=≅ Reply at 13, is therefore not meaningful. Until recently, there has not been enough demand for residential high-speed access to justify the significant investment required to deploy and mass-market DSL. (The failure of ISDN service to gain market share and create any significant revenues for GTE is instructive on this point.) This lack of demand -- not fear of cannibalizing T-1 sales -- is the reason why GTE did not commence its DSL deployment until 1998. Indeed, AT&T/MediaOne=s assertion that GTE and other ILECs slow-rolled DSL deployment to protect their T-1 revenues is flatly inconsistent with marketplace reality. Not until the end of 1997 did DSLAM equipment become commercially available at a price that would permit an economical DSL roll out. Until that time, no major carrier -- including CLECs and IXCs -- launched a full-scale DSL deployment. Moreover, T-1 service differs fundamentally from the DSL service *any company* currently markets to consumers. First and foremost, T-1 service is not marketed to or purchased by residential customers, meaning that even the most comprehensive residential DSL roll out would not affect T-1 revenues. T-1 service is also a *symmetrical* 1.5 Mbps service that comes with a guaranteed level of performance. ADSL,

on the other hand, offers customers far slower upstream speeds and does not come with any speed guarantees -- making it an unsuitable substitute even for a large subset of business customers.

8. Cable providers face a fundamentally different calculus when deciding whether to upgrade their networks to provide cable modem service. Cable plant upgrades that enable an MSO to offer cable modem services support at least *three* distinct lines of revenue. *First*, cable providers secure customer revenues through the sale of broadband access -- the revenue stream GTE earns with DSL. *Second*, cable providers are able to earn revenues from the sale of broadband ISP services, advertising, and e-commerce. Because cable providers are not required (as is GTE) to afford competing ISPs access to its customers, the revenues created by this offering are greater for cable providers. *Third*, cable upgrades that support cable modem service also support entirely new and separate product offerings, including interactive television and cable telephony. With more streams of revenue supporting network upgrades, cable providers can expect a much greater return on their investment than DSL providers. It is therefore a non-sequitur for AT&T/MediaOne to assert that, because cable providers have invested Atens of billions of dollars≅ in cable upgrades,[3] DSL providers are Aunwilling[] . . . to make the necessary investments≅ if they do not spend the same amount.[4]

---

[3] Declaration of Janusz A. Ordover & Robert D. Willig, Attached as Appendix A to AT&T/MediaOne=s Reply Comments, at & 17 (Sept. 17, 1999).

[4] Reply at 80.

9. Because AT&T/MediaOne misconceive this critical point, the Shulman Declaration is largely addressed to the wrong question. Although the Shulman Declaration identifies possible technical solutions to many of the limitations on DSL deployment noted in our original Declaration, it never speaks to the question of whether these solutions are cost-effective or whether their implementation would so dilute GTE=s margins as to render investment in DSL too risky.

10. A prime example of this failing is the Shulman Declaration=s discussion of alternative technologies that allow DSL service to reach beyond 18,000 feet from a central office. Under typical conditions, DSL cannot be provided at commercially viable quality over loops exceeding 18,000 feet. The only way to skirt this limitation is to use a different transmission technology altogether, or use repeaters to amplify the signal. All of the solutions identified in the Shulman Declaration rely on one of these two uneconomical and unproven options. The Shulman Declaration touts a GoDigital/Copper Mountain product that Awould extend data and voice-over-IDSL services to almost 100,000 feet (almost 17 miles) from the central office.≅ *Id.* & 15. Interestingly, Shulman never identifies what AIDSL≅ is or explains how it differs from traditional ADSL. IDSL is not a new product; rather, it is an ISDN product that relies on repeaters to extend the service range. This service is far more expensive to deploy than traditional ADSL, and far more expensive for consumers to purchase because it can only be provided over an additional telephone line. IDSL service therefore lacks the main virtue of ADSL -- that customers can get high-speed data and telephone services over one pre-installed telephone line.

To make matters worse, the maximum speed of IDSL is 144 kbps -- only a small improvement over a typical 56 kbps modem and a far cry from the speed offered by cable modem service. Given these drawbacks -- none of which the Shulman Declaration or AT&T/MediaOne=s comments see fit to mention -- GTE cannot deploy repeatered IDSL service with any reasonable hope of recovering its investment.

11. Likewise, the GlobeSpan and Elastic Networks solutions cited in the Shulman Declaration are non-standard technologies whose marketing claims have not been commercially verified. *Id.* Generally, these technologies have been able to achieve a longer reach only by running their tests over a heavier gauge wire than GTE=s standard copper loops, or by transmitting data over non-standard DSL frequencies that would interfere with telephone service.

12. As we explained in our opening Declaration, a significant percentage of GTE=s customers therefore cannot be reached by DSL service. This fact is particularly significant because more affluent suburban homes are among the likely early adopters of broadband service, and many of these potential customers are beyond the reach of GTE and other DSL providers. The Shulman Declaration faults our estimate that only 65 percent of GTE=s customers reside within 18,000 feet of a central office, citing a GTE public statement that puts the figure at 75 percent. *Id.* & 7. Although both of these numbers are rough estimates, we believe ours is more accurate because roughly 75 percent of *all* telephone lines in the nation are more than 18,000 feet from a central office, and GTE=s customer base is more suburban and rural than any other large

LEC. In any event, even if the number is 75 percent, GTE remains unable to tap a large segment of the broadband market that cable providers can reach readily.

13. Over and above this large group of consumers, GTE and other DSL providers face serious obstacles offering DSL service to customers whose lines are equipped with bridged taps and loading coils. As we explained in our opening Declaration, 15 to 20 percent of all lines have loading coils that completely disrupt the provision of DSL service; likewise, an additional five percent of lines have bridged taps that render DSL service inoperable. The Shulman Declaration offers no real explanation as to why these widely recognized impediments do not keep GTE and other DSL providers from reaching affected customers. Shulman correctly states that GTE has a line testing system that allows it to *identify* lines that fail to qualify for DSL service, *id.* & 23, but says nothing about whether identified line defects can be removed at a cost that does not render the service unprofitable. Indeed, the Shulman Declaration confirms the severity of this problem when it states that some ILECs Acurrently impose[] a $900 per-line non-recurring loop conditioning fee on customers that could include functions such as the removal of load coils, bridge taps, and/or repeaters.≅ *Id.* & 25. Given the expense associated with loop conditioning -- and the fact that customers can get cable modem service without having to pay an up front fee approaching $1,000 -- DSL service cannot viably be offered to this *second* large subgroup of customers.

14. Moreover, it is currently not profitable for GTE to serve customers whose loops are provisioned through existing DLCs, or to build new DLCs just to provide DSL service to residential customers. This *economic* impediment may not last forever. As the Shulman

Declaration correctly notes, there Ais no *technical* reason why incumbent LECs cannot increase the availability of xDSL services by collocating DSLAMs at the DLC sites, or by upgrading existing DLCs to incorporate DSLAM functionality.≅ *Id.* & 19. Indeed, as Shulman again correctly states, AGTE is currently working with vendors to develop DSLAMs that can be installed in a DLC to expand availability to customers served by DLCs.≅ *Id.* & 10. Nevertheless, serving existing neighborhoods through new or existing DLCs remains prohibitively expensive.

15. The Shulman Declaration identifies a number of new technologies that incorporate Aboth DLC and DSLAM functionality that can be housed in a remote terminal, taking up one-third to one-sixth the space needed to accommodate older DLCs.≅ *Id.* & 18. These solutions are effective when GTE is building out service to new neighborhood subdivisions because this new equipment can be installed in DLCs when they are built. But that is not the problem we identified in our opening Declaration. A significant percentage of GTE=s *existing* customers are served by *existing* DLCs. These cabinets are full; there is no room to add DSLAM equipment without building a whole new cabinet, the cost of which would render the service unprofitable. The Shulman Declaration asserts that this conclusion is Adisingenuous≅ because Athe space requirements for modern DLCs and current/next generation DSLAMs are significantly smaller than last generation technology.≅ *Id.* & 19. But that fact would only be relevant if GTE removed all of its DLC equipment and replaced it with next generation technology that incorporates DSLAM functionality. In other words, Shulman=s premise is that GTE should throw away its existing DLCs -- even though they work perfectly and represent (by current GTE estimates) a

$750 million dollar investment -- just to provide DSL service. Again, this suggestion ignores economic reality.

16. From GTE=s perspective, SBC=s recent announcement of AProject Pronto≅ -- a plan to provide DSL service to 80 percent of SBC customers by year-end 2002 -- does not change this economic calculus. GTE=s position has always been that its merger with Bell Atlantic will facilitate the more rapid deployment of advanced services -- a belief that finds strong support in SBC=s post-Ameritech merger announcement. On its own, GTE has just made a multi-billion dollar investment in building a new Internet backbone network and is not in a position to make the $6.1 billion gamble that SBC recently announced. After GTE=s merger with Bell Atlantic is approved -- and the combined company has access to a much larger pool of resources -- its willingness to make more risky DSL investments may change. But in the meantime, even in SBC territories, cable providers will maintain a significant head start in deployment and customer acquisition.

17. Finally, the Shulman Declaration points to the coming introduction of the G.lite Standard as a cure-all that will Areduce the . . . cost of deploying ADSL service significantly≅ and Alikely increase the number of homes capable of receiving ADSL services.≅ *Id.* & 5. These statements are either misleading or untrue. G.lite is nothing more than an industry standard that will allow equipment vendors to build uniform DSL modems that are interoperable with all types of DSLAMs. While Shulman is correct that the introduction of G.lite will reduce DSL deployment expense by eliminating Atruck roll costs,≅ *id.*, that fact does not have any competitive

significance. Cable modem providers will soon make the same stride with the introduction of the DOCSIS 1.1 standard, which will create uniformity among cable modems and allow computer manufacturers (or customers) to install cable modems directly into their PCs. Because cable modem providers are thus soon to see an identical reduction in deployment costs, the introduction of G.lite will not afford DSL providers any competitive advantage.

18. Moreover, the Shulman Declaration is simply incorrect when it states (without explanation) that the G.lite Standard Alikely will increase the number of homes capable of receiving ADSL services.≅ *Id.* The G.lite Standard is in no way addressed to the problems created by bridged taps, loading coils, or DLCs noted above, and, if anything, exacerbates the difficulties associated with reaching distant customers. G.lite standardizes DSL modems by limiting the frequency range used to carry DSL signals, slowing the service that customers with short loops can get to the rate sustainable for customers with loops approaching 18,000 feet. In essence, the G.lite Standard caps the performance of every DSL modem at the least common denominator, even for customers served by shorter loops. G.lite weakens, not strengthens, the DSL signal and therefore does nothing to expand the geographic range of DSL service.

19. Ultimately, in the marketplace as it stands today, there are three large categories of customers that GTE cannot profitably offer DSL service. While GTE is actively addressing these issues, commercially viable solutions will not appear overnight. Cable modem providers -- and particularly AT&T/MediaOne as the would-be head of that group -- can therefore be expected to control a leading share of the broadband market for at least the next few years.