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Attachment II
LOCAL RESALE

ATTACHMENT II

LOCAL RESALE

Section 1. Telecommunications Services Provided for Resale

1.1 In accordance with and subject to the requirements of Applicable Law, Bell Atlantic shall make available to MCIm for resale any Telecommunications Service that Bell Atlantic currently provides or may offer hereafter, including the service functions described in Section 3 below. Such Telecommunications Services and service functions are collectively referred to as "Local Resale."

1.2 To the extent that this Attachment describes services which Bell Atlantic shall make available to MCIm for resale pursuant to this Agreement, this list of services is neither all inclusive nor exclusive. All Telecommunications Services which are to be offered for resale are subject to the terms herein.

1.3 Bell Atlantic shall make all of its Telecommunications Services available for resale to MCIm on terms and conditions that are reasonable and Non-Discriminatory.

1.4 Bell Atlantic will provide services to MCIm for resale that are equal in quality, subject to the same conditions, and provided within the same provisioning time intervals that Bell Atlantic provides itself, including end users. To the extent applicable, Bell Atlantic shall also conform to the specific requirements of Attachment VIII.

1.5 The specific business process requirements and systems interface requirements are set forth in Attachment VIII.

1.6 Notwithstanding any other provision of this Attachment II, Bell Atlantic shall be entitled to change its Telecommunications Services offerings, subject to the notice provisions of Attachment VIII, Section 1.

1.7 MCIm acknowledges that it has a duty under Section 251(b)(1) of the Act not to prohibit, and not to impose unreasonable and discriminatory conditions or limitations on the resale of its Telecommunications Services. MCIm will develop its services with the knowledge that when they are available, Bell Atlantic may request negotiations with MCIm for the resale of such services. MCIm will negotiate in good faith the terms and conditions necessary for Bell Atlantic to purchase such services for resale from MCIm.

Section 2. General Terms and Conditions for Resale

2.1. **Pricing.** The prices regarding Local Resale are set forth in Attachment I of this Agreement.

2.2 Restrictions on Resale

2.2.1 Local Resale services may be purchased by MCIm under this Agreement solely for the purpose of resale by MCIm. Local services to be purchased for other purposes (including, but not limited to, MCIm's own use) must be purchased pursuant to separate written agreements, including, but not limited to, applicable Tariffs of Bell Atlantic. MCIm may purchase Local Resale services under this Agreement for resale to its Affiliates if MCIm resells such services as a Telecommunications Carrier pursuant to terms and conditions that comply with all applicable Commission rules, including non-discrimination rules.

2.2.2 MCIm shall not resell Bell Atlantic's residential Local Resale services to customers who are ineligible to subscribe to such Local Resale services from Bell Atlantic.

2.2.3 MCIm shall not resell Lifeline or any other means-tested service offerings to customers not eligible to subscribe to such service offerings from Bell Atlantic.

2.2.4 MCIm shall not resell grandfathered Local Resale services to customers who are ineligible to subscribe to such Local Resale services from Bell Atlantic.

2.2.5 The Parties agree to negotiate the applicability of any category-to-category restriction on the resale of Bell Atlantic's Local Resale services that may be offered by Bell Atlantic in the future. If the Parties are unable to reach agreement, the Parties will submit the dispute to the Commission under the dispute resolution procedures of Part A, Section 24 (Dispute Resolution Procedures), and Bell Atlantic shall bear the burden of proving that the category-to-category restriction is reasonable and nondiscriminatory.

2.3 Requirements for Specific Services

2.3.1 CENTREX Requirements

2.3.1.1 MCIm may purchase CENTREX features (including system management, call forwarding, digital facility termination and ARS), in accordance with applicable Tariffs.

2.3.1.2 All service levels and features of CENTREX service provided by Bell Atlantic for resale by MCIm shall conform to Bell Atlantic's prevailing service requirements and be at Parity with the service and features provided to its end user customers.

2.3.1.3 MCIm may aggregate multiple MCIm subscribers on dedicated access facilities. Any aggregation of multiple location subscribers may have the effect of changing the retail CENTREX service offered under

applicable Tariff, in which case MCIm must purchase the appropriate tariffed service or, if such changed service is not available under Tariff, the Parties shall attempt to negotiate a separate agreement for such service.

2.3.2 **Federal and State Programs**

When a Bell Atlantic subscriber eligible for the Voluntary Federal Subscriber Financial Assistance Program or other similar state programs, including Life Line and Link-Up services, chooses to obtain Local Resale from MCIm, MCIm shall be responsible for obtaining the necessary information for its records regarding such subscriber's eligibility.

2.3.3 **Grandfathered Services.** Bell Atlantic shall offer for resale to MCIm all grandfathered services eligible for resale hereunder. For purposes of this Agreement, a grandfathered service is a service that Bell Atlantic offers to continue for existing retail subscribers of that service, but not to new subscribers.

2.3.4 **N11 Service.** Bell Atlantic agrees to offer for resale to MCIm any N11 Telecommunications Service it offers under Tariff.

2.3.5 **Contract Service Arrangements, Special Arrangements, and Promotions.** Bell Atlantic shall offer for resale Telecommunications Services, including but not limited to contract service arrangements, special arrangements, and promotions, as required by Applicable Law.

2.3.6 **Inside Wire Maintenance Service. [RESERVED]**

2.3.7 **Voice Mail Service**

2.3.7.1 **[RESERVED]**

2.3.7.2 Bell Atlantic shall make available SMDI-E (Station Message Desk Interface-Enhanced) features where available, or SMDI (Station Message Desk Interface) features where SMDI-E is not available. Bell Atlantic shall make available the MWI (Message Waiting Indicator), stutter dialtone, and message waiting light feature capabilities. Bell Atlantic shall make available CF-B/DA (Call Forward on Busy/Don't Answer), CF/B (Call Forward on Busy), and CF/DA (Call Forward/Don't Answer) feature capabilities allowing for voice mail services.

2.3.8 **Hospitality Service**

2.3.8.1 Bell Atlantic shall provide all blocking, screening, and all other applicable functions available for hospitality (*e.g.*, hospitals, hotels and the like) lines, pursuant to Tariff.

2.3.9 **Telephone Line Number Calling Cards.** Bell Atlantic shall maintain customer information for MCIm customers who subscribe to resold Bell Atlantic Local Service residential or business dial tone lines in Bell Atlantic's Line Information Database ("LIDB") in the same manner that it maintains information in LIDB on its own similarly situated end user customers. Bell Atlantic shall update and maintain, on the same schedule that it uses for its own similarly situated end user customers, the MCIm customer information in LIDB.

Section 3. Service Functions

3.1 When Bell Atlantic converts one of its subscribers to MCIm's service, Bell Atlantic shall inform MCIm, to the extent such information is available through Bell Atlantic's electronic interfaces for CLECs, whether such subscriber is currently participating in any program of reduced or exempt charges, including those for the indigent, the handicapped, governmental bodies and public institutions.

3.2 Each Party will work cooperatively with the other Party with respect to practices and procedures for handling of law enforcement and service annoyance calls.

3.3 The Parties will cooperate in the development of an industry standard of "700" number test lines.

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Attachment III
NETWORK ELEMENTS

ATTACHMENT III

NETWORK ELEMENTS

Section 1. Introduction

1.1 Bell Atlantic shall provide unbundled Network Elements in accordance with this Agreement and Applicable Law. The price for each Network Element is set forth in Attachment I of this Agreement. Except as otherwise set forth in this Attachment, MCIm may order Network Elements as of the Effective Date. The obligations set forth in this Attachment III shall apply to such Network Elements: (i) available when this Agreement becomes effective; (ii) that subsequently become available; and (iii) in all cases to those features, functions, Combinations, and capabilities, the provision of which is Technically Feasible at such time as they are incorporated in unbundled Network Elements offered by Bell Atlantic.

Section 2. Unbundled Network Elements

2.1 Bell Atlantic shall offer Network Elements to MCIm on an unbundled basis on rates, terms and conditions that are just, reasonable, and Non-Discriminatory in accordance with the terms and conditions of this Agreement.

2.2 Bell Atlantic shall permit MCIm to connect MCIm's facilities or facilities provided to MCIm by third-parties with each of Bell Atlantic's unbundled Network Elements at those generic points within Bell Atlantic's network, designated within this Agreement or as a result of the Bona Fide Request ("BFR") process.

2.3 MCIm may use one or more Network Elements to provide features, functions, or capabilities that such Network Element(s) provide as of the date hereof in Bell Atlantic's network, or as may otherwise be agreed upon through the BFR process.

2.3.1 MCIm may, at its option, select methods of access to unbundled elements, as described in this Agreement, or as may otherwise be agreed upon through the BFR process.

2.4 Bell Atlantic shall offer each Network Element individually and in Combinations (where Technically Feasible), solely in order to permit MCIm to provide Telecommunications Services to its subscribers.

2.5 For each Network Element, Bell Atlantic shall provide connectivity at a point which is agreeable to both Parties. However, where Bell Atlantic provides combined Network Elements at MCIm's request, no connectivity point between the Parties shall exist between such contiguous Network Elements.

2.6 This Attachment describes the initial set of Network Elements which MCIm and Bell Atlantic have identified as of the Effective Date of this Agreement:

Loop
Network Interface Device
Local Switching
Operator Systems
Common Transport
Dedicated Transport
Signaling Link Transport
Signaling Transfer Points
Service Control Points/Databases
Tandem Switching
Directory Assistance

2.6.1 MCIm and Bell Atlantic agree that the Network Elements identified in this Attachment may prove not to be all possible Network Elements.

2.6.2 MCIm may identify additional or revised Network Elements as necessary to provide Telecommunications Services to its subscribers, to improve network or service efficiencies or to accommodate changing technologies, subscriber demand, or other requirements.

2.6.2.1 MCIm will request any such Network Elements in accordance with the BFR process described in Section 25 (BFR Process for Further Unbundling) of Part A. Additionally, if Bell Atlantic provides any Network Element that is not identified in this Agreement to another CLEC pursuant to an approved Interconnection Agreement, Bell Atlantic shall make available the same Network Element to MCIm under the same terms, and conditions, as required by 47 U.S.C. Section 252(i).

Section 3. Technical Standards and Technical Specifications for Network Elements

3.1 Each Network Element shall be furnished at the service levels included in this Agreement and in accordance with the performance standards required in this Agreement.

3.2 Each Network Element provided by Bell Atlantic to MCIm, unless identified differently in this Agreement, shall be provided at Parity and in a Non-Discriminatory manner in the areas of: quality of design, performance, features, functions, capabilities and other characteristics, including but not limited to levels and types of redundant equipment and facilities for power, diversity and security, that Bell Atlantic provides to itself (where applicable and Technically Feasible), Bell Atlantic's own subscribers (where applicable and Technically Feasible), to a Bell Atlantic Affiliate, or to any other entity, as set forth in the FCC Rules and Regulations, as the same may be amended from time to time.

3.2.1 Bell Atlantic shall provide to MCIm, upon reasonable request, reasonably available engineering, design, performance and other network data sufficient for MCIm to determine that the requirements of this Section 3 are being met. In the event that such data indicates that the requirements of this Section 3 are not being met, the Parties shall in good faith endeavor to address the issue at the network operations supervisor level, and if necessary, employ the escalation procedure of Section 15.1.2.

3.2.2 Bell Atlantic agrees to work cooperatively with MCIm to ensure that the Network Elements that are provided pursuant to this Agreement will meet MCIm's reasonable needs in providing services to its subscribers.

3.3 Unless otherwise requested by MCIm, each Network Element and the connections between Network Elements provided by Bell Atlantic to MCIm shall be made available to MCIm at Parity and in a Non-Discriminatory manner at the points identified in this Agreement, or additional points made available through the BFR process.

Section 4. Loop

4.1 **Definition:**

4.1.1 Unbundled Local Loop ("ULL") means a transmission path that extends from the vertical side of a main distribution frame, DSX-panel, or functionally comparable piece of equipment in the subscriber's serving End Office to the Network Rate Demarcation Point (or Network Interface Device ("NID") if installed) in or at a subscriber's premises. The actual loop transmission facilities used to provide a ULL may utilize any of several technologies.

4.1.2 Subject to Part A, Section 29 (Facilities), Bell Atlantic shall allow MCIm access to the following ULLs (in addition to those ULLs available under applicable Tariffs) including without limitation unbundled from Local Switching and local transport in accordance with the terms and conditions set forth in this Section 4.

4.1.2.1 2-wire analog voice grade ULL or analog 2W provides an effective 2-wire channel with 2-wire interfaces at each end that is suitable for the transport of analog voice grade (nominal 300 to 3000 Hz) signals and loop-start signaling. The service is more fully described at Exhibit A of this Attachment III.

4.1.2.2 4-wire analog voice grade ULL or analog 4W provides an effective 4-wire channel with 4-wire interfaces at each end that is suitable for the transport of analog voice grade (nominal 300 to 3000 Hz) signals. The service will operate with one of the following signaling types that may be specified when the service is ordered: loop-start, ground-start,

loop-reverse-battery, duplex, and no signaling. The service is more fully described in Exhibit B of this Attachment III.

4.1.2.3 2-wire ISDN digital grade ULL or BRI ISDN provides a channel with 2-wire interfaces at each end that is suitable for the transport of 160 kbps digital services using the ISDN 2B1Q line code. The service is more fully described in Exhibit C of this Attachment III.

4.1.2.4 4-wire DS-1 compatible ULL provides a channel with 4-wire interfaces at each end. Each 4-wire channel is suitable for the transport of 1.544 mbps digital signals simultaneously in both directions using PCM line code. DS-1 compatible ULLs will be available where existing copper facilities can meet the specifications. The service is more fully described in Exhibit C of this Attachment III.

4.1.2.5 ULLs will be offered on the terms and conditions specified herein and on such other terms in applicable Tariffs that are not inconsistent with the terms and conditions set forth herein.

4.1.3 If Bell Atlantic uses integrated digital loop carrier ("DLC") systems to provide the local loop, Bell Atlantic will make alternate arrangements if available, meeting the requirements of this Section 4, to permit MCIm to order an existing contiguous ULL with the same provisioning intervals at no additional cost to MCIm. These arrangements may, at Bell Atlantic's option, include the following: provide MCIm with copper facilities or universal DLC that are acceptable to MCIm. Additional arrangements, such as deployment of Virtual Remote Terminals, or allowing MCIm to purchase the entire DLC, are subject to the BFR procedures of Section 25 of Part A of this Agreement.

4.2 Loop Components

MCIm may, at its option, raise the issue of subloop unbundling (other than NID unbundling, which is addressed in Section 5 of this Attachment III) either through the BFR procedure set forth in Section 25 of Part A of this Agreement, or by cooperating with Bell Atlantic in the design and implementation of a subloop unbundling technical and operational trial. Loop components may include, but are not limited to, the following:

4.2.1 Loop Concentrator/Multiplexer

4.2.2 Loop Feeder

4.2.3 Loop Distribution

Section 5. Network Interface Device

5.1 **Definition:**

5.1.1 "Network Interface Device" or "NID" means the Bell Atlantic provided interface terminating Bell Atlantic's Telecommunications network on the property where the subscriber's service is delivered at a point determined by Bell Atlantic. The NID contains a FCC Part 68 registered jack from which inside wire may be connected to Bell Atlantic's network.

5.1.2 Bell Atlantic shall permit MCIm to connect MCIm's loop to the inside wiring of a subscriber's premises through Bell Atlantic's NID in the manner set forth in Section 5.2 herein.

5.2 **Access to Network Interface Device**

5.2.1 Due to the wide variety of NIDs utilized by Bell Atlantic (based on subscriber size and environmental considerations), MCIm may access the subscriber's inside wire by any of the following means:

5.2.1.1 Bell Atlantic shall allow MCIm to connect its loops directly to Bell Atlantic's multi-line residential NID enclosures that have additional space and are not used by Bell Atlantic or any other Telecommunications Carrier to provide service to the premise. MCIm agrees to install compatible protectors and test jacks, to maintain the protection system and equipment and to indemnify Bell Atlantic pursuant to Part A of this Agreement.

5.2.1.2 In all other cases, MCIm must establish the connection to Bell Atlantic's NID through an adjoining NID deployed by MCIm.

5.2.1.2.1 Where an adequate length of inside wire is present and environmental conditions permit, and with the subscriber authorization required by this Agreement and Applicable Law, either Party may remove the inside wire from the other Party's NID and connect that wire to that Party's own NID; or

5.2.1.2.2 Enter the subscriber access chamber or "side" of "dual chamber" NID enclosures for the purpose of extending a connecterized or spliced jumper wire from the inside wire through a suitable "punch-out" hole of such NID enclosures; or

5.2.1.2.3 Request Bell Atlantic to make other rearrangements to the inside wire terminations or terminal enclosure on a time and materials cost basis to be charged to the requesting Party (*i.e.*,

MCIm, its agent, the building owner or the subscriber). Such charges will be billed to the requesting Party.

5.2.1.3 In no case shall MCIm remove or disconnect Bell Atlantic's loop facilities from Bell Atlantic's NIDs, enclosures, or protectors.

5.2.1.4 In no case shall MCIm remove or disconnect ground wires from Bell Atlantic's NIDs, enclosures, or protectors.

5.2.1.5 In no case shall MCIm remove or disconnect NID modules, protectors, or terminals from Bell Atlantic's NID enclosures.

5.2.1.6 Maintenance and control of premises wiring (inside wire) is the responsibility of the subscriber. Any conflicts between service providers for access to the subscriber inside wire must be resolved by the subscriber.

5.2.1.7 Due to the wide variety of NID enclosures and outside plant environments, Bell Atlantic will work with MCIm to develop specific procedures to establish the most effective means of implementing this Section 5.2.

5.3 **Technical Requirements**

5.3.1 The NID shall provide an accessible point of connection for the subscriber-owned inside wiring, for Bell Atlantic's facilities, for the distribution media and/or cross connect to MCIm's NID, and shall maintain a connection to ground.

5.3.2 The NID shall be capable of transferring electrical analog or digital signals between the subscriber's inside wiring and the distribution media and/or cross connect to MCIm's NID, consistent with the NID's function at the Effective Date of this Agreement.

5.3.3 Where a Bell Atlantic NID exists, it is provided in its "as is" condition. MCIm may request Bell Atlantic do additional work to the NID in accordance with Section 5.2.1.2.3.

5.4 **Interface Requirements**

5.4.1 Where an existing Bell Atlantic NID is installed, the NID shall be the interface to subscribers' premises wiring for the existing loop technology at that premises.

Section 6. Distribution

MCIm may, at its option, raise the issue of distribution unbundling through the BFR procedure set forth in Section 25 of Part A of this Agreement.

Section 7. Local Switching

7.1 **Definition:**

7.1.1 Local Switching is the Network Element that provides MCIm the ability to use switching functionality in a Bell Atlantic end office switch, including all vertical services and/or features that Bell Atlantic already provides, or provides in the future pursuant to the BFR process set forth in Part A, Section 25, out of that switch. MCIm may request modifications to the switching functionality, including the vertical services and/or features, available in a Bell Atlantic end office switch pursuant to the BFR process set forth in Part A, Section 25. Local Switching will be provisioned with a port element, which provides line or trunk side access to Local Switching.

7.1.2 Port element or port means a line card (or equivalent) and associated peripheral equipment on an end office switch which serves as the interconnection between individual loops or individual subscriber trunks and the switching components of an end office switch and the associated switching functionality in that end office switch. Each port is typically associated with one (or more) telephone number(s) which serves as the subscriber's network address. The port element is part of the provision of Local Switching.

7.1.3 Local Switching includes line side and trunk side facilities plus the features, functions, and capabilities of the switch, as set forth in Section 7.1.1. It consists of the line-side port (including connection between a loop termination and a switch line card, telephone number assignment, one primary Directory Listing, presubscription, and access to 911, Operator Services, basic intercept, and Directory Assistance), line and line group features (including appropriate vertical features and line blocking options), usage (including the connection of lines to lines, lines to trunks, trunks to lines, and trunks to trunks), and trunk features (including the connection between the trunk termination and a trunk card). Components of Local Switching, to the extent that they are separately charged, shall be charged at the rates set forth in Attachment I.

7.1.4 Bell Atlantic shall offer, as an optional chargeable feature, daily usage tapes that include the "to and from" number, start time, and stop time, by line port, for all recorded local, access, and toll usage. MCIm may request activation or deactivation of features on a per port basis at any time, and shall compensate Bell Atlantic for the non-recurring charges associated with processing the order.

7.2. Technical Requirements

7.2.1 Bell Atlantic shall route calls to the appropriate trunk or lines for call origination or termination.

7.2.2 Where Technically Feasible, Bell Atlantic will offer Specialized Routing for Local Switching lines and for lines provided to MCIm under Local Resale. Bell Atlantic's initial deployment of Specialized Routing will route Directory Assistance and Operator Services calls (*i.e.*, 411, 555-1212, 0-, 0+local) to: (i) Bell Atlantic provided platforms; (ii) MCIm designated platforms; or (iii) third-party platforms. Due to the constraints of the various switches in place in the Bell Atlantic service region, Bell Atlantic will implement a hybrid network solution for Specialized Routing. The hybrid solution encompasses three different technologies: Bell Atlantic's Common Channel Signaling Network/Advanced Intelligent Network (CCSN/AIN) and, for those office and call types not supported by AIN, Specialized Routing Nodes and/or line class codes. The Combinations of switch types, call types, and technology solutions currently available are identified in Exhibit D of this Attachment III. Exhibit D is subject to modification upon reasonable prior notification to MCIm. The following terms and conditions apply to Specialized Routing service:

7.2.2.1 If MCIm elects the wholesale discount for Local Resale which does not include Bell Atlantic Directory Assistance and Operator Services, MCIm must request Specialized Routing for all End Offices where they elect to resell Bell Atlantic retail Telecommunications Services using this wholesale discount.

7.2.2.2 Specialized Routing will be activated for all MCIm Local Resale and Local Switching end user lines and for all applicable call types (*i.e.*, 411, 555-1212, 0-, 0+local) in a requested End Office.

7.2.2.3 MCIm is responsible for establishing the necessary transport to carry the rerouted calls to its Operator Services platform(s). Trunks will be required for traffic rerouted from the originating End Office and for traffic rerouted from the Specialized Routing Node. Bell Atlantic-supplied Dedicated Transport is available for use with Specialized Routing, where facilities are available, in which case rates and charges for such transport will apply in addition to the rates and charges for Specialized Routing.

7.2.2.4 If the necessary trunks are not in place once a subscriber has been converted to MCIm's local service, then the end user customer will receive a re-order tone.

7.2.2.5 Traffic rerouted via the Specialized Routing Nodes will be handed-off to MCIm at a Point of Interconnection in the originating LATA.

7.2.2.6 Implementation of Specialized Routing will begin in the requested End Offices in the State no later than ninety (90) days after the beginning of the implementation interval, and will be finished for all requested End Offices in a State within one hundred eighty (180) days after the beginning of the implementation interval. The implementation interval for Specialized Routing will begin upon receipt by Bell Atlantic of a list of the End Offices from which MCIm wishes to purchase Specialized Routing service.

7.2.2.7 Certain classes of service and/or line types are not supported by AIN-based Specialized Routing. These exceptions, identified in Exhibit E of this Attachment III, will be addressed by Bell Atlantic on a case-by-case BFR basis at MCIm's request. Additional charges will apply for the development and implementation of the network solution(s) used to address these exceptions. Exhibit E of this Attachment III is subject to modification upon reasonable prior notification to MCIm.

7.2.2.8 Due to the use of AIN technology for Specialized Routing, some existing and future AIN-based services may not work with Local Resale lines that employ Specialized Routing. Exhibit E of this Attachment III lists AIN services that are currently known to conflict with Specialized Routing.

7.2.3 Bell Atlantic shall provide standard recorded announcements at Parity.

7.2.4 Where requested by MCIm, Bell Atlantic will attempt to change a subscriber from Bell Atlantic's services to MCIm's services without loss of feature availability and functionality. However, dependent on the technical arrangements MCIm chooses to use to provide their end user services, some feature interaction conflicts and resulting loss of feature availability and functionality may result.

7.2.5 For unbundled Bell Atlantic switching in Combination with an unbundled Bell Atlantic loop, Bell Atlantic shall perform routine testing (*e.g.*, mechanized loop tests ("MLT")) at Parity upon receipt of a trouble report from MCIm.

7.2.6 Bell Atlantic shall repair, restore and maintain Bell Atlantic provided equipment that has produced trouble conditions, at Parity and in a Non-Discriminatory manner, to minimize recurrence of trouble conditions in MCIm's use of Local Switching.

7.2.7 Bell Atlantic shall control congestion points such as mass calling events, and network routing abnormalities, using capabilities such as automatic call gapping, automatic congestion control, and network routing overflow at Parity and in a Non-Discriminatory manner.

7.2.8 Bell Atlantic shall record billable events, involving usage of the element, and send the appropriate recording data to MCIm as outlined in Attachment VIII.

7.2.9 Unbundled switching will include 911 access on the same basis as such access is provided in Bell Atlantic's network.

7.2.10 Bell Atlantic shall provide switching service point ("SSP") capabilities and signaling software to interconnect the signaling links destined to Bell Atlantic STPs at Parity. In the event that Local Switching is provided out of a switch without SS7 capability, and Bell Atlantic unbundled Common Transport is purchased for use with Bell Atlantic's unbundled switching, Bell Atlantic's Tandem Office Switches shall provide this capability at Parity.

7.2.11 Bell Atlantic shall provide interfaces to Adjunct Equipment, which interfaces are identified in this Agreement, at Parity. Bell Atlantic shall provide interfaces to any other Adjunct Equipment at Parity pursuant to the BFR process.

7.2.12 From time to time MCIm may request that Bell Atlantic provide unique reports of reasonable performance data regarding a subscriber line, traffic characteristics, or other reasonable elements. To the extent that such reports exceed that which Bell Atlantic provides itself or its subscribers, MCIm shall pay reasonable charges for such reports.

7.2.13 Bell Atlantic shall assign each MCIm subscriber line an unbundled switching class of service. MCIm may request and Bell Atlantic will provide call blocking options (*e.g.*, 900, 976) at Parity.

7.3 **Interface Requirements**:

7.3.1 Bell Atlantic shall provide the following unbundled switching interfaces:

Analog Basic (POTS) - line side, loop start or ground start signaling
Analog CENTREX - line side, loop start or ground start signaling
Analog PBX - line side, loop start or ground start signaling

Analog DID - trunk side, loop reverse-battery signaling, associated with a PBX
DS1 (DID) - trunk side, associated with a PBX
DS1 (IOF) - trunk side, associated with dedicated unbundled transport

These services will be more fully described in Exhibits F and G of this Attachment III. Additional interfaces may be developed in accordance with the BFR process set forth in Section 25 of Part A of this Agreement.

7.3.2 Bell Atlantic shall offer access to the following at Parity:

7.3.2.1 SS7 signaling or multi-frequency trunking;

7.3.2.2 Interface to MCIm or Bell Atlantic Operator Services systems through the use of Specialized Routing, as appropriate;

7.3.2.3 Interface to MCIm or Bell Atlantic Directory Assistance Services through the use of Specialized Routing, as appropriate; and

7.3.2.4 Access to other third-party carriers.

7.4 Integrated Services Digital Network ("ISDN")

Implementation of the first customer application of unbundled ISDN switching will require technical and operational coordination and testing by MCIm and Bell Atlantic to ensure that the requirements set forth in this section can be met. Should any of these requirements prove technically infeasible, the Parties shall cooperate to determine the requirements applicable to the unbundled service.

7.4.1 Technical Requirements — ISDN

7.4.1.1 Bell Atlantic shall offer data switching providing ISDN that, at a minimum:

7.4.1.1.1 Provides integrated packet handling capabilities at Parity;

7.4.1.1.2 Allows for full 2B+D channel functionality for BRI at Parity; and

7.4.1.1.3 Allows for full 23B+D channel functionality for PRI at Parity.

7.4.1.1.4 Each B channel shall allow for voice, 64 Kbps CSD, and PSD of 128 logical channels at minimum speeds of 19 Kbps throughput of each logical channel up to the total capacity of the B channel.

7.4.1.1.5 Each B channel shall provide capabilities for alternate voice and data on a per call basis.

7.4.1.1.6 The BRI D channel shall allow for call associated signaling, non-call associated signaling and PSD of 16 logical channels at minimum speeds of 9.6 Kbps throughput of each logical channel up to the total capacity of the D channel.

7.4.1.1.7 The PRI D channel shall allow for call associated signaling.

7.4.2 **Interface Requirements — ISDN**

7.4.2.1 Bell Atlantic shall provide the BRI U interface using 2-wire copper loops in accordance with TR-NWT-000393, January 1991, *Generic Requirements for ISDN Basic Access Digital Subscriber Lines.*

7.4.2.2 Bell Atlantic shall provide the BRI interface using digital subscriber loops adhering to Bellcore TR-NWT-303 specifications to interconnect DLCs.

7.4.2.3 Bell Atlantic shall offer PSD interfaces adhering to the X.25, X.75 and X.75' ANSI and Bellcore requirements.

7.4.2.4 Bell Atlantic shall offer PSD trunk interfaces operating at 56 kbps.

Section 8. Operator Systems

See Attachment VIII, Section 6.1.2 Directory Assistance Service and 6.1.3 Operator Service.

Section 9. Common Transport

9.1 **Definition:**

9.1.1 Common Transport consists of interoffice transmission paths between Bell Atlantic Network Elements (illustrated in Figure 1) shared by carriers. Common Transport consists of Bell Atlantic inter-office transport facilities and is distinct and separate from Local Switching. Common Transport routes the call between two Bell Atlantic switches using the existing route(s) that are used by the Bell Atlantic network for Bell Atlantic's end users.

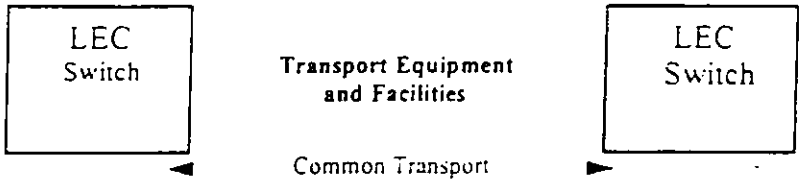

Figure 1

9.2 **Technical Requirements**

9.2.1 Bell Atlantic shall be responsible for the engineering, provisioning, and maintenance of the underlying equipment and facilities that are used to provide Common Transport.

Section 10. Dedicated Transport

10.1 **Definition:**

10.1.1 Dedicated Transport is an interoffice transmission path of a fixed capacity between MCIm designated locations to which MCIm is granted exclusive use. Such locations may include Bell Atlantic Central Offices, other Telecommunication Carrier locations, subscriber premises, or other mutually agreed locations. Dedicated Transport is depicted below in Figure 2.

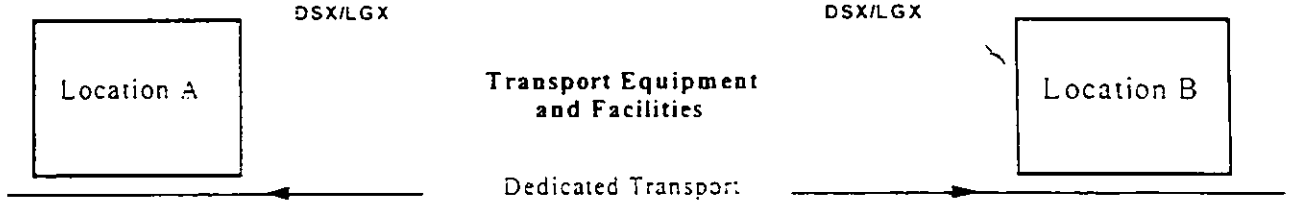

Figure 2

10.1.2 Bell Atlantic shall offer Dedicated Transport as a circuit (*e.g.*, DS0 (voice grade), DS1, STS1 (when available) and DS3) dedicated to MCIm.

10.1.3 When Dedicated Transport is provided as a circuit, it will have available (as appropriate):

10.1.3.1 Optional multiplexing functionality;

10.1.3.2 Grooming functionality in accordance with Section 10.3 herein; and.

10.1.3.3 Redundant equipment and facilities necessary to support protection and restoration at Parity and in a Non-Discriminatory manner.

10.2 Technical Requirements

This Section sets forth technical requirements for all Dedicated Transport.

10.2.1 Dedicated Transport shall provide physical diversity at Parity.

10.2.2 MCIm may request that Bell Atlantic provide additional physical diversity. Bell Atlantic will provide such physical diversity where it is available, at Bell Atlantic's prevailing additional charge, if any. If physical diversity is not reasonably available in response to MCIm's request, then MCIm may order such additional physical diversity by submitting a request for special construction.

10.2.3 Dedicated Transport shall include DSX terminations at one or both ends, as applicable, in Bell Atlantic's Central Office location.

10.2.4 Bell Atlantic shall offer DCS and multiplexing, both together with and separately from Dedicated Transport.

10.3 Digital Cross Connect System ("DCS")

10.3.1 Definition:

10.3.1.1 DCS is a device which provides electronic cross-connection of digital signal level 0 ("DS0") or higher transmission bit rate digital channels within physical interface facilities. Types of DCSs include but are not limited to DCS 1/0s, where the nomenclature 1/0 denotes interfaces typically at the DS1 rate or greater with cross-connection typically at the DS0 rate.

10.3.2 DCS Technical Requirements

10.3.2.1 DCS shall provide cross connection of the channels designated by MCIm, either through service orders or by using Bell Atlantic's Intellimux capabilities.

10.3.2.2 Bell Atlantic shall continue to administer and maintain DCS, including updates to the control software to current available releases, at Parity.

10.3.2.3 Bell Atlantic shall provide various types of Digital Cross Connect Systems including:

10.3.2.3.1 DS0 cross connects (typically termed DCS 1/0).

10.3.2.3.2 Additional DCS types shall be requested in accordance with the BFR process set forth in Section 25 of Part A of this Agreement.

10.3.2.4 Through Bell Atlantic's Intellimux service capabilities, Bell Atlantic shall provide immediate and continuous configuration and reconfiguration of the channels between the physical interfaces (*i.e.*, Bell Atlantic shall establish the processes to implement cross connects on demand, or permit MCIm control of such configurations and reconfigurations).

10.3.2.5 Through Bell Atlantic's Intellimux service capabilities, Bell Atlantic shall provide scheduled configuration and reconfiguration of the channels between the physical interfaces (*i.e.*, Bell Atlantic shall establish the processes to implement cross connects on the schedule designated by MCIm, or permit MCIm to control such configurations and reconfigurations).

10.3.2.6 DCS shall continuously monitor protected circuit packs and redundant common equipment at Parity.

10.3.2.7 DCS shall automatically switch to a protection circuit pack on detection of a failure or degradation of normal operation at Parity.

10.3.2.8 The equipment used to provide DCS shall be equipped with a redundant power supply or a battery back-up at Parity.

10.3.2.9 Bell Atlantic shall make available for DCSs handling MCIm services spare facilities and equipment at Parity, necessary for provisioning repairs.

10.3.2.10 Through Bell Atlantic's Intellimux service capabilities, at MCIm's option, Bell Atlantic shall provide MCIm currently available performance monitoring and alarm data.

10.3.2.11 At MCIm's option, Bell Atlantic shall provide MCIm with the ability to initiate tests on DCS equipment. This will require MCIm to provide additional facilities from the DCS, back to MCIm's test center. The DCS can then be used to connect MCIm's test center ports to other MCIm circuits.

10.3.2.12 Where available, DCS shall provide multipoint bridging of multiple channels to other DCSs. MCIm may designate multipoint bridging to be one-way broadcast from a single master to multiple tributaries, or two-way broadcast between a single master and multiple tributaries.

10.3.2.13 DCS shall multiplex lower speed channels onto a higher speed interface and demultiplex higher speed channels onto lower speed interfaces as designated by MCIm.

Section 11. Signaling Link Transport

11.1 **Definition:**

11.1.1 Bell Atlantic's CCS Access Service ("CCSAS") allows interconnected carriers to exchange signaling information over a communications path which is separate from the message path. The transport portion of CCSAS is provided via a discreetly rated dedicated 56 kbps out of band signaling connection between the carrier's Signaling Point of Interconnection ("SPOI") and Bell Atlantic's STP.

11.1.2 Each CCSAS signaling connection provides for two-way digital transmission at speeds of 56 kbps. The connection to Bell Atlantic's STP pair can be made from either the carrier's signaling point ("SP"), which requires a minimum of two 56 kbps circuits, or from the carrier's STP pair, which requires a minimum of four (4) pairs of 56 kbps circuits.

11.1.3 STP locations are set forth in National Exchange Carrier Association ("NECA") Tariff F.C.C. No. 4. Carriers ordering CCSAS are subject to the technical requirements specified in Bell Atlantic Tariff F.C.C. No. 1, Sections 2.3.9.1, 2.3.10 (B) (9) and 2.3.10 (9). Testing and certification reference documentation shall be pursuant to Bell Atlantic Tariff F.C.C. No. 1, Section 6.4.3 (A).

11.1.4 Each Party shall provide the other Party with access to databases and associated signaling necessary for call routing and completion by providing SS7 CCS interconnection in accordance with existing Tariffs, and interconnection and access to toll free databases, LIDB, and any other necessary databases in accordance with existing Tariffs and/or agreements with other unaffiliated carriers. Alternatively, either Party may secure CCS Interconnection from a commercial SS7 hub provider, and in that case the other Party will permit the purchasing Party to access the same databases as would have been accessible if the purchasing Party had connected via SS7 CCS directly to the other Party's CCS network.

11.1.5 Bell Atlantic shall permit MCIm to access Bell Atlantic's LIDB to validate calling card numbers and requests for bill-to-third-party or collect billing. Bell Atlantic shall provide LIDB access at Parity and in a Non-Discriminatory manner by a SS7 formatted data query before call completion to determine the validity of the billing method requested by the caller. LIDB will respond with a SS7 formatted confirmation of validity or denial of the requested billing option.

11.1.6 The Parties will provide CCS Signaling to one another, where and as available, in conjunction with all local traffic, toll traffic, meet point billing traffic, and transit traffic. The Parties will cooperate on the exchange of TCAP messages to facilitate interoperability of CCS-based features between their respective networks, including all CLASS features and functions, to the extent each Party offers such features and functions to its subscribers. All CCS signaling parameters will be provided upon request (where available), including called party number, Calling Party Number, originating line information, calling party category, and Charge Number. All privacy indicators will be honored. The Parties will follow all relevant OBF adopted standards pertaining to CIC/OZZ codes. Where CCS Signaling is not available, in-band multi-frequency ("MF") wink start signaling will be provided. Any such MF arrangement will require a separate local trunk circuit between the Parties' respective Switches. In such an arrangement, each Party will outpulse the full ten-digit telephone number of the called party to the other party with appropriate call set-up and ANI where available, at Parity.

11.1.7 The following publications describe the practices, procedures and specifications generally utilized by Bell Atlantic for signaling purposes and is listed herein to assist the Parties in meeting their respective interconnection responsibilities related to signaling:

11.1.7.1 Bellcore GR-905-CORE, Issue 1, March 1995, and subsequent issues and revisions;

11.1.7.2 Bell Atlantic Supplement Common Channel Signaling Network Interface Specification, Bell Atlantic-905, December 1990; Issue, Supplement 1, June 1992; Supplement 2, August 1992; Supplement 3, January 1993; and

11.1.7.3 Bell Atlantic AIN SMS Network Disclosure (Date: December 1996, on Bell Atlantic World Wide Web site).

11.1.8 Each Party shall charge the other Party mutual and reciprocal rates for CCS Signaling as follows: Bell Atlantic shall charge MCIm in accordance with Attachment I hereto and applicable Tariffs; MCIm shall charge Bell Atlantic rates equal to the rates Bell Atlantic charges MCIm, unless MCIm's Tariffs for CCS

signaling provide for lower generally available rates, in which case MCIm shall charge Bell Atlantic such lower rates.

11.1.9 MCIm must meet interconnection certification testing requirements of the SS7 network before interconnection is permitted, and also before changes occur within the MCIm SS7 network.

Section 12. Signaling Transfer Points ("STPs")

12.1 **Definition:**

12.1.1 Bell Atlantic's CCSAS allows interconnected carriers to exchange signaling information over a communications path which is separate from the message path. The discretely rated network termination point where this interconnection takes place is called the Bell Atlantic STP port termination. Figure 3 depicts STPs.

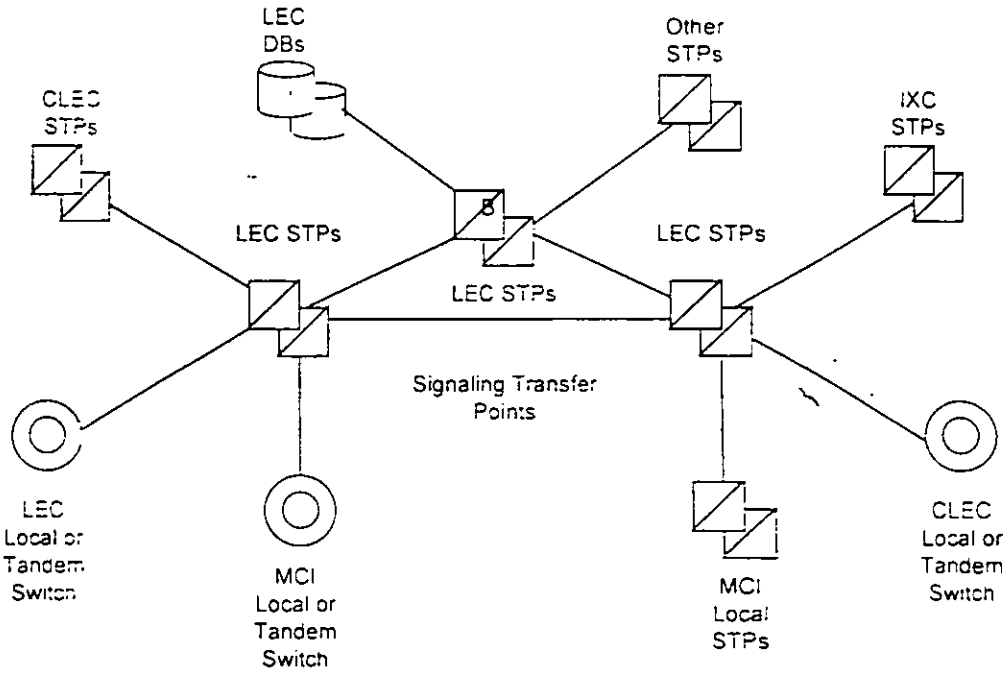

Figure 3

12.1.2 Each CCSAS signaling connection provides for two-way digital transmission at speeds of 56 kbps. The connection to Bell Atlantic's STP pair can be made from either the carrier's STP, which requires a minimum of two (2) 56

kbps circuits, or from the carrier's STP pair, which requires a minimum of four (4) pairs of 56 kbps circuits.

12.1.3 STP locations are set forth in National Exchange Carrier Association ("NECA") Tariff F.C.C. No. 4. Carriers ordering CCSAS are subject to the technical requirements specified in Bell Atlantic Tariff F.C.C. No. 1, Sections 2.3.9.1, 2.3.10 (B) (9) and 2.3.10 (9). See Bell Atlantic Tariff F.C.C. No. 1, Section 6.4.3 (A) for testing and certification reference documentation).

12.2 **Technical Requirements**

12.2.1 STPs shall provide access to all other Network Elements connected to the Bell Atlantic network. These include:

12.2.1.1 Bell Atlantic Local Switching or Tandem Switching;

12.2.1.2 Bell Atlantic Service Control Points/databases;

12.2.1.3 Third-party local or Tandem Switching systems; and

12.2.1.4 Third-party-provided STPs.

12.2.2 The connectivity provided by STPs shall fully support the functions of all other Network Elements connected to the Bell Atlantic SS7 network. This explicitly includes the use of the Bell Atlantic SS7 network to convey messages which neither originate nor terminate at a signaling end point directly connected to the Bell Atlantic SS7 network (*i.e.*, transit messages). When the Bell Atlantic SS7 network is used to convey transit messages, there shall be no alteration of the integrated services digital network user part ("ISDNUP") or Transaction Capabilities Application Part ("TCAP") user data that constitutes the content of the message.

12.2.3 If a Bell Atlantic Tandem Switch routes calling traffic, based on dialed or translated digits, on SS7 trunks between an MCIm local Switch and third-party local Switch, Bell Atlantic's SS7 network shall convey the TCAP messages that are necessary to provide call management features (automatic callback, automatic recall, and screening list editing) between the MCIm local STPs and the STPs that provide connectivity with the third-party local Switch, even if the third-party local Switch is not directly connected to Bell Atlantic's STPs, providing that the third-party Switch is located in the same LATA.

12.2.4 In cases where the destination signaling point is a Bell Atlantic local or Tandem Switching system or database, or is an MCIm or third-party local or Tandem Switching system directly connected to Bell Atlantic's SS7 network, Bell Atlantic STPs shall perform final GTT of messages to the destination and SCCP

Subsystem Management of the destination. In all other cases, STPs shall perform intermediate GTT of messages to a gateway pair of STPs in an SS7 network connected with the Bell Atlantic SS7 network, and shall not perform SCCP subsystem management of the destination.

12.3 Interface Requirements

12.3.1 Bell Atlantic shall provide the following STPs options to connect MCIm or MCIm-designated Local Switching systems or STPs to the Bell Atlantic SS7 network:

12.3.1.1 An A-link interface from MCIm Local Switching systems; and.

12.3.2 Each type of interface shall be provided by one or more sets (layers) of signaling links, as follows:

12.3.2.1 An A-link layer shall consist of two links, as depicted in Figure 4.

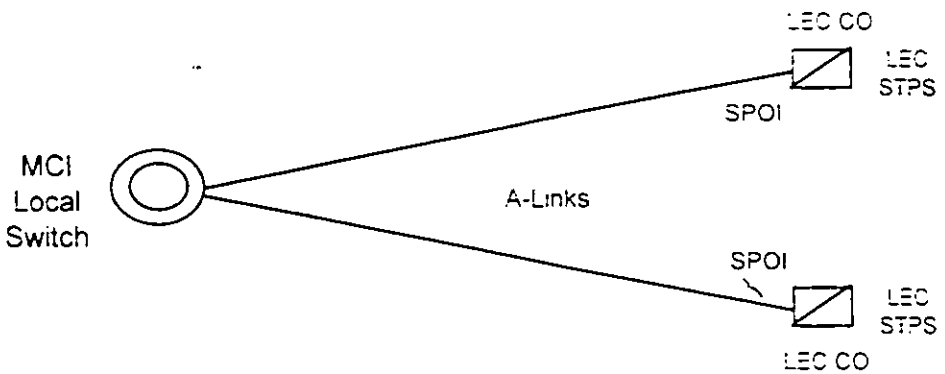

Figure 4. A-Link Interface

12.3.3 The Signaling Point of Interconnection ("SPOI") for each link shall be located at a cross-connect element, such as a DSX-1, in the Central Office where the Bell Atlantic STP is located. There shall be a DS1 or higher rate transport interface at each of the SPOIs. Each signaling link shall appear as a DS0 channel within the DS1 or higher rate interface.

12.4 Message Screening

12.4.1 Bell Atlantic shall set message screening parameters so as to accept messages from MCIm local or tandem switching systems destined to any

signaling point in the Bell Atlantic SS7 network with which the MCIm switching system has a legitimate signaling relation.

12.4.2 Bell Atlantic shall set message screening parameters so as to accept messages from MCIm local or tandem switching systems destined to any signaling point or network interconnected to the Bell Atlantic SS7 network with which the MCIm switching system has a legitimate signaling relation.

12.4.3 Bell Atlantic shall set message screening parameters so as to accept messages destined to an MCIm local or tandem switching system from any signaling point or network interconnected to the Bell Atlantic SS7 network with which the MCIm switching system has a legitimate signaling relation.

12.4.4 Bell Atlantic shall set message screening parameters so as to accept and send messages destined to an MCIm SCP from any signaling point or network interconnected to the Bell Atlantic SS7 network with which the MCIm SCP has a legitimate signaling relation, provided Bell Atlantic receives proper notification and agreement from the owner of such other networks.

12.5 **STP Requirements**

12.5.1 Bell Atlantic shall provide MTP and SCCP protocol interfaces in accordance with sections relevant to the MTP or SCCP in the following specifications:

12.5.1.1 Bellcore GR-905-CORE, Issue 1, March 1, Common Channel Signaling Network Interface Specification ("CCSNIS") Supporting Network Interconnection, Message Transfer Part ("MTP"), and Integrated Services Digital Network User Part ("ISDNUP"); and

Section 13. Call Related Databases and AIN

13.1 **Definition:**

13.1.1 "Call Related Databases" are the Network Elements that provide the functionality for storage of, and access to, information required to route and complete a particular call. Call Related Databases include, but are not limited to: LIDB, Toll Free Number Database, and AIN databases.

13.1.2 A Service Control Point ("SCP") is a specific type of database Network Element deployed in a Signaling System 7 ("SS7") network that executes service application logic in response to SS7 queries sent to it by a switching system also connected to the SS7 network.

13.2 Technical Requirements for Call Related Databases

Requirements for Call Related Databases within this section address storage of information, access to information (*e.g.*, signaling protocols, response times), and administration of information (*e.g.*, provisioning, administration, and maintenance). All Call Related Databases shall be provided to MCIm in accordance with the following requirements, except where such a requirement is superseded by specific requirements set forth in Subsections 13.3 through 13.5:

13.2.1 Bell Atlantic shall provide physical interconnection to SCPs through the SS7 network and protocols, as specified in Section 12 of this Attachment, with TCAP as the application layer protocol.

13.2.2 Bell Atlantic shall provide physical interconnection to databases via existing interfaces and industry standard interfaces and protocols (*e.g.*, 56 Kb TCP/IP).

13.2.3 The reliability of interconnection options shall be consistent with requirements for diversity and survivability as specified in Section 12 of this Attachment (which applies to both SS7 and non-SS7 interfaces).

13.2.4 Call Related Database functionality shall be available at Parity. If, based on information available through the process set forth in Section 3, MCIm believes the functionality is inadequate to meet its needs, it may initiate a BFR.

13.2.5 Bell Atlantic shall complete database transactions (*i.e.*, add, modify, delete) for MCIm subscriber records stored in Bell Atlantic databases at Parity.

13.2.6 Bell Atlantic shall provide database maintenance consistent with the maintenance requirements as specified in this Agreement (*e.g.*, notification of Bell Atlantic network affecting events, testing).

13.2.7 Bell Atlantic shall provide billing and recording information to track database usage consistent with connectivity billing and recording requirements for Call Related Databases as specified in this Agreement (*e.g.*, recorded message format and content, timeliness of feed, data format and transmission medium).

13.2.8 Bell Atlantic shall provide Call Related Databases in accordance with the physical security requirements specified in this Agreement.

13.2.9 Bell Atlantic shall provide Call Related Databases in accordance with the logical security requirements specified in this Agreement.

13.3 Line Information Database ("LIDB")

This Subsection 13.3 defines and sets forth additional requirements for the Line Information Database. This Subsection 13.3 supplements the requirements of Subsection 13.2 and 13.5.

13.3.1 Definition:

LIDB is a transaction-oriented database accessible through CCS networks. It contains records associated with subscriber line numbers and special billing numbers (in accordance with the requirements in the technical reference in GR-1158-CORE OSSGR, Section 22.3). LIDB accepts queries from other Network Elements, or MCIm's network, and provides appropriate responses. The query originator need not be the owner of LIDB data. LIDB queries include functions such as screening billed numbers that provides the ability to accept collect or third number billing calls and validation of telephone line number based non-proprietary calling cards. The interface for the LIDB functionality is the interface between the Bell Atlantic CCS network and other CCS networks. LIDB also interfaces to administrative systems. The administrative system interface provides Bell Atlantic work centers with an interface to LIDB for functions such as provisioning, auditing of data, access to LIDB measurements and reports.

13.3.2 Technical Requirements

13.3.2.1 Prior to the availability of a long-term solution for NP, Bell Atlantic shall enable MCIm to store in Bell Atlantic's LIDB any subscriber line number or special billing number record, (in accordance with the technical reference in GR-1158-CORE OSSGR, Section 22.3) whether ported or not, for which the NPA-NXX or NXX-0/1XX group is supported by that LIDB.

13.3.2.2 Prior to the availability of a long-term solution for NP, Bell Atlantic shall enable MCIm to store in Bell Atlantic's LIDB any subscriber line number or special billing number (in accordance with the technical reference in GR-1158-CORE OSSGR, Section 22.3) record, whether ported or not, and NPA-NXX and NXX-0/1XX Group Records, belonging to an NPA-NXX or NXX-0/1 XX assigned to MCIm.

13.3.2.3 Subsequent to the availability of a long-term solution for NP, Bell Atlantic shall enable MCIm to store in Bell Atlantic's LIDB any subscriber line number or special billing number (in accordance with the technical reference in GR-1158-CORE OSSGR, Section 22.3) record, whether ported or not, regardless of the number's NPA-NXX or NXX-0/1XX.

13.3.2.4 Bell Atlantic shall perform the following LIDB functions (*i.e.*, processing of the following query types as defined in the technical reference in GR-1158-CORE OSSGR, Section 22.3) for MCIm's subscriber records in LIDB:

13.3.2.4.1 Billed number screening (provides information such as whether the billed number may accept collect or third number billing calls); and

13.3.2.4.2 Calling card validation.

13.3.2.5 Bell Atlantic shall process MCIm's subscriber records in LIDB at least at Parity with Bell Atlantic subscriber records, with respect to other LIDB functions (as defined in the technical reference in GR-1158-CORE OSSGR, Section 22.3). Bell Atlantic shall indicate to MCIm what additional functions (if any) are performed by LIDB in Bell Atlantic's network.

13.3.2.6 Within two (2) weeks after a request by MCIm, Bell Atlantic shall provide MCIm with a list of the subscriber data items which MCIm would have to provide in order to support billed number screening and calling card validation. The list shall indicate which data items are essential to LIDB function, and which are required only to support certain services. For each data item, the list shall show the data formats, the acceptable values of the data item and the meaning of those values.

13.3.2.7 Bell Atlantic shall provide LIDB systems with rates of operating deficiencies at Parity. If, based on information available through the process set forth in Section 3, MCIm believes that the rate of deficiencies is inadequate to meet its needs, it may initiate a BFR.

13.3.2.8 Bell Atlantic shall provide MCIm with the capability to provision (*e.g.*, to add, update, and delete) NPA-NXX and NXX-0/1XX group records, and line number and special billing number records, associated with MCIm subscribers, directly into Bell Atlantic's LIDB provisioning process.

13.3.2.9 As directed by MCIm or the new local service provider, in the event that end user subscribers change their local service provider, Bell Atlantic shall maintain subscriber data (for line numbers, card numbers, and for any other types of data maintained in LIDB), as mutually agreed by the Parties, so that such subscribers shall not experience any interruption of service, except for any interruption associated with a LIDB-only service order transaction at Parity.

13.3.2.10 All additions and updates of MCIm data to the LIDB shall be solely at the direction of MCIm. Bell Atlantic will process orders from other CLECs or from Bell Atlantic for subscribers that choose to migrate from MCIm to another provider.

13.3.2.11 Bell Atlantic shall provide priority updates to LIDB for MCIm data upon MCIm's request (*e.g.*, to support fraud protection) at Parity.

13.3.2.12 Bell Atlantic shall accept queries to LIDB associated with MCIm subscriber records, and shall return responses in accordance with the requirements of this Section 13.

13.4 Toll Free Number Database

The "Toll Free Number Database" is an SCP that provides functionality necessary for toll free (*e.g.*, 800 and 888) number services by providing routing information and additional features during call set-up in response to queries from SSPs. This Subsection 13.4 supplements the requirements of Subsection 13.2 and 13.5. Bell Atlantic shall provide the Toll Free Number Database in accordance with the following:

13.4.1 Technical Requirements

13.4.1.1 Bell Atlantic shall make the Bell Atlantic Toll Free Number Database available for MCIm to query, from MCIm's designated switch including Local Switching, with a toll-free number and originating information.

13.4.1.2 The Toll Free Number Database shall return carrier identification and, where applicable, the queried toll free number, translated numbers and instructions as it would in response to a query from a Bell Atlantic switch.

13.4.2 Interface Requirements

The signaling interface between the MCIm or other local switch and the Toll Free Number Database shall use the TCAP protocol as specified in Part A, Section 15 (Technical References), together with the signaling network interface as specified in Part A, Section 15 (Technical References).

13.5 Advanced Intelligent Network ("AIN") Access. Service Creation Environment and Service Management System ("SCE/SMS") Advanced Intelligent Network Access

13.5.1 Bell Atlantic shall provide access to any and all Bell Atlantic service applications resident in Bell Atlantic's SCP. Such access may be from MCIm's switch or Bell Atlantic's unbundled local switch.

13.5.2 SCE/SMS AIN access shall provide MCIm the ability to create service applications in the Bell Atlantic SCE and deploy those applications via the Bell Atlantic SMS to the Bell Atlantic SCP. This interconnection arrangement shall provide MCIm access to the Bell Atlantic development environment in a manner at least at Parity with Bell Atlantic's ability to deliver its own AIN-based services. SCE/SMS AIN Access is the creation and provisioning of AIN services in the Bell Atlantic network. See Figure 5 below.

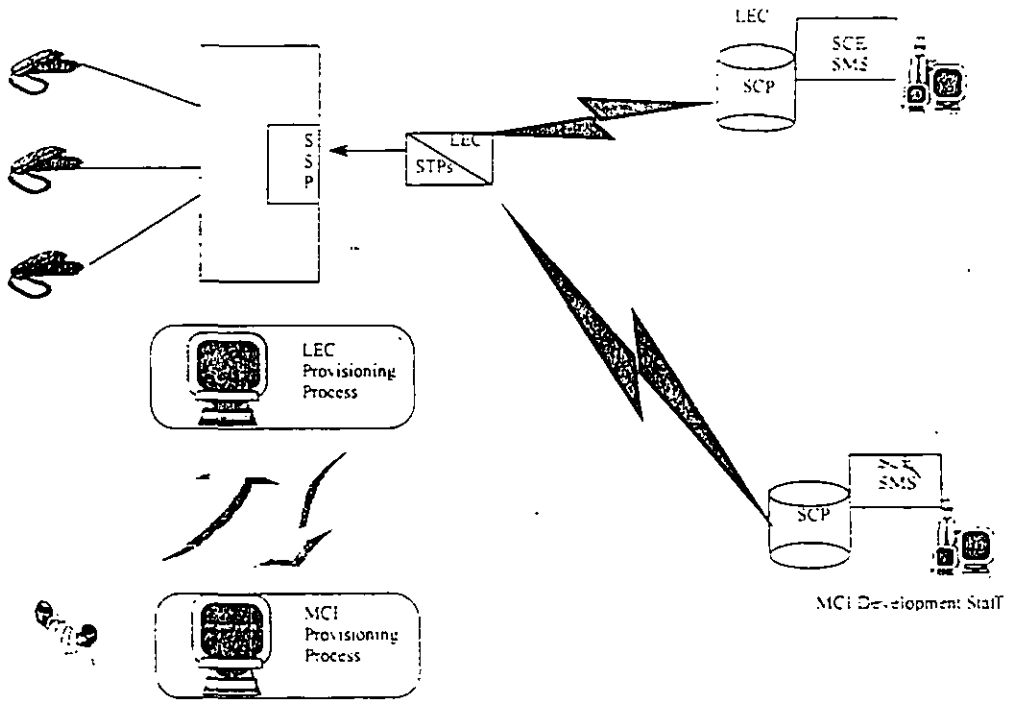

Figure 5

13.5.3 Bell Atlantic shall make SCE hardware, software, testing and technical support (e.g., help desk, system administrator) resources available to MCIm. Scheduling of SCE resources shall allow MCIm at least equal priority to Bell Atlantic.

13.5.4 The Bell Atlantic SCE/SMS shall allow for multi-user access. Source code (i.e., AIN service applications and process flow design developed by an MCIm service designer/creator to provide AIN based services) management and other logical security functions will be provided.

13.5.5 Bell Atlantic shall provide reasonable protection to MCIm service logic and data from unauthorized access, execution or other types of compromise.

13.5.6 Bell Atlantic or a designated vendor shall provide for service creation training, documentation, and technical support of MCIm development staff at Parity with that provided to Bell Atlantic's own development staff. Training sessions shall be "suitcased" to MCIm facilities or delivered at Bell Atlantic facilities at MCIm's cost, at MCIm's discretion, subject to vendor's requirements.

13.5.7 When MCIm selects SCE/SMS AIN access, Bell Atlantic shall provide for a secure, controlled access environment on-site as well as via remote data connections (*i.e.*, ISDN circuit switched data).

13.5.8 When MCIm selects SCE/SMS AIN access, Bell Atlantic shall allow MCIm to transfer data forms and/or tables to the Bell Atlantic SCP via the Bell Atlantic SMS (*e.g.*, service customization and subscriber subscription) in a manner consistent with how Bell Atlantic provides that capability to itself.

13.5.9 When MCIm selects SCE/SMS AIN access for providing services on MCIm's network, the Parties will work cooperatively to resolve technical and provisioning issues.

Section 14. Tandem Switching

14.1 Definition:

14.1.1 Tandem Switching includes trunk-connect facilities, the basic switching function of connecting trunks to trunks, and the functions that are centralized in tandem switches. Tandem Switching creates a temporary transmission path between interoffice trunks that are interconnected at a Bell Atlantic access tandem switch for the purpose of routing a call or calls.

14.2 Technical Requirements

14.2.1 Tandem Switching shall provide:

14.2.1.1 Signaling to establish a tandem connection;

14.2.1.2 Screening and routing at Parity;

14.2.1.3 To the extent Technically Feasible and at Parity, Tandem Switching shall provide recording of billable events;

14.2.1.4 Tandem Switching shall provide AIN triggers supporting AIN features at Parity with its provision of such triggers for Bell Atlantic subscribers;

14.2.1.5 Bell Atlantic's Tandem Switching shall provide access to toll free and Number Portability databases in the same manner as it provides such access to itself and its Bell Atlantic subscribers;

14.2.1.6 Tandem Switching shall provide all trunk interconnections, where available, in Bell Atlantic's access tandems; and

14.2.1.7 Tandem Switching shall accept connections (including the necessary signaling and trunking interconnections) between end offices, IXCs, ITCs, CAPs and CLEC switches that subtend/interconnect at the same tandem.

14.2.2 Tandem Switching shall provide local tandeming functionality between two End Offices that subtend/interconnect at the same tandem, including two offices belonging to different CLECs (*e.g.*, between an MCIm end office and the end office of another CLEC).

14.2.3 Tandem Switching shall preserve CLASS/LASS features and Caller ID as traffic is processed on SS7 trunk groups at Parity. Additional signaling information and requirements are provided in Section 12.

14.2.4 Bell Atlantic shall perform routine testing and fault isolation on the underlying switch that is providing Tandem Switching and all its interconnections at Parity with its performance of such testing for its own subscriber services. When commonly available, the results of the testing shall be made immediately available to MCIm.

14.2.5 Tandem Switching shall control congestion using capabilities such as automatic congestion control and network routing overflow. Congestion control provided or imposed on MCIm traffic shall be at Parity with controls being provided or imposed on Bell Atlantic traffic for itself and its subscribers.

14.2.6 Tandem Switching shall route calls to Bell Atlantic or MCIm endpoints or platforms for which Tandem Switching is provided. For Tandem Switching with unbundled Common Transport, call routing including overflow is accomplished as Bell Atlantic's network normally routes the calls. For Tandem Switching with unbundled Dedicated Transport, specific routing may be requested through the BFR process.

14.2.7 Tandem Switching shall process originating toll-free traffic received from an MCIm local switch.

14.2.8 In support of AIN triggers and features, Tandem Switching shall provide SSP capabilities at Parity with Bell Atlantic's provision of these capabilities for its own subscribers under the same circumstances when these capabilities are not available from Local Switching.

14.2.9 The Local Switching and Tandem Switching functions may be combined in an office. If this is done, both Local Switching and Tandem Switching shall provide all of the functionality required of each of those Network Elements in this Agreement.

14.3 **Interface Requirements**

14.3.1 Tandem Switching shall interconnect, with direct trunks, to all carriers with which Bell Atlantic interconnects.

14.3.1.1 Transit traffic that is originated by an ITC or wireless carrier shall be settled in accordance with the terms of an appropriate IntraLATA Telecommunications Services Settlement Agreement between the Parties substantially in the form appended hereto as Exhibit H. Meet-Point Billing compensation arrangements as described in Section 3 of Attachment VIII shall be utilized for compensation for the joint handling of toll traffic.

14.3.1.2 Bell Atlantic expects that most networks involved in transit traffic will deliver each call to each involved network with CCS and the appropriate TCAP message to facilitate full interoperability of those services supported by Bell Atlantic and billing functions. In all cases, each Party shall follow the Exchange Message Record ("EMR") standard and exchange records between the Parties and with the terminating carrier to facilitate the billing process to the originating network.

14.3.1.3 Transit traffic to and from MCIm shall be routed over the traffic exchange trunks.

14.3.2 Bell Atlantic shall provide signaling necessary to provide Tandem Switching with feature functionality impacts and effects at Parity.

Section 15. Additional Requirements

This Section 15 of Attachment III sets forth the additional requirements for Network Elements which Bell Atlantic agrees to offer to MCIm under this Agreement.

15.1 Cooperative Testing

15.1.1 Definition:

"Cooperative Testing" means that both Bell Atlantic and MCIm shall cooperate with reasonable requests from the other to (i) ensure that the Network Elements and ancillary functions and additional requirements being provided to MCIm by Bell Atlantic are in compliance with the requirements of this Agreement, (ii) test the overall functionality of various Network Elements and ancillary functions provided by Bell Atlantic to MCIm in Combination with each other or in Combination with other equipment and facilities provided by MCIm or third-parties, (iii) test the overall functionality of services provided by third-parties involving or combining Network Elements provided by Bell Atlantic and services provided by MCIm, and (iv) ensure that billing data can be provided to MCIm and Bell Atlantic.

15.1.2 Requirements

Within forty-five (45) days after the Effective Date of this Agreement, MCIm and Bell Atlantic will agree upon a process to resolve technical issues relating to interconnection of MCIm's network to Bell Atlantic's network and Network Elements and ancillary functions. The agreed upon process shall include procedures for escalating disputes and unresolved issues up through higher levels of each Party's management. If MCIm and Bell Atlantic do not reach agreement on such a process within forty-five (45) days, any issues that have not been resolved by the Parties with respect to such process shall be submitted to the procedures set forth in Part A, Section 24 (Dispute Resolution Procedures) of this Agreement unless both Parties agree to extend the time to reach agreement on such issues.

15.1.2.1 Where mutually agreed (*e.g.*, POT bays in the common area associated with physical Collocation), Bell Atlantic shall provide MCIm access for testing MCIm facilities at interfaces between a Bell Atlantic Network Element, or at interfaces between a Bell Atlantic Combination, and MCIm equipment or facilities. This access shall be available seven (7) days per week, twenty-four (24) hours per day.

15.1.2.2 When mutually agreed, Bell Atlantic shall temporarily provision MCIm designated Local Switching features (*e.g.*, customized routing) for testing. MCIm and Bell Atlantic shall mutually agree on the procedures to be established between Bell Atlantic and MCIm to expedite such provisioning processes for feature testing.

15.1.2.3 Upon reasonable request, Bell Atlantic and MCIm shall provide technical staff to meet with each other to provide required support for Cooperative Testing.

15.1.2.4 Dedicated Transport and ULL may experience alarm conditions due to in-progress tests. When an entire Bell Atlantic facility is dedicated to MCIm services, Bell Atlantic shall not remove such facility from service without obtaining MCIm's prior approval.

15.1.2.5 Bell Atlantic shall provide to MCIm electronic access to 105 type responders, 100-type test lines, or 102-type test lines associated with any circuits under test.

15.1.2.6 MCIm and Bell Atlantic shall endeavor to complete Cooperative Testing as stated in Attachment VIII.

15.1.2.7 MCIm may accept or reject the Network Element ordered by MCIm if, upon completion of cooperative acceptance testing, the tested Network Element does not meet the requirements stated in applicable technical references included in Appendix 1 (Technical Reference Schedule) of Part A.

15.2 Protection, Restoration, and Disaster Recovery

15.2.1 Scope

This Section refers specifically to requirements on the use of redundant network equipment and facilities for protection, restoration, and disaster recovery.

15.2.2 Requirements

15.2.2.1 Bell Atlantic shall provide protection, restoration, and disaster recovery capabilities at Parity with those capabilities provided for their own services, facilities and equipment (*e.g.*, equivalent circuit pack protection ratios, facility protection ratios).

15.2.2.2 Bell Atlantic shall provide Network Elements equal priority in protection, restoration, and disaster recovery as provided to their own services, facilities and equipment.

15.2.2.3 Bell Atlantic shall provide Network Elements equal priority in the use of spare equipment and facilities as provided to their own services, facilities and equipment.

15.2.2.4 Bell Atlantic shall restore Network Elements which are specific to MCIm end user subscribers on a priority basis as MCIm may designate at Parity.

15.3 Synchronization

15.3.1 Definition:

"Synchronization" is the function which keeps all digital equipment in a communications network operating at the same average frequency. With respect to digital transmission, information is coded into discrete pulses. When these pulses are transmitted through a digital communications network, all synchronous Network Elements are traceable to a stable and accurate timing source. Network synchronization is accomplished by timing all synchronous Network Elements in the network to a stratum 1 source so that transmission from these network points have the same average line rate.

15.3.2 Technical Requirements

The following requirements are applicable to the case where Bell Atlantic provides synchronization services to equipment that MCIm owns and operates within a Bell Atlantic location. In addition, these requirements apply to synchronous equipment that is owned by Bell Atlantic and is used to provide a Network Element to MCIm. Synchronization services by Bell Atlantic shall be subject to rates and charges to be determined.

15.3.2.1 The synchronization of clocks within digital networks is divided into two parts: intra-building and inter-building. Within a building, a single clock is designated as the building integrated timing supply ("BITS"), which provides all of the DS1 and DS0 synchronization references required by other clocks in such building. This is referred to as intra-building synchronization. The BITS receives synchronization references from remotely located BITS. Synchronization of BITS between buildings is referred to as inter-building synchronization.

15.3.2.2 To implement a network synchronization plan, clocks within digital networks are divided into four stratum levels. All clocks in strata 2, 3, and 4 are synchronized to a stratum 1 clock, that is, they are traceable to a stratum 1 clock. A traceable reference is a reference that can be traced back through some number of clocks to a stratum 1 source. Clocks in different strata are distinguished by their free running accuracy or by their stability during trouble conditions such as the loss of all synchronization references.

15.3.2.2.1 **Intra-Building**

15.3.2.2.1.1 Within a building, there may be different kinds of equipment that require synchronization at the DS1 and DS0 rates. Synchronization at the DS1 rate is accomplished by the frequency synchronizing presence of buffer stores at various DS1 transmission interfaces. Synchronization at the DS0 rate is accomplished by using a composite clock signal that phase synchronizes the clocks. Equipment requiring DS0 synchronization frequently does not have adequate buffer storage to accommodate the phase variations among different equipment. Control of phase variations to an acceptable level is accomplished by externally timing all interconnecting DS0 circuits to a single clock source and by limiting the interconnection of DS0 equipment to less than 1,500 cable feet. Therefore, a BITS shall provide DS1 and composite clock signals when the appropriate composite signal is a 64-kHz 5 8th duty cycle, return to zero with a bipolar violation every eighth pulse ("B8RZ").

15.3.2.2.2 **Inter-Building**

15.3.2.2.2.1 Bell Atlantic shall provide inter-building synchronization at the DS1 rate, and the BITS shall accept the primary and secondary synchronization links from BITS in other buildings. From hierarchical considerations, the BITS shall be the highest stratum clock within the building and Bell Atlantic shall provide operations capabilities (this includes, but is not limited to: synchronization reference provisioning; synchronization reference status inquiries; timing mode status inquiries; and alarm conditions).

15.3.3 **Synchronization Distribution Requirements**

15.3.3.1 Central Office BITS shall contain redundant clocks meeting or exceeding the requirements for a stratum 3 enhanced clock as specified in ANSI T1.101-1994 and Bellcore *GR-1244 Clocks for the Synchronized Network: Common Genetic Criteria.*

15.3.3.2 Central Office BITS shall be powered by primary and backup power sources.

15.3.3.3 If both reference inputs to the BITS are interrupted or in a degraded mode (meaning off frequency greater than twice the minimum accuracy of the BITS, loss of frame, excessive bit errors, or in alarm indication signal), then the stratum clock in the BITS shall provide the necessary bridge in timing to allow the network to operate without a frame repetition or deletion (slip free) with better performance than 1 frame repetition or deletion (slip) per week.

15.3.3.4 DS1s multiplexed into a SONET synchronous payload envelope within an STS-n (where n is defined in ANSI T1.105-1995) signal shall not be used as reference facilities for network synchronization.

15.3.3.5 The total number of Network Elements cascaded from the stratum 1 source shall be minimized.

15.3.3.6 A Network Element shall receive the synchronization reference signal only from another Network Element that contains a clock of equivalent or superior quality (stratum level).

15.3.3.7 Bell Atlantic shall select for synchronization those facilities shown to have the greatest degree of availability (absence of outages).

15.3.3.8 Where possible, all primary and secondary synchronization facilities shall be physically diverse (this means the maximum feasible physical separation of synchronization equipment and cabling).

15.3.3.9 No timing loops shall be formed in any combination of primary and secondary facilities.

15.3.3.10 An operations support system ("OSS") shall continuously monitor the BITS for synchronization related failures or degradation.

15.3.3.11 An OSS shall continuously monitor all equipment transporting synchronization facilities for synchronization related failures or degradation.

15.3.3.12 For non-SONET equipment, Bell Atlantic shall provide synchronization facilities which, at a minimum, comply with the standards set forth in ANSI T1.101-1994.

15.3.3.13 All equipment approved for deployment in Bell Atlantic's network shall meet Bellcore GR-253 and GR-1244 requirements.

Section 16. Basic 911 and E911

See Attachment VIII, Section 6.1.1.

Section 17. Directory Assistance Data

See Attachment VIII, Section 6.1.6. and Section 6.2.

EXHIBIT A

Bell Atlantic

EXHIBIT A

TR 72565
Issue 2, December 1996

Bell Atlantic Technical Reference

Basic Unbundled Loop Services Technical Specifications

Notice

This Technical Reference is published by Bell Atlantic to provide a technical description of Basic Unbundled Loop Services. To the extent feasible, the description references or duplicates existing published technical references utilized by the industry.

Bell Atlantic reserves the right to revise this technical reference for any reason including, but not limited to, changes in tariffs, laws, or regulations, conformity with updates and changes in standards promulgated by various agencies, utilization of advances in the state of technical arts, or the reflection of changes in the design of any facilities, equipment, techniques, or procedures described or referred to herein. Liability for difficulties arising from technical limitations or changes herein is disclaimed.

Bell Atlantic reserves the right not to offer any or all of these services and to withdraw any or all of them at any future time. In addition, the services described herein are based on available facilities and equipment and may not be universally available.

With respect to services offered pursuant to tariff, however, the terms and conditions of the service offering are determined by the tariff itself and applicable laws and regulations. This reference is intended to be supplemental to the tariffs. In the event of a conflict between the tariffs, laws or regulations and this reference, the tariffs, laws, and regulations shall govern.

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EXHIBIT A

Bell Atlantic Network Services, Inc.
Technical Reference

TR 72565
Issue 2, December 1996

Bell Atlantic
Basic Unbundled Loop Services
Technical Specifications

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1. General

1.01 This document provides the technical specifications for the Basic Unbundled Loop Services (BULS) offered by Bell Atlantic in the co-carrier section of local exchange tariffs.

1.02 This technical reference has been reissued to provide a revised leakage specification and to provide interface code information. In addition, several editorial changes have been made.

1.03 BULS enable Other Telephone Companies (OTC) collocated in a Bell Atlantic (BA) Central Office (CO) to connect to analog subscriber loops to provide loop-start switched access services to end-user locations.

1.04 The technical specifications in this document assume that the OTC is collocated in the same CO as the BULS loop. In the future, Bell Atlantic may offer transport services for analog unbundled loops, however such transport will not be available for BULS. In instances where an OTC desires transport for a loop-start analog unbundled loop, the OTC must order Analog Unbundled Loop Service with Customer Specified Signaling (AULSCSS) and specify loop-start signaling. The technical specifications for AULSCSS may be found in BA TR72570.

2. Service Description

A. General

2.01 The description, terms and conditions, rates, regulations, and Universal Service Order Codes (USOCs) for Basic Unbundled Loop Services are contained in applicable tariffs or contracts.

2.02 Basic Unbundled Loop Services (BULS) provide the customer with a voice grade transmission channel suitable for loop-start signaling and the transport of analog voice grade signals. The channel is between the Central Office Distributing Frame (CODF) termination of OTC equipment in a BA Central Office (CO) and the Rate Demarcation Point (RDP) at an end-user customer location.

2.03 BULS is provided subject to availability on a first-come first-served basis. Special construction charges apply when appropriate facilities are not available.

B. Physical Characteristics

2.04 The interface at the CODF termination is 2-wire and the interface at the RDP is 2-wire. At each interface one conductor is called tip and the other conductor is called ring. A typical BULS configuration is shown in Figure 2-1.

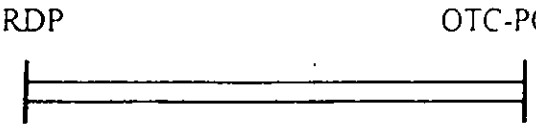

Figure 2-1: Typical BULS configuration

2.05 The transmission channel between the BULS 2-wire interfaces is effective 2-wire. An effective 2-wire channel may be entirely 2-wire or it may contain a 4-wire facility portion (such as a Digital Loop Carrier) with a 2-wire metallic extension to the end-users RDP. The transmission channel is suitable for the transport of analog voice grade signals between approximately 300 and 3000 Hz.

2.06 BULS may be provided using a variety of loop transmission technologies, including but not limited to, metallic cable, metallic cable based digital loop carrier, and fiber optic digital loop carrier systems.

2.07 When digital loop carrier (DLC) is used to provide BULS, the DLC will provide loop-start signaling at the RDP that meets the network requirements in ANSI T1.401-1993 [1].

C. Service Elements

2.08 BULS ordinarily consists of two elements:

(1) the CODF wire and tie cable(s) between the CODF termination of the collocated OTC equipment and the CODF termination of a subscriber loop; and,

(2) a subscriber loop facility between the CODF and the end-user customer's RDP. The loop is either:

(a) a metallic facility consisting of cable and wire between the CODF and the RDP; or,

(b) a universal DLC channel with loop start (LS) signaling capability. The DLC channel consists of:

- CO cabling between the CODF and a DLC Central Office Terminal (COT) equipped with a LS open-end channel unit;

- a fiber or metallic facility from the DLC COT to the DLC Remote Terminal (RT) equipped with a LS closed-end channel unit; and,

- cable and wire between the DLC RT and the RDP.

D. Compatibility Considerations

2.09 BULS utilizes subscriber loop facilities that have been designed for Plain Ordinary (analog) Telephone Service (POTS). In most cases, BULS should be suitable for loop-start single line residential service and loop-start single line business service. POTS qualified loops may not be suitable for data or other special services however.

2.10 Bell Atlantic does not guarantee that BULS will be suitable for analog data (e.g., V.32, V.32bis, V.34, etc.). If a customer is able to send and receive data, Bell Atlantic will not guarantee a data rate.

2.11 Special services such as Centrex, Foreign Exchange, Secretarial, and Wide Area Telephone Service lines may have service requirements that are more stringent than POTS. If such services are provided using BULS and electronic transmission and signaling enhancement equipment is required to meet the more stringent requirements, the OTC will be responsible for providing such enhancement equipment.

2.12 Bell Atlantic will work with the OTC to resolve facility problems should the BULS loop facility require enhancement equipment to support loop-start POTS voice service.

3. Element Specifications

A. General

3.01 Two elements are always used with Basic Unbundled Loop Services. They are: CODF wire and tie cable(s), and subscriber loop facilities. A third element, electronic transmission and signaling enhancement equipment, is sometimes used with BULS. The following sections contain the specifications for each of these elements.

B. CODF Wiring and Tie Cable(s)

3.02 CODF cross-connect wiring and tie cable(s) are used to link the CODF termination of co-located OTC equipment to the CODF termination of metallic subscriber loops, DLC COTs, and electronic transmission and signaling enhancement equipment.

3.03 The total combined length of all CODF cross-connect wiring and all CODF-to-CODF tie cables between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 1500 feet.

3.04 The direct-current resistance between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 80 ohms. This is equal to 1500 or less feet of 24 gauge cable.

3.05 The 1kHz loss measured on the CODF wiring and tie cables when measured between 900 ohm impedances should be .5 dB or less.

3.06 The C-message noise measured on the CODF wiring and tie cables shall be 20 dBrnC or less.

C. Subscriber Loop Facilities

3.07 Subscriber loop facilities consist of feeder and distribution plant between the CODF and the end-user customer's RDP. Feeder plant uses a variety of transmission technologies, including but not limited to, twisted-pair metallic cables, twisted-pair metallic cable based digital loop carrier, and fiber optic based digital loop carrier. Distribution plant usually consists of multipair metallic cables. Additional information about subscriber loops may be found in Bellcore SR-TSV-002275 [2] and appendix A of this document.

3.08 A twisted-pair metallic loop facility consists entirely of metallic cable and wire between the CODF and the end-user customer's RDP. Most metallic loops consist of multipair cables, laid out on aerial, underground, or buried routes to suit the needs of a particular community. The metallic loop facility may be loaded or non-loaded. It may also have bridged-tap. Loaded bridged-tap and bridged tap between load coils are not permitted.

3.09 A universal DLC facility consists of CO cabling between the CODF and a DLC COT, OSP fiber or metallic cable facilities from the DLC COT to the DLC RT, and cable and wire between the DLC RT and the end-user customer's RDP. Some DLC may not support enhanced services such as distinctive ringing, forward disconnect, caller ID, etc.

3.10 Subscriber loop facilities have been designed on a global basis primarily to accommodate POTS and guarantee that loop transmission loss is statistically distributed and that no single loop exceeds the signaling range of the CO.

3.11 Prior to 1980, loops were designed using one of the following design plans: Resistance Design (RD), Long Route Design (LRD), or Unigauge Design (UD). From 1980 to 1986, the Modified Resistance Design (MRD), Modified Long Route Design (MLRD), and Concentrated Range Extension with Gain (CREG) plans were applied on a going-forward basis (i.e., retroactive redesign was not implemented). In 1986, the Revised Resistance Design (RRD) plan was applied on a going-forward basis. Appendix A provides a summary of the various loop design plans.

3.12 Most metallic loop facilities (98%) were designed using the RD, MRD, or RRD design rules. The RRD design rules currently in use limit the loop resistance to the design range of the CO switch (1300 or 1500 ohms) or 1500 ohms whichever is less. The 1 kHz loss of RRD loops is 8.5 dB or less.

3.13 A small number of loops have been designed using the LRD, MLRD, UD, and CREG design plans. These loops are long (15+kft) and have high resistance (up to 2800 or 3600 ohms) and high loss (up to 13 dB without gain). Such loops require electronic transmission and signaling range enhancement equipment to accommodate POTS. The LRD and MLRD design plans use Range

Extension with Gain (REG) equipment that is either dedicated to each loop or hard-wired to the BA CO line equipment. In the latter case, the hard-wired REG is not available for use with BULS.

3.14 The REG equipment used with CREG designed loops is implemented behind a stage of switching concentration in the associated CO switch. This permits REG equipment to be shared with other loops working out of the same CO switch. For this reason, the REG associated with CREG designed loops is not available for use with BULS. Bell Atlantic will work with the OTC to explore available options when an LRD, MLRD, or CREG designed loop requires enhancement to support BULS.

3.15 The direct-current resistance of a metallic loop facility measured between the CODF and the RDP shall be 1520 ohms or less if the facility was designed using RD, MRD, or RRD rules. The resistance will be 2500 ohms or less if the facility was designed using UD rules, 2800 ohms or less if the facility was designed using CREG or MLRD rules, and 3600 ohms or less if the facility was designed using LRD rules.

3.16 The 1kHz loss of a metallic loop facility when measured with a 900 ohm impedance at the CODF and a 600 ohm impedance at the RDP shall be 8.5 dB or less if the loop was designed using RD, MRD, or RRD rules. The loss will be 10 dB or less if the loop was designed using LRD or MLRD rules, and 13 dB or less if the loop was designed using UD or CREG rules.

3.17 The C-message noise measured on a metallic subscriber loop at the RDP shall be less than 30 dBrnC.

3.18 The leakage resistance between the tip conductor and ground and the ring conductor and ground shall each be greater than 100 K ohms.

3.19 The longitudinal noise or power influence (PI) measured per IEEE Std 743-1984 [3] on the metallic portion of a loop should be less than 90 dBrnC.

3.20 The longitudinal balance of a metallic subscriber loop is defined as the longitudinal noise (in dBrnC) minus the C-message noise (in dBrnC). The longitudinal balance shall be >50 dB.

3.21 DLC facilities shall provide a battery feed to the RDP. When the RDP is terminated by a direct-current resistance of 430 ohms or less, the loop current shall be 20 mA or greater.

3.22 The 1kHz loss of a DLC facility when measured with a 900 ohm impedance at the CODF and a 600 ohm impedance at the RDP shall be 8 dB or less.

3.23 The C-message noise measured on a DLC facility shall be 23 dBrnC or less.

3.24 The C-Notched noise measured on a DLC facility shall be 36 dBrnC or less with a -13 dBm0 1004 Hz holding tone.

3.25 The impulse noise measured on a DLC facility shall be no more than 15 counts in 15 minutes with a threshold of 59 dBrnC.

3.26 Subscriber loop facilities shall meet all applicable design specifications. (See appendix A)

3.27 The echo return loss and singing return loss of a subscriber loop facility measured with a 900 ohm + 2.16 uf reference at the CODF and a 600 ohm + 2.16 uf termination at the RDP shall be equal to or greater than 5.5 dB and 2.5 dB respectively.

D. Transmission and Signaling (T&S) Enhancement Equipment

3.28 Transmission and signaling (T&S) enhancement equipment is sometimes used with BULS. Several different types of T&S equipment can be used. Examples are: transmission repeaters: loop signaling repeaters; and signaling battery boost equipment.

3.29 T&S equipment is often used with BULS loops designed to LRD, MLRD, UD, and CREG rules. Such devices are often called Range Extenders with Gain (REGs).

3.30 The impedance of T&S equipment shall be a nominal 900 ohms when used in the CO and a nominal 600 ohms when used at or near the RDP.

3.31 T&S equipment shall provide 20 mA or more of loop current when the RDP is terminated by a direct-current resistance of 430 ohms or less.

3.32 The C-message noise measured on T&S equipment shall be 20 dBrnC or less.

3.33 The C-Notched noise measured on T&S equipment shall be 36 dBrnC or less with a -13 dBm0 1004 Hz holding tone.

4. Service Specifications

4.01 The overall end-to-end BULS service is from the CODF termination of the OTC equipment to the end-user customer's RDP. The compatible BULS Network Channel Interface (NCI) code combination is shown in Figure 4-1.

Figure 4-1: Compatible BULS NCI Code Combinations

EU-POT	OTC-POT
02LS2	02QC3.OOD

4.02 Parameters are tested at the RDP in response to trouble reports or when additional testing is purchased.

4.03 Acceptance Limits (AL) and Immediate Action Limits (IAL) are shown in Figure 4-2 for loops designed to RD, MRD, and RRD rules. The resistance and loss parameters of loops designed to LRD, MLRD, UD, and CREG rules are in Appendix A.

Figure 4-2: BULS Acceptance Limits (AL) and Immediate Action Limits (IAL)

PARAMETER	AL	IAL
1004 Hz Loss	< 8.5 dB	> 10.0 dB
Resistance	< 1520 ohms	> 1520 ohms
Leakage	> 100 kilohms	< 100 kilohms
C-Message Noise	< 30 dBrnC	> 30 dBrnC
Power Influence	< 90 dB	> 90 dB
Loop Current (DLC only)	> 20 mA	< 20 mA

5. OTC Equipment and CO Cabling Requirements

A. OTC Equipment Requirements

5.01 Co-located OTC equipment used for interconnection with BULS shall meet all of the applicable generic equipment requirements in Bellcore GR-63-CORE [4] and Bellcore GR-1089-CORE [5].

5.02 Co-located OTC equipment used for interconnection with BULS shall be manufactured in accordance with FCC, NEC, UL, and USDL requirements and orders applicable to Federal, State, and local requirements including, but not limited to, statutes, rules, regulations, orders, or ordinances, or otherwise imposed by law. Requirements that are not specified in this document, contractual technical requirements, or other applicable documents, shall meet the manufacturer's requirements consistent with industry standards.

5.03 The open circuit tip-to-ring dc voltage that collocated OTC equipment applies to BA VF cabling shall be less than 80 Vdc.

5.04 Co-located OTC equipment shall not deliver more than 2.5 watts of power to any load via BA VF cable.

5.05 Co-located OTC equipment shall not deliver more than 150 mA of loop current to any load via BA VF cable.

5.06 The noise limits for BULS require collocated OTC equipment to have a longitudinal balance of >60 dB.

5.07 The loss and noise limits for BULS require collocated OTC equipment to have a nominal impedance of 900 ohms.

5.08 The applied power level of any transmitted signal on BULS averaged over 3 seconds shall not exceed -13 dBm0.

5.09 Loops may be exposed to electrical surges from lightning and commercial power system disturbances. Despite protective devices on the CODF, some of these disturbances are likely to reach OTC equipment. OTC equipment shall be designed to withstand certain surges without being damaged, and shall fail in a safe manner under infrequent high stress.

5.10 The prevalent voltage-limiting device available for CO use is the 3-mil carbon block. This device has an upper 3c limiting voltage of 1000 volts peak under surge conditions and 600 volts rms (800 peak) at 60 Hz. OTC equipment connected to BULS loops protected by carbon blocks may be subjected to voltages up to these levels. Unexposed COs may not have primary protection, and OTC equipment not coordinating with carbon blocks may need protection in these locations.

5.11 If the subscriber loop facility is exposed to commercial ac power, the CO protector may also include 350 mA heat coils for limiting the current that is permitted to flow to CO equipment. In addition, a protective fuse cable located outside the CO incorporating 24 or 26 AWG conductors to coordinate with the protector, serves to limit current to safe levels in the event of prolonged operation of the protector during power fault conditions.

B. OTC Equipment CO Cabling Requirements

5.12 The voice grade CO cabling used to terminate OTC equipment on the CODF shall use twisted-pair conductors.

5.13 The type, gauge, and length of the OTC CODF cabling shall be specified based on this specification and OTC equipment requirements. If the specifications in this document differ from the OTC equipment manufacturers specifications, then the more stringent of the two shall be used.

5.14 The direct-current resistance of the CO cabling between the OTC equipment and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [6] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

5.15 All CO cabling between OTC equipment and the CODF shall be equipped with connectors at each end. The type of connectors shall be specified by the BA CO Engineer.

5.16 The 1kHz loss of the CO cabling between the OTC equipment and the CODF, when measured between 900 ohm impedances, shall be less than .15 dB.

5.17 The C-message noise measured on the CO cabling between the OTC equipment and the CODF shall be 20 dBrnC or less.

6. References

A. Definitions

Basic Unbundled Loop Services (BULS)
A basic unbundled loop service is a service that provides a basic untreated or unconditioned loop-start channel between the Bell Atlantic central office distributing frame termination of collocated equipment belonging to an OTC and the rate demarcation point at a customer location.

Battery Boost
A series aiding battery source that extends the signaling range of current sensing equipment.

Bridged tap
Any branch section of a cable pair, or any extension of a cable pair beyond the point where it is used, in which no direct current flows when customer equipment is connected and used.

Central Office (CO)
A telephone company building which houses equipment and facilities used to provide switched access services.

Central Office Distributing Frame (CODF)
Framework located in a CO that holds wire cross-connects which are used to interconnect cable terminations for end-user customer loops, switching system ports, and inter-office facilities.

C-Message Noise
The frequency-weighted, short-term average noise within an idle channel. The frequency weighting, called C-message, is used to account for the variations in 500-type telephone set transducer efficiency and end-user annoyance to tones as a function of frequency.

C-Notched Noise
The C-message frequency-weighted noise on a channel with a holding tone that is removed at the measuring end through a notch (very narrow band) filter.

Channel
An electrical, or photonic communications path between two or more points of transmission.

Closed End
The end of a switched access service that receives ringing and dial tone and transmits address signals.

dBm
A unit for expression of power level in decibels relative to one milliwatt.

dBm0
Power level referred to, or measured at, a zero transmission level point (0TLP).

dBrn
A unit used to express noise power relative to one picowatt (-90 dBm).

dBrnC
Noise power measured with C-message weighting expressed in dBrn.

dBrnC0
Noise power in dBrnC referred to, or measured at, a zero transmission level point (0TLP).

Decibel (dB)
The logarithmic unit of signal power ratio most commonly used in telephony. It is used to express the relationship between two signal powers, usually between two acoustic, electric, or optical signals; it is equal to ten times the common logarithm of the ratio of the two signal powers.

Facilities
Any cable, poles, conduit, microwave, or carrier equipment, central office distributing frames, central office switching equipment, computers (both hardware and software), business machines, etc., utilized to provide the services offered by a telephone company.

Impulse Noise
Any momentary occurrence of noise on a channel that significantly exceeds the normal noise peaks. Impulse noise is analyzed by counting the number of occurrences that exceed a threshold.

Leakage
The resistance between the conductors of an insulated metallic pair or the resistance between each conductor of an insulated metallic pair and ground.

Loop
A transmission channel between a end-user customer location and a BA CO that is used as a transmission channel for telephone company services.

Loop-start (LS) Signaling
A type of switched access line signaling in which the network provides a battery source. To initiate a call, customer premises equipment will provide a loop closure that causes dc loop current to flow which the network will detect.

Open End
The end of a switched access service that transmits ringing and dial tone and receives address signaling.

Other Telephone Company (OTC)
An organization that provides telecommunications services to the public.

Plain Ordinary Telephone Service (POTS)
The basic single line switched access service offered by local exchange carriers to residential and business customers. POTS uses loop-start signaling.

Power Influence (PI)
The power of a longitudinal signal induced in a metallic loop by an electromagnetic field emanating from a conductor or conductors of a power system. PI is also called longitudinal noise or noise-to-ground.

Rate Demarcation Point (RDP)
The point at which Bell Atlantic network access recurring charges and responsibility stop and beyond which customer responsibility begins. The RDP is the point of demarcation and/or interconnection between a Bell Atlantic subscriber loop facility and end-user premises cabling or terminal equipment. Bell Atlantic facilities at, or constituting, the rate demarcation point shall consist of wire or a jack conforming to Subpart F of Part 68 of FCC rules.

Signaling Repeater
Loop enhancement equipment that detects and regenerates signaling states.

Transmission Repeater
Loop enhancement equipment that amplifies and equalizes voice frequency signals.

Unbundled Business Loop Service
The product name for a basic unbundled loop service offered in BA-MD.

Unbundled Loop
A transmission channel between a end-user customer location and a LEC CO that is not a part of, or connected to, other LEC services.

Voice Grade (VG)
A term used to describe a channel, circuit, facility, or service that is suitable for the transmission of speech, digital or analog data, or facsimile, generally with a frequency range of about 300 to 3000 Hz.

B. Acronyms

ANSI	American National Standards Institute
BA	Bell Atlantic
BULS	Basic Unbundled Loop Service
CO	Central Office
CODF	Central Office Distributing Frame
COT	Central Office Terminal
CREG	Concentrated Range Extension with Gain
DLC	Digital Loop Carrier
EU	End User

EU-POT	End User Point Of Termination
FCC	Federal Communications Commission
IEEE	International Electrical and Electronic Engineers
LRD	Long Route Design
LS	Loop-Start
MLRD	Modified Long Route Design
MRD	Modified Resistance Design
NEC	National Electric Code
OTC	Other Telephone Company
OTC-POT	Other Telephone Company Point Of Termination
PI	Power Influence
POTS	Plain Ordinary Telephone Service
RD	Resistance Design
RDP	Rate Demarcation Point
REG	Range Extender with Gain
RRD	Revised Resistance Design
RT	Remote Terminal
T&S	Transmission and Signaling
UD	Unigauge Design
UL	Underwriter's Laboratory
USDL	United States Department of Labor
VF	Voice Frequency
VG	Voice Grade

7. Bibliography

1- ANSI T1.401-1993, American National Standard for Telecommunications - Interface Between Carriers and Customer Installations - Analog Voicegrade Switched Access Lines Using Loop-Start and Ground-Start Signaling.

2- Special Report SR-TSV-002275, Issue 2, BOC Notes on the LEC Networks - 1990. Bellcore: 1991.

3- IEEE Std 743-1984, IEEE Standard Methods and Equipment for Measuring the Transmission Characteristics of Analog Voice frequency Circuits.

4- Generic Requirements GR-63-CORE, Network Equipment-Building System (NEBS) Requirements: Physical Protection, Issue 2, (Bellcore, October 1995).

5- Generic Requirements GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment, Issue 2 (Bellcore, November 1994).

6- Technical Reference FR-NWT-000064, LATA Switching Systems Generic Requirements (LSSGR), (Bellcore, 1994).

NOTE: These documents are subject to change; references reflect the most current information available at the time of printing. Readers are advised to check the status and availability of all documents.

Appendix A: Loop Design Rules

1- Resistance Design (RD): (96% of loops designed prior to 1980)
- 0 - 1300 ohms, 8.5 dB max
- Max BT on NL cable = 6 kft
- POTS = No loading to 18 kft, H88 loading beyond 18 kft
- CENTREX = No loading to 11 kft, H88 loading beyond 11 kft
- Max end section plus BT = 15 kft
- No loaded BT, No BT between load coils.

2- Long Route Design (LRD): (3% of loops designed prior to 1980)
- 1301 - 3600 ohms, 10 dB max
- Applicable > 18 kft, full H88 loading
- Gain required for loops over 1600 ohms
- Max end section plus BT = 12 kft
- No loaded BT, No BT between load coils.

3- Unigauge Design (UD): (1% of loops designed prior to 1980)
- 0 - 2500 ohms, 13 dB max
- No loading to 24 kft, partial H88 loading beyond 24 kft
- Gain applied to loops > 15 kft
- Max BT on NL cable = 6 kft
- End section plus BT = 12 kft
- No loaded BT, No BT between load coils.

4- Modified Resistance Design (MRD): (1980 - 1986)
- 0 - 1500 ohms, 8.5 dB max
- Max BT on NL cable = 6 kft
- Total NL cable plus BT = 15 kft
- POTS = No loading to 15 kft, full H88 loading beyond 15 kft
- CENTREX = No loading to 11 kft, H88 loading beyond 11 kft
- Loaded cable end section plus BT = 3 to 12 kft
- No loaded BT, No BT between load coils.

5- Modified Long Route Design (MLRD): (1980 - 1986)
- 1501 - 2000 ohms = Res Zone 18
- 2001 - 2800 ohms = Res Zone 28
- RZ 18 = Range Extension plus 3 dB of gain, 10 dB max
- RZ 28 = Range Extension plus 6 dB of gain, 10 dB max
- Full H88 loading
- End section plus BT = 3 to 12 kft
- No loaded BT, No BT between load coils.

6- Concentrated Range Extension with Gain (CREG): (1980 - 1986, 1A & 2A ESS Only)
- 0 - 2800 ohms, 13 dB max
- No loading to 15 kft, full H88 loading beyond 15 kft
- Range extension with gain (REG) required for all loops over 1500 ohms
- REG provided behind a stage of switching concentration
- Total NL cable plus BT = 15 kft max
- Max NL cable BT = 6 kft
- Loaded end section plus BT = 3 to 12 kft
- No loaded BT, No BT between load coils.

7- Revised Resistance Design, (after 1986)
- 0 - 18 kft = 1300 ohms max
- 18 - 24 kft = 1500 ohms max (CO permitting)
- No loading to 18 kft, full H88 loading between 18 - 24 kft
- Max NL cable plus BT = 18 kft
- Max BT on NL cable = 6 kft
- Loaded cable end section plus BT = 3 to 12 kft
- No loaded BT, No BT between load coils.

EXHIBIT B

EXHIBIT B

72570
Issue 1, December 1996

Bell Atlantic Technical Reference

Analog Unbundled Loop Service with Customer Specified Signaling Technical Specifications

Bell Atlantic Network Services, Inc.
Technical Reference

TR-72570
Issue 1, December 1996

Notice

This Technical Reference is published by Bell Atlantic to provide a technical description of Analog Unbundled Loop Service with Customer Specified Signaling. To the extent feasible, the description references or duplicates existing published technical references utilized by the industry.

Bell Atlantic reserves the right to revise this technical reference for any reason including, but not limited to, changes in tariffs, laws, or regulations, conformity with updates and changes in standards promulgated by various agencies, utilization of advances in the state of technical arts, or the reflection of changes in the design of any facilities, equipment, techniques, or procedures described or referred to herein. Liability for difficulties arising from technical limitations or changes herein is disclaimed.

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EXHIBIT B

Bell Atlantic Network Services, Inc. TR-72570
Technical Reference Issue 1, December 1996

Bell Atlantic
Analog Unbundled Loop Service with Customer Specified Signaling
Technical Specifications

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Figures and Tables **Page**

1. General

1.01 This technical reference provides the technical specifications associated with the Analog Unbundled Loop Service with Customer Specified Signaling that is offered by Bell Atlantic. The service may not be universally available.

1.02 Whenever this technical reference is reissued, the reason(s) for reissue will be provided in this paragraph.

1.03 Analog Unbundled Loop Services with Customer Specified Signaling (AULSCSS) enable Other Telephone Companies (OTC) collocated in a Bell Atlantic Central Office (CO) to connect to analog subscriber loops to provide switched access services to end-user locations. AULSCSS provides a 2-wire or 4-wire channel that is suitable for the transport of analog services that use various types of signaling.

1.04 The technical specifications in this document assume that the OTC is collocated in the same CO as the AULSCSS service. In the future, Bell Atlantic may offer transport services for AULSCSS. In that case, the technical specifications associated with the transport service should be consulted.

2. Service Description

A. General

2.01 The description, terms, conditions, rates, regulations, and Universal Service Order Codes (USOCs) for AULSCSS are contained in applicable tariffs or contracts.

2.02 AULSCSS provides the customer with a voice grade transmission channel between the Central Office Distributing Frame (CODF) termination of OTC equipment in a Bell Atlantic CO and the Rate Demarcation Point (RDP) at an end-user customer location.

2.03 AULSCSS channels are suitable for the transport of analog voice grade signals between 300 and 3000 Hz.

2.04 A 2-Wire AULSCSS channel will support either loop-start, ground-start, loop reverse-battery, or customer-provided inband signaling. A 4-wire AULSCSS channel will support either loop-start, ground-start, loop reverse-battery, customer-provided inband, or duplex signaling.

2.05 AULSCSS is provided subject to availability on a first-come first-served basis. Special construction charges apply when appropriate facilities are not available.

B. Physical Characteristics

2.06 AULSCSS channels can be effective 2-wire or 4-wire. When the OTC or RDP interface is 2-wire, one conductor is called tip and the other conductor is called ring. When the OTC or RDP interface is 4-wire the conductors of the OTC or End-User transmit pair are called tip and ring and the conductors of the OTC or End-User receive pair are called tip 1 and ring 1.

2.07 An effective 2-wire AULSCSS channel has 2-wire interfaces at both the OTC POT and the RDP. In addition, an effective 2-wire AULSCSS channel consists entirely of 2-wire facilities or a combination of 2-wire and 4-wire facilities. A typical 2-wire AULSCSS configuration is shown in Figure 2-1.

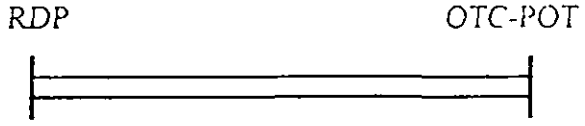

Figure 2-1: Typical 2-Wire AULSCSS configuration

2.08 A 4-wire AULSCSS channel has 4-wire interfaces at both the OTC POT and the RDP. In addition, the 4-wire AULSCSS channel consists entirely of 4-wire facilities with no 2-wire segments. A typical 4-wire AULSCSS configuration is shown in Figure 2-2.

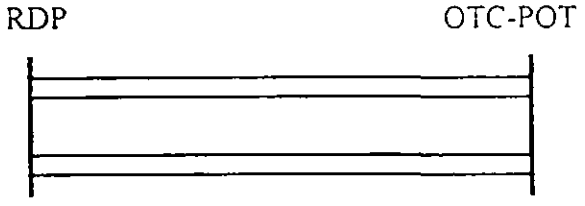

Figure 2-2: Typical 4-Wire AULSCSS configuration

2.09 AULSCSS channels may be provided using a variety of subscriber loop transmission technologies, including but not limited to, metallic cable, metallic cable based digital loop carrier, and fiber optic digital loop carrier systems.

C. Service Elements

2.10 AULSCSS ordinarily consists of two elements:

(1) the CODF wire and tie cable(s).

(2) a subscriber loop facility between the CODF and the end-user customer's RDP. The loop facility is either:

(a) a metallic facility consisting of cable and wire between the CODF and the RDP; or,

(b) a DLC facility channel with loop start (LS), ground start (GS), loop reverse battery (RV), or duplex (DX) signaling capability, or transmission-only(TO) capability for customer inband signaling applications, that consists of,

- CO cabling between the CODF and a DLC COT that is equipped with an LS, GS, RV, DX, or TO channel unit,

- a fiber or metallic facility from the DLC COT to the DLC RT that is equipped with an LS, GS, RV, DX, or TO channel unit, and,

- cable and wire between the DLC RT and the RDP.

D. Compatibility Considerations

2.11 Electronic transmission and signaling (T&S) enhancement equipment is not ordinarily used with AULSCSS. Examples of T&S are:

(a) a transmission repeater, or

(b) a transmission repeater with a signaling repeater, or

(c) a transmission repeater with signaling battery boost equipment.

2.12 If the OTC needs T&S equipment with AULSCSS to accommodate an OTC service, the OTC will be responsible for providing any such T&S equipment.

3. Service Element Design Criteria

A. General

3.01 Two elements are always used with AULSCSS. They are: CODF wire and tie cable(s), and subscriber loop facilities. The sections which follow contain the specifications for each of these elements.

B. CODF Wiring and Tie Cable(s)

3.02 CODF cross-connect wiring and tie cable(s) are used to link the CODF termination of OTC equipment to the CODF termination of metallic subscriber loops, DLC COTs, and electronic transmission and signaling enhancement equipment.

3.03 The total combined length of all CODF cross-connect wiring and all CODF-to-CODF tie cables between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 1500 feet.

3.04 The direct-current resistance between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 125 ohms. This is equal to 1500 or less feet of 26 gauge cable.

3.05 The 1kHz loss between the CODF termination of the OTC equipment and the CODF termination of a subscriber loop in the same CO, when measured between 900 ohm impedances, should be less than .85 dB.

3.06 The C-message noise measured on the wiring and tie cables between the CODF termination of the OTC equipment and the CODF termination of a subscriber loop in the same CO shall be 20 dBrnC or less.

C. Subscriber Loop Facilities

3.07 Subscriber loop facilities consist of feeder and distribution plant between the CODF and the end-user customer's RDP. Feeder plant uses a variety of transmission technologies, including but not limited to, twisted-pair metallic cables, twisted-pair metallic cable based digital loop carrier, and fiber optic based digital loop carrier. Distribution plant usually consists of multipair metallic cables. Additional information about subscriber loops may be found in Bellcore SR-TSV-002275 [1].

3.08 A twisted-pair metallic loop facility consists entirely of metallic cable and wire between the CODF and the end-user customer's RDP. Most metallic loops consist of multipair cables, laid out on aerial, underground, or buried routes to suit the needs of a particular community. The metallic loop facility may be loaded or non-loaded. It may also have bridged-tap. Loaded bridged-tap and bridged tap between load coils are not permitted.

3.10 A universal DLC facility consists of CO cabling between the CODF and a DLC COT, OSP fiber or metallic cable facilities from the DLC COT to the DLC RT, and cable and wire between the DLC RT and the end-user customer's RDP. Some universal DLC will not support enhanced services such as distinctive ringing, forward disconnect, caller ID, etc.

3.11 Subscriber loop facilities have been designed on a global basis primarily to accommodate POTS and guarantee that loop transmission loss is statistically distributed and that no single loop exceeds the signaling range of the CO.

3.12 Prior to 1980, loops were designed using one of the following design plans: Resistance Design (RD), Long Route Design (LRD), or Unigauge Design (UD). From 1980 to 1986, the Modified Resistance Design (MRD), Modified Long Route Design (MLRD), and Concentrated Range Extension with Gain (CREG) plans were applied on a going-forward basis (i.e., retroactive

redesign was not implemented). In 1986, the Revised Resistance Design (RRD) plan was applied on a going-forward basis. Appendix A provides a summary of the various loop design plans.

3.13 Most metallic loop facilities (98%) were designed using the RD, MRD, or RRD design rules. The RRD design rules currently in use limit the loop resistance to the design range of the CO switch or 1500 ohms whichever is less. CO switches have a range of either 1300 or 1500 ohms. The 1 kHz loss of RRD loops is 8.5 dB or less.

3.14 A small number of loops have been designed using the LRD, MLRD, UD, and CREG design plans. These loops are long (15+kft) and have high resistance (up to 2800 or 3600 ohms) and high loss (up to 13 dB without gain). Such loops require electronic transmission and signaling range enhancement equipment to accommodate AULSCSS. The LRD and MLRD design plans use Range Extension with Gain (REG) equipment that is either dedicated to each loop or hard-wired to the BA CO line equipment. In the latter case, the hard-wired REG is not available for use on AULSCSS.

3.15 The REG equipment used with CREG designed loops is implemented behind a stage of switching concentration in the associated CO switch. This permits REG equipment to be shared with other loops working out of the same CO switch. For this reason, the REG associated with CREG designed loops is not available for use on AULSCSS.

3.16 Bell Atlantic will work with the OTC to explore available options when an LRD, MLRD, or CREG designed loop requires enhancement to support AULSCSS.

3.17 The direct-current resistance of a metallic loop facility measured between the CODF and the RDP shall be 1520 ohms or less if the facility was designed using RD, MRD, or RRD rules. The resistance will be less than 2500 ohms if the facility was designed using UD rules, less than 2800 ohms if the facility was designed using CREG or MLRD rules, and less than 3600 ohms if the facility was designed using LRD rules.

3.18 The 1kHz loss of a metallic loop facility when measured with a 900 ohm impedance at the CODF and a 600 ohm impedance at the RDP shall be 8.0 dB or less if the loop was designed using RD, MRD, or RRD rules. The loss will be 10 dB or less if the loop was designed using LRD or MLRD rules, and 13 dB or less if the loop was designed using UD or CREG rules.

3.19 The C-message noise measured on a metallic subscriber loop at the RDP shall be less than 30 dBrnC.

3.20 The leakage resistance between the tip conductor and ground, the ring conductor and ground, and tip and ring conductors of a loop should each be greater than 100 K ohms.

3.21 The Power Influence (PI) measured per IEEE Std 743-1984 [2] on the metallic portion of a loop should be less than 90 dBrnC.

3.22 For LS and GS signaling, the DLC facilities provide a battery feed to the RDP. When the RDP is terminated by a direct-current resistance of 430 ohms or less, the loop current supplied by the DLC in such cases shall be 20 mA or greater.

3.23 The 1kHz loss of a DLC facility when measured with a 900 ohm impedance at the CODF and a 600 ohm impedance at the RDP shall be 8 dB or less.

3.24 The C-message noise measured on a DLC facility shall be 23 dBrnC or less.

3.25 The C-Notched noise measured on a DLC facility shall be 36 dBrnC or less with a -13 dBm0 1004 Hz holding tone.

3.26 The impulse noise measured on a DLC facility shall be no more than 15 counts in 15 minutes with a threshold of 59 dBrnC.

3.27 The echo return loss and singing return loss of a subscriber loop facility measured with a 900 ohm + 2.16 uf reference at the CODF and a 600 ohm + 2.16 uf termination at the RDP shall be equal to or greater than 5.5 dB and 2.5 dB respectively.

3.28 Subscriber loop facilities shall meet all applicable design specifications. (See appendix A)

4. Service Specifications

A. General

4.01 The overall end-to-end AULSCSS service is from the CODF appearance of the collocated OTC equipment to the end-user customer's RDP. AULSCSS service will use the TXNU service code.

B. Performance

4.02 Loss and C-Message noise will be measured during acceptance testing of new services at turn-up. Services that reuse existing working loops are only tested for continuity at turn-up.

4.03 Other parameters are tested in response to trouble reports or when additional testing is purchased.

4.04 The acceptance limits and immediate action limits in Table 4-1 apply to AULSCSS channels.

4.05 When a AULSCSS channel is provided using DLC, the transmission performance of the channel is evaluated by measuring performance parameters on the overall end-to-end service.

Table 4-1
Acceptance Limits (AL) and Immediate Action Limits (IAL)
for AULSCSS channels

PARAMETER	AL	IAL
Loss	< 8.5 dB	> 10.0 dB
Resistance	< 1520 ohms	> 1520 ohms
Three-Tone Slope*	-1.5 to +5.5 dB	-2.0 to +6.5 dB
C-Message Noise	< 30 dBrnC0	> 30 dBrnC0
C-Notched Noise	< 36 dBrnC0	> 36 dBrnC0
Leakage	> 100 kohms	< 100 kohms
Echo Return Loss	> 5.5 dB	< 5.5 dB
Singing Return Loss	> 2.5 dB	< 2.5 dB
Power Influence	< 90 dB	> 90 dB
LS/GS Loop Current (DLC)	> 20 mA	< 20 mA

* Minus (-) means less loss and plus (+) means more loss.

C. Available Signaling

4.06 The following 2-wire signaling capability is available where facilities and equipment permit:

- No signaling (includes inband signaling furnished by the OTC).
- Loop-start closed-end at end-user RDP and loop-start open-end at the OTC-POT.
- Loop-start open-end at end-user RDP and loop-start closed-end at the OTC-POT.
- Ground-start closed-end at end-user RDP and ground-start open-end at the OTC-POT.
- Ground-start open-end at end-user RDP and ground-start closed-end at the OTC-POT.
- Loop reverse-battery terminating at the end-user RDP and loop reverse-battery originating at the OTC-POT.
- Loop reverse-battery originating at the end-user RDP and loop reverse-battery terminating at the OTC-POT.

4.07 The following 4-wire signaling capability is available where facilities and equipment permit:

- No signaling (includes inband signaling furnished by the OTC).
- Loop-start closed-end at end-user RDP and loop-start open-end at the OTC-POT.
- Loop-start open-end at end-user RDP and loop-start closed-end at the OTC-POT.
- Ground-start closed-end at end-user RDP and ground-start open-end at the OTC-POT.
- Ground-start open-end at end-user RDP and ground-start closed-end at the OTC-POT.
- Loop reverse-battery terminating at the end-user RDP and loop reverse-battery originating at the OTC-POT. This signaling capability is not available on a 4-wire basis when the loop facility includes DLC.

- Loop reverse-battery originating at the end-user RDP and loop reverse-battery terminating at the OTC-POT. This signaling capability is not available on a 4-wire basis when the loop facility includes DLC.
- Duplex (DX) signaling at EU-POT and OTC-POT.

4.08 The signaling associated with 4-wire interfaces can be derived from the associated simplex leads. BA provides the standard simplex sense for all 4-wire interfaces, that is, the B-lead or Ring conductor can be derived from the OTC and EU receive pair and the A-lead or Tip conductor can be derived from the OTC and EU transmit pair.

4.09 AULSCSS Network Channel (NC) codes and Network Channel Interface (NCI) codes are shown in the following figures: Figure 4-2 shows NC codes: Figure 4-3 shows OTC-POT NCI codes; and Figure 4-4 shows compatible NCI code combinations. Additional information concerning NC/NCI codes may be found in Bellcore SR-STS-000307 [3].

Figure 4-2: AULSCSS NC Codes

NC Code	Character 3	Character 4
LX	-	-

Figure 4-3: AULSCSS OTC-POT NCI Codes

NCI Code	Description
02QC3.OOB	2-Wire Ground-start signaling - Open End
02QC3.OOC	2-Wire Ground-start signaling - Closed End
02QC3.OOD	2-Wire Loop-start signaling - Open End
02QC3.OOE	2-Wire Loop-start signaling - Closed End
02QC3.OOF	2-Wire Transmission Only - No Signaling
02QC3.RVO	2-Wire Reverse-Battery - OTC Originating
02QC3.RVT	2-Wire Reverse-Battery - OTC Terminating
04QC2.DXO	4-Wire Duplex Signaling
04QC2.OOB	4-Wire Ground-start signaling - Open End
04QC2.OOC	4-Wire Ground-start signaling - Closed End
04QC2.OOD	4-Wire Loop-start signaling - Open End
04QC2.OOE	4-Wire Loop-start signaling - Closed End
04QC2.OOF	4-Wire Transmission Only - No Signaling
04QC2.RVO	4-Wire Reverse-Battery - OTC Originating
04QC2.RVT	4-Wire Reverse-Battery - OTC Terminating

Figure 4-4: Compatible AULSCSS NCI Code Combinations

EU-POT	OTC-POT
02GO2	02QC3.OOC
02GS2	02QC3.OOB
02LO2	02QC3.OOE
02LS2	02QC3.OOD
02NO2	02QC3.OOF
02RV2.T	02QC3.RVO
02RV2.O	02QC3.RVT
04GO2	04QC2.OOC
04GS2	04QC2.OOB
04LO2	04QC2.OOE
04LS2	04QC2.OOD
04NO2	04QC2.OOF
04RV2.T*	04QC2.RVO
04RV2.O*	04QC2.RVT
04DX2	04QC2.DXO

* 04RV2.T and 04RV2.O are not available when DLC facilities are used.

D. Available Options

4.09 No options are available for AULSCSS channels.

E. Compatible TLP Ranges

4.10 Compatible TLP ranges are shown in Figures 4-5 and 4-6.

Figure 4-5: Compatible TLP Ranges at the EU-POT and OTC-POT for 2-Wire AULSCSS Channels

Specified Protocol Code	EU/OTC Transmit TLP	EU/OTC Receive TLP
GO, GS, LO, LS, NO, RV	0	0 to -8.5 #

In general, the receive TLP is a function of the cable loss.

Figure 4-6: Compatible TLP Ranges at the EU-POT and OTC-POT for 4-Wire AULSCSS Channels

Specified Protocol Code	EU/OTC Transmit TLP	EU/OTC Receive TLP
DX, GO, GS, LO, LS, NO, RV	0	0 to -8.5 #

In general, the receive TLP is a function of the cable loss.

5. OTC Equipment and CO Cabling Requirements

A. OTC Equipment Requirements

5.01 Several different types of OTC equipment can connect to AULSCSS. The equipment can be collocated in a BA CO or located at the end-user premises. Examples are: transport equipment; transmission repeaters; transmission repeaters with loop signaling repeaters; transmission repeaters with signaling battery boost equipment; and special service channel units.

5.02 Co-located OTC equipment used for interconnection with AULSCSS shall meet all applicable requirements including those in this document as well as applicable generic equipment requirements in Bellcore documents GR-63-CORE [4] and GR-1089-CORE [5].

5.03 Co-located OTC equipment shall be manufactured in accordance with FCC, NEC, UL, and USDL requirements and orders applicable to Federal, State, and local requirements including, but not limited to, statutes, rules, regulations, orders, or ordinances, or otherwise imposed by law. Where requirements are not specified in this document, contractual technical requirements or other applicable documents, the manufacturer's requirements consistent with industry standards shall be met.

5.04 The open circuit tip-to-ring dc voltage that OTC equipment applies to BA cabling shall be less than 80 Vdc.

5.05 OTC equipment shall not deliver more than 2.5 watts of power to any load via BA cable.

5.06 OTC equipment shall not deliver more than 150 mA of loop current to any load via BA cable.

5.07 The noise limits for AULSCSS are predicated on the OTC equipment having a longitudinal balance of > 60 dB.

5.08 The impedance of OTC equipment shall be a nominal 900 ohms when collocated in a BA CO and a nominal 600 ohms when used on the end-user premises at or near the RDF.

5.09 The applied power level of any signal transmitted on AULSCSS averaged over 3 seconds shall not exceed -13 dBm0.

5.10 AULSCSS loops may be exposed to electrical surges from lightening and commercial power system disturbances. Despite protective devices on the CODF, some of these disturbances are likely to reach OTC equipment. OTC equipment shall be designed to withstand certain surges without being damaged, and shall fail in a safe manner under infrequent high stress.

5.11 The prevalent voltage-limiting device available for CO use is the 3-mil carbon block. This device has an upper 3σ limiting voltage of 1000 volts peak under surge conditions and 600 volts rms (800 peak) at 60 Hz. OTC equipment connected to AULSCSS subscriber loop facilities protected by carbon blocks may be subjected to voltages up to these levels. Unexposed COs may

not have primary protection, and OTC equipment not coordinating with carbon blocks may need protection in these locations.

5.12 If the AULSCSS subscriber loop facility is exposed to commercial ac power, the CO protector may also include 350 mA heat coils for limiting the current that is permitted to flow to CO equipment. In addition, a protective fuse cable located outside the CO incorporating 24 or 26 AWG conductors to coordinate with the protector, serves to limit current to safe levels in the event of prolonged operation of the protector during power fault conditions.

B. OTC CO Cabling Requirements

5.13 The voice grade CO cabling used to terminate collocated OTC equipment on the CODF shall use twisted-pair conductors.

5.14 The type, gauge, and length of the OTC CODF cabling shall be specified based on this specification and OTC equipment requirements. If the specifications in this document differ from the OTC equipment manufacturers specifications, then the more stringent of the two shall be used.

5.14 The direct-current resistance of the CO cabling between the OTC equipment and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [6] (i.e., 22 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

5.15 All CO cabling between OTC equipment and the CODF shall be connected as specified by the BA CO Engineer.

5.16 The 1kHz loss of the CO cabling between the OTC equipment and the CODF, when measured between 900 ohm impedances, shall be less than .15 dB.

5.17 The C-message noise measured on the CO cabling between the OTC equipment and the CODF shall be 20 dBrnC or less.

6. References

A. Definitions

Acceptance Limit (AL)
The maximum value of, or deviation, that is allowed at service turnup or IC acceptance.

Analog Unbundled Loop Service with Customer Specified Signaling (AULSCSS)
A service that provides an analog facility between a BA CO and a customer location that is capable of supporting signaling specified, at the time the service is ordered, by the customer.

Central Office (CO)
A telephone company building which houses equipment and facilities used to provide switched access services.

Central Office Distributing Frame (CODF)
Framework located in a CO that holds wire cross-connects which are used to interconnect cable terminations for end-user customer loops, switching system ports, and inter-office facilities.

C-Message Noise
The frequency-weighted, short-term average noise within an idle channel. The frequency weighting, called C-message, is used to account for the variations in 500-type telephone set transducer efficiency and end-user annoyance to tones as a function of frequency.

C-Notched Noise
The C-message frequency-weighted noise on a channel with a holding tone that is removed at the measuring end through a notch (very narrow band) filter.

Channel
An electrical, or photonic communications path between two or more points of transmission.

Closed End
The end of a switched access service that receives ringing and dial tone and transmits address signals.

dBm
A unit used to express power level in decibels relative to one milliwatt.

dBm0
A unit used to express power level referred to, or measured at, a zero transmission level point (0TLP).

dBrn
A unit used to express noise power relative to one picowatt (-90 dBm).

dBrnC
A unit used to express noise power relative to one picowatt measured with C-message weighting.

dBrnC0
A unit used to express noise power in dBrnC referred to, or measured at, a zero transmission level point (0TLP).

Decibel (dB)
The logarithmic unit of signal power ratio most commonly used in telephony. It is used to express the relationship between two signal powers, usually between two acoustic, electric, or optical signals; it is equal to ten times the common logarithm of the ratio of the two signal powers.

Duplex Signaling
A type of dc signaling that employs symmetrical and balanced signaling equipment at each end of the loop. One simplex conductor of the 4-wire loop is used for signaling and the other simplex conductor is used for ground potential compensation.

Echo Return Loss (ERL)
A frequency-weighted measure of return loss over the middle of the voiceband (approximately 560 to 1965 Hz), where talker echo is most annoying. (See Table 9 of IEEE Std. 743-1984)

End User (EU)
The term "end user" denotes any customer of a telecommunications service that is not a carrier, except that a carrier shall be deemed to be an "end user" to the extent that such a carrier uses a telecommunications service for administrative purposes, without making such a service available to others, directly, or indirectly.

End-User Point Of Termination (EU-POT)
The rate demarcation point (RDP) on an end user's premises at which Bell Atlantic's responsibility for the provision of the services described in this document ends.

Facilities
Any cable, poles, conduit, microwave, or carrier equipment, central office distributing frames, central office switching equipment, computers (both hardware and software), business machines, etc., utilized to provide the services offered by a telephone company.

Immediate Action Limit (IAL)
The bound of acceptable performance and the threshold beyond which BA will accept a customer's trouble report and take immediate corrective action.

Impulse Noise
Any momentary occurrence of noise on a channel that significantly exceeds the normal noise peaks. Impulse noise is analyzed by counting the number of occurrences that exceed a threshold.

Leakage
The resistance between the conductors of an insulated metallic pair or the resistance between each conductor of an insulated metallic pair and ground.

Loop Reverse-Battery Signaling
A type of switched access line dc signaling that uses loop-open and loop-closure signals to indicate on-hook and off-hook signals in one direction and normal battery polarity and reverse battery polarity to indicate on-hook and off-hook signals in the other direction. The end of the service that generates loop open and loop closure signals is called the originating end and the other end which generates the normal battery polarity and reverse battery polarity signals is called the terminating end.

Loop-start (LS) Signaling
A type of switched access line signaling in which the network provides a battery source. To initiate a call, customer premises equipment will provide a loop closure that causes dc loop current to flow which the network will detect.

Open End
The end of a switched access service that transmits ringing and dial tone and receives address signaling.

Other Telephone Company (OTC)
An organization that provides telecommunications services to the public.

Plain Ordinary Telephone Service (POTS)
The basic single line switched access service offered by local exchange carriers to residential and business customers. POTS uses loop-start signaling.

Power Influence (PI)
The power of a longitudinal signal induced in a metallic OSP facility by an electromagnetic field emanating from a conductor or conductors of a power system. PI is also called longitudinal noise or noise-to-ground.

Protocol Code
In general, a component of the Network Channel Interface (NCI) code that identifies the basic electrical function of the interface. For AULSCSS, the protocol codes (i.e., DX, GO, GS, LO, LS, NO and RV) identify the type of signaling if any.

Rate Demarcation Point (RDP)
The point at which Bell Atlantic network access recurring charges and responsibility stop and beyond which customer responsibility begins. The RDP is the point of demarcation and/or interconnection between a Bell Atlantic subscriber loop facility and end-user premises cabling or terminal equipment. Bell Atlantic facilities at, or constituting, the rate demarcation point shall consist of wire or a jack conforming to Subpart F of Part 68 of FCC rules.

Return Loss (RL)
A measure of the similarity between the two impedances at a junction. The higher the return loss, the higher the similarity. It is the ratio (in decibels) of the power incident upon the junction to the power reflected from the junction. If the two impedances at the junction are Z1 and Z2, then:

$$\text{return loss} = 20 \log \frac{|Z1 - Z2|}{|Z1 - Z2|} \text{dB}$$

Signal-to-Noise Ratio (S/N Ratio)
The ratio of the signal power to the noise power at a given point in a given system (usually expressed in decibels).

Singing Return Loss (SRL)
The frequency-weighted measure of return loss at the edges of the voiceband (SRL Low, 260 to 500 Hz and SRL High, 2200 to 3400 Hz), where singing (instability) problems are most likely to occur.

Signaling Repeater
Loop enhancement equipment that detects and regenerates signaling states.

Three-Tone Slope
The loss at 404 Hz and 2804 Hz relative to the loss at 1004 Hz.

Transmission Level Point (TLP)
A point in a transmission system at which the ratio, usually expressed in decibels, of the power of a test signal at that point to the power of the test signal at a reference point, is specified.

Transmission Repeater
Loop enhancement equipment that amplifies and equalizes voice grade signals.

Unbundled Loop
A transmission channel between a end-user customer location and a LEC CO that is not a part of, or connected to, other LEC services.

Voice Grade (VG)
A term used to describe a channel, circuit, facility, or service that is suitable for the transmission of speech, digital or analog data, or facsimile, generally with a frequency range of about 300 to 3000 Hz.

B. Acronyms

ANSI	American National Standards Institute
AULSCSS	Analog Unbundled Loop Service with Customer Specified Signaling
BA	Bell Atlantic
CO	Central Office
CODF	Central Office Distributing Frame
COT	Central Office Terminal
CREG	Concentrated Range Extension with Gain
DLC	Digital Loop Carrier
GS	Ground-Start
LRB	Loop Reverse-Battery
LRD	Long Route Design
LS	Loop-Start
MLRD	Modified Long Route Design
MRD	Modified Resistance Design
OTC	Other Telephone Company

PI	Power Influence
POTS	Plain Ordinary (analog) Telephone Service
RD	Resistance Design
RDP	Rate Demarcation Point
REG	Range Extender with Gain
RRD	Revised Resistance Design
RT	Remote Terminal
TO	Transmission Only
T&S	Transmission and Signaling
UD	Unigauge Design
VF	Voice Frequency
VG	Voice Grade

7. Bibliography

1- Special Report SR-TSV-002275, Issue 2, *BOC Notes on the LEC Networks*, Bellcore, April 1994.

2- IEEE Std 743-1984, *IEEE Standard Methods and Equipment for Measuring the Transmission Characteristics of Analog Voice Frequency Circuits.*

3- Special Report SR-STS-000307, Issue 3, *Industry Support Interface (ISI): NC/NCI Code Dictionary*, Bellcore, January 1992.

4- Generic Requirements GR-63-CORE, *Network Equipment-Building System (NEBS) Requirements: Physical Protection*, Issue 1, (Bellcore, October 1995).

5- Generic Requirements GR-1089-CORE, *Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment*, Issue 1 (Bellcore, November 1994).

6- Technical Reference FR-NWT-000064, *LATA Switching Systems Generic Requirements (LSSGR)*, (Bellcore, 1994).

NOTE: These documents are subject to change: references reflect the most current information available at the time of printing. Readers are advised to check the status and availability of all documents.

Appendix A: Historical Loop Design Rules

1- Resistance Design (RD): (96% of loops designed prior to 1980)
- 0 - 1300 ohms
- Max BT on NL cable = 6 kft
- POTS = No loading to 18 kft. H88 loading beyond 18 kft
- CENTREX = No loading to 11 kft. H88 loading beyond 11 kft
- Max end section plus BT = 15 kft
- No loaded BT. No BT between load coils.

2- Long Route Design (LRD): (3% of loops designed prior to 1980)
- 1301 - 3600 ohms
- Applicable > 18 kft. full H88 loading
- Gain required for loops over 1600 ohms
- Max end section plus BT = 12 kft
- No loaded BT. No BT between load coils.

3- Unigauge Design (UD): (1% of loops designed prior to 1980)
- 0 - 2500 ohms
- No loading to 24 kft. partial H88 loading beyond 24 kft
- Gain applied to loops > 15 kft
- Max BT on NL cable = 6 kft
- End section plus BT = 12 kft
- No loaded BT. No BT between load coils.

4- Modified Resistance Design (MRD): (1980 - 1986)
- 0 - 1500 ohms
- Max BT on NL cable = 6 kft
- Total NL cable plus BT = 15 kft
- POTS = No loading to 15 kft. H88 loading beyond 15 kft
- CENTREX = No loading to 11 kft. H88 loading beyond 11 kft
- Loaded cable end section plus BT = 3 to 12 kft
- No loaded BT. No BT between load coils.

5- Modified Long Route Design (MLRD): (1980 - 1986)
- 1501 - 2000 ohms = Res Zone 18
- 2001 - 2800 ohms = Res Zone 28
- RZ 18 = Range Extension plus 3 dB of gain
- RZ 28 = Range Extension plus 6 dB of gain
- Full H88 loading
- End section plus BT = 3 to 12 kft
- No loaded BT. No BT between load coils.

6- Concentrated Range Extension with Gain (CREG): (1980 - 1986, 1A & 2A ESS Only)
- 0 - 2800 ohms
- No loading to 15 kft. full H88 loading beyond 15 kft
- Range extension with gain (REG) required for all loops over 1500 ohms
- REG provided behind a stage of switching concentration
- Total NL cable plus BT = 15 kft max
- Max NL cable BT = 6 kft
- Loaded end section plus BT = 3 to 12 kft
- No loaded BT. No BT between load coils.

7- Revised Resistance Design (after 1986)
- 0 - 18 kft = 1300 ohms max
- 18 - 24 kft = 1500 ohms max (CO permitting)
- No loading to 18 kft. full H88 loading between 18 - 24 kft
- Max NL cable plus BT = 18 kft
- Max BT on NL cable = 6 kft
- Loaded cable end section plus BT = 3 to 12 kft
- No loaded BT. No BT between load coils.

EXHIBIT C

Bell Atlantic

EXHIBIT C

TR 72575
Issue 1, October 1996

Bell Atlantic Technical Reference

Digital Unbundled Loop Services Technical Specifications

Bell Atlantic Network Services, Inc.
Technical Reference

TR-72575
Issue 1, October 1996

Notice

This Technical Reference is published by Bell Atlantic to provide a technical description of digital unbundled loop services. To the extent feasible, the description references or duplicates existing published technical references utilized by the industry.

Bell Atlantic reserves the right to revise this technical reference for any reason including, but not limited to, changes in tariffs, laws, or regulations, conformity with updates and changes in standards promulgated by various agencies, utilization of advances in the state of technical arts, or the reflection of changes in the design of any facilities, equipment, techniques, or procedures described or referred to herein. Liability for difficulties arising from technical limitations or changes herein is disclaimed.

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With respect to services offered pursuant to tariff, however, the terms and conditions of the service offering are determined by the tariff itself and applicable laws and regulations. This reference is intended to be supplemental to the tariffs. In the event of a conflict between the tariffs, laws or regulations and this reference, the tariffs, laws, and regulations shall govern.

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EXHIBIT C

Bell Atlantic Network Services, Inc.
Technical Reference

TR 72575
Issue 1, October 1996

Bell Atlantic
Digital Unbundled Loop Services
Technical Specifications

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1. General

1.01 This technical reference provides the technical specifications associated with the Digital Unbundled Loop Services offered by Bell Atlantic (BA) in the co-carrier section of local exchange tariffs. All of the services described in this document may not be available in every jurisdiction.

1.02 Whenever this technical reference is reissued, the reason(s) for reissue will be provided in this paragraph.

1.03 Digital unbundled loop services enable Other Telephone Companies (OTC) that are co-located in a BA Central Office to connect to BA subscriber loops that are designed to support digital services including Integrated Services Digital Network (ISDN) services.

1.04 The following digital unbundled loop services are defined: ISDN Basic Rate and DS1. HDSL and ADSL unbundled loop services are under study.

1.05 The technical specifications in this document assume that the OTC is co-located in the same CO as the digital unbundled loop service. In the future, BA may offer transport services for digital unbundled loop services. In that case, the technical specifications associated with the transport service should be consulted.

2. Service Description

A. General

2.01 The description, terms and conditions, rates, regulations, and Universal Service Order Codes (USOCs) for digital unbundled loop services are contained in applicable tariffs or contracts.

2.02 Digital unbundled loop services are provided subject to availability on a first-come first-served basis. Special construction charges apply when appropriate facilities are not available.

2.03 Digital unbundled loop services provide the OTC with a transmission channel suitable for the transport of certain digital services. The channel is between the Central Office Distributing Frame (CODF) or DSX-1 termination of OTC equipment in a BA Central Office (CO) and the Rate Demarcation Point (RDP) at an End User (EU) customer location.

B. ISDN Basic Rate Unbundled Loop Service (IBRULS)

2.04 IBRULS provides the OTC with an effective 2-wire channel that is suitable for the transport of 160 kbps digital signals in both directions simultaneously using the 2B1Q line code.

2.05 The interface at the OTC CODF termination is 2-wire and the interface at the EU-RDP is 2-wire. At each interface one conductor is called tip and the other conductor is called ring.

2.06 The transmission channel between the IBRULS 2-wire interfaces is effective 2-wire. An effective 2-wire channel may be entirely 2-wire or it may contain a 4-wire facility portion (such as a Digital Loop Carrier) with a 2-wire metallic extension to the EU-RDP. A typical IBRULS configuration is shown in Figure 2-1.

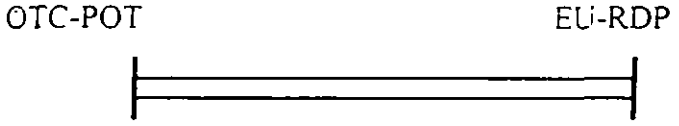

Figure 2-1: Typical 2-Wire IBRULS configuration

2.07 IBRULS supports full duplex 160 kbps digital transmission. The 160 kbps ISDN Basic Rate supports a 16 kbps overhead channel for performance monitoring, framing, synchronization, and maintenance. In addition, the line rate supports 144 kbps of payload data which is divided into three channels, two 64 kbps "B" (Bearer) channels and one 16 kbps "D" (Data) channel.

2.08 IBRULS supports the standard ISDN Basic Rate Two-Binary One-Quaternary (2B1Q) line code. Vendor-specific, non-standard line codes are not supported and Bell Atlantic spectrum management rules do not permit their deployment.

2.09 IBRULS may be provided using a variety of loop transmission technologies, including but not limited to, metallic cable, metallic cable based digital loop carrier, and fiber optic digital loop carrier systems.

2.10 When digital loop carrier (DLC) is used to provide IBRULS, the DLC will provide an ISDN Basic Rate interface at the RDP that meets the network requirements in ANSI T1.601-1992 [1].

2.11 It is currently known that the 2B1Q line code is incompatible with a number of embedded services. These services include CO-LAN, 15 kHz Program Audio Service, and analog carrier systems.

2.12 Analog carrier systems are extremely susceptible to interference from the 2B1Q line code and separation into separate cable sheaths is required.

2.13 Program audio services are also susceptible to interference from the 2B1Q line code on the loop. In order for the program audio and the IBRULS services to coexist, binder group separation is necessary. Separation to non-adjacent binder groups is preferred but adjacent binder groups may provide adequate margin.

2.14 Data-Voice Multiplexers (DVM) are also incompatible with IBRULS depending upon the range at which the DVMs are deployed. If DVMs are operated at less than 80% of the manufacturer's maximum specified range, including CO and customer wiring, they may be compatible with the 2B1Q line code. If DVMs are operated at or above the 80% range and occupy

the same cable sheath as a 2B1Q service, then the two services are considered to be incompatible. In this case binder group separation is necessary. If this is not possible, an alternate means of providing the 2B1Q service must be sought.

2.15 IBRULS utilizes subscriber loop facilities that were originally designed for Plain Ordinary (analog) Telephone Service (POTS). For this reason, some loops, such as loaded metallic facilities or analog carrier systems, may not be suitable for IBRULS.

2.16 Bell Atlantic will work with the OTC to resolve facility problems should the IBRULS loop facility require enhancement equipment to support BRI service.

2.17 If an OTC service is provided using IBRULS and electronic transmission enhancement equipment is required to meet OTC requirements that are more stringent than IBRULS and Basic Rate ISDN, the OTC will be responsible for providing such enhancement equipment.

C. DS1 (1.544 Mbps) Unbundled Loop Service (DS1ULS)

2.18 DS1ULS provides the OTC with a 4-wire transmission channel that is suitable for the transport of 1.544 Mbps (DS1) digital signals in both directions simultaneously.

2.19 The interface at the OTC DSX-1 termination in the BA CO is 4-wire and the interface at the EU-RDP is 4-wire. The conductors of the OTC or EU transmit pair are called tip and ring and the conductors of the OTC or EU receive pair are called tip 1 and ring 1.

2.20 The transmission channel between the DS1ULS interfaces consists of 4-wire facilities. DS1ULS may be provided using a variety of loop transmission technologies, including but not limited to, metallic cable, metallic cable with regenerators, metallic cable with High-Bit-Rate Digital Subscriber Line (HDSL) technology, or fiber optic transport systems. A typical DS1ULS configuration is shown in Figure 2-2.

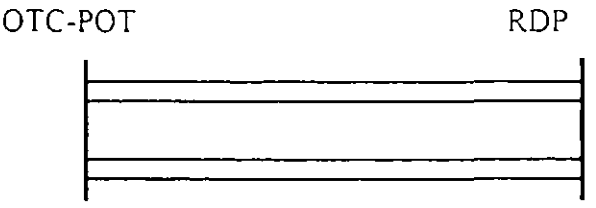

Figure 2-2: Typical 4-Wire DS1ULS configuration

2.21 DS1ULS enables full duplex 1.544 Mbps digital transmission. The 1.544 Mbps line rate supports an 8 kbps framing format and 1.536 Mbps of payload data. DS1ULS will support either the Superframe (SF) or Extended Superframe (ESF) framing formats as specified in ANSI T1.403-1995 [4].

2.22 DS1ULS is available with either the AMI or B8ZS line codes as specified in ANSI T1.403-1995 [4].

2.23 DS1ULS shall provide an electrical DS1 interface at the RDP that meets the network requirements in ANSI T1.403-1995 [4].

2.24 The DS1 interface provided by BA does not deliver direct-current power to the NI via the simplex leads of the transmit and receive pairs. When BA employs metallic facilities and no loopback device is deployed, direct-current power could appear at the NI on the simplex leads of the transmit and receive pairs however. In such cases, the OTC or EU equipment shall provide a direct-current connection between the simplexes of the transmit and receive pairs.

2.25 Direct-current power shall not be delivered to the EU-POT by customer equipment. In addition, customer equipment shall not apply voltages to the EU-POT other than those described in ANSI T1.403-1995.

2.26 The OTC will be responsible for providing synchronization timing for the DS1ULS.

2.27 Subscriber loop facilities were originally designed for Plain Ordinary (analog) Telephone Service (POTS). For this reason, some loops may not be suitable for DS1ULS.

D. High-Bit-Rate Digital Subscriber Line Unbundled Loop Service (HDULS)

2.28 HDULS is under study.

E. Asymmetrical Digital Subscriber Line (ADSL) Unbundled Loop Service

2.29 ADSL Unbundled Loop Service (ADULS) is under study.

F. Service Elements

2.30 IBRULS ordinarily consists of two elements:

(1) The CODF wire and tie cable(s) between the CODF termination of the co-located OTC equipment and the CODF termination of a subscriber loop; and,

(2) a subscriber loop facility between the CO and the EU-RDP. The loop is either:

(a) a metallic non-loaded facility consisting of cable and wire between the CODF and the RDP wire with no intermediate electronics; or,

(b) a metallic non-loaded facility consisting of cable and wire between the CODF and the RDP wire with transmission enhancement equipment; or,

(c) a universal digital loop carrier (DLC) facility with 2B+1D ISDN Basic Rate transport capability via three DS0 channels. The DLC facility consists of:

- CO cabling between the CODF and a DLC Central Office Terminal (COT) equipped with an ISDN Basic Rate Interface Terminal Equipment (BRITE) channel unit with NT functionality;

- a fiber or metallic facility from the DLC COT to the DLC Remote Terminal (RT) equipped with an ISDN BRITE channel unit with LT functionality; and,

- cable and wire between the DLC RT and the RDP.

2.31 DS1ULS ordinarily consist of two elements:

(1) The DSX-1 wire and repeatered tie cable(s) between the DSX-1 termination of the co-located OTC equipment and the DSX-1 termination of subscriber loop facilities; and

(2) a subscriber loop facility between the CO and the EU-RDP. The loop is either:

(a) a metallic non-loaded facility consisting of cable and wire between the CODF and the RDP wire with no intermediate electronics; or,

(b) a metallic non-loaded facility consisting of cable and wire between the CODF and the RDP wire with transmission enhancement equipment such as regenerators or DSL technology; or,

(c) a fiber facility from the CO to a Remote Terminal (RT) location with cable and wire between the DLC RT and the RDP.

2.32 HDULS is under study.

2.33 ADULS is under study.

3. Element Specifications

A. General

3.01 Two elements are always used with digital unbundled loop services. They are: CODF wire and tie cable(s), and subscriber loop facilities. A third element, electronic transmission enhancement equipment, is sometimes used with digital unbundled loop services. The following sections contain the specifications for each of these elements.

B. CODF Wiring and Tie Cable(s)

3.02 CODF cross-connect wiring and tie cable(s) are used to link the CODF termination of co-located OTC equipment to the CODF termination of metallic subscriber loops, DLC COTs, and electronic transmission enhancement equipment.

3.03 The total combined length of all CODF cross-connect wiring and all CODF-to-CODF tie cables between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 1500 feet. No bridged tap is permitted in the CO.

3.04 The direct-current resistance between the CODF termination of the OTC equipment and the CODF termination of any subscriber loop in the same CO should be less than 80 ohms. This is equal to 1500 or less feet of 24 gauge cable.

3.05 The 1 kHz loss measured on the CODF wiring and tie cables when measured between 900 ohm impedances should be .85 dB or less.

C. Subscriber Loop Facilities

3.07 Subscriber loop facilities consist of feeder and distribution plant between the CODF and the EU customer's RDP. Feeder plant uses a variety of transmission technologies, including but not limited to, twisted-pair metallic cables, twisted-pair metallic cable based digital loop carrier, and fiber optic based digital loop carrier. Distribution plant usually consists of multipair metallic cables. Additional information about subscriber loops may be found in Bellcore SR-TSV-002275 [2].

3.08 Subscriber loop facilities have been designed on a global basis primarily to accommodate POTS and guarantee that loop transmission loss at 1 kHz is statistically distributed and that no single loop exceeds the signaling range of the CO.

3.09 Prior to 1980, loops were designed using one of the following design plans: Resistance Design (RD), Long Route Design (LRD), or Unigauge Design (UD). From 1980 to 1986, the Modified Resistance Design (MRD), Modified Long Route Design (MLRD), and Concentrated Range Extension with Gain (CREG) plans were applied on a going-forward basis (i.e., retroactive redesign was not implemented). In 1986, the Revised Resistance Design (RRD) plan was applied on a going-forward basis.

3.10 Most metallic loop facilities (98%) were designed using the RD, MRD, or RRD design rules. The RRD design rules currently in use limit the loop resistance to the design range of the CO switch (1300 or 1500 ohms) or 1500 ohms whichever is less. The vast majority of non-loaded loops, designed using these rules, will support IBRULS without the need for additional transmission enhancement.

3.11 An IBRULS qualified metallic loop facility is non-loaded and meets the following ISDN Basic Rate design parameters:

(1) The length shall be 18 kft or less;

(2) The direct-current resistance measured between the CODF and the EU-RDP shall be 1300 ohms or less;

(3) Loaded bridged-tap is not permitted;

(4) Bridged tap is limited to 6 kft;

(5) The 40 kHz loss of a metallic loop facility when measured with a 135 ohm impedance at the CODF and a 135 ohm impedance at the RDP shall be 40.0 dB or less;

(6) Metallic loops with a 40 kHz loss between 40 and 76 dB will require transmission enhancement equipment.

3.12 The leakage resistance between the tip conductor and ground and the ring conductor and ground on an IBRULS metallic loop shall each be greater than 100 K ohms.

3.13 The longitudinal noise or power influence (PI) measured per IEEE Std 743-1984 [3] on an IBRULS metallic loop should be less than 90 dBrnC.

3.14 The longitudinal balance of a metallic IBRULS loop is defined as the longitudinal noise (in dBrnC) minus the C-message noise (in dBrnC). The longitudinal balance shall be >50 dB.

3.15 Qualification for IBRULS may require the placement of a mid-span repeater or similar device. Bell Atlantic does not place more than one mid-span repeater per loop. If a loop will not operate with one repeater, construction of DLC will be necessary.

3.16 When a metallic IBRULS loop has a mid-span repeater, the metallic facility between the CODF and the mid-span repeater and the metallic facility between the mid-span repeater and the EU-RDP shall each meet the requirements in section 3.11.

3.17 IBRULS will not operate properly on non-staggered twist cable (installed prior to 1923) or on flat ribbon cables, such as those used for some CPE interconnections. Such cable may need to be replaced to accommodate IBRULS.

3.18 The HDULS loop facility is under study.

3.19 The ADULS loop facility is under study.

D. Transmission Enhancement Equipment

3.20 Transmission enhancement equipment is sometimes used with IBRULS. Such equipment can consist of a CO span power module, a mid-span repeater, or BRI extended range system equipment.

3.21 The span power module is located in the CO and provides power to a mid-span repeater. A mid-span repeater regenerates the 2B1Q line code. The repeater has NT functionality that faces the OTC equipment and LT functionality that faces the RDP. A mid-span repeater is deployed when the calculated loss of the non-repeatered loop at 40 kHz (excluding BT) is > 40.0 < 76.0 dB.

3.22 BRI extended range systems consist of a unit located in the CO that has NT functionality and a 2B1Q line code that faces the OTC equipment and a remote unit near the RDP that has LT functionality and delivers a 2B1Q line code to the EU customer. The CO unit uses a line code that is spectrum compatible with BA services. The line code permits operation with a remote unit that is connected via a metallic cable that could have a 40 kHz loss of up to 60 dB.

3.23 The impedance of transmission enhancement equipment shall be a nominal 135 ohms.

3.24 Transmission enhancement equipment shall provide loop current when the RDP is terminated by a direct-current resistance of 135 ohms.

4. Service Specifications

A. General

4.01 Parameters are tested at the RDP in response to trouble reports or when additional testing is purchased.

4.02 Network Channel (NC) and Network Channel Interface (NCI) codes are used for providing channel and interface information to customers. The NC/NCI code set facilitates the identification of network channel requirements and associated interface specifications for services described in tariffs.

4.03 For switched services, the NC code is an encoded representation of the channel that is provided by from the OTC Point Of Termination (POT) to the BA CO. By varying the NC code, the customer is allowed to further specify the type of service.

4.04 The NCI code is an encoded representation used to identify five interface elements located at a POT. The five elements reflect the following physical and electrical characteristics: number of physical conductors, protocol, impedance, protocol options, and transmission levels points (if applicable).

4.05 Examples of the most common NC and NCI codes are given each service described in this section. The complete set of codes may be found in SR-STS-000307[2].

4.06 Valid NCI code combinations are shown for each service described in this section. Complete NC/NCI compatibility information may be found in SR-STS-000323 [3].

B. IBRULS

4.07 The overall end-to-end IBRULS service is from the CODF termination of the OTC equipment to the EU customer's RDP.

4.08 IBRULS NC code information is shown in Figure 4-1 and IBRULS NCI code combinations are shown in Figure 4-2.

4.09 IBRULS Acceptance Limits (AL) and Immediate Action Limits (IAL) are shown in Table 4-3.

Figure 4-1: IBRULS NC Codes

NC CODE	Character 3	Character 4
UB	-	-

Figure 4-2: IBRULS NCI Code Combinations

OTC-POT	EU-POT
02QC5.OOS	02IS5

Figure 4-3: IBRULS Acceptance Limits (AL) and Immediate Action Limits (IAL)

Parameter	AL	IAL
40 kHz loss	< 40.0 dB	> 42.0 dB
Resistance	< 1300 ohms	> 1300 ohms
Leakage	> 100 kilohms	< 100 kilohms
Power Influence	< 90 dB	> 90 dB

C. DS1ULS

4.10 The overall end-to-end DS1ULS service is from the DSX-1 termination of the OTC equipment to the EU customer's RDP.

4.11 DS1ULS NC code information is shown in Figure 4-8, and DS1ULS NCI code combinations are shown in Figure 4-9.

4.12 DS1ULS performance objectives are shown in Figure 4-10 and DS1ULS test limits are shown in Figure 4-11.

4.13 Availability is a measure of the relative amount of time that a service is "usable" by the customer. Unavailability begins when the Bit Error Ratio (BER) in each second is worse than 10^{-3} for a period of 10 consecutive seconds. The DS1ULS objective is 99.925 percent availability in any twelve consecutive months. Availability equals the total time minus the outage time divided by the total time.

4.14 Accuracy denotes the error performance and is usually specified in terms of errored seconds (ES), or conversely, error-free seconds (EFS). EFS are the primary measure of error performance for DS1ULS. An EFS is any second that an error does not occur.

4.15 A Severely Errored Second (SES) is any one second interval that has a BER of less than (worse than) 10^{-3}.

Figure 4-4: DS1ULS NC Codes

NC CODE	Character 3	Character 4
HC	- (SF and AMI)	-
HC	D (ESF and AMI)	-
HC	E (ESF and B8ZS)	-
HC	Z (SF and B8ZS)	-
HC	E (ESF and B8ZS)	I (ISDN PRA)

Figure 4-5: DS1ULS NCI Code Combinations

OTC-POT	EU-POT
04QB9.11	04DU9-BN (SF and AMI)
04QB9.11	04DU9-DN (SF and B8ZS)
04QB9.11	04DU9-1KN (ESF and AMI)
04QB9.11	04DU9-1SN (ESF and B8ZS)

Figure 4-6: DS1ULS Performance Objectives

Parameter	Objective
Accuracy	0.25 % errored seconds long-term (30 days or more)
Availability	99.925 % per year

Figure 4-7: DS1ULS Test Limits

Test Duration	Errored Seconds	Severely Errored Seconds
15 min	0	0
30 min	3	0
45 min	5	2
24 hours	150	7

4.16 Acceptance testing for DS1ULS should be performed with a Quasi Random Signal Source (QRSS), on an OTC-POT to EU-POT basis, using ES performance parameters.

4.17 If BA has installed a loopback device on the DS1ULS, a dispatch for "cooperative testing" will not ordinarily be made and testing will be performed remotely. Normally, a technician will be dispatched by BA in the following instances:

- The DS1ULS is not equipped with a loopback device;
- The loopback device is inoperable;
- Test results do not meet applicable limits;
- The OTC requests a dispatch.

4.18 At the request of the OTC, BA will provide the remote test results to the OTC.

4.19 Other tests may be performed in response to trouble reports or when additional testing is purchased. The 3/24, 1/8, and All Ones patterns are acceptable diagnostic stress tests forDS1ULS when used in accordance with Figure 4-8.

4.20 The patterns in Figure 4-8 may not detect all possible troubles. Additional tests may be required using other patterns designed to detect specific problems (e.g., bridged tap, etc.).

4.21 If errors are detected using the QRSS, 3/24, or 1/8 patterns, it is recommended that the DS1ULS line code options (AMI/B8ZS) be verified using the procedures outlined in the Bell Atlantic Network Services Reference Manual Series 72710 & NS6050. These tests make use of the Framed 2/8 and Framed 1/8 patterns.

Figure 4-8: AMI and B8ZS Test Matrix (1)

TEST PATTERN (2)	TEST DURATION	ACCEPTANCE LIMIT	MAINTENANCE LIMIT
3/24 (AMI only)	5 minutes	7	60
1/8 (B8ZS only)	5 minutes	7	60
All Ones	5 minutes	7	60
QRSS	15 minutes	20	60
Framed All Zeros (3) (B8ZS only)	30 seconds	0	0

Notes:
(1) Test patterns should be framed.

(2) If compatible test equipment is not available to perform these tests, loopback testing should be utilized.

(3) WARNING: This pattern may cause DS1 failures if DS3 equipment is not optioned properly.

D. HDULS

4.22 HDULS service is under study.

E. ADULS

4.25 ADULS service is under study.

5. OTC Equipment and CO Cabling Requirements

A. OTC Equipment Requirements

5.01 Co-located OTC equipment used for interconnection with digital unbundled loop services shall meet all of the applicable generic equipment requirements in Bellcore GR-63-CORE [4] and Bellcore GR-1089-CORE [5].

5.02 Co-located OTC equipment used for interconnection with digital unbundled loop services shall be manufactured in accordance with FCC, NEC, UL, and USDL requirements and orders applicable to Federal, State, and local requirements including, but not limited to, statutes, rules, regulations, orders, or ordinances, or otherwise imposed by law. Requirements that are not specified in this document, contractual technical requirements, or other applicable documents, shall meet the manufacturer's requirements consistent with industry standards.

5.03 The open circuit tip-to-ring dc voltage that co-located OTC equipment applies to BA VF cabling shall be less than 80 Vdc.

5.04 Co-located OTC equipment shall not deliver more than 2.5 watts of power to any load via BA VF cable.

5.05 Co-located OTC equipment shall not deliver more than 150 mA of loop current to any load via BA VF cable.

5.06 The noise limits for digital unbundled loop services require co-located OTC equipment to have a longitudinal balance of >60 dB.

5.07 The loss and noise limits for IBRULS requires co-located OTC equipment to have a nominal impedance of 135 ohms.

5.08 The maximum power level of any transmitted signal on IBRULS shall not exceed ANSI T1.601-1992 [1].

5.09 OTC equipment used with Digital Unbundled Loop Services shall be synchronized to a stratum 1 clock.

5.10 Loops may be exposed to electrical surges from lightning and commercial power system disturbances. Despite protective devices on the CODF, some of these disturbances are likely to reach OTC equipment. OTC equipment shall be designed to withstand certain surges without being damaged, and shall fail in a safe manner under infrequent high stress.

5.11 The prevalent voltage-limiting device available for CO use is the 3-mil carbon block. This device has an upper 3c limiting voltage of 1000 volts peak under surge conditions and 600 volts rms (800 peak) at 60 Hz. OTC equipment connected to digital unbundled loop services with loops protected by carbon blocks may be subjected to voltages up to these levels. Unexposed COs may not have primary protection, and OTC equipment not coordinating with carbon blocks may need protection in these locations.

5.12 If the subscriber loop facility is exposed to commercial ac power, the CO protector may also include 350 mA heat coils for limiting the current that is permitted to flow to CO equipment. In addition, a protective fuse cable located outside the CO incorporating 24 or 26 AWG conductors to coordinate with the protector, serves to limit current to safe levels in the event of prolonged operation of the protector during power fault conditions.

B. OTC Equipment CO Cabling Requirements

5.13 The CO cabling used to terminate OTC equipment on the CODF shall use twisted-pair conductors.

5.14 The type, gauge, and length of the OTC CODF cabling shall be specified based on this specification and OTC equipment requirements. If the specifications in this document differ from the OTC equipment manufacturers specifications, then the more stringent of the two shall be used.

5.15 The direct-current resistance of the CO cabling between the OTC equipment and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [6] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

5.16 All CO cabling between OTC equipment and the CODF shall be connected as specified by the BA CO Engineer.

5.17 The 1kHz loss of the CO cabling between the OTC equipment and the CODF, when measured between 900 ohm impedances, shall be less than .15 dB.

5.18 The C-message noise measured on the CO cabling between the OTC equipment and the CODF shall be 20 dBmC or less.

6. References

A. Definitions

Asymmetrical Digital Subscriber Line (ADSL)
A system that is capable of transmitting digital signals up to 6 Mbps toward the EU-POT and up to 640 kbps from the EU-POT.

ADSL Unbundled Loop Service (ADULS)
A service that provides an effective 2-wire channel, suitable for the transport of ADSL that uses using Carrierless AM/PM (CAP) technology, between the Bell Atlantic central office distributing frame termination of co-located equipment belonging to an OTC and the rate demarcation point at a customer location.

Basic Rate Integrated Services Digital Network Interface (BRI)
The BRI is a 2-wire ISDN interface that uses the two-binary one-quaternary line code at a 160 kilobit per second rate to transport overhead and up to two B channels and one D channel.

B Channel
The B channel is a 64 kilobit per second channel used for information transfer between users.

Bridged tap
Any branch section of a cable pair, or any extension of a cable pair beyond the point where it is used, in which no direct current flows when customer equipment is connected and used.

Central Office (CO)
A telephone company building which houses equipment and facilities used to provide switched access services.

Central Office Distributing Frame (CODF)
Framework located in a CO that holds wire cross-connects which are used to interconnect cable terminations for EU customer loops, switching system ports, and inter-office facilities.

Channel
An electrical, or photonic communications path between two or more points of transmission.

C-Message Noise
The frequency-weighted, short-term average noise within an idle channel. The frequency weighting, called C-message, is used to account for the variations in 500-type telephone set transducer efficiency and EU annoyance to tones as a function of frequency.

dBm
A unit for expression of power level in decibels relative to one milliwatt.

dBrn
A unit used to express noise power in decibels relative to one picowatt (-90 dBm).

dBm0
A unit used to express power level in decibels relative to one milliwatt referred to, or measured at, a zero transmission level point (0TLP). A unit used to express noise power in decibels relative to one picowatt measured with C-message weighting.

dBrnC0
Noise power in dBrnC referred to, or measured at, a zero transmission level point (0TLP).

D Channel
The D Channel is a 16 kilobit per second packet-switched channel that carries signaling and control for the B channels and also supports customer packet data traffic at speeds up to 9.6 kilobits per second.

Decibel (dB)
The logarithmic unit of signal power ratio most commonly used in telephony. It is used to express the relationship between two signal powers, usually between two acoustic, electric, or optical signals; it is equal to ten times the common logarithm of the ratio of the two signal powers.

Digital Signal Level One (DS1)
A digital signal transmitted at the nominal rate of 1.544 Mbit/s.

Facilities
Any cable, poles, conduit, microwave, or carrier equipment, central office distributing frames, central office switching equipment, computers (both hardware and software), business machines, etc., utilized to provide the services offered by a telephone company.

High-Bit-Rate Digital Subscriber Line (HDSL)
A system that is capable of transmitting bi-directional DS1 (1.544 Mbps) signals or bi-directional half DS1 (768 kbps) signals over metallic twisted-pair cables to provide access to digital telecommunications services.

HDSL Unbundled Loop Service (HDULS)
A service that provides a 2-wire or 4-wire metallic channel, suitable for the transport of HDSL, between the Bell Atlantic central office distributing frame termination of co-located equipment belonging to an OTC and the rate demarcation point at a customer location.

Integrated Services Digital Network (ISDN)
ISDN describes the end-to-end digital telecommunications network architecture which provides for the simultaneous access, transmission, and switching of voice, data, and image services. These functions are provided via channelized transport facilities over a limited number of standard user-network interfaces.

ISDN Basic Rate Unbundled Loop Service (IBRULS)
An unbundled loop service that provides an ISDN basic rate channel between the Bell Atlantic central office distributing frame termination of co-located equipment belonging to an OTC and the rate demarcation point at a customer location.

Leakage
The resistance between the conductors of an insulated metallic pair or the resistance between each conductor of an insulated metallic pair and ground.

Loop
A transmission channel between a EU customer location and a BA CO that is used as a transmission channel for telephone company services.

Other Telephone Company (OTC)
An organization that provides telecommunications services to the public.

Plain Ordinary Telephone Service (POTS)
The basic single line switched access service offered by local exchange carriers to residential and business customers. POTS uses loop-start signaling.

Power Influence (PI)
The power of a longitudinal signal induced in a metallic loop by an electromagnetic field emanating from a conductor or conductors of a power system. PI is also called longitudinal noise or noise-to-ground.

Rate Demarcation Point (RDP)
The point at which Bell Atlantic network access recurring charges and responsibility stop and beyond which customer responsibility begins. The RDP is the point of demarcation and/or interconnection between a Bell Atlantic subscriber loop facility and EU premises cabling or terminal equipment. Bell Atlantic facilities at, or constituting, the rate demarcation point shall consist of wire or a jack conforming to Subpart F of Part 68 of FCC rules.

Transmission Enhancement Equipment
In general, any equipment that improves the characteristics of a transmitted signal. In this document, transmission enhancement equipment is any equipment that regenerates a digital signal.

Unbundled Loop
A transmission channel between a EU customer location and a LEC CO that is not a part of, or connected to, other LEC services.

Voice Grade (VG)
A term used to describe a channel, circuit, facility, or service that is suitable for the transmission of speech, digital or analog data, or facsimile, generally with a frequency range of about 300 to 3000 Hz.

B. Acronyms

ADSL	Asymmetrical Digital Subscriber Line
ADULS	ADSL Unbundled Loop Service
ANSI	American National Standards Institute
BA	Bell Atlantic
BRI	Basic Rate Interface
BRITE	Basic Rate Interface Terminal Equipment
CO	Central Office
CODF	Central Office Distributing Frame
COT	Central Office Terminal
DLC	Digital Loop Carrier
DS0	Digital Signal Level Zero
DS1	Digital Signal Level One
DVM	Data-Voice Multiplexer
HDSL	High-Bit-Rate Digital Subscriber Line
HDULS	High-Bit-Rate Digital Unbundled Loop Service
IBRULS	ISDN Basic Rate Unbundled Loop Service
ISDN	Integrated Services Digital Network
LT	Line Terminating
NT	Network Terminating
OTC	Other Telephone Company
PI	Power Influence
POTS	Plain Ordinary Telephone Service

RD	Resistance Design
RDP	Rate Demarcation Point
RT	Remote Terminal
USOC	Universal Service Order Code
VF	Voice Frequency
VG	Voice Grade
2B1Q	Two-Bit One-Quaternary

7. Bibliography

1- ANSI T1.601-1992, American National Standard for Telecommunications- ISDN - Basic Access Interface for Use on Metallic Loops for Application at the Network Side of NT. Layer 1 Specification.

2- Special Report SR-TSV-000307

3- Special Report SR-TSV-000323

3- IEEE Std 743-1984, IEEE Standard Methods and Equipment for Measuring the Transmission Characteristics of Analog Voice frequency Circuits.

4- Generic Requirements GR-63-CORE, Network Equipment-Building System (NEBS) Requirements: Physical Protection, Issue 1, (Bellcore, October 1995).

5- Generic Requirements GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment, Issue 1 (Bellcore, November 1994).

6- Technical Reference FR-NWT-000064, LATA Switching Systems Generic Requirements (LSSGR), (Bellcore, 1994).

7- Committee T1 Technical Report No.28, *High-Bit-Rate Digital Subscriber Line (HDSL)*, February, 1994.

NOTE: These documents are subject to change: references reflect the most current information available at the time of printing. Readers are advised to check the status and availability of all documents.

EXHIBIT D

EXHIBIT D

Specialized Routing Solution For Operator & DA Calls

CALL TYPE	5ESS	DMS-100	EWSD	1AESS	DMS-10
0-	AIN	AIN	AIN	SRN	SRN
0+ local	LCC (cocot coin) SRN (non-coin)	LCC (cocot coin) SRN (non-coin)	LCC (cocot coin) SRN (non-coin)	LCC (cocot coin) SRN (non-coin)	LCC (cocot coin) SRN (non-coin)
0+ IntraLATA toll	LCC (coin) SRN/2PIC[1] (non-coin)	LCC (coin) SRN/2PIC[1] (non-coin)	LCC (coin) SRN/2PIC[1] (non-coin)	LCC (coin) SRN/2PIC[1] (non-coin)	LCC (coin) SRN/2PIC[1] (non-coin)
411	AIN	AIN	AIN	AIN	SRN
555-1212	AIN	AIN	AIN	AIN	SRN

[1]After 2 PIC implementation, these calls will be routed to the IntraLATA toll provider.

Definitions:

1. AIN = Advanced Intelligent Network
2. SRN = Specialized Routing Node
3. LCC = Line Class Code

EXHIBIT E

EXHIBIT E

AIN EXCEPTION LIST

Lucent 5ESS	Nortel DMS100	Siemens EWSD
ISATND – # ISDN Attendant Lines	NISDN – BRI, Including EKTS	Two-Party Lines
DID – Lines without Office Equipment	MDC Attendant Consoles Data Units	Denied Origination Service
CustoPak Lines	MBS Data Units, Customized ISDN Lines, and functional signaling Meridian feature transparency (MFT) set. (P-phones)	Remote Call Forwarding
Customized ISDN Lines	Datapath lines	
	WATS lines	

OTHER AIN-BASED SERVICE EXEPTIONS

1. CENTREX ARS
2. Easy Voice
3. Work At Home Billing Service
4. CENTREX Extend
5. Switch Redirect Service (requires special handling)

EXHIBIT F

EXHIBIT F

TR 72580
Issue 1, January 1997

Bell Atlantic Technical Reference

Analog Unbundled Port Services Technical Specifications

Notice

This Technical Reference is published by Bell Atlantic to provide a technical description of Analog Unbundled Port Services. To the extent feasible, the description references or duplicates existing published technical references utilized by the industry.

Bell Atlantic reserves the right to revise this technical reference for any reason including, but not limited to, changes in tariffs, laws, or regulations, conformity with updates and changes in standards promulgated by various agencies, utilization of advances in the state of technical arts, or the reflection of changes in the design of any facilities, equipment, techniques, or procedures described or referred to herein. Liability for difficulties arising from technical limitations or changes herein is disclaimed.

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With respect to services offered pursuant to tariff, however, the terms and conditions of the service offering are determined by the tariff itself and applicable laws and regulations. This reference is intended to be supplemental to the tariffs. In the event of a conflict between the tariffs, laws or regulations and this reference, the tariffs, laws, and regulations shall govern.

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EXHIBIT F

Bell Atlantic Network Services, Inc.
Technical Reference

TR 72580
Issue 1, January 1997

Bell Atlantic Technical Reference
Analog Unbundled Port Services
Technical Specifications

Contents **Page**

Figures **Page**

1. General

1.01 This technical reference provides the technical specifications associated with the Analog Unbundled Port Services offered by Bell Atlantic in the co-carrier section of some local exchange tariffs.

1.02 Whenever this technical reference is reissued, the reason(s) for reissue will be provided in this paragraph.

1.03 Analog Unbundled Port Services (UPS) enable Other Telephone Companies (OTC) that are collocated in a Bell Atlantic (BA) Central Office (CO) to connect to analog switch ports on BA local switching systems. The analog switch ports provide access to the functionality of the switch including supervisory signaling, digit reception and transmission, routing, rating, usage, as well as other line or trunk features.

1.04 The technical specifications in this document assume that the OTC is collocated in the same CO as the analog UPS. In the future, BA may offer transport services for analog UPS. In that case, the technical specifications associated with the transport service will supersede those in this document where applicable.

2. Service Description

2.01 The service description, terms and conditions, prices, and Universal Service Order Codes (USOCs) for analog UPS are contained in applicable tariffs or contracts.

2.02 Analog UPS are provided subject to availability on a first-come first-served basis. Special construction charges apply when appropriate facilities are not available.

2.03 Analog UPS vary according to the type of switch port (interface) and the services desired. This document contains the technical specifications associated with the analog switch port. The services associated with the analog switch port are described in applicable tariffs and other technical references.

2.04 Analog ports provide a local switch interface that is suitable for the transmission of analog voice grade signals between approximately 300 and 3000 Hz. Analog ports use various methods of dc supervisory signaling to control call processing.

2.05 The following analog UPS are offered: Basic, Centrex, PBX, and Direct Inward Dialing (DID). The Basic, Centrex, and PBX ports are on the line side of the local switching system and use Loop-Start or Ground-Start signaling. The DID port is on the trunk side of the local switching system and uses Loop Reverse-Battery signaling.

2.06 Basic, Centrex, PBX, and DID ports consist of a 2-wire analog interface associated with a local switching system and a 2-wire CODF cross-connect between a 2-wire OTC CODF

termination and the CODF termination of the analog port. At each 2-wire interface one conductor is called tip and the other conductor is called ring. A typical analog port configuration is shown in Figure 2-1.

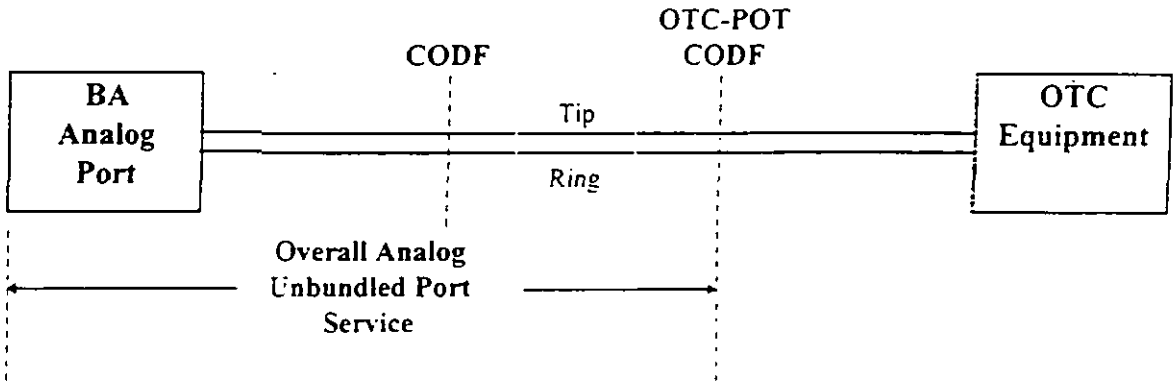

Figure 2-1. Typical Analog Unbundled Port Configuration

2.07 An analog UPS ordinarily consists of the following elements (see Figure 2-2):

(1) Central Office Distributing Frame (CODF) wire and tie cable(s) between the CODF termination of the OTC equipment and the CODF termination of the BA analog switch port;

(2) CO cabling between the CODF and the BA analog switch port; and

(3) an analog switch port on a BA local switching system that is either:

(a) a loop-start line-side port (LSLS);
(b) a ground-start line-side port (GSLS); or,
(c) a loop reverse-battery trunk-side port (LRTS). The LRTS port is either:

(I) an LRTS port on the trunk-side of a local switching system; or,
(II) an LRTS port on a digital channel bank in the same building that has a high capacity connection (such as DS1) to the local switching system.

(4) Each LSLS or GSLS port has the following basic characteristics and capabilities:

(a) an associated telephone number;
(b) Dial Pulse (DP) or Dual Tone Multi-Frequency (DTMF) address signaling;
(c) access to local calling within the minimum BA-defined local calling area for each rate center;
(d) basic intercept;
(e) one primary directory listing;
(f) PIC1 and PIC2 access;

(g) access to 911;
(h) access to call routing, switch usage, and recording capability.

(5) Each LRTS port has the following basic characteristics and capabilities:

(a) one way call routing from the BA local switching system to the OTC for associated telephone numbers;
(b) DP, DTMF, or MF address signaling;
(c) access to call routing and switch usage capabilities.

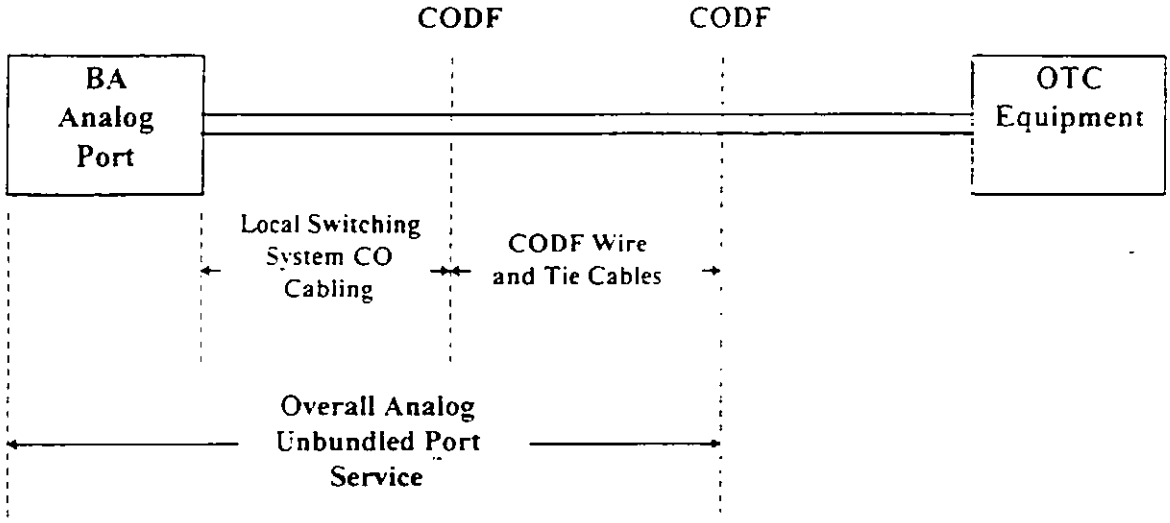

Figure 2-2. Unbundled Port Service Elements

2.08 The requirements for the BA unbundled port service elements are provided in Section 3 of this technical reference. The overall service requirements are specified in Section 4. Section 5 provides OTC equipment and cabling specifications. Figure 2-3 shows the requirements associated with unbundled port services.

2.09 The Basic line-side port is suitable for single line residential or business service. Unless the OTC requests ground-start supervisory signaling or DP address signaling at the time the service is ordered, the Basic port will be provided with loop-start supervisory signaling and DTMF address signaling capabilities. DP address signaling can be used on a port that is arranged for DTMF signaling.

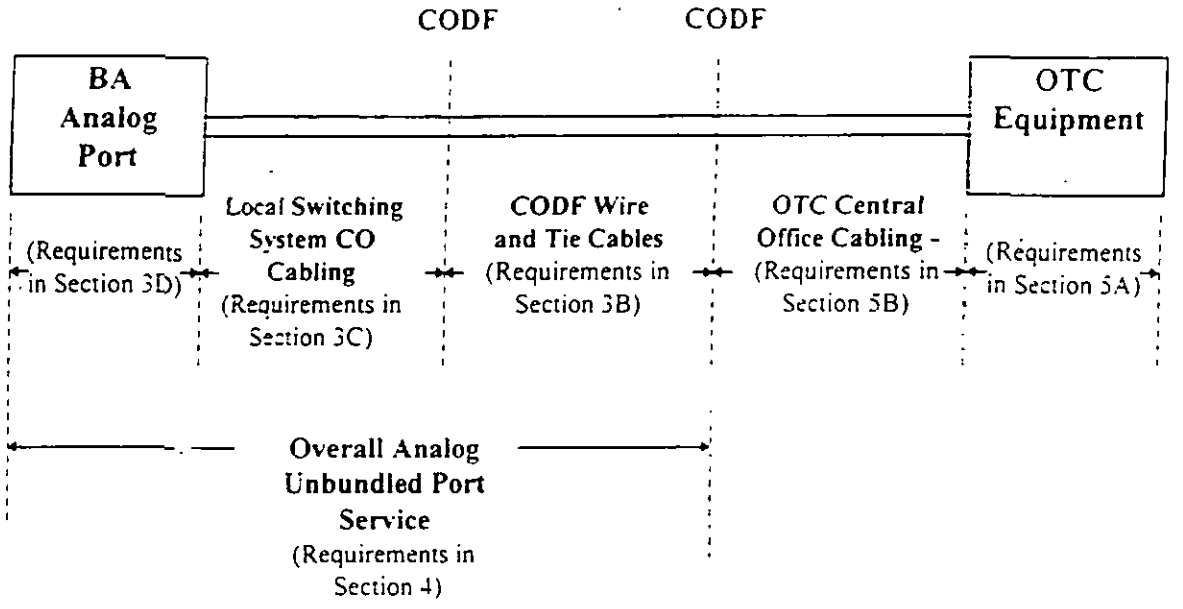

Figure 2-3. Requirements Associated with Analog Unbundled Port Services

2.10 The Centrex port is suitable for Centrex line service. Unless the OTC requests ground-start supervisory signaling or DP address signaling at the time the port is ordered, the Centrex port will be provided with loop-start supervisory signaling and DTMF address signaling capabilities. DP address signaling can be used on a port that is arranged for DTMF signaling.

2.11 The PBX port is suitable for Private Branch Exchange (PBX) Central Office trunks. Unless the OTC requests loop-start supervisory signaling or DP address signaling at the time the port is ordered, the PBX port will be provided with ground-start supervisory signaling and DTMF address signaling. DP address signaling can be used on a port that is arranged for DTMF signaling.

2.12 The DID port is suitable for one-way Direct Inward Dialing (DID) trunks. Loop reverse battery is the only supervisory signaling available. Unless the OTC requests DTMF or MF address signaling at the time the port is ordered, the DID port will be provided with DP address signaling.

2.13 The following list of supplementary features are some of the features that are available on line-side ports where technically feasible. Detailed feature lists by switch port type will be provided by the product manager.

- Additional listings
- Operator services
- Directory assistance
- Call Blocking (customer or OTC activated)
- Caller ID (calling number delivery)
- Speed calling

- 3-Way calling
- Call Waiting
- Call Forwarding (including Call Forwarding Busy and No Answer)
- Early fraud warning
- Hunt group arrangements
- Usage recording and daily usage tapes indicating the to and from number and start and stop time by port
- Simplified Message Desk Interface data link
- Routing options

2.14 All analog UPS services use the SN network channel (NC) code. Additional NC option codes are shown in Figure 2-4.

2.15 Network Channel Interface (NCI) codes describe the type of OTC signaling. Valid analog NCI codes are shown in Figure 2-5.

2.16 Valid analog NC/NCI code combinations are shown in Figure 2-6.

Figure 2-4: UPS NC Codes

NC Code	Character 3	Character 4
SN	A (2-wire)	L (line-side port) T (trunk-side port)

Figure 2-5: UPS NCI Codes (see note)

NCI Code	Description
02QC3.OOE	Loop-start signaling - Closed End
02QC3.OOC	Ground-start signaling - Closed End
02QC3.RVT	Loop Reverse-Battery Terminating Signaling

Note: NCI codes describe the function performed by the connecting OTC equipment not the function of the unbundled port service. For example, an LSLS port performs the open end function of an access line and connecting OTC equipment performs the closed end function.

Figure 2-6: Valid analog UPS NC/NCI Code Combinations

Unbundled Port Service	NC Code	NCI Code
LSLS	SNAL	02QC3.OOE
GSLS	SNAL	02QC3.OOC
LRTS	SNAT	02QC3.RVT

3. Service Elements

A. General

3.01 Three elements are always used with analog Unbundled Port Services. They are: Central Office Distributing Frame (CODF) wire and tie cable(s), BA local switching system CO cabling, and a BA local switching system port. The following sections contain the specifications for each of these elements.

B. CODF Wiring and Tie Cable(s)

3.02 CODF cross-connect wiring and tie cable(s) are used to link the CODF termination of OTC equipment to the CODF termination of the BA local switching system port.

3.03 The total combined length of all CODF cross-connect wiring and all CODF-to-CODF tie cables used for analog UPS should be less than 1500 feet.

3.04 The direct-current resistance of the CODF wiring and tie cable used for analog UPS should be less than 80 ohms. This is equal to 1500 or less feet of 24 gauge cable.

3.05 The 1kHz loss of the CODF wiring and tie cable used for UPS, when measured between 900 ohm impedances, should be less than .5 dB.

3.06 The C-message noise measured on the CODF wiring and tie cables used for analog UPS shall be 20 dBrnC or less when measured between 900 ohm impedances..

C. Bell Atlantic Local Switching System CO Cabling

3.07 The voice grade CO cabling used to terminate BA Local Switching System ports on the CODF shall use twisted-pair conductors.

3.08 The type, gauge, and length of the BA CODF cabling shall be specified based on this specification and BA equipment vendor requirements. If the specifications in this document differ from the equipment manufacturers specifications, then the more stringent of the two shall be used.

3.09 The direct-current resistance of the CO cabling between the BA local switching system port and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [1] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

3.10 The 1kHz loss of the CO cabling between the BA local switching system port and the CODF, when measured between 900 ohm impedances, shall be less than .15 dB.

3.11 The C-message noise measured on the CO cabling between the BA local switching system port and the CODF shall be 20 dBrnC or less.

D. Local Switching System Analog Ports

3.12 Bell Atlantic currently offers three different local switching system analog ports. They are: (1) the loop-start line-side (LSLS) port, (2) the ground-start line-side (GSLS) port, and (3) the loop reverse-battery terminating (LRTS) trunk-side port.

3.13 The impedance of the local switching system analog port is based on the type of local switching system. Most BA local switching system ports have a nominal 900 ohms + 2.16uF impedance, however some switching system ports have a nominal impedance of 800 ohms in parallel with 0.05 uF and 100 ohms.

3.14 Line-side analog ports shall provide 20 mA or more of loop current when terminated by a direct-current resistance of between 430 ohms and 1730 ohms.

3.15 The C-message noise measured on the analog port shall be 20 dBrnC or less.

3.16 The C-Notched noise measured on the analog port shall be 45 dBrnC or less with a -13 dBm0 1004 Hz holding tone.

3.17 Signaling on the LSLS (02QC3.OOE) and GSLS (02QC3.OOC) ports shall conform to the network specifications in ANSI T1.401-1993 [2].

3.18 Signaling on the LRTS (02QC3-RVT) port shall conform to the network specifications in ANSI T1.405-1996 [3].

4. Service Specifications

4.01 The overall end-to-end analog UPS service is from the CODF termination of the OTC equipment (OTC-POT) to the BA local switching system port (See Figure 2-1).

4.02 Analog UPS should meet the limits in Figure 4-1, 4-2, and 4-3 when measured at the BA local switching system test position. Parameters are usually tested in response to trouble reports or when additional testing is purchased.

Figure 4-1: Analog UPS Acceptance Limits (AL) and Immediate Action Limits (IAL)

Parameter	AL	IAL
Loss	< 1.0 dB	> 1.5 dB
Resistance	< 100 ohms	> 100 ohms
C-Message Noise	< 30 dBrnC0	> 30 dBrnC0
LSLS & GSLS Loop Current	> 20 mA	< 20 mA

4.03 Signaling on the LSLS (02QC3.OOE) and GSLS (02QC3.OOC) ports shall conform to the network specifications in ANSI T1.401-1993 [2]. Signaling on the LRTS (02QC3.RVT) port shall conform to the network specifications in ANSI T1.405-1996 [3].

4.04 Compatible TLP ranges are shown in Figures 4-2 and 4-3.

Figure 4-2: Compatible TLP Ranges at the OTC-POT

Specified NCI Code	OTC Transmit TLP [1]	OTC Receive TLP [2]
02QC3.OOE, 02QC3.OOC	0.0 to -8.0 [0.0]	0.0 to -1.0
02QC3.RVT	-2 to -3.5 [-3.5]	0.0 to -1.0

Figure 4-3: Compatible TLP Ranges at the BA Local Switching System

Specified NCI Code	BA Transmit TLP	BA Receive TLP
02QC3.OOE, 02QC3.OOC	0.0	0.0 to -8.0
02QC3.RVT	0.0	-2 to -4 [3]

5. OTC Equipment and CO Cabling Requirements

A. OTC Equipment Requirements

5.01 Collocated OTC equipment used for interconnection with analog UPS shall meet all of the applicable generic equipment requirements in GR-63-CORE [4] and GR-1089-CORE [5].

5.02 Collocated OTC equipment shall be manufactured in accordance with FCC, NEC, UL, and USDL requirements and orders applicable to Federal, State, and local requirements including, but not limited to, statutes, rules, regulations, orders, or ordinances, or otherwise imposed by law. Where requirements are not specified in this document, contractual technical requirements, or other applicable documents, the manufacturer's requirements consistent with industry standards shall be met.

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[1] The OTC transmit TLP is normally specified by the OTC. When the OTC transmit TLP is not specified, the bracketed [ ] value denotes the default TLP.

[2] The OTC receive TLP will be a function of the BA transmit TLP (0.0) and the total loss of the BA port, BA CO cabling, and BA CODF wiring. The average OTC receive TLP is -0.5 dBm and the level cannot be adjusted.

[3] When the LRTS port is an analog trunk circuit, the BA receive TLP will be a function of the OTC transmit TLP and the total loss of the BA CO cabling, the BA CODF wiring, and the BA LRTS port. The average total loss of the BA CO cabling, BA CODF wiring, and BA port is about 0.5 dB and the BA receive TLP cannot be adjusted by BA. When the LRTS port is on a channel bank that has a high capacity connection to the BA Local Switching System, the BA receive TLP is obtained by Local Switching System translations and is always -4.0.

5.03 The open circuit tip-to-ring dc voltage that collocated OTC equipment applies to BA VF cabling shall be less than 80 Vdc.

5.04 Collocated OTC equipment shall not deliver more than 2.5 watts of power to any load via BA VF cable.

5.05 Collocated OTC load equipment shall not draw more than 100 mA of loop current from LSLS and GSTS ports and shall not deliver more than 100mA of loop current to any LRTS port.

5.06 The noise limits for analog UPS are predicated on the OTC equipment having a longitudinal balance of > 60 dB when measured using the methods and equipment specified in ANSI/IEEE 455-1984 [6].

5.07 The loss and noise limits for analog UPS are predicated on collocated OTC equipment having a nominal impedance of 900 ohms when measured using the methods and equipment in ANSI/IEEE 743-1995 [7].

5.08 The applied power level of any transmitted signal averaged over 3 seconds shall not exceed -12 dBm0.

5.09 The signaling characteristics of OTC equipment associated with LSLS and GSLS ports shall conform to the loop-start and ground-start customer installation specifications in ANSI T1.401-1993 [2].

5.10 The signaling characteristics of OTC equipment associated with LRTS ports shall conform to the loop reverse battery customer installation specifications in ANSI T1.405-1996 [3].

B. OTC CO Cabling Requirements

5.11 The voice grade CO cabling used to terminate OTC equipment on the CODF for interconnection with analog UPS shall use twisted-pair conductors.

5.12 The type, gauge, and length of the OTC CODF cabling shall be specified based on this specification and OTC equipment requirements. If the specifications in this document differ from the OTC equipment manufacturers specifications, then the more stringent of the two shall be used.

5.13 The direct-current resistance of the CO cabling between the OTC equipment and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [1] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

5.14 All CO cabling between OTC equipment and the CODF shall be equipped with connectors at each end. The type of connectors shall be specified by the CO Engineer.

5.15 The 1kHz loss of the CO cabling between the OTC equipment and the CODF, when measured between 900 ohm impedances using the methods and equipment specified in ANSI/IEEE 743-1995 [7], shall be less than .15 dB.

5.16 The C-message noise measured on the CO cabling between the OTC equipment and the CODF, when measured between 900 ohm impedances using the methods and equipment specified in ANSI/IEEE 743-1995 [7], shall be 20 dBrnC or less.

6. References

A. Definitions

Central Office (CO)
A telephone company building which houses equipment and facilities used to provide switched access services.

Central Office Distributing Frame (CODF)
Framework located in a CO that holds wire cross-connects which are used to interconnect cable terminations for end-user customer loops, switching system ports, and inter-office facilities.

Closed end
The closed end of an access line is the end of the access line that is not switched. The closed end connects to CPE or OTC equipment that functions as terminal equipment.

C-Message Noise
The frequency-weighted, short-term average noise within an idle channel. The frequency weighting, called C-message, is used to account for the variations in 500-type telephone set transducer efficiency and end-user annoyance to tones as a function of frequency.

C-Notched Noise
The C-message frequency-weighted noise on a channel with a holding tone that is removed at the measuring end through a notch (very narrow band) filter.

dBm
A unit for expression of power level in decibels relative to one milliwatt.

dBm0
Power level referred to, or measured at, a zero transmission level point (0TLP).

dBrn
A unit used to express noise power relative to one picowatt (-90 dBm).

dBrnC
Noise power measured with C-message weighting expressed in dBrn.

dBrnC0
Noise power in dBrnC referred to, or measured at, a zero transmission level point (0TLP).

Decibel (dB)
The logarithmic unit of signal power ratio most commonly used in telephony. It is used to express the relationship between two signal powers, usually between two acoustic, electric, or optical signals; it is equal to ten times the common logarithm of the ratio of the two signal powers.

Dial Pulse (DP)
A type of switched access line address signaling that uses rapid loop open and loop closure signals (pulses) to indicate the digit being dialed. The digits 1 through 9 are represented by the same number of pulses and the digit zero is represented by ten pulses.

Dual Tone Multi-Frequency (DTMF)
A type of switched access line address signaling that uses two tones transmitted simultaneously to indicate a digit (0 to 9) or character (* or #).

Ground-Start (GS) signaling
A type of switched access line supervisory signaling in which the network provides a battery source. To initiate a call, CPE or OTC equipment provides a ground on the ring lead. The ring ground causes dc current to flow which the local switching system will detect as a request for service. On terminating calls, CPE or OTC equipment will provide an off-hook loop closure that is recognized as an answer signal.

Line-side
That part of a local switching system that interfaces access lines.

Local switching system
A system that establishes connections between access lines and connections between access lines and interoffice trunks. Access line ports are located on the line-side of the local switching system and trunk ports are located on the trunk-side of the local switching system.

Loop reverse-battery signaling
A type of switched access line supervisory signaling that uses loop-open and loop-closure signals to indicate on-hook and off-hook signals in one direction and normal battery polarity and reverse battery polarity to indicate on-hook and off-hook signals in the other direction. The end of the service that generates loop open and loop closure signals is called the originating end and the other end which generates the normal battery polarity and reverse battery polarity signals is called the terminating end. For LRTS and other DID-type ports, the local switching system is the originating end and the CPE or OTC equipment is the terminating end. The interface code for such applications represents the function performed by the CPE or OTC equipment (02QC3-RVT).

Loop-Start (LS) signaling
A type of switched access line signaling in which the network provides a battery source. To initiate and maintain a call, CPE or OTC equipment will provide an off-hook loop closure. The loop

closure causes dc loop current to flow which the local switching system will recognize as a service request. On terminating calls, CPE or OTC equipment will provide an off-hook loop closure that is recognized as an answer signal.

Open end
The open end of an access line is the end of the access line that connects to the local switching system port. The open end can be switched to other line or trunk ports associated with the same local switching system.

Other Telephone Company (OTC)
An organization that provides telecommunications services to the public.

Trunk-side
That part of a local switching system that interfaces interoffice trunks.

Unbundled Port
A physical termination (port) on a switching system that provides access to and from the public switched telephone network.

Voice Grade (VG)
A term used to describe a channel, circuit, facility, or service that is suitable for the transmission of speech, digital or analog data, or facsimile, generally with a frequency range of about 300 to 3000 Hz.

B. Acronyms

AL	acceptance limit
ANSI	American National Standards Institute
BA	Bell Atlantic
CO	central office
CODF	central office distributing frame
CPE	customer premises equipment
DID	Direct Inward Dialing
DP	dial pulse
DS1	digital signal level one
DTMF	dual tone multi-frequency
GS	ground-start
GSLS	ground-start line-side
FCC	Federal Communications Commission
IAL	immediate action limit
IEEE	International Electrical and Electronic Engineers
LRB	loop reverse-battery
LRTS	loop reverse-battery trunk-side
LS	loop-start
LSLS	loop-start line-side

NC	network channel
NCI	network channel interface
NEC	National Electric Code
OTC	Other Telephone Company
PBX	Private Branch Exchange
PIC1	primary interconnect carrier one
PIC2	primary interconnect carrier two
POTS	plain ordinary (analog) telephone service
UL	Underwriter's Laboratory
UPS	*Unbundled Port Service*
USDL	United States Department of Labor
USOC	Universal Service Order Code
VF	voice frequency
VG	voice grade

7. Bibliography

1- Technical Reference FR-NWT-000064. LATA Switching Systems Generic Requirements (LSSGR). (Bellcore. 1994).

2- American National Standard for Telecommunications - Interface Between Carriers and Customer Installations - Analog Voicegrade Switched Access Lines Using Loop-Start and Ground-Start Signaling. ANSI T1.401-1993.

3- American National Standard for Telecommunications - Network-to-Customer Installation Interfaces - Direct-Inward-Dialing Analog Voice grade Switched Access Using Loop Reverse-Battery Signaling, ANSI T1.405-1996.

4- Generic Requirements GR-63-CORE. Network Equipment-Building System (NEBS) Requirements: Physical Protection. Issue 1. (Bellcore. October 1995).

5- Generic Requirements GR-1089-CORE. Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment. Issue 2 (Bellcore. November 1994).

6- ANSI/IEEE 455-1984 (R1993). Test Procedure for Measuring Longitudinal Balance of Telephone Equipment Operating in the Voice Band.

7- ANSI/IEEE 743- 1995. Standard Methods and Equipment for Measuring the Transmission Characteristics of Analog Voice Frequency Circuits.

NOTE: These documents are subject to change: references reflect the most current information available at the time of printing. Readers are advised to check the status and availability of all documents.

EXHIBIT G

EXHIBIT G

TR 72585
Issue 1, April 1997

Bell Atlantic Technical Reference

Digital Unbundled Port Services Technical Specifications

Bell Atlantic Network Services, Inc.
Technical Reference

TR 72585
Issue 1, April 1997

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Bell Atlantic reserves the right to revise this technical reference for any reason including, but not limited to, changes in tariffs, laws, or regulations, conformity with updates and changes in standards promulgated by various agencies, utilization of advances in the state of technical arts, or the reflection of changes in the design of any facilities, equipment, techniques, or procedures described or referred to herein. Liability for difficulties arising from technical limitations or changes herein is disclaimed.

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EXHIBIT G

Bell Atlantic Network Services, Inc.
Technical Reference

TR 72585
Issue 1, April 1997

Bell Atlantic Technical Reference
Digital Unbundled Port Services
Technical Specifications

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1. General

1.01 This technical reference provides the technical specifications associated with the Digital Unbundled Port Services offered by Bell Atlantic (BA) in the co-carrier section of some local exchange tariffs or via contract.

1.02 Whenever this technical reference is reissued, the reason(s) for reissue will be provided in this paragraph.

1.03 Digital Unbundled Port Services (DUPS) enable Other Telephone Companies (OTC) that are collocated in a BA Central Office (CO) to connect to digital switch ports on BA local switching systems. The digital switch ports provide access to the functionality of the switch including supervisory signaling, digit reception and transmission, routing, rating, usage, as well as other line and trunk features.

1.04 The technical specifications in this document assume that the OTC is collocated in the same CO as the digital UPS. In the future, BA may offer transport services for DUPS. In that case, the technical specifications associated with the transport service will supersede those in this document where applicable.

2. Service Description

A. General

2.01 The service description, terms and conditions, prices, and Universal Service Order Codes (USOCs) for DUPS are contained in applicable tariffs or contracts.

2.02 DUPS are provided subject to availability on a first-come first-served basis. Special construction charges apply when appropriate facilities are not available.

2.03 DUPS vary according to the type of switch port (interface) and the services desired. This document contains the technical specifications associated with the digital switch ports. The services associated with the digital switch port are described in applicable tariffs and other technical references.

2.04 Digital ports provide a local switch interface that is suitable for the transmission of digital signals at the rates specified for each port.

2.05 The following DUPS are currently offered: Basic Rate ISDN (BRI), Centrex Basic Rate ISDN (CBRI), Primary Rate ISDN (PRI), DS1 message trunk interface (DS1MT), and DS1 Direct Inward Dialing (DS1DID). Other port types will be considered upon receipt of a bona-fide request.

2.06 DUPS ordinarily consists of the following elements:

(1) (a) For BRI and CBRI: Central Office Distributing Frame (CODF) wire and tie cable(s) between the CODF termination of the OTC transport equipment and the CODF termination of the BA switch port. (b) For PRI, DS1MT, and DS1DID: Digital Signal 1 Cross-Connect (DSX-1) wire and repeatered tie cable between the DSX-1 termination of the OTC transport equipment and the DSX-1 termination of the BA switch port. (In some cases, an electronic digital cross-connect (EDSX) system can be substituted for the DSX-1.)

(2) CO cabling between the CODF or DSX-1 and the BA Digital switch port; and,

(3) a digital switch port on a BA local switching system that is either:

(a) a line-side Basic Rate ISDN or Centrex Basic Rate ISDN interface;
(b) a line-side[1] DS1 interface for Primary Rate ISDN; or,
(c) a trunk-side DS1 interface for Message Trunks, or Direct Inward Dialing trunks.

2.07 Each DUPS line-side port has the following basic characteristics and capabilities:

- an associated telephone number;
- access to local calling within the minimum BA-defined local calling area for each rate center;
- basic intercept;
- PIC1 and PIC2 (where deployed) access;
- access to 911;
- access to call routing, switch usage, and recording capability.

2.08 Each DS1DID trunk-side port has the following basic characteristics and capabilities:

- One-way call routing from the BA local switching system to the OTC for associated telephone numbers;
- wink-start address control signal;
- DP, DTMF, or MF address signaling;
- access to call routing and switch usage capabilities.

2.09 Each DS1MT trunk-side port has the following basic characteristics and capabilities:

- One-way call routing from the BA local switching system to the OTC for associated telephone numbers, or,
- One-way call routing from the OTC to the BA local switching system for associated telephone numbers;
- SS7 out-of-band signaling, or,

[1] Primary Rate ISDN (PRI) services use a DS1 interface (port) on the local switching system. Depending upon the architecture of the local switching system, the port may be on the line-side or the trunk-side of the local switching system. Since the location of the port has no bearing on the functional characteristics of the port, for the purposes of this technical reference a line-side port is assumed.

- wink-start address control signal with MF address signaling; and
- access to call routing and switch usage capabilities.

2.10 The following list of supplementary features are some of the features that are available on line-side ports where technically feasible. Detailed feature lists by switch port type will be provided by the product manager.

- Additional listings
- Operator services
- Directory assistance
- Call Blocking (customer or OTC activated)
- Caller ID (calling number delivery)
- Speed calling
- 3-Way calling
- Call Forwarding (including Call Forwarding Busy and No Answer)
- Hunt group arrangements
- Visual message waiting indicator
- Usage recording and daily usage tapes indicating the to and from number and start and stop time by port

B. Basic Rate ISDN (BRI)

2.11 BRI service consists of a 2-wire line-side port associated with a local switching system and a 2-wire CODF cross-connect between a 2-wire OTC CODF termination and the BRI CODF termination. At each 2-wire interface one conductor is called tip and the other conductor is called ring. A typical BRI port configuration is shown in Figure 2-1.

2.12 The BRI interface provides Line Termination (LT) functionality and utilizes the Two-Binary One-Quaternary (2B1Q) line code operating at 160 kbps that is described in Bellcore technical reference TR-NWT-000393 [1].

2.13 BRI is available in the 2B + D configuration which provides two B channels and one D channel (for signaling). BRI also supports a maintenance channel (M channel).

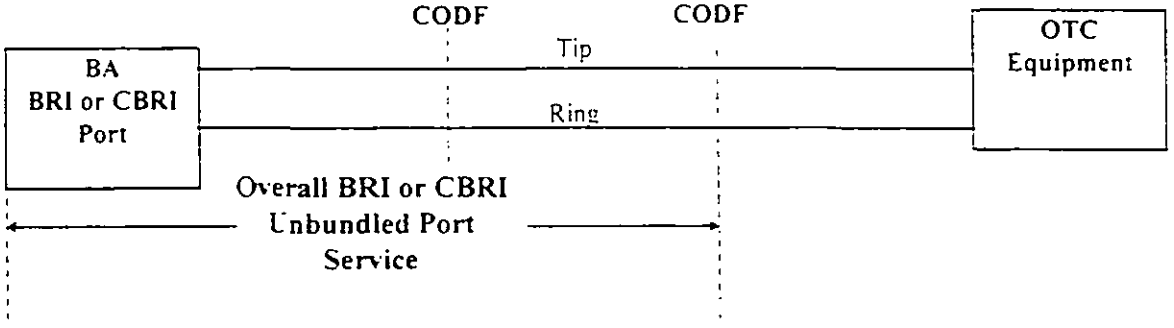

Figure 2-1. Typical BRI or CBRI Unbundled Port Configuration

C. Centrex Basic Rate ISDN (CBRI)

2.14 CBRI service consists of a 2-wire line-side port associated with a local switching system and a 2-wire CODF cross-connect between a 2-wire OTC CODF termination and the CTX BRI CODF termination. At each 2-wire interface one conductor is called tip and the other conductor is called ring. A typical CBRI port configuration is shown in Figure 2-1.

2.15 The CBRI interface provides Line Termination (LT) functionality and utilizes the Two-Binary One-Quaternary (2B1Q) line code operating at 160 kbps that is described in Bellcore technical reference TR-NWT-000393 [1].

2.16 CBRI is available in the 2B + D configuration which provides two B channels and one D channel (for signaling). CBRI also supports a maintenance channel (M channel).

D. Reserved for future use.

E. Primary Rate ISDN (PRI)

2.17 PRI service consists of a 4-wire DSX-1 port associated with a local switching system and the 4-wire DSX-1 cross-connect between the OTC DSX-1 termination and the local switching system DSX-1 termination. A typical PRI port configuration is shown in Figure 2-2.

2.18 PRI ports are DSX-1 interfaces that meet the electrical specifications in ANSI T1.102 [3]. PRI service uses B8ZS line code and the Extended SuperFrame (ESF) Format described in ANSI T1.403 [5].

2.19 PRI is synchronized by the BA local switching system that uses timing that is traceable to a stratum one timing supply. The associated Building Integrated Timing Supply (BITS) meets the 3E specifications in ANSI T1.101 [6].

2.20 PRI is available in several configurations. The 23B + D configuration provides 23 B channels and one D channel (for signaling) that is always assigned to timeslot 24. The 24B configuration provides 24 B channels and signaling is carried over the D-channel of an associated PRI.

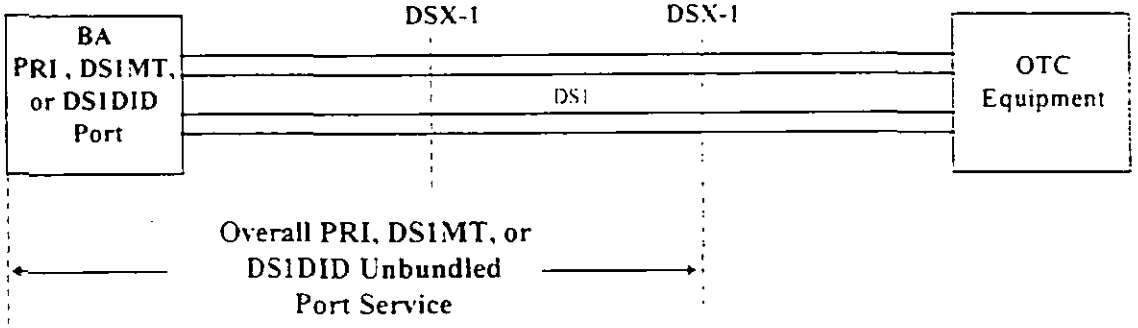

Figure 2-2. Typical PRI, DS1MT, or DS1DID Unbundled Port Configuration

2.21 Circuit Mode 3.1 kHz Audio is assumed for all calls originating from the Public Switched Telephone Network (PSTN). In addition, the analog voice grade signals on each DS0 for such calls are encoded and decoded using the μ255 coding scheme described in ITU-T Recommendation G.711 [4].

F. DS1 Message Trunk (DS1MT)

2.22 DS1MT service consists of a 4-wire DSX-1 port associated with the trunk-side of a local switching system and the 4-wire DSX-1 cross-connect and repeatered tie cable between the OTC DSX-1 termination and the local switching system DSX termination. A typical DS1MT port configuration is illustrated in Figure 2-2.

2.23 DS1MT ports are DSX-1 interfaces that meet the electrical specifications in ANSI T1.102 [3]. DS1MT ports use the B8ZS line code and the ESF framing format described in ANSI T1.403 [5].

2.24 DS1MT ports are synchronized by the BA local switching system that uses a timing supply that is traceable to a stratum one clock as described in ANSI T1.101 [6]. The Building Integrated Timing Supply (BITS) meets the 3E clock specifications in ANSI T1.101 [6].

2.25 DS1MT ports are channelized into 24 DS0 channels.

2.26 For out-of-band common channel signaling (CCS) applications, each DS0 can carry a 56 kbps or 64 kbps information payload. Signaling System 7 (SS7) signaling conforming to Bellcore GR-905-CORE [7] will be used in such applications.

2.27 For non-CCS/SS7 applications, robbed bit supervisory signaling conforming to ANSI T1.403 [5], wink-start call control protocol, and MF signaling will be used. When robbed bit supervisory signaling is used, each DS0 is limited to a 56 kbps payload.

2.28 Analog voice grade signals on each DS0 are encoded and decoded using the μ255 coding scheme described in ITU-T Recommendation G.711 [4].

G. DS1 Direct Inward Dialing (DS1DID)

2.29 DS1DID service consists of a 4-wire DSX-1 port associated with the trunk-side of a local switching system and the 4-wire DSX-1 cross-connect and repeatered tie cable between the OTC DSX-1 termination and the local switching system DSX termination. A typical DS1DID port configuration is illustrated in Figure 2-2.

2.30 DS1DID ports are DSX-1 interfaces that meet the electrical specifications in ANSI T1.102 [3]. DS1DID uses the AMI or B8ZS line code and the SF or ESF framing format described in ANSI T1.403 [5].

2.31 DS1DID ports are synchronized by the BA local switching system using a timing supply that is traceable to a stratum one clock as described in ANSI T1.101 [6]. The Building Integrated Timing Supply (BITS) meets the 3E clock specifications in ANSI T1.101 [6].

2.32 DS1DID ports are channelized into twenty-four 56 kbps DS0 channels. Each DS0 channel uses robbed bit supervisory signaling conforming to the loop reverse battery signaling (customer installation provided loop current feed) specifications in ANSI T1.403, Annex C [5].

2.33 Each DID DS0 channel uses the wink-start call control protocol and either dial pulse (DP), Dual Tone Multi-Frequency (DTMF), or Multi-Frequency (MF) address signaling. DP address signaling is transmitted using the robbed bit supervisory signaling. DTMF and MF address signaling is transmitted along with other voiceband frequencies in the DS0 payload after being encoded using the μ255 coding scheme described in ITU-T Recommendation G.711 [4].

2.34 Analog voice grade signals on each DS0 are encoded and decoded using the μ255 coding scheme described in ITU-T Recommendation G.711 [4].

H. Network Channel and Network Channel Interface Codes

2.35 Network Channel (NC) and Network Channel Interface (NCI) codes are used for communicating channel and interface information. The NC/NCI code set facilitates the identification of network channel requirements and associated interface specifications for services described in tariffs.

2.36 For switched services, the NC code is an encoded representation of the channel that is provided from the OTC Point Of Termination (POT) to the BA CO. By varying the NC code, the customer is allowed to further specify the type of service.

2.37 The most common DUPS NC codes are shown in figure 2-3. The complete set of NC codes for DUPS and other services may be found in SR-STS-000307 [9].

2.38 The NCI code is an encoded representation used to identify five interface elements located at a POT. The five elements reflect the following physical and electrical characteristics: number of physical conductors, protocol, impedance, protocol options, and transmission levels points (if applicable).

2.39 Valid DUPS NCI codes are shown in Figure 2-4.

2.40 Valid Digital NC/NCI code combinations are shown in Figure 2-5. Complete NC/NCI compatibility for DUPS and other services may be found in SR-STS-000323 [10].

Figure 2-3: DUPS NC Codes

Service	NC Code	Character 3	Character 4
BRI & CBRI	SN	A (2-Wire)	L (line side)
Primary Rate ISDN	HC	E (ANSI ESF & B8ZS)	E (PRI 24B)
			I (PRI 23B + D)
DS1 Message Trunk	SD	U	K (EO to EO SS7)
			L (EO to LT SS7)
DS1 DID	SD	-	Y (DID - DTMF)

Figure 2-4: DUPS NCI Codes

NCI Code	Description
02QC5.OOS	Basic Rate ISDN
02QC5.OOS	Centrex Basic Rate ISDN
04QB9.11	Primary Rate ISDN
04QB9.11	DS1 Message Trunk
04QB9.11	DS1 Direct Inward Dialing

Figure 2-5: Valid NC/NCI Code Combinations

Service	NC Code	NCI Code
Basic Rate ISDN	SNAL	02QC5.OOS
Centrex Basic Rate ISDN	SNAL	02QC5.OOS
Primary Rate ISDN (24B)	HCEE	04QB9.11
Primary Rate ISDN (23B+D)	HCEI	04QB9.11
DS1 Message Trunk (EO to EO SS7)	SDUK	04QB9.11
DS1 Message Trunk (EO to Tandem SS7)	SDUL	04QB9.11
DS1 Direct Inward Dialing	SD-Y	04QB9.11

3. Service Elements

A. General

3.01 Three elements are always used with BRI and CBRI Unbundled Port Services. They are: CODF cross-connect wiring and tie cable(s), BA local switching system CO voice frequency (VF) cabling, and a BA local switching system port. Figure 3-1 illustrates the BRI and CBRI Unbundled Port Service elements and identifies the sections of this document that contain the requirements for each of the elements.

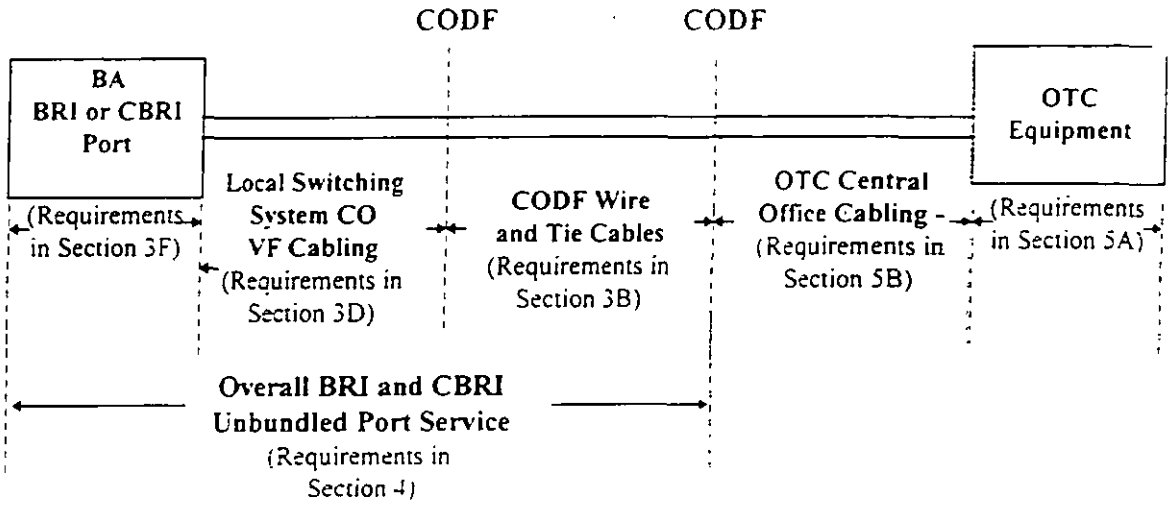

Figure 3-1. BRI and CBRI Unbundled Port Service Elements

3.02 Three elements are always used with the DS1s associated with the PRI, DS1MT, and DS1DID Unbundled Port Services. They are: DSX-1 cross-connect wiring and tie cable(s), BA local switching system CO DSX-1 cabling, and a BA local switching system DS1 port. Figure 3-2 illustrates the PRI, DS1MT, and DS1DID Unbundled Port Service elements and identifies the sections of this document that contain the specifications for each of the elements.

B. CODF Wiring and Tie Cable(s)

3.03 CODF cross-connect wiring and tie cable(s) are used to link the CODF termination of OTC transport equipment to the CODF termination of the BA BRI or CBRI port.

3.04 The total combined length of all CODF cross-connect wiring and all CODF-to-CODF tie cables used for DUPS should be less than 1500 feet.

3.05 The direct-current resistance of the CODF wiring and tie cable used for DUPS should be less than 80 ohms. This is equal to 1500 or less feet of 24 gauge cable.

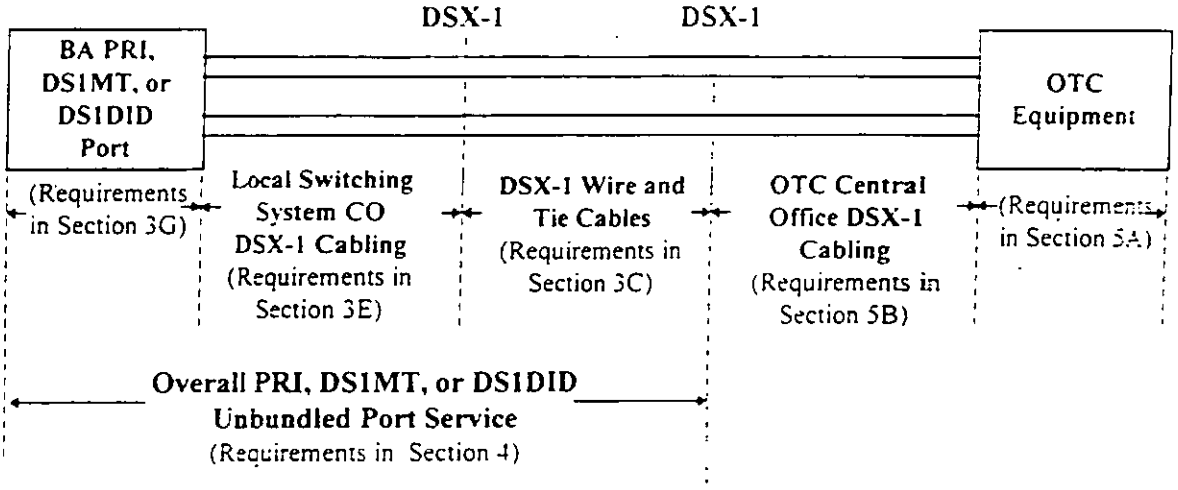

Figure 3-2. PRI, DS1MT, and DS1DID Unbundled Port Service Elements

C. DSX-1 Wiring and Repeatered Tie Cable(s)

3.06 DSX-1 cross-connect wiring and tie cable(s) are used to link the DSX-1 termination of OTC equipment to the DSX-1 termination of the BA PRI, DS1MT, or DS1DID port. In some cases, an electronic digital cross-connect (EDSX) system may be substituted for the DSX-1.

3.07 The total length of all DSX-1 cross-connect wiring should be less than 185 feet.

3.08 When repeatered tie cables are used to link OTC DSX-1 terminations to BA DSX-1 terminations, the cabling between the repeaters and the DSX-1 panels shall be built-out in each direction of transmission such that the overall cabling and build-out is the equivalent of 655 feet of 22 gauge ABAM cable.

D. Bell Atlantic Local Switching System CO Voice Grade Cabling

3.09 The voice-grade CO cabling used to terminate BRI or CBRI local switching system ports on the CODF shall use twisted-pair conductors.

3.10 The type, gauge, and length of the BA CODF cabling shall be specified based on this specification and BA equipment vendor requirements. If the specifications in this document differ from the equipment manufacturers specifications, then the more stringent of the two shall be used.

3.11 The direct-current resistance of the CO cabling between the BA local switching system port and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [11] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

E. Bell Atlantic Local Switching System CO DSX-1 Cabling Requirements

3.12 BA cabling between the Local Switching System and the DSX-1 panels shall be built-out in each direction of transmission such that the overall cabling and build-out is the equivalent of 655 feet of 22 gauge ABAM cable.

F. BRI and CBRI Local Switching System Ports

3.13 The BRI and CBRI line-side ports shall conform to the LT specifications in TR-NWT-000393 [1] and the network specifications in ANSI T1.601-1993 [12].

G. PRI, DS1MT, and DS1DID Local Switching System Ports

3.14 The PRI port shall conform to the DSX-1 specifications in ANSI T1.102 [3], the B8ZS and ESF requirements in ANSI T1.403 [5], the network requirements in ANSI T1.408 [13], the timing requirements in ANSI T1.101 [6], and (for PSTN calls) the μ255 coding scheme in ITU-T Recommendation G.711 [4].

3.15 The DS1MT port shall conform to the DSX-1 specifications in ANSI T1.102 [3], the B8ZS and ESF requirements in ANSI T1.403 [5] and the μ255 coding scheme in ITU-T Recommendation G.711 [4]. In SS7 applications, the DS1MT shall conform to the specifications in GR-905-CORE. In MF applications, the DS1MT shall conform to the robbed-bit signaling specifications in ANSI T1.403 Annex C [5] and the MF signaling requirements in FR-NWT-000064 [11].

3.16 The DS1DID port shall conform to the DSX-1 specifications in ANSI T1.102 [3], the AMI or B8ZS and SF or ESF requirements in ANSI T1.403 [5], the robbed-bit signaling specifications in ANSI T1.403 Annex C [5], the μ255 coding scheme in ITU-T Recommendation G.711 [4], and the DP, DTMF, or MF signaling requirements in FR-NWT-000064 [11].

4. Service Specifications

A. General

4.01 The overall end-to-end DUPS service is from the CODF or DSX-1 termination of the OTC equipment to the BA local switching system port.

4.02 DUPS should meet the limits of this section when measured at the BA local switching system port. Parameters are usually tested in response to trouble reports or when additional testing is purchased.

B. BRI and CBRI

4.03 The overall end-to-end BRI or CBRI service is from the CODF termination of the OTC equipment to the local switching system port (see figure 2-1).

4.04 BRI and CBRI Acceptance Limits (AL) and Immediate Action Limits (IAL) are shown in Table 4-1.

4.05 BRI and CBRI services shall meet the LT specifications in TR-NWT-000393 [1] and the network specifications in ANSI T1.601-1993 [12].

Table 4-1: BRI and CBRI
Acceptance Limits (AL) and Immediate Action Limits (IAL)

Parameter	AL	IAL
40 kHz loss	< 6.0 dB	> 6.0 dB
Resistance	< 130 ohms	> 130 ohms
Leakage	> 5 Megaohms	< 5 Megaohms

C. PRI, DS1MT, and DS1DID

4.06 The overall end-to-end PRI, DS1MT, and DS1DID service is from the DSX-1 termination of the OTC equipment to the digital port on the local switching system.

4.07 PRI service shall meet the B8ZS and ESF specifications in ANSI T1.403 [5], the network specifications in ANSI T1.408 [13], and the 3E timing requirements in ANSI T1.101 [6].

4.08 DS1MT service shall meet the B8ZS and ESF specifications in ANSI T1.403 [5]. If SS7 signaling is used, it shall conform to the specifications in GR-905-CORE [7] and BA 905 [8]. If MF signaling is used, it shall conform to the MF requirements in FR-NWT-000064 [11] and the robbed-bit signaling specifications in ANSI T1.403 Annex C [5].

4.09 DS1DID service shall meet the AMI or B8ZS and SF or ESF specifications in ANSI T1.403 [5]. The robbed-bit signaling specifications in ANSI T1.403 Annex C [5], and the DP, DTMF, or MF signaling requirements in FR-NWT-000064 [11].

4.10 The PRI, DS1MT, and DS1DID services consist of one DS1. The electrical signals of each DS1 at the OTC POT shall meet the DSX-1 specifications in ANSI T1.102 [3].

4.11 Accuracy and availability performance objectives for each PRI, DS1MT, and DS1DID are shown in Figure 4-2. DS1 performance test limits are shown in Figure 4-3.

4.12 Availability is a measure of the relative amount of time that a service is "usable" by the customer. Unavailability begins when the Bit Error Ratio (BER) in each second is worse than 1×10^{-3} for a period of 10 consecutive seconds. The DS1 objective is 99.925 percent availability in any twelve consecutive months. Availability equals the total time minus the outage time divided by the total time.

4.13 Accuracy denotes the error performance and is usually specified in terms of errored seconds (ES), or conversely, error-free seconds (EFS). EFS are the primary measure of error performance for DS1s. An EFS is any second that an error does not occur.

4.14 A Severely Errored Second (SES) is any one second interval that has a BER of less than (worse than) 1×10^{-3}.

4.15 Acceptance and maintenance tests for DS1s should be performed with a Quasi-Random Signal Source (QRSS), on an OTC-POT to local switching system basis, using the Errored Second and Severely Errored Second performance parameters in Figure 4-3.

4.16 Other tests may be performed in response to trouble reports or when additional testing is purchased. The All Ones, 3/24, and 1/8 patterns are acceptable diagnostic stress tests. The pattern sensitivity test criteria associated with these patterns is provided in Figure 4-4.

4.17 If errors are detected using the QRSS or 1/8 patterns, it is recommended that the DS1 line code options (AMI/B8ZS) be verified using the procedures outlined in the Bell Atlantic Network Services Reference Manual Series 72710 & NS6050 and the test criteria in Figure 4-4. These tests make use of the Framed 3/24 and Framed All Zeros patterns.

Figure 4-2: DS1 Performance Objectives

Parameter	Objective
Accuracy	0.25 % errored seconds long-term (30 days or more)
Availability	99.925 % per year

Figure 4-3: DS1 Acceptance and Maintenance Test Limits[2]

Test Duration	Errored Seconds	Severely Errored Seconds
15 min	0	0
30 min	3	0
45 min	5	2
24 hours	150	7

[2] While some of the entries in this table are "0", it should be noted that an isolated error event is not necessarily indicative of a service affecting problem.

Figure 4-4: Pattern sensitivity test criteria (see notes 1 and 2)

TEST PATTERN (see note 3)	TEST DURATION	ACCEPTANCE LIMIT
All Ones	5 minutes	0
3/24 (AMI only)	5 minutes	0
1/8	5 minutes	0
Framed All Zeros (4) (B8ZS only)	30 seconds	(see note 5)

Notes:

(1) Test patterns should be framed.

(2) One retest is allowed if the initial test fails.

(3) If compatible test equipment is not available to perform these tests, loopback testing should be utilized.

(4) WARNING: If used with the DS1 SF framing format, zeros will occur in time slot 2 of every octet (channel). Terminal equipment will display a false Remote Alarm Indication (a.k.a., yellow alarm). In addition, the use of the framed all-zeros pattern through some types of DS3 equipment may cause DS1 failure if the equipment is not properly optioned for B8ZS.

(5) As an equipment option check, failure will typically be seen as large error counts. Very low counts (e.g., 1 or 2 errors) are not indicative of an optioning problem.

5. OTC Equipment and CO Cabling Requirements

A. OTC Equipment Requirements

5.01 Collocated OTC equipment shall meet all of the applicable generic equipment requirements in Bellcore GR-63-CORE [14] and GR-1089-CORE [15].

5.02 Collocated OTC equipment shall be manufactured in accordance with FCC, NEC, UL, and USDL requirements and orders applicable to Federal, State, and local requirements including, but not limited to, statutes, rules, regulations, orders, or ordinances, or otherwise imposed by law. Where requirements are not specified in this document, contractual technical requirements, or other applicable documents, the manufacturer's requirements consistent with industry standards shall be met.

5.03 The open circuit tip-to-ring dc voltage that collocated OTC equipment applies to BA VF cabling shall be less than 80 Vdc.

5.04 Collocated OTC equipment shall not deliver more than 2.5 watts of power to any load via BA VF cable.

5.05 Collocated OTC equipment shall not deliver more than 100 mA of loop current to any load via BA VF cable.

5.06 OTC equipment connecting to BRI and CBRI ports shall conform to the NT specifications in *TR-NWT-000393* [1] and the customer installation specifications in *ANSI T1.601-1993* [12].

5.07 OTC equipment connecting to PRI ports shall conform to the DSX-1 specifications in ANSI T1.102 [3], the B8ZS and ESF specifications in ANSI T1.403 [5], the customer installation requirements in ANSI T1.408 [13], the timing requirements in ANSI T1.101 [6], and the μ255 coding scheme in ITU-T Recommendation G.711 [4].

5.08 OTC equipment connecting to DS1MT ports shall conform to the DSX-1 specifications in ANSI T1.102 [3], the B8ZS and ESF specifications in ANSI T1.403 [5], and the μ255 coding scheme in ITU-T Recommendation G.711 [4]. For SS7 applications, OTC equipment shall also conform to the specifications in GR-905-CORE [7] and BA 905 [8]. For MF applications, OTC equipment shall also conform to the robbed-bit signaling specifications in ANSI T1.403 Annex C [5] and the MF signaling requirements in FR-NWT-000064 [11].

5.09 OTC equipment connecting to the DS1DID port shall conform to the DSX-1 specifications in ANSI T1.102 [3], the AMI or B8ZS and SF or ESF specifications in ANSI T1.403 [5], the robbed-bit signaling specifications in ANSI T1.403, Annex C [5], and the μ255 coding scheme in ITU-T Recommendation G.711 [4], and the DP, DTMF, or MF signaling requirements in FR-NWT-000064 [11].

B. OTC CO VF Cabling Requirements

5.10 The voice-grade CO cabling used to terminate OTC equipment on the CODF for interconnection with BRI or CBRI port services shall use twisted-pair conductors.

5.11 The type, gauge, and length of the OTC CODF cabling shall be specified based on this specification and OTC equipment requirements. If the specifications in this document differ from the OTC equipment manufacturers specifications, then the more stringent of the two shall be used.

5.12 The direct-current resistance of the CO cabling between the OTC equipment and the CODF shall meet the CO cabling requirements in the Bellcore FR-TSY-000064 [11] (i.e., 23 ohms or less). This is equivalent to 275 feet or less of 26 gauge cable, 440 feet or less of 24 gauge cable, and 700 feet or less of 22 gauge cable.

C. OTC DSX-1 Cabling Requirements

5.13 OTC DSX-1 cabling and build-out in each direction of transmission shall be the equivalent of 655 feet of 22 gauge ABAM cable.

6. References

A. Definitions

Acceptance Limit (AL)
The maximum margin, value, or deviation that is allowed at service turnup or customer acceptance.

Alternate Mark Inversion (AMI)
A DS1 line code that does not perform zero code suppression and is therefore transparent to an all zeros byte.

Basic Rate ISDN (BRI)
Basic Rate ISDN is a 2-wire line-side local switching system port that uses the two-bit one-quaternary line code at a 160 kilobit per second rate to transport overhead and up to two B channels and one D channel.

B Channel
The B channel, or bearer channel, is a 64 kbps channel used for information transfer between users.

Bipolar Eight Zero Substitution (B8ZS)
A DS1 line code that performs zero code suppression by replacing an all zeros byte with a special pattern of ones and zeros that contains two consecutive bipolar violations.

Bit Seven (BIT7)
A TR08 DS1 line code that performs zero code suppression by placing a one in bit 7 of an all zeros byte.

Central Office (CO)
A telephone company building which houses equipment and facilities used to provide switched access services.

Central Office Distributing Frame (CODF)
Framework located in a CO that holds wire cross-connects which are used to interconnect cable terminations for end-user customer loops, switching system ports, and inter-office facilities.

Channel
An electrical, or photonic communications path between two or more points of transmission.

D Channel
The D channel is a packet-switched channel that carries signaling and control for B channels. In BRI applications, it can also support customer packet data traffic at speeds up to 9.6 kilobits per second.

DS1 Message Trunk (DS1MT)
A digital trunk-side port of a local switching system that operates at 1.544 Mbps and is channelized to provide twenty-four 64 kbps or 56 kbps trunks for the message telecommunications network.

Digital Unbundled Port Services (DUPS)
A service, not bundled with a loop or transport facility, that provides digital access to the functionality of a local switching system.

Extended SuperFrame (ESF)
A type of DS1 framing format that utilizes the framing bit of twenty-four consecutive frames to provide a 2 kbps framing pattern sequence, a 4 kbps data link, and a 2 kbps cyclic redundancy check channel.

Immediate Action Limit (IAL)
The bound of acceptable performance and the threshold beyond which BA will accept a customer's trouble report and take immediate corrective action.

Integrated Services Digital Network (ISDN)
ISDN describes the end-to-end digital telecommunications network architecture which provides for the simultaneous access, transmission, and switching of voice, data, and image services. These functions are provided via channelized transport facilities over a limited number of standard user-network interfaces.

Line Termination (LT)
Equipment that terminates a BRI or Centrex BRI digital subscriber line on the network side of the network to customer (or OTC) interface.

Maintenance Limit
The maximum margin, value, or deviation associated with normal in-service performance.

Network Termination (NT)
Equipment that terminates a BRI or CTX BRI digital subscriber line on the customer (or OTC) side of the network to customer (or OTC) interface.

Other Telephone Company (OTC)
The term "Other Telephone Company" (OTC) denotes any individual, partnership, association, joint-stock company, trust, governmental entity, or corporation engaged for hire in intrastate exchange communication by wire, fiber, or radio.

Point Of Termination (POT)
The point of demarcation at which the BA's responsibility for the provision of services ends.

Protocol Code
A component of an interface code that is readily associated with the basic electrical function of the interface.

Primary Rate ISDN (PRI)
PRI is a 4-wire 1.544 Mbps (DS1) local switching system port that uses the B8ZS line code and the ESF framing format. PRI is available in a twenty-three B channel plus one D channel (23B + D) configuration or a twenty-four B channel (24B) configuration.

SuperFrame (SF)
A type of DS1 framing format that utilizes the framing bit of twelve consecutive frames to provide terminal framing and signaling framing.

Two Binary, One Quaternary (2B1Q)
A line code used for BRI and Centrex BRI where each two bits of the binary data stream are combined into a single four-level pulse amplitude modulation signal.

Unbundled Port
An interface (port) on a local switching system, that is not bundled with a loop or transport facility, that provides access to and from the public switched telephone network and the functionality of the local switching system.

Voice-Grade (VG)
A term used to describe a channel, circuit, facility, or service that is suitable for the transmission of speech, digital or Digital data, or facsimile, generally with a frequency range of about 300 to 3000 Hz.

B. Acronyms

ABAM	Cable Type
AL	Acceptance Limit
ANSI	American National Standards Institute
BA	Bell Atlantic
BRI	Basic Rate ISDN
B8ZS	Bipolar Eight Zero Substitution
OTC	Other Telephone Company
CO	Central Office
CODF	Central Office Distributing Frame
DID	Direct Inward Dialing
DSX-1	Digital Signal Cross-Connect One
DS1	Digital Signal One (1.544 Mbps)
DS1DID	DS1 Direct Inward Dialing
DS1MT	DS1 Message Trunk
DUPS	Digital Unbundled Port Services
ESF	Extended Superframe Format
FCC	Federal Communications Commission
IAL	Immediate Action Limit
IDLC	Integrated Digital Loop Carrier
IEEE	International Electrical and Electronic Engineers

LT	Line Termination
NC	Network Channel
NCI	Network Channel Interface
NEC	National Electric Code
POT	Point Of Termination
POTS	Plain Ordinary (analog) Telephone Service
RBS	Robbed-Bit Signaling
SF	Superframe Format
TR08	Technical Reference TR-NWT-000008
UL	Underwriter's Laboratory
USDL	United States Department of Labor
USOC	Universal Service Order Code
VF	Voice Frequency
VG	Voice Grade
2B1Q	Two-Bit One-Quaternary

7. Bibliography

1- Technical Reference TR-NWT-000393, Generic Requirements for ISDN Basic Access Digital Subscriber Lines, Issue 2, (Bellcore, April 1991).

2- Technical Reference TR-TSY-000008, Digital interface Between the SLC®96 Digital Loop Carrier System And A Local Digital Switch, Issue 2, (Bellcore, August 1987).

3- American National Standard for Telecommunications- Digital Hierarchy - Electrical Interfaces, ANSI T1.102-1993.

4- ITU-T Recommendation G.711, Pulse Code Modulation (PCM) of Voice Frequencies, Blue Book Fasc. III.4, (ITU-TSS, 1988).

5- American National Standard for Telecommunications- Network-to-Customer Installation - DS1 Metallic Interface, ANSI T1.403-1995.

6- American National Standard for Telecommunications- Synchronization Interface Standards for Digital Networks, ANSI T1.101-1994.

7- Generic Requirements GR-905-CORE, Common Channel Signaling Network Interface Specification (CCSNIS) Supporting Network Interconnection, Message Transfer Part (MTP), and Integrated Services Digital Network User Part (ISDNUP), Issue 2, (Bellcore, December 1996).

8- BA905, Bell Atlantic Supplement Common Channel Signaling Network Interface Specification.

9- Special Report SR-STS-000307, Issue 3, *Industry Support Interface (ISI): NC/NCI Code Dictionary*. Bellcore, April 1992.

10- Special Report SR-STS-000323, *NC/NCI Compatibility Guide*, Issue 4, (Bellcore, May 1994).

11- Technical Reference FR-NWT-000064, LATA Switching Systems Generic Requirements (LSSGR), (Bellcore, 1994).

12- American National Standard for Telecommunications- ISDN Basic Access Interface for use on Metallic Loops for Application at the Network Side of NT, Layer 1 Specification, ANSI T1.601-1992.

13- American National Standard for Telecommunications- ISDN Primary Rate - Customer Installation Metallic Interfaces - Layer 1 Specification, ANSI T1.408 -1990.

14- Generic Requirements GR-63-CORE, Network Equipment-Building System (NEBS) Requirements: Physical Protection, Issue 2, (Bellcore, October 1995).

15- Generic Requirements GR-1089-CORE, Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment, Issue 1, Rev 1, (Bellcore, November 1996).

NOTE: These documents are subject to change. References reflect the most current information available at the time of printing. Readers are advised to check the status and availability of all documents.

EXHIBIT H

EXHIBIT H

INTRALATA TELECOMMUNICATIONS SERVICES SETTLEMENT

This IntraLATA Telecommunications Services Settlement Agreement is made this __ of _____, 1996, by and between Bell Atlantic - Pennsylvania, Inc. ("BA"), a Pennsylvania corporation with offices at _____, and _____ ("CLEC"), a _____ corporation with offices at _____.

SECTION 1

SCOPE

This Agreement sets forth the terms and conditions for the following:

(a) administering and processing messages in the intraLATA Toll Originating Responsibility Plan (ITORP); and

(b) the settlement of compensation for the following telecommunications traffic within a BA LATA:

(1) intrastate and interstate intraLATA traffic terminated to CLEC and originated by an Independent Telephone Company or wireless carriers that transits the facilities of BA within a BA LATA, including Message Telecommunications Service and Local Exchange Service (the "ITORP Transit Service Traffic");

(2) intrastate and interstate intraLATA Message Telecommunications Service and Local Exchange Service traffic which originates from a Certified Local Exchange Carrier or CLEC, transits BA's network and terminates to CLEC, or a wireless carrier or an Exchange Carrier other than BA, which traffic is subject to a Meet-Point Billing arrangement (the "Meet-Point Transit Service Traffic");

(3) intraLATA 800/888 Service Traffic; and

(4) intraLATA Alternately Billed Calls billed to a line-based telephone number within the state where the call is originated.

By way of clarification, this Agreement does not cover the following: (x) traffic that does not use BA facilities (except intraLATA 800/888 Service Traffic); (y) interLATA traffic; and (z)

any statewide services (whether interLATA or intraLATA) provided entirely by an Interexchange Carrier such as statewide WATS.

SECTION II

DEFINITIONS

For purposes of this Agreement, the terms set forth below shall have the following meaning:

A. 800/888 Number Database shall mean the call management service database that provides POTS telephone number translation or routing information or both for a given 800/888 telephone number.

B. 800/888 Number Query shall mean routing information obtained from an 800/888 Number Database for originating 800/888 calls.

C. 800/888 Service Traffic means a toll free call originating with the Originating Company and billed to the Terminating Company's end user. 800/888 service MOUs are recorded by the Originating Company and provided to the Terminating Company so that it can bill its end user(s).

D. Access Tandem shall mean a switching entity that is used to connect and switch trunk circuits between and among End Offices and between and among End Office switches and carriers' aggregation points, points of termination, or points of presence, which entity has billing and recording capabilities that are used to provide switched Exchange Access services.

E. Alternately Billed Calls shall mean all intraLATA land-line Collect Calls, Calling Card Calls and Third-Number Calls that originate and terminate in the Commonwealth of Pennsylvania and are billed to a line-based number within the jurisdiction of the Commonwealth of Pennsylvania serviced by the Billing Company. Alternately Billed Calls are identified in ITORP reports as "Received Collect/Sent Collect Calls".

F. Billing Company shall mean the Local Exchange Carrier that provides the local telephone exchange service for the number to which an Alternately Billed Call is to be billed.

G. Calling Card Call shall mean a call billed to a pre-assigned end user line-based billing number, including calls dialed or serviced by an operator system.

H. Carrier Common Line Facilities means the facilities from the end user's premises to the End Office used to originate or terminate Transit Service Traffic and 800/888 Service Traffic. Such carrier common line facilities are as specified in each party's Exchange Access Tariff.

I. Category 01 shall mean the EMR/billing record for usage charges applicable to the terminating 800/888 number service subscriber.

J. Category 08 shall mean the EMR/copy record containing the information necessary for CLEC to bill/settle intraLATA terminating charges with other carriers.

K. Category 11 shall mean the EMR/access record containing information necessary for CLEC to bill/settle interexchange access charges.

L. CCS/SS7 shall mean the Common Channel Signaling/Signaling System 7, which refers to the packet-switched communication, out-of-band signaling architecture that allows signaling and voice to be carried on separate facilities, and thus is a signaling network that is common to many voice channels. There are two modes of operation defined for CCS/SS7: database query mode, and trunk signaling mode.

M. Centralized Message Distribution System (CMDS) shall mean the message processing system which handles the distribution of Message Records from the Earning Company to the Billing Company.

N. Competitive Local Exchange Carrier (CLEC) means a carrier certified by the Pennsylvania Public Utility Commission to provide Local Exchange or Exchange Access services within the BA operating territory in that state.

O. Clearing House shall mean the monthly function performed by BA for a fee to collect funds owed by one Exchange Carrier or wireless carrier and the distribution of those funds to other Exchange Carriers or wireless carriers. These Clearing House funds include but are not limited to amounts owed for terminating traffic and Alternately Billed Calls. The Clearing House function will include funds due from and payable to each Independent Telephone Company, Certified Local Exchange Carrier and wireless carrier that contracts with BA to provide the Clearing House function and will not include any funds due from or payable to BA.

P. Collect Call shall mean a non-sent paid call that is billed to the number receiving the call, including calls dialed or serviced by an operator system.

Q. Discounted Toll Services means services in which the originating end user is charged a rate less than would normally be assessed for calls placed to similar points outside the end user's local calling area.

R. Earning Company shall mean the Local Exchange Carrier that provides local telephone exchange service for the number from which an Alternately Billed Call originates.

S. End Office means the end office switching and end user line termination facilities used to originate or terminate switched intraLATA telecommunications services traffic.

T. Exchange means a geographic area established for the furnishing of local telephone service under a local tariff. It usually embraces a city, town or village and its environs. It consists of one or more wire centers together with the associated facilities used in furnishing communications service within the area.

U. Exchange Access means the facilities and services used for the purpose of originating or terminating interexchange telecommunications in accordance with the schedule of charges, regulations and conditions specified in lawfully established Exchange Access Tariffs.

V. Exchange Access Tariffs means the tariffs lawfully established with the Federal Communications Commission or the by an Exchange Carrier for the provision of Exchange Access facilities and services.

W. Exchange Carrier shall mean a carrier licensed to provide telecommunications services between points located in the same Exchange area.

X. Exchange Message Record (EMR) shall mean the standard used for exchange of telecommunications message information among Local Exchange Carriers for billable, non-billable, sample, settlement and study data. EMR format is described in BR-010-200-010 CRIS Exchange Message Record, a Bell Communications Research, Inc. document that defines industry standards for Exchange Message Records, which is hereby incorporated by reference.

Y. ITORP Transit Service Traffic shall have the meaning set forth in Section I above titled "Scope".

Z. Independent Telephone Company shall mean any entity other than BA which, with respect to its operations within the Commonwealth of Pennsylvania, is an incumbent Local Exchange Carrier.

AA. Inter-Company Net Billing Statement shall mean the separate monthly financial reports issued by BA to the Exchange Carriers for settlement of amounts owed.

BB. IntraLATA Toll Originating Responsibility Plan (ITORP) shall mean the information system owned and administered by BA for calculating charges between BA and Local Exchange Carriers for termination of intraLATA calls.

CC. Interexchange Carrier (IXC) means a carrier that provides, directly or indirectly, interLATA or intraLATA telephone toll services.

DD. Local Access and Transport Area (LATA) means a contiguous geographic area: (1) established before the date of enactment of the Telecommunications Act of 1996 by BA such that no Exchange area includes points within more than one metropolitan statistical area, consolidated metropolitan statistical area, or state, except as expressly permitted under the AT&T Consent Decree; or (2) established or modified by BA after such date of enactment and approved by the Federal Communications Commission.

EE. Local Exchange Carrier (LEC) means any person that is engaged in the provision of Local Exchange Service or Exchange Access. Such term does not include a person insofar as such person is engaged in the provision of a commercial mobile service under Section 332 (c) of the Telecommunications Act of 1996, except to the extent that the Federal Communications Commission finds that such service should be included in the definition of such term.

FF. Local Exchange Service means telecommunications services provided between points located in the same LATA.

GG. Meet-Point Billing (MPB) means an arrangement whereby two or more LECs jointly provide to a third party the transport element of a switched access Local Exchange Service to one of the LECs' End Office switches, with each LEC receiving an appropriate share of the transport element revenues as defined by their effective Exchange Access tariffs.

HH. Meet-Point Transit Service Traffic shall have the meaning set forth in Section 1, "Scope".

II. Message Records shall mean the message billing record in Exchange Message Record format.

JJ. Message Telecommunications Service (MTS) means message toll telephone communications, including Discounted Toll Services, between end users in different Exchange areas, but within the same LATA, provided in accordance with the schedules of charges, regulations and conditions specified in lawfully applicable tariffs.

KK. Minutes of Use (MOU) means the elapsed time in minutes used in the recording of Transit Service Traffic and 800/888 Service Traffic.

LL. Multiple Bill/Single Tariff means the MPB method whereby each LEC prepares and renders its own Meet Point Bill in accordance with its own tariff(s) for the portion of the jointly-provided Exchange Access service which the LEC provides.

MM. Multiple Exchange Carrier Access Billing (MECAB) means the document prepared by the Billing Committee of the Ordering and Billing Forum, which

functions under the auspices of the Carrier Liaison Committee of the Alliance for Telecommunications Industry Solutions, and published by Bellcore as Special Report SR-BDS-000983, which document contains the recommended guidelines for the billing of an Exchange Access service provided by two or more LECs, or by one LEC in two or more states, within a single LATA, and is incorporated herein by reference.

NN. Originating Company means the company which originates intraLATA MTS or Local Exchange Service on its system. (For compensation purposes, the Originating Company shall be considered the Terminating Company for 800/888 Service Traffic.)

OO. Terminating Company means the company which terminates intraLATA MTS or Local Exchange Service on its system where the charges for such services are collected by the Originating (or Billing) Company. (For compensation purposes, the Terminating Company shall be considered the Originating Company for 800/888 Service Traffic.)

PP. Third-Number Call shall mean a call billed to a subscriber's line-based billing number which is not the number to which the call either terminates or originates.

QQ. Transit Traffic shall refer to both ITORP Transit Service Traffic and Meet-Point Transit Service Traffic.

RR. Transiting Company shall mean a Local Exchange Carrier which transports intraLATA telecommunications traffic on its system between an Originating Company and a Terminating Company.

SS. Transport Facilities means the facilities from the End Office to an interconnection point used to originate or terminate switched intraLATA telecommunication services traffic.

SECTION III

SETTLEMENT OF TRANSIT SERVICES

(a) ITORP Transit Service Traffic.

(1) Call Routing and Recording; Billing Percentages. BA will route ITORP Transit Service Traffic over the combined local and toll trunk groups between BA and CLEC for those Independent Telephone Companies, Certified Local Exchange Carriers and wireless carriers who have either executed an IntraLATA Telecommunications Services Settlement Agreement with BA, or another agreement with BA setting forth the terms under which Transit Traffic will be exchanged. BA and CLEC agree to designate the points of interconnection for the purpose of

terminating ITORP Transit Service Traffic which originates from an Independent Telephone Company or wireless carrier and terminates to CLEC. Both parties further agree to develop and mutually agree to billing percentages applicable to ITORP Transit Service Traffic, which billing percentages shall be calculated in accordance with ITORP guidelines.

(2) Exchange of Billing Data. The Originating Company will provide to BA all billing data relating to ITORP Transit Service Traffic for processing in ITORP within thirty(30) days from the date the usage occurs (to the extent usage occurs on any given day) for traffic originating from an Independent Telephone Company or wireless carrier, which traffic transits BA's facilities and terminates to CLEC.

(3) Billing. BA will, on behalf of CLEC, bill Exchange Carriers and wireless carriers for intraLATA ITORP Transit Service Traffic, and collect compensation due CLEC based on CLEC's established and legally-approved tariffed or negotiated rates utilizing ITORP. The charges set forth in Attachment A, attached hereto and incorporated herein by reference, shall apply to the billing and collection services provided by BA to CLEC hereunder. CLEC will record the ITORP Transit Service Traffic usage at its switch, and shall bill BA for this traffic in accordance with the rates set forth in the Interconnection Agreement under Section 251 and 252 of the Telecommunications Act of 1996, dated as of June 13, 1997, by and between BA and CLEC.

(b) Meet-Point Transit Service Traffic.

(1) Call Routing and Recording; Billing Percentages. BA and CLEC will route their respective Meet-Point Transit Service Traffic over the combined local and toll trunk groups between them. BA and CLEC agree to designate the points of interconnection for the purpose of terminating Meet-Point Transit Service Traffic which originates from a CLEC and terminates to CLEC, or originates from CLEC and terminates to a CLEC, Independent Telephone Company, or a wireless carrier. Both parties further agree to develop and file mutually agreed to billing percentages applicable to Meet-Point Transit Service Traffic in the National Exchange Carrier Association F.C.C. Tariff No. 4, which billing percentages shall be calculated in accordance with MECAB guidelines.

(i) End Offices Subtending BA Access Tandem. Meet-Point Transit Service Traffic will be routed over the local and toll interconnection facilities used to terminate similar traffic directly between BA and CLEC when the Originating and Terminating Company's End Office switches subtend BA's Access Tandem. BA will record this traffic at the BA Access Tandem, and forward the terminating call records to the Terminating Company for purposes of Meet-Point Billing.

(ii) End Offices That Do Not Subtend a BA Access Tandem. When the Originating and/or the Terminating Company's End Office switches do not subtend BA's Access Tandem, the Meet-Point Transit Service Traffic must be routed over interconnection facilities other than those used to terminate intraLATA MTS or Local Exchange Service to BA's end users. The Terminating

Company will record this traffic at its Access Tandem and forward the terminating call records to BA for Meet-Point Billing purposes.

(iii) Special Access. Upon request, any Meet-Point Service Transit Traffic may be routed over special access interconnection facilities between CLEC, on the one hand, and a CLEC, an Independent Telephone Company, or a wireless carrier, on the other.

(2) Exchange of Billing Data. All billing data exchanged hereunder will be exchanged on magnetic tape or via electronic data transfer, to be delivered at the addresses set forth below, using the Electronic Message Record format. BA will provide to CLEC the switched-access detail usage data (category 1101XX records) on magnetic tape within thirty (30) days from the date the usage occurs (to the extent usage occurs on any given day) for traffic originating from a CLEC, transiting BA's facilities and terminating to CLEC, and CLEC will provide to BA the switched access summary usage data (category 1150XX records) on a magnetic tape on a monthly basis within thirty (30) days of receipt from BA of the switched access detail usage data referenced above.

(3) Billing. BA and CLEC will submit to CLECs separate bills under their respective tariffs for their portion of jointly-provided Meet-Point Transit Service Traffic. With respect to Meet-Point Transit Service Traffic, BA and CLEC will exchange billing data and render bills under Multiple Bill/Single Tariff arrangements in accordance with the applicable terms and conditions set forth in MECAB.

(4) Addresses. Magnetic tapes to be sent hereunder to CLEC will be sent to the following address (which address CLEC may change upon prior written notice to BA):

_____

_____

_____

_____

Magnetic tapes to be sent hereunder to BA will be sent to the following address(es), as appropriate (which address(es) BA may change upon prior written notice to CLEC):

_____

_____

_____

_____

SECTION IV

800/888 SERVICE

800/888 Service Traffic will be exchanged among BA, CLEC, Independent Telephone Companies, CLECs and wireless carriers via CCS/SS7 trunks, and all will deliver/route these calls as appropriate and provide EMRs to the Terminating Company. These EMRs will, per industry standards, include the following: Category 01 (800/888 number subscriber billing), Category 08 (copy record/local exchange charges), and Category 11 (interexchange carriers access records).

(a) Delivery of Translated 800/888 Number Queries and calls over CCS/SS7 links and trunks. BA and CLEC will launch their own 800/888 Number Query for 800/888 Service Traffic originated in their networks, and route this traffic to each other, as appropriate, utilizing existing local and toll interconnection facilities.

(b) Exchange of Records; Compensation. All 800/888 Service Traffic hereunder shall be subject to the appropriate access charges, as set forth in the applicable tariffs. In addition, for jointly provided intraLATA 800/888 Service Traffic between two Local Exchange Carriers, the Originating Company is responsible for billing its tariffed 800/888 Number Query charge to the Terminating Company. CLEC, when acting as an Originating Company, must submit to BA, via magnetic tape(s) in EMR format, (i) the information necessary to bill/settle intraLATA charges (EMR Category 110125), and (ii) the usage charges applicable to the terminating 800/888-number service subscriber (EMR Category 010125).

(c) Settlement. EMR records submitted by CLEC hereunder acting as an Originating Company, as contemplated in Paragraph (b) above, will be processed in accordance with ITORP. For purposes of calculating the access charges due Local Exchange Carriers with respect to 800/888 Service Traffic, the Originating Company shall be deemed the Terminating Company. Access charges payable hereunder shall be calculated in accordance with Section VI of this Agreement, as applicable.

(d) Payment of Amounts Outstanding. Upon receipt of the Inter-Company Net Billing Statement from BA, CLEC shall, within thirty (30) days of invoice, remit to BA full payment of amounts owed under the Inter-Company Net Billing Statement.

SECTION V

ALTERNATELY BILLED CALLS

(a) Responsibilities of the Billing Company. The Billing Company agrees to provide the Earning Company with billing services, as specified below, with respect to Alternately Billed Calls.

(1) Billing. Upon receipt of the appropriate Message Record from CMDS, the Billing Company shall include this record in the bill to be issued to the end user responsible for payment. The Earning Company shall also submit copies of these Message Records to BA, at least once a month, in order to determine monthly settlement amounts for both the Billing Company and the Earning Company which will be reflected in the Inter-Company Net Billing Statement. These amounts will reflect any and all applicable charges due the Billing Company for performing billing services hereunder. In addition, as applicable, the Inter-Company Net Billing Statement will reflect any amounts owed by CLEC to BA for administering and processing ITORP.

(2) Payment of Amounts Outstanding. Upon receipt of the Inter-Company Net Billing Statement from BA, CLEC shall, within thirty (30) days of invoice, remit to BA full payment of amounts owed under the Inter-Company Net Billing Statement.

(b) Responsibilities of the Earning Company. In connection with Alternately Billed Calls, the Earning Company shall provide Message Records to the Billing Company on a daily basis to the extent that any usage has been recorded. These Message Records will be delivered by the Earning Company to the Billing Company via the CMDS system, unless otherwise agreed to by the parties hereto.

(c) Fees for Settlement of Alternately Billed Calls. The billing services provided by the Billing Company to the Earning Company with respect to Alternately Billed Calls shall be subject to the applicable charges set forth in Attachment A, which charges will be reflected in the Inter-Company Net Billing Statement. These charges may be revised upon mutual written agreement of the parties hereto.

SECTION VI

CALCULATION OF COMPENSATION

BA and CLEC agree to compensate each other with respect to Transit Services Traffic and 800/888 Service Traffic in accordance with the terms established below, and the rate elements set forth in Attachments A and B, attached hereto and incorporated herein by reference.

(a) Compensation due to the Terminating/Transiting Company. Compensation due to the Terminating Company/Transiting Company will be determined separately for each month as follows:

(1) For Carrier Common Line facilities provided by the Terminating Company, an amount calculated as specified for Carrier Common Line Facilities in the Terminating Company's Exchange Access Tariff. Compensation will be determined by multiplying a) the Terminating Company's Carrier Common Line rate, times b) the MOU.

(2) For End Office facilities provided by the Terminating Company, an amount calculated as specified for End Office facilities in the Terminating Company's Exchange Access Tariff. Compensation will be determined by multiplying a) the Terminating Company's appropriate Exchange Access End Office rate elements, times b) the MOU.

(3) For Transport facilities, where these facilities are provided by the Terminating Company, or a Transiting and Terminating Company, an amount calculated in accordance with the following steps:

(i) Determine the Terminating Company's airline miles from the End Office which serves the Terminating Company's end user to the Terminating Company's Access Tandem switching facility and/or to the interconnection point with the Transiting Company(ies).

(ii) Determine the Transiting Company's airlines miles from the interconnection point with the Terminating Company to the Transiting Company(ies) Access Tandem switching facility and/or to the interconnection point with the Originating Company.

(iii) Determine the sum of the total airline miles by adding (i) and (ii) above.

(iv) Divide the Terminating Company's airline miles determined in (i) preceding by the total airline miles determined in (iii) preceding, to determine the ratio of local transport miles provided by the Terminating Company.

(v) Divide the Transiting Company's airline miles determined in (ii) preceding by the total airline miles determined in (iii) preceding, to determine the ratio of local transport miles provided by the Transiting Company.

(vi) Identify the rates set forth in the Exchange Access Tariff for either the Terminating Company or Transiting Companies, or both, as appropriate, which rates are applicable to Transport Facilities.

(vii) Multiply the ratio determined in (iv) preceding, times the rate calculated in (vi) preceding, times the MOU, and add the amount set forth in (ix) below to determine the amount due the Terminating Company.

(viii) Multiply the ratio determined in (v) preceding, times the rate calculated in (vi) preceding, times the MOU, and add the amount set forth in (ix) below to determine the amount due the Transiting Company.

(ix) To the extent the Exchange Access Tariffs of the Terminating or Transiting Company, or both, provide for the payment of a fixed transport

charge to be assessed with respect to a terminating location (End Office or toll switch), multiply this charge times the chargeable MOU.

(4) For 800/888 Number Query facilities, provided by the Originating Company, an amount calculated as specified for query facilities in the Originating Company's Exchange Access Tariff. Compensation will be determined by multiplying a) the Originating Company's query rate, times b) the number of queries.

(5) For Local Call Termination facilities, provided by the Terminating Company, an amount calculated as specified for local call termination facilities in the Terminating Company's applicable Tariff or Agreement. Compensation will be determined by multiplying a) the Terminating Company's local call termination rate, times b) the MOU.

SECTION VII

ITORP ADMINISTRATION AND RESPONSIBILITIES

(a) Responsibilities of BA. BA shall:

1. Operate and maintain the ITORP system.

2. Provide the requirements and standards for ITORP records and tapes.

3. Inform CLEC of any proposed change in tape creation or distribution process at least sixty (60) days prior to the actual implementation of the change.

4. Develop and implement all system enhancements required to maintain the integrity of BA's ITORP system.

5. Process ITORP tapes received from CLEC, or its agent, during the next available billing cycle.

6. Review and analyze daily pre-edit reports to determine if a tape is acceptable for ITORP processing; provided, however, that CLEC is not absolved, as the Originating Company, from its responsibility to conform to ITORP input requirements.

7. Communicate with CLEC, or its agent, to resolve the problems with tapes which are identified as being unacceptable for ITORP processing.

8. Create and/or maintain all ITORP tables.

9. Include the monthly compensation due to and from CLEC as identified by ITORP on the Inter-Company Net Billing Statement. The compensation includes 800/888 Service Traffic and Alternately Billed Services traffic.

10. If requested by CLEC to perform the Clearing House function: settle with all local Exchange Carriers, via the Inter-Company Net Billing Statement, for ITORP Transit Service Traffic, 800/888 Service Traffic and Alternately Billed Calls originating from and/or terminating to CLEC.

11. Distribute monthly ITORP reports.

(b) Responsibilities of CLEC. CLEC shall:

1. Compensate BA for the administration and processing of ITORP as specified in Attachment A.

2. Notify BA Exchange Carrier Services staff in writing of any changes in its rates affecting ITORP tables, as specified in Attachment A, thirty (30) days prior to the effective date of any such changes.

3. Notify BA Exchange Carrier Services staff in writing of any network changes, such as changes in traffic routing, sixty (60) days prior to the implementation of the change in the network.

4. Conform to BA's ITORP record requirements and standards.

5. CLEC or its designated agent will forward the Exchange Message Records to BA, in a timely manner for processing.

6. Inform the BA Exchange Carrier Services staff in writing of any proposed changes in the Exchange Message Record creation or distribution process at least sixty (60) days prior to the actual implementation of the change.

7. Reimburse BA for compensating other local Exchange Carriers on behalf of CLEC, as reflected in the Inter-Company Net Billing Statement.

(c) Fees. Compensation for the administration and processing of ITORP will be due BA on a monthly basis, based on the number of messages processed in ITORP for CLEC. The processing and administrative fees are set forth in Attachment A. These fees may be revised by BA, at its discretion and upon notice to CLEC, based on periodic studies conducted by BA, and CLEC hereby agrees to be bound by such revised rates. A minimum monthly processing fee, as specified in Attachment A, will be assessed when CLEC's monthly ITORP processing charges are below the stated minimum monthly charge.

SECTION VIII

LIABILITIES

In the event of an error on the part of BA in calculating or settling any compensation amounts hereunder, CLEC's sole remedy and BA's only obligation shall be to re-calculate the compensation amount, and to the extent any amounts are owed to or owed by CLEC, such amounts will be reflected as an adjustment in the next Inter-Company Net Billing Statement. In the event any records are lost or destroyed, BA and CLEC will jointly estimate the charges due to either party hereunder as follows:

(1) Total the compensation paid for the most recent six (6) months period preceding the month covered by the lost or destroyed tapes with respect to the following types of traffic (but only to the extent records for that particular type of traffic are lost of destroyed): ITORP Transit Service Traffic, Meet-Point Transit Service Traffic, 800/888 Service Traffic or Alternately Billed Calls.

(2) Divide the total determined in (1) preceding, by 180 days.

(3) Multiply the compensation per day determined in (2) preceding, by the number of days covered by the lost or destroyed tapes. The calculated amount will be included as an adjustment for lost or destroyed tapes in the next Inter-Company Net Bill Statement.

BA shall have no liability whatsoever, including any related access charges, with respect to any lost, damaged or destroyed records submitted hereunder by CLEC. In addition and to the extent applicable, BA's liability under this Agreement and/or in connection with the settlement, payment and/or calculation of any amounts due hereunder shall be limited as set forth in the applicable tariffs. BA shall have no obligation or liability with respect to any billing, settlement or calculation-of-compensation errors or omissions, including without limitation the duty to re-calculate any compensation amounts reflected in the Inter-Company Net Billing Statement, if such error or omission occurred more than two (2) years prior to the time in which it is brought to BA's attention in writing. Without limiting the foregoing, in no event shall either party hereto be liable for consequential, incidental, special or indirect damages (including without limitation loss of profit or business) hereunder whether such damages are based in tort (including, without limitation, under any theory of negligence), contract breach or otherwise, and even if said party knew or should have known of the possibility thereof.

SECTION IX

RELATIONSHIP OF THE PARTIES

Nothing herein contained will be deemed to constitute a partnership or agency relationship between the parties. Each party agrees that it will perform its obligations hereunder as an independent contractor and not as the agent, employee or servant of the other party. Neither party nor any personnel furnished by such party will be deemed employees or agents of the other party or entitled to any benefits available under any plans for such other party's employees. Each party has and hereby retains the right to exercise full control of and supervision over its own performance of the obligations under this Agreement, and retains full control over the employment, direction, compensation and discharge of all employees assisting in the performance of such obligations, including without limitation all matters relating to payment of such employees, including compliance with social security taxes, withholding taxes and all other regulations governing such matters. In addition, each party will be responsible for its own acts and those of its own subordinates, employees, agents and subcontractors during the performance of that party's obligations hereunder.

SECTION X

TERM AND TERMINATION

(a) Term - Upon execution by all parties hereto, this Agreement shall become effective as of the date first shown on Page 1 of this Agreement, and shall remain in effect until terminated by either party in accordance with paragraphs (b), (c), (d), or (e) below.

(b) Termination for Breach - Either party may, upon prior written notice to the other party, terminate this Agreement in the event the other party is in default or breach of this Agreement and such breach or default is not corrected within thirty (30) days after the breaching party has been notified of same.

(c) Termination for Convenience - Upon six (6) months written advance notice to the other party, either party may terminate this Agreement.

(d) Acts of Insolvency - Either party may terminate this Agreement or any portion thereof, effective immediately, by written notice to the other party, if said other party (1) applies for or consents to the appointment of or the taking of possession by receiver, custodian, trustee, or liquidation of itself or of all or a substantial part of its property; (2) becomes insolvent; (3) makes a general assignment for the benefit of creditors; (4) suffers or permits the appointment of a receiver for its business or assets; (5) becomes subject to any proceeding under any bankruptcy or insolvency law whether domestic or foreign, voluntarily or otherwise; or (6) fails to contest in a timely or appropriate manner, or acquiesces in writing to, any petition filed against it in an involuntary case under the Federal Bankruptcy Code or any application for the appointment of a

receiver, custodian, trustee, or liquidation of itself or of all or a substantial part of its property, or its reorganization, or dissolution.

(e) Termination of Interconnection Agreement. Unless otherwise agreed to by the parties hereto in writing, in the event that the Interconnection Agreement under Sections 251 and 252 of the Telecommunications Act of 1996, dated as of June 13, 1997, by and between BA and CLEC expires without being renewed, or expires or is terminated and no other interconnection agreement has been entered into by BA and CLEC, then this Agreement shall be deemed terminated effective on the date the aforesaid Interconnection Agreement expires or is terminated.

SECTION XI

NETWORK CONFIGURATION

Each party shall provide six (6) months advance written notice to the other party of any network configuration that may affect any of the services or compensation contemplated under this Agreement, and the parties hereto agree to use reasonable efforts to avoid service interruptions during any such network change.

SECTION XII

CONSTRUCTION AND EFFECT

All services contemplated under this Agreement are provided in accordance with any and all applicable regulatory requirements and effective tariffs filed with and approved by the appropriate federal and/or state regulatory bodies, as these tariffs and requirements may be modified from time to time. To the extent there is a conflict between the terms of any said tariff or regulatory requirement and this Agreement, the terms of the tariff or the regulatory requirement shall prevail. However, to the extent not in conflict with the provisions of the applicable tariffs or regulatory requirements, this Agreement shall supplement the tariffs or regulatory requirements, and it shall be construed to the fullest extent possible in harmony with such tariffs or regulatory requirements.

SECTION XIII

MISCELLANEOUS

(a) Headings. Headings used in this Agreement are for reference only, do not constitute part of this Agreement, and shall not be deemed to limit or otherwise affect any of the provisions hereof.

(b) Notices. All notices, requests, demands, or other communications required or permitted hereunder shall be in writing, shall be deemed delivered (1) on the date of delivery when delivered by hand, (2) on the date of transmission when sent by electronic mail or facsimile transmission during normal business hours with telephone confirmation of receipt, (3) one (1) day after dispatch when sent by overnight courier maintaining records of receipt, or (4) three (3) days after dispatch when sent by registered mail, postage prepaid, return-receipt requested, all addressed as follows (or at such other addresses as shall be given in writing by either party to their other):

If to BA:	Address:	1320 N. Court House Road, 9th Floor Arlington, VA 22201
	Attn.:	Manager-Local Interconnection
	Facsimile:	703 974 2188
	Telephone:	704 974 4614
If to CLEC:	Address:	
	Attn:	
	Facsimile:	
	Telephone:	

(c) Successors; Assignment. This Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns, and nothing herein shall be construed to create any rights enforceable by any other person or third party. This Agreement may not be assigned by either party (except by BA to an affiliate or successor in interest) without the prior written consent of the other party, which consent shall not be unreasonably withheld.

(d) Waiver. No waiver of any right or term hereof shall be effective unless in a writing executed by the waiving party. No waiver of any right or privilege hereunder shall operate as a waiver of any subsequent or similar right or privilege.

(e) Modifications. This Agreement may be modified or amended only by a written agreement executed by the parties hereto.

(f) Counterparts. This Agreement may be executed in counterparts, all of which shall be considered one and the same agreement and each of which shall be deemed an original.

(g) Severability. If any term, provision, paragraph or clause of this Agreement or any application thereof shall be held invalid or unenforceable in any particular jurisdiction, the remainder of this Agreement and any other application of such term, provision, paragraph or clause shall not be affected thereby in such jurisdiction (where such remainder or application shall be construed as if such invalid or unenforceable term, provision, paragraph or clause has not been inserted), and this Agreement and such application of such term, provision, paragraph or clause shall not be affected in any other jurisdiction.

(h) Contingency. Neither party will be held liable for any delay or failure in performance of this Agreement from any cause beyond its control and without its fault or negligence including but not limited to acts of God, acts of civil or military authority, government regulations, embargoes, epidemics, wars, terrorist acts, riots, insurrections, fires, explosions, earthquakes, nuclear accidents, floods, strikes, power blackouts, other major environmental disturbances, unusually sever weather conditions, inability to secure products or services of other persons or transportation facilities, or acts or omissions of transportation common carriers.

(i) Governing Law. Except as otherwise expressly provided herein, this Agreement shall be interpreted, construed and governed by the laws of the Commonwealth of Pennsylvania, without regard to conflict of law provisions.

(j) Confidentiality. Unless by mutual agreement, or except to the extent directed by a court of competent jurisdiction, neither party shall disclose this Agreement or the terms hereof to any person other than such party's affiliates or such party's officers, employees and consultants, who are similarly bound hereby. This paragraph shall not prevent the filing of this Agreement with a state or federal commission having jurisdiction over the parties hereto if such filing is required by rule or order of that commission; provided, however, that the parties hereto shall jointly request that the Agreement be treated as confidential by that commission to the extent permitted under the commission's regulations and procedures. Each party hereto must maintain the confidentiality of all message, billing, traffic, and call records, traffic volumes and all other material information and data pertaining to the traffic covered by this Agreement and the carriers and end users associated with such traffic.

(k) Remedies under Law. All remedies available to the parties hereto under the terms of this Agreement shall be in addition to, and not by way of limitation of, any other rights that said parties may have at law or equity, none of which are hereby waived.

(l) Entire Agreement. This Agreement, including all Attachments and Schedules attached hereto, contains the entire agreement, and supersedes and voids any prior understanding, between BA and CLEC regarding the subject matter hereof.

In witness whereof, the undersigned parties have caused this Agreement to be executed on their behalf this _____ day of _____, 199_.

Witness: CLEC

_____ By: _____

Witness: Bell Atlantic - Pennsylvania, Inc.

_____ By: _____

ATTACHMENT A

BASIS OF COMPENSATION

CHARGES FOR ADMINISTRATION OF ITORP AND ITORP PROCESSING

A. Bell Atlantic - Pennsylvania, Inc. charges the following rates for providing ITORP services:

1.	Administrative Charge (monthly) (includes Clearing House function)	$100.00
2.	Processing Charge Elements:	
	a. Terminating Traffic (per message)	$0.00199
	b. Minute/Message (per message)	$0.00001
	c. 800/888 Message (per message)	$0.00105
	d. Net Compensation (per message)	$0.00001
	e. Collected Revenue Processing (per message)	$0.00026
3.	Minimum Monthly Processing Fee (monthly)	$100.00
4.	Alternately Billed Calls (per message)	$0.0434

ATTACHMENT B

I.

Message Telecommunications Service - Terminating to CLEC

Rate Element	Billing Company
Carrier Common Line	CLEC
End Office	CLEC
Transport	Based on negotiated billing percentages (BIPs)

II.

800/888 - Terminating to or originating from CLEC Customers

Rate Element	Billing Company
Carrier Common Line	Originating Company
End Office	Originating Company
Transport	Based on negotiated billing percentages (BIPs)
Query	Originating Company

III.

Local Exchange - Terminating to CLEC

Rate Element	Billing Company
Local Call Termination Charge	CLEC
Transport	Based on negotiated billing percentages (BIPs)

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Attachment IV
INTERCONNECTION

ATTACHMENT IV

INTERCONNECTION

Section 1. Local Interconnection Trunk Arrangement

1.1 The Parties shall terminate Local Traffic and intraLATA/interLATA toll traffic originating on each other's networks as follows:

1.1.1 Initially, the Parties shall make available to each other two-way trunks, to be used one-way, for the reciprocal exchange of combined Local Traffic, non-equal access intraLATA toll traffic, and local transit traffic to other ILECs. In quarterly joint planning meetings pursuant to Section 8.3, where mutually agreed, the Parties may combine these trunk groups on a single shared two-way trunk group.

1.1.2 Bell Atlantic shall make available to MCIm a two-way trunk group, to Bell Atlantic's appropriate access tandem(s), to be used two-way, for the exchange of equal access traffic between MCIm and purchasers of Bell Atlantic's switched Exchange Access Services.

1.1.3 The Parties shall make available to each other trunks, to connect the originating Party's Switch to the appropriate E911 tandem of the other Party, or to connect the originating Party's Switch to the appropriate 911 PSAP.

1.1.4 **Bell Atlantic Operator Services Trunks**

1.1.4.1 The Parties shall make available to each other trunks to connect the originating Party's Switch to the other Party's Operator Service center for operator-assisted Line Status Verification/Verification and Call Interrupt.

1.1.4.2 For traffic from the Bell Atlantic network to MCIm for Operator Services, Bell Atlantic shall provide one trunk group per NPA served by Bell Atlantic.

1.1.4.3 Bell Atlantic shall provide such trunks as one-way trunks from the Bell Atlantic network to the MCIm network.

1.1.5 Bell Atlantic shall make available to MCIm trunks to connect MCIm's Switch to Bell Atlantic's Directory Assistance center in instances where MCIm is purchasing Bell Atlantic's Directory Assistance service.

1.1.6 It is recognized by the Parties that there is no technical requirement to segregate local and toll traffic from MCIm to Bell Atlantic, or from Bell Atlantic to MCIm, provided that the classification of the traffic can reliably be identified by the Parties in accordance with the terms of Section 7.5 herein.

1.2 Interconnection Point

1.2.1 Definitions

1.2.1.1 "Interconnection Point" or "IP" means the switching, Wire Center, or other similar network node in a Party's network at which such Party accepts Local Traffic from the other Party. Bell Atlantic IPs include any Bell Atlantic End Office, for the delivery of traffic terminated to numbers served out of that End Office, and/or any Bell Atlantic access Tandem Office, for the delivery of traffic to numbers served out of any Bell Atlantic End Office that subtends that access Tandem Office. MCIm IPs include any MCIm Switch, for the delivery of traffic terminated to numbers served out of that Switch.

1.2.1.2 "Point of Interconnection" or "POI" means the physical point that establishes the technical interface, the test point, and the operational responsibility hand-off between the Parties for the Local Interconnection of their networks. Unless otherwise mutually agreed, MCIm will be responsible for engineering and maintaining its network on its side of the POI and Bell Atlantic will be responsible for engineering and maintaining its network on its side of the POI.

1.2.2 MCIm shall establish at Technically Feasible points in Bell Atlantic's network at least one POI in each of the Bell Atlantic access tandem serving areas in which MCIm originates Local Traffic and interconnects with Bell Atlantic; provided that Bell Atlantic may request relief from the Commission if Bell Atlantic reasonably believes that MCIm has manipulated the designation of POIs in order to maximize the transport revenues Bell Atlantic must pay to MCIm. The Party delivering traffic to the other Party's IP(s) shall do so by purchasing from the other Party transport between the POI(s) and the IP(s), if necessary. MCIm shall deliver traffic to at least one IP in each Bell Atlantic access tandem serving area to which its end users have local calling; provided, however, that if MCIm delivers traffic to only one IP in an access tandem serving area, the IP shall be the access tandem. Bell Atlantic shall deliver traffic to at least one (1) MCIm IP in each Bell Atlantic access tandem serving area.

1.2.2.1 If and when the Parties choose to interconnect at a fiber optic mid-span meet, MCIm and Bell Atlantic will mutually agree on the technical, operational and compensation issues associated with each specific mid-span

meet implemented, and jointly provision the fiber optic facilities that connect the two networks in accordance with such agreement.

1.2.2.2 In response to a Party's request for any POI, the other Party shall provide any information in its possession or control regarding the environmental conditions of those POIs whose location is within its possession or control. The Party controlling the POI shall notify the requesting Party of any hazardous environmental conditions of the POI, including the existence and condition of asbestos, lead paint, hazardous substance contamination, and the like. The Party controlling the POI shall respond to any such request within ten (10) business days for manned sites and within no more than thirty (30) calendar days for unmanned sites.

1.2.2.3 The Party controlling a POI shall allow the requesting Party to perform at reasonable hours, reasonable environmental site investigations, including, but not limited to, asbestos surveys, that the requesting Party deems to be necessary in support of its interconnection needs.

1.2.2.4 If interconnection is complicated by the presence of environmental contamination or hazardous materials, and an alternative route is available within the space controlled by the Party controlling an POI, then such Party shall make such alternative route available for the requesting Party's consideration.

Section 2. Compensation Mechanisms

2.1 Point of Interconnection

2.1.1 Each (originating) Party is responsible for bringing their traffic to a POI.

2.2 Compensation for Local Traffic Transport and Termination

2.2.1 The POI determines the point at which the originating carrier shall pay the terminating carrier for the Transport and Termination of local traffic. The following compensation elements shall apply:

2.2.1.1 "Transport," which includes the transmission of Local Traffic from the POI to the terminating carrier's IPs, and any necessary Tandem Switching, and any necessary transport between the terminating carrier's access Tandem Office and the terminating carrier's End Office Switch that directly serves the called end user.

2.2.1.2 "Termination," which includes the switching of Local Traffic at the terminating carrier's End Office Switch.

2.3 When an MCIm customer places a call to a Bell Atlantic customer, MCIm will hand off that call to Bell Atlantic at the POI. Conversely, when Bell Atlantic hands over Local Traffic to MCIm for MCIm to transport and terminate, Bell Atlantic must use an established POI.

2.4 MCIm may designate as its means of delivering traffic to a POI any Technically Feasible methods, including but not limited to, Collocation using electronic or manual cross-connect points via a digital signal access point ("DSAP"), or mutually-agreed mid-span meets. The transport and termination charges for Local Traffic delivered to POI shall be as follows:

2.4.1 When Local Traffic from MCIm is terminating on Bell Atlantic's network through the Bell Atlantic access Tandem Office IP, MCIm will pay Bell Atlantic transport charges from the POI to the Tandem Office for Dedicated Transport. Alternatively, MCIm may choose to collocate at the Bell Atlantic access Tandem Office and pay applicable Collocation and cross-connect charges. MCIm may also choose to purchase Bell Atlantic Dedicated Transport from the POI to a Collocation site established by MCIm or a third Party at the Bell Atlantic access Tandem Office IP. MCIm shall also pay a charge for the tandem termination rate. The tandem termination rate includes Tandem Switching, Common Transport to the End Office, and End Office termination and will be charged at the rate set forth in Attachment I.

2.4.2 When Local Traffic from Bell Atlantic is terminating on MCIm's network through the POI, Bell Atlantic shall pay MCIm transport charges from the POI to the MCIm Switch for Dedicated Transport. This transport charge shall not exceed Bell Atlantic's equivalent charge. Bell Atlantic shall also pay a charge symmetrical to its own charges to MCIm for Tandem Switching, Tandem Office to End Office transport, and End Office termination, provided that the MCIm Switch covers an area comparable to the Bell Atlantic access Tandem Office serving the same area. If the area covered by the MCIm Switch is comparable instead to the area of an End Office, Bell Atlantic shall not pay the charges for Tandem Switching or Tandem Office to End Office transport.

2.4.3 MCIm may choose to establish direct trunking to any given Bell Atlantic End Office from the POI. If MCIm leases trunks from Bell Atlantic, it shall pay charges for Dedicated Transport. For calls terminating from MCIm to subscribers served by these directly-trunked end offices, MCIm shall also pay for Local Traffic termination at the End Office termination rate. For Bell Atlantic Local Traffic terminating to MCIm over the direct End Office trunking, compensation payable by Bell Atlantic shall be the same as that detailed in Section 2.4.2 above.

Section 3. Signaling

3.1 Signaling protocol. The Parties will interconnect their networks using SS7 signaling as defined in Bellcore documents GR-905-CORE, Issue 1, March 1995, Bellcore Special Report SR-TSV-002275, BOC Notes on the LEC Networks-Signaling, Bellcore Generic Requirements GR-317, Issue 1, February 1994 and GR-394, Issue 1, February 1994, including ISDN User Part ("ISUP") for trunk signaling and Transaction Capabilities Application Part ("TCAP") for CCS-based features in the interconnection of their networks.

3.2 The Parties will provide CCS to each other in conjunction with all trunk groups supporting intraLATA, local, transit, and toll traffic. CCS will not be provided in conjunction with trunk groups supporting Operator Services (Call Completion and Directory Assistance), 911, or where CCS has not been deployed by the originating carrier. The Parties will cooperate on the exchange of Transactional Capabilities Application Part ("TCAP") messages to facilitate full inter-operability of CCS-based features between their respective networks, including all CLASS features and functions. All CCS signaling parameters will be provided including Automatic Number Identification ("ANI"), originating line information ("OLI"), calling party category, Charge Number, *etc.* For terminating FGD, Bell Atlantic will pass CPN if it receives CPN from FGD carriers. All privacy indicators will be honored. Where available, network signaling information such as Transit Network Selection ("TNS") parameter (CCS platform) and CIC/OZZ information (non-CCS environment) will be provided by either Party wherever such information is needed for call routing or billing. The Parties will generally conform to OBF adopted guidelines pertaining to TNS and CIC/OZZ codes in accordance with Section 15.4 of Part A.

3.3 Refer to Attachment III, Section 11 for detailed terms of SS7 Network Interconnection.

3.4 Standard interconnection facilities shall be ESF with B8ZS line code. Where ESF/B8ZS is not available, both Parties will agree to use other interconnection protocols on an interim basis until the standard ESF/B8ZS is available. For specific arrangements not deployed as ESF/B8ZS, Bell Atlantic will provide anticipated dates of ESF/B8ZS availability for these facilities.

3.4.1 Where MCIm is unwilling to utilize an alternate interconnection protocol, MCIm will provide Bell Atlantic with a request for 64 kbps Clear Channel Capability ("64K CCC") trunk quantities consistent with the quarterly forecasting agreements between the Parties pursuant to Section 8.3. Upon receipt of this request, the Parties will begin joint planning for the engineering, procurement, and installation of the segregated 64K CCC Local Interconnection Trunk Groups, and the associated B8ZS Extended Super Frame ("ESF") facilities, for the sole purpose of transmitting 64K CCC data calls between MCIm and Bell Atlantic. Where additional equipment or network rearrangements are required, such equipment and

rearrangements will be obtained, engineered, installed, and performed on the same basis and with the same intervals as any similar subscriber specific special construction jobs for IXCs, CLECs, or Bell Atlantic internal subscriber demand for 64K CCC trunks. Such equipment and rearrangements shall be charged at Commission-approved, applicable special construction rates. Should the foregoing not be adequate, MCIm may invoke the BFR process. Where Technically Feasible and mutually agreed, these trunks will be established as two-way.

Section 4. Network Servicing

4.1 **Trunk Forecasting**

4.1.1 The Parties shall work toward the development of their forecasting responsibilities for traffic utilization over trunk groups. Orders for trunks that exceed forecasted quantities for forecasted locations will be accommodated as facilities and/or equipment are available. Parties shall make all reasonable efforts and cooperate in good faith to develop alternative solutions to accommodate orders when facilities are not available. Intercompany forecast information must be provided by MCIm to Bell Atlantic on a quarterly basis. The forecasts shall include:

4.1.1.1 Yearly forecasted trunk quantities to each of Bell Atlantic's End Offices and access Tandem Office(s) affected by the exchange of traffic (which include measurements that reflect actual Tandem and End Office Local Interconnection and meet point trunks and tandem-subtending Local Interconnection End Office equivalent trunk requirements for no more than two years (current plus one year)) by traffic type (local/toll, operator services, 911, etc.), Access Carrier Terminal Location ("ACTL"), interface type (*e.g.*, DS1), and trunks in service each year (cumulative);

4.1.1.2 The use of A location/Z location Common Language Location Identifier ("CLLI-MSG"), which are described in Bellcore documents BR 795-100-100 and BR 795-400-100; and

4.1.1.3 Descriptions of major network projects that affect the other Party will be provided in the forecasts. Major network projects include, but are not limited to, trunking or network rearrangements, shifts in anticipated traffic patterns, or other activities by either Party that are reflected by a significant increase or decrease in trunking demand for the following forecasting period.

4.1.2 Parties shall meet to review and reconcile their forecasts if forecasts vary significantly.

4.1.2.1 Because each Party's trunking requirements will, at least during an initial period, be dependent on the subscriber segments to whom MCIm decides to market its services, Bell Atlantic will be largely dependent on MCIm to provide accurate trunk forecasts for both inbound (from Bell Atlantic) and outbound (from MCIm) traffic. Bell Atlantic will, as an initial matter, and upon receipt of a forecast from MCIm, order a sufficient number of trunks from MCIm for Local Traffic and intraLATA toll, to MCIm from Bell Atlantic, to handle the traffic forecast. Upon the establishment of any new set of trunks for traffic, each Party will monitor traffic for up to ninety (90) days, and will, as necessary, either augment trunks or disconnect trunks, based on the application of reasonable engineering criteria to the actual traffic volume experienced. If, after such ninety (90) day period, either Party has determined that the trunks are not warranted by actual traffic volumes, then, it shall inform the other in writing. Thereafter, within ten (10) business days of receipt of the written notice, the Party receiving notice shall inform the other Party of whether it desires to keep in operation any unused trunk. Each Party may hold the other financially responsible for such trunks, installed at the request of the other Party, retroactive to the start of the ninety (90) day period until such time as they are justified by actual traffic volumes, based on the application of reasonable engineering criteria.

4.1.3 Each Party shall provide a specified point of contact for planning, forecasting, and trunk servicing purposes.

4.1.4 Trunking can be established to Tandem or End Offices or a Combination Class 5/Class 4 via either one-way or two-way trunks in accordance with the standards set forth in Section 1 above. Trunking will be at the DS-0 level, DS-1 level, or higher, as mutually agreed in accordance with the standards set forth in Section 1 of this Attachment. Initial trunking will be established between the MCIm switching centers and Bell Atlantic's access Tandem Office(s). The Parties may use direct End Office trunking for their traffic when deemed appropriate. Requests for direct End Office trunking will not be unreasonably denied.

4.2 Grade of Service

4.2.1 A blocking standard of one percent (.01) during the average busy hour, as defined by each Party's standards, for final trunk groups between MCIm and Bell Atlantic shall be maintained.

4.3 Trunk Servicing

4.3.1 Orders between the Parties to establish, add, change or disconnect trunks shall be processed by use of an Access Service Request ("ASR"), or another industry standard eventually adopted to replace the ASR for local service ordering.

4.3.2 As discussed in this Agreement, both Parties will manage the capacity of their Local Interconnection Trunk Groups. Bell Atlantic will issue an ASR to MCIm to trigger changes Bell Atlantic desires to the Bell Atlantic Local Interconnection Trunk Groups based on Bell Atlantic's capacity assessment. MCIm will issue an ASR to Bell Atlantic to trigger changes MCIm desires to the MCIm Local Interconnection Trunk Groups based on MCIm's capacity assessment.

4.3.3 The standard interval used for the provisioning of local interconnection trunk groups shall be ten (10) business days for orders of fewer than ninety-six (96) DS-0 trunks. Orders beyond this amount shall be determined on an individual case basis. Where feasible, Bell Atlantic will expedite installation, upon MCIm's request.

4.3.4 Orders that comprise a major project that directly impacts the other Party may be submitted at the same time, and their implementation shall be jointly planned and coordinated. Major projects are those that require the coordination and execution of multiple orders or related activities between and among Bell Atlantic and MCIm work groups, including but not limited to the initial establishment of Local Interconnection or Meet Point trunk groups and service in an area, facility grooming, or network rearrangements.

4.3.5 MCIm and Bell Atlantic agree to exchange escalation lists which reflect contact personnel including vice president-level officers. These lists shall include name, department, title, phone number, and fax number for each person. MCIm and Bell Atlantic agree to exchange an up-to-date list promptly following changes in personnel or information.

Section 5. Network Management

5.1 Protective Protocols

5.1.1 Either Party may use protective network traffic management controls such as 7-digit and 10-digit code gaps on traffic toward the other Party's network, when required to protect the public switched network from congestion due to facility failures, Switch congestion or failure, or focused overload. MCIm and Bell Atlantic will immediately notify each other of any protective control action planned or executed.

5.2 Expansive Protocols

5.2.1 Where the capability exists, originating or terminating traffic reroutes may be implemented by either Party to temporarily relieve network congestion due to facility failures or abnormal calling patterns. Reroutes will not be used to

circumvent normal trunk servicing. Expansive controls will only be used when mutually agreed to by the Parties.

5.3 **Mass Calling**

5.3.1 MCIm and Bell Atlantic shall cooperate and share pre-planning information, where available, regarding cross-network call-ins expected to generate large or focused temporary increases in call volumes, to prevent or mitigate the impact of these events on the public switched network.

Section 6. Line Status Verification And Verification With Call Interruption

6.1 Each Party shall offer Line Status Verification ("LSV") and Verification and Call Interrupt ("VCI") services to enable its subscribers to verify and/or interrupt calls of the receiving Party's subscribers. The receiving Party shall accept and respond to LSV and VCI requests from the operator bureau of the originating Party, provided that the originating Party has ordered the requisite underlying LSV/VCI service from the receiving Party.

6.2 The receiving Party operator shall only verify the status of the line or interrupt the line to inform the called Party that there is a call waiting. The receiving Party operator will not complete the telephone call of the subscriber initiating the LSV/VCI request. The receiving Party operator will only make one LSV/VCI attempt per subscriber operator bureau telephone call, and the applicable charges apply whether or not the called Party releases the line.

6.3 Each Party's operator bureau shall accept LSV and VCI inquiries from the operator bureau of the other Party in order to allow transparent provision of LSV/VCI traffic between the Parties' networks.

6.4 Each Party shall route LSV/VCI traffic inquiries over separate direct trunks (and not the local/intraLATA/interLATA trunks) established between the Parties' respective operator bureaus. Each Party shall offer interconnection for LSV/VCI traffic at its Operator Services tandem office or other mutually agreed point in the LATA. Separate LSV/VCI trunks will be directed to the Operator Services tandem office designated by the receiving Party. The originating Party shall outpulse the appropriate NPA, ATC Code, and Routing Code (operator code) to the receiving Party.

6.5 When a LSV/VCI request for a ported number is directed to either Party's operator and the query is not successful (*i.e.*, the request yields an abnormal result), the operator shall confirm whether the number has been ported and shall direct the request to the appropriate operator. The Parties shall work cooperatively to develop this process, which does not exist as of the Effective Date.

6.6 *Compensation:* Each Party shall charge the other Party for LSV and VCI at rates specified in Attachment I.

Section 7. Usage Measurement

7.1 Each Party shall calculate terminating interconnection minutes of use based on standard Automatic Message Accounting ("AMA") recordings made within each Party's network, these recordings being necessary for each Party to generate bills to the other Party.

7.2 Measurement of minutes of use over Local Interconnection Trunk Groups shall be in actual conversation seconds. The total conversation seconds over each individual Local Interconnection Trunk Group will be totaled for the entire monthly bill-round and then rounded to the next whole minute.

7.3 For billing purposes, each Party shall pass Calling Party Number ("CPN") information on each call carried over the traffic exchange trunks at such time as the originating Switch is equipped for SS7 and from all switches no later than December 31, 1998. At such time as either Party has the ability, as the Party receiving the traffic, to use such CPN information to classify on an automated basis traffic delivered by the other Party as either Local Traffic or toll traffic, such receiving Party shall bill the originating Party the Local Traffic termination rates, intrastate Exchange Access rates, or interstate Exchange Access rates applicable to each minute of traffic for which CPN is passed, as provided in Attachment I and applicable Tariffs.

7.4 If, under the circumstances set forth in Section 7.3, the originating Party does not pass CPN on up to ten percent (10%) of calls, the receiving Party shall bill the originating Party the Local Traffic termination rates, intrastate Exchange Access rates, intrastate/interstate transit traffic rates, or interstate Exchange Access rates applicable to each minute of traffic, as provided in Attachment I and applicable Tariffs, for which CPN is passed. For the remaining up to ten percent (10%) of calls without CPN information, the receiving Party shall bill the originating Party for such traffic at Local Traffic termination rates, intrastate Exchange Access rates, intrastate/interstate transit traffic rates, or interstate Exchange Access rates applicable to each minute of traffic, as provided in Attachment I and applicable Tariffs, in direct proportion to the minutes of use of calls passed with CPN information.

7.5 If the originating Party fails to pass CPN on more than ten percent (10%) of calls, either Party may require that separate trunk groups for Local Traffic and toll traffic be established. If neither Party requests such separate trunk groups, or if the receiving Party lacks the ability to use CPN information to classify on an automated basis traffic delivered by the other Party as either Local Traffic or toll traffic, and the originating Party desires to combine Local Traffic and toll traffic on the same trunk group, it will supply an auditable Percent Local Usage ("PLU") report quarterly, based on the previous three months' traffic, and applicable to the following three months. If the originating Party also desires

to combine interstate and intrastate toll traffic on the same trunk group, it will supply an auditable Percent Interstate Usage ("PIU") report quarterly, based on the previous three months' terminating traffic, and applicable to the following three months. In lieu of the foregoing PLU and/or PIU reports, the Parties may agree to provide and accept reasonable surrogate measures for an agreed-upon period.

7.6 Measurement of billing minutes for purposes of determining terminating compensation shall be in conversation seconds.

Section 8. Responsibilities of the Parties

8.1 Bell Atlantic and MCIm agree to treat each other fairly and nondiscriminatorily for all items included in this Agreement, or related to the support of items included in this Agreement.

8.2 MCIm and Bell Atlantic agree to exchange such reports and/or data as provided in this Attachment in Section 7 to facilitate the proper billing of traffic. Either Party may request an audit of such usage reports on no fewer than ten (10) business days' written notice and any audit shall be accomplished during normal business hours at the office of the Party being audited. Such audit must be performed by a mutually agreed-to independent auditor paid for by the Party requesting the audit and may include review of the data described in Section 7 above. Such audits may be requested within six (6) months of having received the PLU factor and usage reports from the other Party.

8.3 MCIm and Bell Atlantic will review engineering requirements on a quarterly basis and establish forecasts for trunk and facilities utilization provided under this Agreement. Bell Atlantic and MCIm will work together to begin providing these forecasts within thirty (30) days from the Effective Date of this Agreement. New trunk groups will be implemented as dictated by engineering requirements for either Bell Atlantic or MCIm.

8.4 Unless otherwise mutually agreed for specific facility arrangements, Bell Atlantic shall be solely responsible for Control Office functions for local interconnection trunks and trunk groups that Bell Atlantic orders from MCIm. In addition, Bell Atlantic shall be solely responsible for the overall coordination, installation, and maintenance responsibilities for the trunks and trunk groups that MCIm orders from Bell Atlantic. The Parties shall agree upon the assignment of Control Office, coordination, installation, and maintenance responsibilities for shared interconnection trunks and for mid-span meet trunks at such time as the Parties agree to install each such facility.

8.5 MCIm and Bell Atlantic shall:

8.5.1 Provide trained personnel with adequate and compatible test equipment to work with each other's technicians.

8.5.2 Notify each other when there is any change affecting the service requested, including the due date.

8.5.3 Coordinate and schedule testing activities of their own personnel, and others as applicable, to ensure its interconnection trunks/trunk groups are installed per the interconnection order, meet agreed-upon acceptance test requirements, and are placed in service by the due date.

8.5.4 Perform sectionalization to determine if a trouble is located in its facility or its portion of the interconnection trunks prior to referring the trouble to each other.

8.5.5 Advise each other's Control Office if there is an equipment failure which may affect the interconnection trunks.

8.5.6 Provide each other with a trouble reporting/repair contact number that is readily accessible and available twenty-four (24) hours/seven (7) days a week. Any changes to this contact arrangement must be immediately provided to the other Party.

8.5.7 Provide to each other test-line numbers to enable testing of interconnection trunks.

8.5.8 Cooperatively plan and implement coordinated repair procedures for the meet point and local interconnection trunks and facilities to ensure trouble reports are resolved in a timely and appropriate manner.

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Attachment V
COLLOCATION

ATTACHMENT V

COLLOCATION

Section 1. Introduction

This Attachment sets forth the requirements for Collocation. Bell Atlantic shall provide MCIm Collocation in accordance with the terms of its FCC and Pennsylvania Collocation Tariffs and the provisions of this Attachment V. Any conflicts between the Tariff and the provisions hereof shall be resolved as set forth in Section 1, Part A of this Agreement.

Section 2. Technical Requirements

2.1 Bell Atlantic shall provide space, as reasonably requested by MCIm, to meet MCIm's needs for placement of equipment. MCIm may collocate only that equipment which is used for interconnection and access to Network Elements. Such equipment may include Remote Switching Modules ("RSMs") in Bell Atlantic's Central Offices which currently provide Unbundled Local Loops ("ULLs") using digital loop carriers or are scheduled to provide ULLs using digital loop carriers.

2.1.1 To the extent practicable and consistent with the needs of Bell Atlantic and other collocators, Bell Atlantic will use reasonable efforts to place MCIm's physically collocated interconnection space so as to permit MCIm to expand its collocated interconnection space to a contiguous area, up to a maximum of four-hundred (400) square feet.

2.1.2 Subject to availability, physically-collocated interconnection will be provided on a first-come, first-served basis in a physically-collocated office until available Collocation space and facilities are exhausted. In such instances where two (2) or more requests for space are received at the same time for a Central Office building with limited space, a lottery will be administered to determine the order of selection of applicants.

2.1.3 If the space remaining in the portion of the Central Office in which physical Collocation is provided (the "Collocation Space") is less than one-hundred (100) square feet or otherwise configured so as to be unsuited to meet the requirements of another collocator that has requested such space, the existing collocator(s) shall have the option of applying for any portion(s) of the remaining space.

2.1.4 In the event that MCIm withdraws its request for Collocation service prior to completion, Bell Atlantic will refund the pre-paid design and planning fee, less actual costs incurred by Bell Atlantic.

2.1.5 Upon receipt of MCIm's first Collocation application form, Bell Atlantic will, upon request, make available to MCIm at cost any applicable Bellcore or Bell Atlantic-specific documentation as listed in Bell Atlantic's Tariff F.C.C. No. 1, Section 19.3.5. MCIm is responsible for obtaining all other applications listed in Appendix 1 to Part A.

2.1.6 At the time Bell Atlantic submits contractor bids to MCIm, Bell Atlantic shall provide any information in its possession or control regarding the environmental condition of the space provided for those sites, where the information is reasonably available. Bell Atlantic shall also notify MCIm at such time of the following conditions of which it is aware: the existence and condition of asbestos, lead paint, hazardous substance contamination, and the like.

2.1.7 Bell Atlantic shall allow MCIm to perform reasonable environmental site investigations within the designated Collocation Space, including, but not limited to, asbestos surveys, which MCIm deems to be necessary in support of its Collocation needs, upon completion of Bell Atlantic's required construction work for the MCIm Collocation space.

2.1.8 If the space provided for the placement of equipment, interconnection, or provision of service contains environmental contamination or hazardous material, particularly but not limited to asbestos or lead paint which makes the placement of such equipment or interconnection hazardous, Bell Atlantic shall offer an alternative space, if available at the same Bell Atlantic premise, for MCIm's consideration.

2.2 Bell Atlantic shall provide intraoffice facilities (*e.g.*, DS1, DS3, DS0, OC3, OC12, OC48, and STS-1, terminations where and when available) as requested by MCIm to meet MCIm's need for placement and interconnection of equipment, where Technically Feasible.

2.3 Bell Atlantic agrees to allow MCIm's employees and designated agents unrestricted access to MCIm dedicated space in Bell Atlantic offices twenty-four (24) hours per day each day of the week. Bell Atlantic may place reasonable security restrictions on access by MCIm's employees and designated agents to the MCIm Collocated space in Bell Atlantic offices, in accordance with Attachment IX.

2.4 Where Technically Feasible, Bell Atlantic shall provide the connection between the equipment in the collocated spaces of two (2) or more Telecommunications Carriers permitting such Telecommunications Carrier(s) to interconnect its network with that of another collocating Telecommunications Carrier at Bell Atlantic premises, provided that the collocated equipment is used for interconnection with Bell Atlantic or for access to Bell Atlantic's Network Elements.

2.5 Bell Atlantic shall permit MCIm to subcontract the construction of physical Collocation arrangements within the MCIm Collocation space, to Bell Atlantic's construction specifications, with contractors approved by Bell Atlantic, provided, however, that Bell Atlantic shall not unreasonably withhold approval of contractors. Approval by Bell Atlantic shall be based on the same criteria it uses in approving contractors for its own purposes.

2.6 MCIm may order from Bell Atlantic basic business telephone service at the Collocation space, as may be required for administrative purposes.

2.7 Bell Atlantic shall provide lighting, ventilation, power, heat, air conditioning, and other environmental conditions for MCIm's space and equipment in substantial conformance with Bell Communication Research ("Bellcore") Network Equipment-Building System ("NEBS") standards TR-EOP-000063. MCIm may order additional lighting and AC power in accordance with Bell Atlantic's Collocation Tariffs.

2.8 Bell Atlantic shall provide access to bathrooms and drinking water within a collocated facility on a twenty-four (24) hours per day, seven (7) days per week basis for authorized MCIm personnel and agents in facilities where such amenities are located in Collocation common areas. Where such amenities are not available within a Collocation common area and where Bell Atlantic has employees available on the premise, Bell Atlantic shall provide an escort for access to such facilities.

2.9 Bell Atlantic shall provide all ingress and egress of fiber and power cabling to MCIm Collocated Spaces in compliance with MCIm's reasonable cable diversity requirements. The specific level of diversity requested for each site or Network Element will be provided in the Collocation request. MCIm shall pay Bell Atlantic any reasonable special construction charges incurred in providing MCIm the requested level of diversity where said diversity is not available.

2.10 In a Collocation arrangement hereunder, Bell Atlantic shall protect MCIm's Proprietary Information to the extent required by Applicable Law.

2.11 Bell Atlantic shall notify MCIm's National Network Management Center at least five (5) business days prior to those instances when Bell Atlantic or its subcontractors know they will be performing work reasonably anticipated to affect MCIm's service on the DC power plants which support MCIm equipment. Bell Atlantic will inform MCIm by telephone of any emergency related activity reasonably anticipated to affect MCIm's service that Bell Atlantic or its subcontractors may be performing on the DC power plants which support MCIm equipment. Notification of any emergency related activity shall be as soon as practicable so that MCIm can take any action required to monitor or protect its service.

2.12 MCIm shall submit a request to collocate equipment using the form attached as Exhibits A and B to this Attachment V. Promptly following MCIm's submission of a

Collocation application, Bell Atlantic shall review the application, and within ten (10) business days, conduct a meeting with MCIm to review the details of the application to assure that it is complete.

2.12.1 Within forty-five (45) days after the application review meeting, Bell Atlantic shall tender to MCIm drawings of the proposed Collocation space. MCIm shall review the drawings and either approve them or specify changes to the space design within thirty (30) days after receiving them. Promptly thereafter, Bell Atlantic and MCIm shall agree on final drawings, specifications and charges for the requested space specified on MCIm's application. Upon MCIm's request, Bell Atlantic shall construct the Collocation space in substantial compliance with MCIm's Collocation application.

2.13 MCIm and Bell Atlantic will complete an acceptance walk through of the Collocated space constructed by Bell Atlantic. Exceptions from drawings and plans approved under Section 2.12 that would materially affect MCIm's intended use of the space that are noted by MCIm during this acceptance walk through shall be corrected, or the price otherwise adjusted, by Bell Atlantic within five (5) business days after the walk through unless otherwise agreed. The correction of these exceptions from the original Collocation application shall be at Bell Atlantic's expense.

2.14 Bell Atlantic shall provide telephone equipment drawings depicting the location, type, and cable termination requirements (*i.e.*, connector type, number and type of pairs, and naming convention) for Bell Atlantic point of termination bay(s) to MCIm upon completion of Bell Atlantic construction of the MCIm Collocation space.

2.15 Bell Atlantic shall provide drawings depicting available paths, with dimensions, for MCIm outside plant fiber ingress and egress into MCIm collocated space at the initial site implementation meeting between MCIm and Bell Atlantic within ten (10) business days after Bell Atlantic's acceptance of MCIm's request for collocated space. Such path and any areas around it in which MCIm must work to perform installation shall be free of asbestos, lead paint (unless encapsulated), and other health or safety hazards to the same extent that comparable Bell Atlantic work areas in the same premises are free of such conditions.

2.16 Bell Atlantic shall provide power cabling connectivity information, including the sizes and number of power feeders, to MCIm upon completion of Bell Atlantic construction of MCIm Collocation space.

2.17 Bell Atlantic shall provide positive confirmation to MCIm when its construction of MCIm's Collocation space is fifty percent (50%) completed. This confirmation shall also include confirmation of the scheduled completion and turnover dates.

2.18 Bell Atlantic shall make commercially reasonable efforts to provide the following information to MCIm within ten (10) business days after receipt of request from MCIm unless otherwise agreed:

2.18.1 Work restriction guidelines.

2.18.2 Bell Atlantic or industry technical publication guidelines that impact the design of virtually collocated equipment.

2.18.3 Bell Atlantic contacts (names and telephone numbers) for the following areas:

Engineering
Physical & Logical Security
Billing
Operations
Site and Building Managers
Environmental and Safety

2.18.4 Escalation process for Bell Atlantic employees (names, telephone numbers and the escalation order) for any disputes or problems that might arise in connection with MCIm's Collocation activities.

2.19 "Power" as referenced in this Section 2.19 refers to any electrical power source supplied by Bell Atlantic for MCIm Collocation equipment. It includes necessary superstructure, infrastructure, and overhead facilities, including, but not limited to, cable, cable racks and bus bars. Bell Atlantic will supply power to support collocated MCIm equipment at equipment-specific and industry standard DC and AC voltages. Bell Atlantic shall supply power to MCIm at Parity with that provided by Bell Atlantic to itself or to any third party at the premises.

2.19.1 Central Office power supplied by Bell Atlantic into the MCIm equipment area shall be supplied in the form of power feeders (cables) on cable racking into the designated MCIm equipment area. The power feeders (cables) shall support the requested quantity and capacity of MCIm equipment in accordance with the Collocation Tariff. The termination location shall be as reasonably requested by MCIm.

2.19.2 Bell Atlantic shall provide power as reasonably requested by MCIm to meet MCIm's need for the interconnection and placement of equipment in accordance with Tariff.

2.19.3 Bell Atlantic power equipment supporting MCIm's equipment shall:

2.19.3.1 Comply in material respects with applicable industry standards (e.g., Bellcore, and NEBS) for equipment installation, cabling practices, and physical equipment layout;

2.19.3.2 Have redundant power feeds with physical diversity and battery back-up for MCIm equipment at Parity with that provided for similar Bell Atlantic equipment at the same premises. Power requirements for remote switching equipment, if any is collocated, and physical diversity for power feeds where such diversity is not already available, may require special construction.

2.19.3.3 Upon MCIm's request, Bell Atlantic will provide prices and specifications for unique battery and power requirements, including those for other types of equipment that can be collocated under this Agreement;

2.19.3.4 Provide Central Office ground, connected to a ground electrode in compliance with applicable industry standards. Central Office ground for remote switching equipment, if any is collocated, may require special construction; and

2.19.3.5 Provide feeder capacity and quantity to support the equipment layout for MCIm equipment in accordance with MCIm's Collocation application. Feeder capacity for remote switching equipment, if any is collocated, may require special construction.

2.19.4 Bell Atlantic shall use commercially reasonable efforts to, within forty-five (45) days after MCIm's application:

2.19.4.1 Provide documentation submitted to and received from contractors for any contractor bids for any work being done on behalf of MCIm (except for any work that is covered by a Tariffed rate);

2.19.4.2 Provide MCIm access to its Collocation space upon completion of construction that will provide safe and secure access to the Collocation space;

2.19.4.3 Provide cabling that adheres in all material respects to Bell Communication Research ("Bellcore") Network Equipment-Building System ("NEBS") standards TR-EOP-000063; and

2.19.4.4 Provide Lock Out-Tag Out and other electrical safety procedures and devices in conformance with agreed OSHA or industry guidelines.

2.20 Bell Atlantic shall provide virtual Collocation where physical Collocation is not practical for technical reasons or because of space limitations. Bell Atlantic shall take

collocator demand into account when renovating existing facilities and constructing or leasing new facilities.

2.21 Standard intervals for physical Collocation shall be one hundred twenty (120) days from the date an application is finalized and approved by the Parties. Virtual Collocation will have a standard interval of sixty (60) days from the foregoing date.

2.22 MCIm may collocate only that equipment which is used for interconnection and access to Network Elements. MCIm may collocate the quantity and type of such equipment it reasonably deems necessary in its Collocation space, provided that the equipment meets Bellcore specifications. Approved vendors will, at a minimum, be vendors Bell Atlantic currently approves for their own use. Bell Atlantic will not unreasonably withhold approval of additional vendors whose equipment meets Bellcore specifications.

2.23 MCIm may choose to lease unbundled transport from Bell Atlantic or a third carrier for the purpose of connection to MCIm collocated equipment, rather than construct to such facilities, all in accordance with FCC Rules and Regulations.

2.24 Bell Atlantic will maintain MCIm's virtually collocated equipment in Parity with how it maintains its own equipment. Such maintenance shall include the change out of electronic cards provided by MCIm and per MCIm's request.

Section 3. License

Bell Atlantic hereby grants MCIm a license to occupy any premises or rack space which contain collocated equipment as permitted hereunder, including without limit all necessary ingress and egress, all in accordance with the terms and conditions of this Agreement including this Attachment V.

EXHIBIT A

EXHIBIT A

Bell Atlantic

VIRTUAL COLLOCATION APPLICATION

DATE SENT ____/____/____ VERSION _____

I CUSTOMER INFORMATION

1. Company Name _____

   Street _____

   City/Town/State/Zip _____

2. 24 Hour Emergency Contact Number _____

3. Contact Name _____

   Telephone Number _____ Facsimile Number _____

4. Desired Service Date ____/____/____

5. Activity: New _____ Augment _____ Other _____

6. Percent Interstate Usage (PIU) _____

7. Central Office CLLI Code _____

8. ACNA _____

II TYPE OF SERVICE

Initial Terminations Required: DS3 _____ DS1 _____ DS0 _____

Incremental Quantities of Desired Services:

Interface (Cross-Connect) Forecast:

	Year 1	Year 2	Year 3
DS3			
DS1			
DS0			

Service (Channel Termination) Forecast:

	Year 1	Year 2	Year 3
DS3			
DS1			
DS0			

Ex: Interface - 2 DS3s: Service - 25 DS1s. 420 DS0s with muxing provided by Bell Atlantic

Is Synchronization To Be Provided By Access Provider? Yes ☐ No ☐

Official Use Only
Date Received _____
OP Received _____

Bell Atlantic

VIRTUAL COLLOCATION APPLICATION

III EQUIPMENT REQUIREMENTS

1. **List of Access Customer's Designated Equipment**

(NOTE: Please specify the type, size and quantity of equipment to be installed so that adequate power and environmental safeguards can be provided. Also, please attach a copy of the product's Technical Description.)

Manufacturer/Model #	Size	Quantity	CLEI*

Will Bell Atlantic be Designated to Install the Equipment? Yes ☐ No ☐

If no, Provide Bell Atlantic Approved Vendor Name _____

Vendor Contact Number _____

(*) Bellcore common Language Equipment Identification TM. Common Language is a Registered trademark and CLEI, CLLI, CLFI and CLCI are trademarks of Bell Communications Research, Inc. (Bellcore)

2. **List of Required Plug-in Units**

(NOTE: Please indicate the circuit number or slot where the plug-in unit is to be installed, as required by the Access Provider's practices.)

Manufacturer/Model #	Slot/Circuit #	Quantity In Service	Quantity Protection

Bell Atlantic

VIRTUAL COLLOCATION APPLICATION

4. ***List of Required Test/Maintenance Spare Equipment***

Manufacturer/Model #	Qty	CLEI
_____	_____	_____
_____	_____	_____
_____	_____	_____

Heat Dissipation Requirements: _____ (WATTS)

IV OUTSIDE PLANT FIELD SURVEY

1. Cable Information

   A. Direction from where cable will originate:

   _____
   _____
   _____
   _____

   B. Have Licensing Agreements for this location been established (e.g., conduit)?
   Yes ☐ No ☐ (Note: If Yes, please provide Contract Number.)

   C. Contract Number _____

   D. Dual Building Entrance Requested Yes ☐ No ☐

   E. Dual Riser Cables Requested Yes ☐ No ☐

2. Cable Requirements

	Feeder	Riser
A. Number of Cables To Be Placed	_____	_____
B. Size of Cables (Diameter)	_____	_____
C. Number of Fibers per Cable	_____	_____

Bell Atlantic

VIRTUAL COLLOCATION APPLICATION

IV OUTSIDE PLANT FIELD SURVEY (Cont'd)

3. Cable Makeup

A. Cable Designation and Count _____

B. Name of Fiber Manufacturer _____

C. Name of Cable Manufacturer _____

D. Type of Single Mode Fiber Used (e.g., Dual Window, Dispersion Shifted)

_____

E. Loss Decibels Per Kilometer _____

V REMARKS (New Customers, please provide bill to information here)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

4

EXHIBIT B

EXHIBIT B

Bell Atlantic

PHYSICAL COLLOCATION APPLICATION

DATE SENT ___/___/___ VERSION _____

I CUSTOMER INFORMATION Issue 1: 7/22/96

1. Company Name _____
   Street _____
   City/Town/State/Zip _____
2. 24 Hour Emergency Contact Number _____
3. Contact Name _____
   Telephone Number _____ Facsimile Number _____
4. Desired Service Date ___/___/___
5. Activity: New _____ Augment _____ Other _____
6. Percent Interstate Usage (PIU) _____
7. Central Office CLLI Code _____
8. ACNA _____

II TYPE OF SERVICE

Initial Terminations Required: DS3 _____ DS1 _____ DS0 _____

Incremental Quantities of Desired Services:

Interface (Cross-Connect) Forecast

	Year 1	Year 2	Year 3
DS3 (Point to point)			
DS3 (Multiplexed)			
DS1			
DS0 (Unbundled Loops)			

Service (Channel Termination) Forecast

	Year 1	Year 2	Year 3
DS3			
DS1			
DS1			

Ex: Interface Year 1: 3 DS3s Point to Point, 3 DS3s Muxed, 672 Unbund DS0s
Service Year 1: 3 DS3s, 84 DS1s (Muxed DS3s)

Official Use Only
Date Received _____
ID # Received _____

Bell Atlantic

PHYSICAL COLLOCATION APPLICATION

III FLOOR SPACE REQUIREMENTS

1. Number of equipment frames to be installed _____
2. Amount of space required _____
   (Square foot increments are based on tariff)
3. Attach preferred floor plan layout for space (footprint)
4. Are there other environmental, enclosure or security requirements? Yes___ No___
   (If yes, additional charges may apply. Please attach details of additional requirements.)

IV. TECHNICAL EQUIPMENT SPECIFICATIONS

1. DC Power Requirements
   A. -48v Battery and Ground, A & B supplies number of (A & B) feeds_____
   B. Number of AMPs required per A & B feed (maximum 60 amp)_____
2. Special AC Power Requirements? Yes ____No_____
   (If yes, additional charges may apply. Please attach details if required.)
3. Heat Dissipation Requirements_____(WATTS)
4. List of Access Customer's Installed Equipment
   (Please specify type, size and quantity so that adequate power and environmental safeguards can be provided. Also, please attach a copy of the product's technical description.)

Manufacturer/Model #	Physical Dimensions	Qty
1._____	_____	____
2._____	_____	____
3._____	_____	____
4._____	_____	____

Total anticipated equipment load_____ (AMPS)

Bell Atlantic

PHYSICAL COLLOCATION APPLICATION

V OUTSIDE PLANT FIELD SURVEY

1. Cable Information

   A. Direction from where cable will originate

   _____
   _____
   _____
   _____

   B. Have Licensing Agreements for this location been established (e.g., conduit)?
   Yes _____ No _____ (If Yes, please provide Contract Number)

   C. Contract Number _____

   D. Dual Building Entrance Requested Yes ____ No ____

   E. Dual Riser Cables Requested Yes ____ No ____

2. Cable Requirements	Feeder	Riser
A. Number of Cables To Be Placed	_____	_____
B. Size of Cables (Diameter)	_____	_____
C. Number of Fibers per Cable	_____	_____

3. Cable Makeup

   A. Cable Designation and Count _____

   B. Name of Fiber Manufacturer _____

   C. Name of Cable Manufacturer _____

   D. Type of Single Mode Fiber Used (e.g., Dual Window, Dispersion Shifted)
   _____

   E. Loss Decibels per Kilometer _____

Bell Atlantic

PHYSICAL COLLOCATION APPLICATION

VI ACCESS CUSTOMER'S VENDOR SELECTION

1. **Engineering Vendor** _____
   Address _____
   _____
   Telephone Number _____

2. **Outside Plant Vendor** _____
   (For cable placement)
   Address _____
   _____
   Telephone Number _____

3. **Outside Plant Vendor** _____
   (For cable splicing)
   Address _____
   _____
   Telephone Number _____

4. **Installation Vendor** _____
   (For customer's equipment)
   Address _____
   _____
   Telephone Number _____

5. **Installation Vendor** _____
   (For riser cable)
   Address _____
   _____
   Telephone Number _____

VII CERTIFICATE OF INSURANCE

Certificate of Insurance must accompany all applications for new sites
If this is a new site, please indicate that the certificate is included. Yes ___ No___

Bell Atlantic

PHYSICAL COLLOCATION APPLICATION

VIII REMARKS (New Customers, please provide bill to information here)

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TABLE OF CONTENTS

Attachment VI
Rights of Way, Conduits, Pole Attachments

ATTACHMENT VI

Rights of Way, Conduits, Pole Attachments

Introduction

This Attachment VI sets forth the terms and conditions applicable to MCIm's access to Poles, Conduits and Rights of Way owned or controlled by Bell Atlantic pursuant to Section 224 of the Act.

Section 1. Definitions

As used solely in this Attachment VI, the following terms shall have the following meanings. All other terms defined in the Agreement, including Part B, shall continue to apply within this Attachment.

1.1 **Anchor**

An assembly (rod and fixed object or plate) designed to resist the pull of a Guy Strand.

1.2 **Conduit**

A tube structure containing one or more Ducts or Innerducts used to house communication cables, that is owned by Bell Atlantic or with respect to which Bell Atlantic has the right to authorize the occupancy of MCIm's Communications Facilities.

1.3 **Conduit Occupancy**

Occupancy of a Conduit System by any item of MCIm's Communications Facilities.

1.4 **Conduit Section**

Conduit between two adjacent Manholes or between a Manhole and an adjacent Pole or other structure.

1.5 **Conduit System**

Any combination of Ducts, Innerducts, Conduits, and Manholes joined to form an integrated whole, including Central Office and other cable vaults (excluding controlled environmental vaults).

1.6 **Duct/Innerduct**

An enclosed raceway for communication facilities contained in a Conduit.

1.7 **Guy Strand**

A metal cable attached to a Pole and Anchor (or another structure) for the purpose of increasing Pole stability.

1.8 **MCIm's Communications Facilities**

All facilities, including but not limited to cables, equipment and associated hardware, owned or utilized by MCIm in providing communication services, which are attached to a Pole or occupy a Conduit or Right of Way.

1.9 **Manhole**

A subsurface enclosure used for the purpose of installing, operating and maintaining communications facilities, including handholes.

1.10 **Make-Ready Work**

All work, including but not limited to the rearrangement and/or transfer of Bell Atlantic's existing facilities and administering the rearrangement and/or transfer of the facilities of other licensees, replacement of a Pole, or other changes required to accommodate MCIm's Communications Facilities on a Pole, or in a Conduit or Right of Way.

1.11 **Pole**

A Pole with respect to which Bell Atlantic owns or has the right to authorize the attachment of MCIm's Communications Facilities.

1.12 **Pole Attachment**

Any item of MCIm's Communications Facilities affixed to a Pole.

1.12.1 Horizontal attachment is for a single Pole Attachment associated with Pole to Pole construction.

1.12.2 Vertical attachment is for single Pole construction where MCIm's facilities are affixed along the vertical axis of the Pole.

1.13 **Prelicense Survey**

All work, including field inspection and administrative processing, to determine the Make-Ready Work necessary to accommodate MCIm's Communications Facilities on a Pole, or in a Conduit or Right of Way.

1.14 **Right of Way**

A right possessed by Bell Atlantic to use or pass over or under the land of another, with respect to which Bell Atlantic has the right to authorize the usage or passage of MCIm's Communications Facilities over or through such land. Notwithstanding the foregoing, for the purposes of this Attachment VI, Right of Way shall also include real property owned by Bell Atlantic that contain Poles or Conduit or that would typically be used for such purposes.

Section 2. Scope of Licenses

2.1 Subject to the provisions of this Agreement, for license applications granted by Bell Atlantic in accordance with Section 7 below, Bell Atlantic hereby grants to MCIm, for any lawful communications purpose, a nonexclusive license authorizing the attachment of MCIm's Communications Facilities to Poles, or the placement of MCIm's Communications Facilities in Bell Atlantic's Conduits or Rights of Way, as specified in the pertinent application.

2.2 No use, however extended, of Poles, Conduits and/or Rights of Way, or payment of any fees or charges required, under this Agreement, shall create or vest in MCIm any easements or any other ownership of property rights of any nature in such Poles, Conduits and/or Rights of Way. MCIm's rights herein shall be and remain a license.. Neither this Agreement nor any license granted hereunder shall constitute an assignment of any of Bell Atlantic's rights to use the public or private property at locations of such Poles, Conduits, and/or Rights of Way.

2.3 Nothing contained in this Agreement shall limit Bell Atlantic's right to locate and maintain its Poles, Conduits and Rights of Way, and to operate its facilities in conjunction therewith, in such a manner as will best enable it to fulfill its own service requirements consistent with its obligations under Applicable Law.

2.4 Bell Atlantic shall grant MCIm access to Poles, Conduits and/or Rights of Way at Parity and on a Non-Discriminatory basis, except as may be otherwise permitted under Applicable Law. In cases where Bell Atlantic does not have the right to authorize such access, Bell Atlantic shall reasonably cooperate with MCIm in obtaining such permission subject to Bell Atlantic's right to provide a reasonable technical evaluation of the requirements for such access to the owner or other authorizing party. Nothing shall preclude MCIm from obtaining any such additional authorization without requesting Bell Atlantic's cooperation. Upon reasonable request by MCIm, Bell Atlantic will provide any documentation that is not confidential or privileged in its possession supporting a claim that it does not own or have authority to grant access to a given Right of Way.

Section 3. Fees and Charges

3.1 MCIm is responsible for all fees and charges applicable in connection with the attachment of its Communications Facilities to a Pole, or occupancy of a Conduit or Right of Way, as specified in Appendix I to this Attachment VI and hereby made a part of this Agreement. Such fees and charges shall be in accordance with Section 224 of the Act.

3.2 Nonpayment of any amount due under this Attachment VI shall constitute a breach by MCIm of this Agreement and shall be resolved in accordance with Part A, Section 21 (Default and Termination). Late payments shall be subject to fees as prescribed in Attachment VIII, Section 3.

3.3 At such time that MCIm's "net worth" (as defined under generally accepted accounting principles, hereinafter "Net Worth") fails to exceed $100,000,000, Bell Atlantic may require a bond in a form satisfactory to Bell Atlantic or other satisfactory evidence of financial security in such amount as Bell Atlantic from time to time may reasonably require to guarantee the performance of all MCIm obligations hereunder. The amount of the bond or financial security shall not operate as a limitation upon the obligations of MCIm hereunder; and if MCIm furnishes a deposit of money pursuant to this section, such deposit may be held during the continuance of this Agreement at the option of Bell Atlantic as security for any and all amounts which are or may become due to Bell Atlantic under this Attachment VI.

3.4 On an annual basis, changes in the amount of the fees and charges specified in Appendix I may be made by Bell Atlantic upon at least sixty (60) days prior written notice to MCIm in the form of a revised Appendix I, and MCIm agrees to pay such changed fees and charges provided they are in accordance with Applicable Law. Notwithstanding any other provision of this Agreement, MCIm may terminate the licenses entered into pursuant to Section 7 below at the end of such notice period if the change in fees and charges is not acceptable to MCIm, by giving Bell Atlantic written notice of its election to terminate such licenses at least thirty (30) days prior to the end of such notice period.

Section 4. Advance Payments

4.1 At such time that MCIm's Net Worth fails to exceed $100,000,000, MCIm shall be required to make an advance payment to Bell Atlantic prior to:

4.1.1 Any undertaking by Bell Atlantic of a Prelicense Survey or the administrative processing of such a survey in an amount sufficient to cover the estimated charges for completing the specific work operation required; and

4.1.2 Performance by Bell Atlantic of any Make-Ready Work required in an amount sufficient to cover the estimated charges for completing the required Make-Ready Work.

4.2 The amount of the advance payment required (Appendix II, Forms A-1, B-1 and B-4) will be credited against the payment due Bell Atlantic for performing the Prelicense Survey and/or Make-Ready Work.

4.3 Where the advance payment is less than the charge by Bell Atlantic for such work, MCIm agrees to pay Bell Atlantic within thirty (30) days of receipt of the bill all sums due in excess of the amount of the advance deposit.

4.4 Where the advance payment exceeds the charge by Bell Atlantic for such work, Bell Atlantic shall refund the difference to MCIm.

Section 5. Specifications

5.1 MCIm's Communications Facilities shall be placed and maintained in accordance with the requirements and specifications of the current editions of the Bellcore Manual of Construction Procedures ("Blue Book"), the National Electrical Code ("NEC"), the National Electrical Safety Code ("NESC"), the rules and regulations of the Occupational Safety and Health Act ("OSHA"), and regulations or directives of a governing authority having jurisdiction over such subject matter. Where a difference in specifications may exist, the more stringent shall apply.

5.2 MCIm shall correct all material safety violations within ten (10) days from receipt of written notice from Bell Atlantic. MCIm shall correct all other non-standard conditions within thirty (30) days from receipt or written notice from Bell Atlantic. If MCIm does not correct any violation within the aforementioned time limits, Bell Atlantic may at its option correct said conditions at MCIm's expense.

5.3 Notwithstanding Subsection 5.2 above, when conditions created by MCIm's Communications Facilities pose an immediate threat to the safety of Bell Atlantic's employees or the public, interfere with the performance of Bell Atlantic's service obligations, or pose an immediate threat to the physical integrity of Bell Atlantic's facilities or structures, Bell Atlantic may perform such work and/or take such action as it deems necessary without first giving written notice to MCIm. As soon as practicable thereafter, Bell Atlantic will advise MCIm in writing of the work performed or the action taken and will endeavor to arrange for reaccommodation of MCIm's facilities so affected. MCIm shall pay Bell Atlantic for all reasonable costs incurred by Bell Atlantic in performing such work.

5.4 The failure of Bell Atlantic to notify MCIm of violations or to correct violations pursuant to Subsections 5.2 or 5.3 shall not relieve MCIm of its responsibility to place and maintain its facilities in a safe manner and condition in accordance with the terms of

this Attachment VI, and shall not relieve MCIm of any liability imposed by this Agreement.

5.5 Bell Atlantic and MCIm agree to resolve disputes arising under this Attachment VI as set forth in Section 24, Part A of this Agreement.

Section 6. Legal Requirements

6.1 If Bell Atlantic's authority to occupy a Pole, Conduit or Right of Way does not allow MCIm to place its facilities thereon or therein without some additional authorization or government approval, MCIm shall be responsible for obtaining from the appropriate public and/or private authority any such additional authorization to construct, operate and/or maintain its communication facilities on public and/or private property before it attaches its communication facilities to Poles, or occupies Conduit or Rights of Way, located on such public and/or private property. Evidence of MCIm's having obtained such additional authority to so construct and maintain facilities shall be submitted forthwith upon demand.

6.2 No license granted under this Agreement shall extend to any Pole, Conduit or Right of Way where the attachment or placement of MCIm's Communication Facilities would result in a forfeiture of rights of Bell Atlantic or its existing licensees to occupy the property on which such Poles, Conduits or Rights of Way are located. If the existence of MCIm's Communication Facilities on a Pole, or in a Right of Way or Conduit, would cause a forfeiture of the right of Bell Atlantic or its existing licensees to occupy such property, Bell Atlantic shall promptly notify MCIm in writing describing the circumstances of forfeiture with reasonable specificity. Bell Atlantic and MCIm shall cooperate in taking reasonable and prompt action to avoid such forfeiture, which may include obtaining a stay or other equitable relief. If such actions are not successful prior to forfeiture becoming imminent, then MCIm shall remove its Communications Facilities forthwith upon receipt of written notification from Bell Atlantic. In such case, and provided MCIm's facilities were placed in space authorized by Bell Atlantic, Bell Atlantic shall reimburse MCIm for the full costs of the Prelicense Survey and Make-Ready Work charges (if any, or if shared and paid by MCIm, those charges solely attributable to MCIm's facilities) paid by MCIm to Bell Atlantic, plus the costs of removing MCIm's Communications Facilities; provided that where all parties, including Bell Atlantic, must remove all communications facilities from the property, MCIm shall remove its Communications Facilities without reimbursement by Bell Atlantic. If MCIm fails to remove said Communication Facilities as provided above, Bell Atlantic may perform or have performed such removal after the expiration of ten (10) days after the receipt of said written notification without liability on the part of Bell Atlantic, and MCIm agrees to pay Bell Atlantic or other licensees or both, the cost thereof and for all losses and damages that may result, including, but not limited to, relocation costs of Bell Atlantic's facilities.

Section 7. Issuance of Licenses

7.1 Before MCIm shall attach to any Pole, or occupy any portion of a Conduit or Right of Way, MCIm shall make written application for and have received written license from Bell Atlantic utilizing the following forms: Appendix II, Forms A-1 and A-2 and/or B-1 through B-3. Bell Atlantic shall follow the same process in attaching to, or occupying, such Poles, Conduits or Rights of Way.

7.2 Bell Atlantic shall process all completed license applications, including the performance of a Prelicense Survey, on a first-come, first-serve basis (including all license applications pertaining to itself) in accordance with the provisions of Sections 7 and 8 of this Attachment VI. Bell Atlantic shall make all access determinations in accordance with the requirements of Applicable Law, considering such factors as capacity, safety, reliability and general engineering considerations to the degree allowed by Section 224 of the Act, or, in the alternative, applicable state law. Bell Atlantic shall inform MCIm in writing as to whether an application has been granted or denied (stating the reasons for such denial in reasonable detail) within forty-five (45) days after receipt of such application. Where an application involves an increase in capacity by Bell Atlantic, Bell Atlantic shall take reasonable steps to accommodate requests for access in accordance with Applicable Law, including making such determinations in the same manner as it would for itself. Before denying MCIm access based on lack of capacity, Bell Atlantic shall explore potential accommodations in good faith with MCIm. MCIm shall bear the costs associated with any such expansion performed by Bell Atlantic in accordance with Applicable Law, provided that MCIm shall be entitled to recover costs from subsequent licensees (including Bell Atlantic) that attach to or occupy such expanded capacity as provided by Applicable Law. Bell Atlantic shall provide reasonably detailed information on any environmental contamination or other environmental hazards of which it is aware for the specified route within twenty (20) days of the date of the application.

7.3 In order to facilitate MCIm's completion of an application, Bell Atlantic shall make commercially reasonable efforts to, within ten (10) business days of a legitimate request identifying the specific geographic area and types and quantities of required structures, provide MCIm such maps, plats or other relevant data reasonably necessary to complete the applications described above. All such materials and information shall be treated as Confidential Information by MCIm in accordance with the provisions of Part A, Section 22. Such requests shall be processed by Bell Atlantic on a "first-come, first-serve" basis. Bell Atlantic shall also make commercially reasonable efforts to meet with or respond to MCIm's inquiries regarding the information supplied to it under this Section 7.3 within five (5) business days following the receipt of such a request for a meeting or inquiry from MCIm. Bell Atlantic shall also notify MCIm of any environmental contamination or other environmental hazards of which it is aware that would make the placement of facilities within pathways specified by MCIm hazardous.

7.4 License applications received by Bell Atlantic from two (2) or more applicants for the same Pole, Conduit Section or Right of Way will be processed by Bell Atlantic according to the order in which the applications are received by Bell Atlantic. Once any additional applicants file an application, Bell Atlantic shall use commercially reasonable efforts to, within twenty (20) days of receipt of the additional application, notify the additional applicant of the following: 1) that a previous application had been received for some or all of the same structures or property; 2) the name and address of the initial applicant; and 3) that the additional applicant may wish to share make ready costs with the initial applicant. The responsibility for arranging for the sharing of make ready costs shall be on the additional applicant. However, the responsibility for transmitting to Bell Atlantic any make ready changes resulting from the additional applicant shall be on the initial applicant, provided that the initial applicant is not obligated to share Make-Ready Work or make ready costs with any subsequent applicant, unless required by Applicable Law. Bell Atlantic shall bill the initial applicant for the entire cost of all work necessary to accommodate both the initial and additional applicants, pursuant to executed Form B-4, Appendix II.

7.5 If within twelve (12) months from the date a license is granted by Bell Atlantic, MCIm shall not at a minimum have initiated material construction or similar activity related to its attachment or occupation, MCIm's license for the applicable Poles, Conduits or Rights of Way shall automatically terminate and MCIm shall remove any communications facilities installed as of such date in accordance with Section 9.10 of this Attachment VI. MCIm and any other attacher or occupier (including Bell Atlantic) shall be liable for attachment or occupancy charges commencing on the date that the license is granted if no Make-Ready Work is required, or on the date that any required Make-Ready Work is completed.

7.6 Where Bell Atlantic has available ducts or inner ducts, Bell Atlantic shall make available ducts or inner ducts to MCIm for MCIm's use in accordance with Applicable Law. No more than one full-sized duct (or one full-sized and one inner duct if both copper and fiber cable are used in the Conduit) shall be assigned as an emergency duct in each Conduit Section. If Bell Atlantic or any other service provider, including MCIm, utilizes the last unoccupied full-sized duct in the applicable cross-section, that provider shall promptly, at its expense, reestablish a clear, full-sized duct for emergency restoration or immediately upon the occurrence of an emergency requiring such space.

Section 8. Pre-License Survey and Make-Ready Work

8.1 When an application for attachment to, or occupation of, a Pole, Conduit or Right of Way is submitted by MCIm, a Prelicense Survey will be required to determine the existing adequacy of such structures or property to accommodate MCIm's Communication Facilities.

8.1.1 The field inspection portion of the Prelicense Survey, which requires the visual inspection of such structures or property, shall be performed by Bell

Atlantic (with participation by MCIm at its option, for which Bell Atlantic shall provide at least twenty-four (24) hours advance notice). Bell Atlantic shall also perform the administrative processing portion of the Prelicense Survey which includes the processing of the application and the preparation of the Make-Ready Work orders (if necessary), including the notification of other attachers of Bell Atlantic's Make-Ready Work schedule and the provision to MCIm of a list of such other attachers.

8.1.2 Bell Atlantic shall make commercially reasonable efforts to advise MCIm in writing of the estimated charges that will apply for its Prelicense Survey work as soon as practicable after receipt of MCIm's application but no later than ten (10) days from receipt thereof. Bell Atlantic shall receive written authorization from MCIm before undertaking such work (Appendix II, Form B-1). Alternatively, MCIm may pay Bell Atlantic the estimated charges that will apply for a Prelicense Survey with its submission of an application provided that Bell Atlantic has advised MCIm that standard estimated charges exist for the type of application that is being submitted.

8.2 In the event Bell Atlantic determines that a Pole, Conduit or Right of Way which MCIm desires to utilize is inadequate or otherwise needs rearrangement or expansion of the existing structures or property to accommodate MCIm's Communication Facilities, Bell Atlantic will advise MCIm in writing of the estimated Make-Ready Work charges that would apply to any modifications or expansions of capacity that Bell Atlantic proposes to undertake (Appendix II, Form B-4). The estimated Make-Ready Work charges and completion date shall be given to MCIm at the time that the application is accepted and access is granted. Bell Atlantic shall complete the steps described in paragraphs 8.1 through 8.2 within forty-five (45) days of the date the application is submitted, excluding the time taken by MCIm to respond to Bell Atlantic's proposals in paragraph 8.1.2, if applicable.

8.3 MCIm shall have thirty (30) days after the receipt of said Form B-4 to indicate its written authorization for completion of the required Make-Ready Work and acceptance of the resulting charges. If during such period MCIm presents Bell Atlantic with a proposal from a Bell Atlantic-authorized subcontractor to complete such Make-Ready Work at a cost and/or time that is materially less than that estimated by Bell Atlantic, Bell Atlantic agrees to use such subcontractor to perform the Make-Ready Work. Bell Atlantic shall use commercially reasonable efforts to provide written notice to existing attachers or occupiers of the affected structures or property of the proposed Make-Ready Work within ten (10) days after receipt of MCIm's authorization to perform such work. Such attachers or occupiers will be given sixty (60) days after such notice to indicate whether they desire to participate in the proposed modification or expansion.

8.4 If approved by MCIm, Make-Ready Work will be initiated by Bell Atlantic no earlier than sixty (60) days after notice to existing attachers or occupiers, and Bell Atlantic shall use commercially reasonable efforts to complete such work as soon as practicable

thereafter, depending upon the size of the job and the cooperation of necessary third parties. MCIm shall pay Bell Atlantic for all Make-Ready Work performed by it in accordance with the provisions of this Agreement, and make arrangements with attachers or occupiers participating in the modification or expansion (including Bell Atlantic, if applicable), and with future attachers or occupiers who benefit from the modification or expansion, to reimburse MCIm for their share of the make ready costs as required by Applicable Law.

Section 9. Construction, Maintenance and Removal of Communications Facilities

9.1 MCIm shall, at its own expense, construct and maintain its Communications Facilities on Poles or in Conduits or Rights of Way covered by this Attachment VI, in a safe condition and in a manner acceptable to Bell Atlantic, so as not to physically conflict or electrically interfere with the facilities attached thereon or placed therein by Bell Atlantic or other authorized licensees.

9.2 Bell Atlantic shall specify the point of attachment on each Pole to be occupied by MCIm's Communications Facilities. Where communications facilities of more than one licensee are involved, Bell Atlantic will attempt, to the extent practical, to designate the same relative position on each Pole for MCIm's Communications Facilities.

9.3 Subject to Section 9.10 of this Attachment VI, MCIm shall secure Bell Atlantic's written consent, not to be unreasonably withheld or delayed, before adding to, relocating, replacing or otherwise modifying its facilities attached to a Pole where additional space or holding capacity may be required on either a temporary or permanent basis. No such modifications shall be made by MCIm that would affect the placement or operations of attachments of Bell Atlantic or existing licensees, except through application to Bell Atlantic in accordance with the provisions of Sections 7 and 8 of this Attachment VI.

9.4 MCIm must obtain prior written authorization from Bell Atlantic approving the work and the party performing such work before MCIm shall install, remove, or provide maintenance of its Communications Facilities in any of Bell Atlantic's Conduit Systems. Bell Atlantic shall not withhold such authorization without good cause.

9.5 In each instance where MCIm's Communications Facilities are to be placed in Bell Atlantic's Conduits, MCIm and Bell Atlantic shall discuss the placement of MCIm's Communications Facilities. Bell Atlantic shall designate the particular Duct(s) to be occupied, the location and manner in which MCIm's Communications Facilities will enter and exit Bell Atlantic's Conduit System, and the specific location and manner of installation for any associated equipment which is permitted by Bell Atlantic to occupy the Conduit System. Bell Atlantic will attempt, to the extent practicable and consistent with its non-discrimination obligations, to designate the same relative position in each Conduit bank for each MCIm facility.

9.6 Whenever Bell Atlantic intends to modify or alter any Poles, Conduits or Rights of Way which contain MCIm's facilities, Bell Atlantic shall provide written notification to MCIm at least sixty (60) days prior to taking such action so that MCIm may have a reasonable opportunity to add to or modify MCIm's facilities. If MCIm adds to or modifies MCIm's facilities according to this paragraph, MCIm shall bear a proportionate share of the costs incurred by Bell Atlantic in making such facilities accessible in accordance with Applicable Law.

9.7 MCIm shall be notified in writing at least sixty (60) days prior to any modification that will result in the rearrangement or replacement of its facilities. Subject to Section 9.6 above, MCIm shall not be required to bear any of the costs of rearranging or replacing its facilities, if such rearrangement or replacement is required as a result of an additional attachment or the modification of an existing attachment sought by any entity other than MCIm, including Bell Atlantic. MCIm agrees to make such rearrangements or replacements that are reasonably requested by Bell Atlantic to accommodate the attachment or placement of the facilities of other licensees on the applicable structures.

9.8 Bell Atlantic shall not attach, nor permit other entities to attach facilities on, within or overlashed to existing MCIm facilities without MCIm's prior written consent.

9.9 Bell Atlantic's Manholes shall be opened only as permitted by Bell Atlantic's authorized employees or agents. MCIm shall be responsible for obtaining any necessary authorization from appropriate authorities to open Manholes and conduct work operations therein. Except in emergency situations provided that MCIm makes reasonable efforts to give prior notice to Bell Atlantic, MCIm's employees, agents or contractors will be permitted to enter or work in Bell Atlantic's Manholes only when an authorized employee or agent of Bell Atlantic is present or prior written authorization waiving this requirement is granted by the Bell Atlantic. Bell Atlantic's said employee or agent shall have the authority to suspend MCIm's work operations in and around Bell Atlantic's Manholes if, in the reasonable judgment of said employee or agent any hazardous conditions arise or any unsafe practices are being followed by MCIm's employees, agents, or contractors. MCIm agrees to pay Bell Atlantic the charges, as determined in accordance with the terms and conditions of Appendix I of this Attachment VI, for having one Bell Atlantic employee or agent present when MCIm's work is being done in and around Bell Atlantic's Manholes. The presence of Bell Atlantic's authorized employee or agent shall not relieve MCIm of its responsibility to conduct all of its work operations in and around Bell Atlantic's Manholes in a safe and workman-like manner, in accordance with the terms of this Agreement.

9.10 Bell Atlantic shall maintain its Poles, Conduits and Rights of Way without additional charge to MCIm beyond the charges provided for in this Attachment VI. MCIm shall maintain its own facilities installed on or within Bell Atlantic's Poles, Conduits and Rights of Way at its sole cost. In the event of an emergency, Bell Atlantic shall use commercially reasonable efforts to begin repair of its structures containing MCIm's facilities within two (2) hours of notification by MCIm. If Bell Atlantic cannot

begin repair within such two (2) hour period, MCIm may, using qualified personnel and reasonable care, begin such repairs without the presence of Bell Atlantic personnel. MCIm may climb Poles and enter the Manholes, handholes, Conduits and equipment spaces containing Bell Atlantic's facilities in order to perform such emergency maintenance, but only until such time as qualified personnel of Bell Atlantic arrives ready to continue such repairs. For emergency and non-emergency repairs, MCIm may use spare Innerduct or Conduits, including the Innerduct or Conduit designated by Bell Atlantic as emergency spare for maintenance purposes; however, MCIm may only use such spare Conduit or Innerduct until its repairs are completed but in no event for a period of greater than ninety (90) days, and shall terminate any non-emergency use immediately upon notification of an emergency warranting the use of such spare by Bell Atlantic or other licensees. The Parties agree to cooperate with one another with respect to the use of spare Innerduct or Conduit during any emergency affecting MCIm, Bell Atlantic or other licensees.

9.11 Upon reasonable request, Bell Atlantic will provide MCIm with space in its Manholes for racking and storage of cable and other materials of the type that Bell Atlantic stores in its Manholes.

9.12 MCIm, contracting with Bell Atlantic or a contractor approved by Bell Atlantic, shall be permitted to add Conduit parts to Bell Atlantic's manholes or to add branches to Conduits when existing Conduits do not provide the connectivity required by MCIm, provided that the structural integrity of the manhole is maintained and sound engineering judgment is employed.

9.13 If practicable and if additional space is required, Bell Atlantic shall within a reasonable period of time remove any retired cable from Poles or Conduit Systems to allow for the efficient use of Poles or Conduit space. Bell Atlantic will give MCIm prior notice of its cable removal effort and MCIm may have a representative present.

9.14 MCIm, at its expense, will remove its Communications Facilities from Poles, Conduits or Rights of Way within sixty (60) days after:

9.14.1 Termination of the license covering such attachment or Conduit Occupancy in accordance with the terms of this Agreement; or

9.14.2 The date MCIm replaces its existing facilities on a Pole with the placement of substitute facilities on the same Pole or another Pole or replaces its existing facilities in one Duct with the placement of substitute facilities in another Duct.

9.15 MCIm shall remain liable for, and pay to Bell Atlantic, all fees and charges pursuant to provisions of this Agreement until all of MCIm's facilities are physically removed from such Poles, Conduits or Rights of Way. If MCIm fails to remove its facilities within the specified period, Bell Atlantic shall have the right to remove such

facilities at MCIm's expense and without any liability on the part of Bell Atlantic for damage to such facilities unless caused by the negligent or intentional acts of Bell Atlantic.

9.16 When MCIm's Communications Facilities are removed from a Pole, Conduit or Right of Way, no reattachment to the same Pole, or occupancy of Conduits or Rights of Way, shall be made until:

9.16.1 MCIm has first complied with all of the provisions of this Agreement as though no such Pole Attachment or Conduit or Right of Way occupancy had previously been made; and

9.16.2 All outstanding charges due Bell Atlantic for such previous attachment and/or occupancy have been paid in full.

9.17 MCIm shall advise Bell Atlantic in writing as to the date on which the removal of its Communications Facilities from each Pole, Conduit or Right of Way has been completed.

Section 10. Termination of Licenses

10.1 Any license issued under this Agreement shall automatically terminate when MCIm ceases to have authority to construct and operate its Communications Facilities on public or private property at the location of the particular Pole, Conduit or Right of Way covered by the license, but shall automatically revive for the balance of any unexpired term upon restoration of such authority within six (6) months of cessation thereof provided MCIm pays all applicable charges in the interim period. Notwithstanding the foregoing, MCIm shall be allowed to seek a stay or other equitable relief in order to prevent such automatic termination.

10.2 MCIm may at any time terminate its license with respect to the attachment to a Pole, or occupancy of a Conduit or Right of Way, and remove its communications facilities by giving Bell Atlantic written notice of such intention (Appendix II, Forms C & D). Once MCIm's Communications Facilities have been removed they shall not be reattached to such Pole, or occupy the same portion of such Conduit System or Right of Way, until MCIm has complied with all provisions of this Agreement as though no previous license has been issued.

Section 11. Inspection of Licensee's Communications Facilities

11.1 Bell Atlantic reserves the right to make reasonable periodic inspections of any part of MCIm's Communications Facilities attached to Poles, or occupying Bell Atlantic's Conduits or Rights of Way, to confirm adherence to the provisions of this Attachment VI.

11.2 Bell Atlantic will give MCIm advance written notice of such inspections, except in those instances where Bell Atlantic determines that safety considerations justify the need for such an inspection without the delay of waiting until a written notice has been forwarded to MCIm. In such cases and if practicable, Bell Atlantic shall provide telephonic notice to MCIm.

11.3 The making of periodic inspections or the failure to do so shall not operate to impose upon Bell Atlantic any liability of any kind whatsoever nor relieve MCIm of any responsibility, obligations or liability assumed under this Agreement.

Section 12. Unauthorized Attachment, Utilization or Occupancy

12.1 If any of MCIm's Communications Facilities shall be found attached to Poles, or occupying Conduit or Right of Way, for which no license has been granted, Bell Atlantic without prejudice to its other rights or remedies under this Agreement may require MCIm to submit an application pursuant to Section 7 of this Attachment within sixty (60) days after receipt of written notification from Bell Atlantic of the unauthorized attachment or occupancy. If such application is not received by Bell Atlantic within the specified time period, MCIm may be required to remove its unauthorized attachment or occupancy, or Bell Atlantic may, at Bell Atlantic's option, remove MCIm's facilities at MCIm's sole expense and risk and without liability to Bell Atlantic. In addition, MCIm shall pay any unauthorized attachment or occupancy charge as specified in Appendix I of this Attachment.

12.2 No act or failure to act by Bell Atlantic with regard to said unlicensed use shall be deemed as a ratification of the unlicensed use; and if any license should be subsequently issued, said license shall not operate retroactively or constitute a waiver by Bell Atlantic of any of its rights or privileges under this Agreement or otherwise; provided, however, that MCIm shall be subject to all liabilities, obligations and responsibilities of this Agreement in regard to said unauthorized use from its inception.

Section 13. Security Interest

At such time that MCIm's Net Worth fails to exceed $100,000,000, MCIm shall grant Bell Atlantic a security interest in all of MCIm's Communications Facilities now or hereafter attached to Poles, or placed in Conduit Systems or Rights of Way pursuant to this Agreement, and MCIm agrees to perform all acts necessary to perfect Bell Atlantic's security interest under the terms of the Uniform Commercial Code, or applicable lien or security laws then in effect. If the terms of MCIm's loan agreements and debentures preclude the grant of liens or security interests to Bell Atlantic, MCIm shall grant to Bell Atlantic, upon Bell Atlantic's request, other permissible assurance of security for performance, satisfactory to Bell Atlantic, to cover any amounts due Bell Atlantic under this Agreement. Nothing in this Section shall operate to prevent Bell Atlantic from pursuing, at its option, any other remedies under this Agreement or in law or equity, including public or private sale of facilities under security interest or lien.

Section 14. Liability and Damages

14.1 Bell Atlantic shall exercise reasonable caution to avoid damaging MCIm Communications Facilities and shall make an immediate report to MCIm of the occurrence of any such damage caused by its employees, agents or contractors, and Bell Atlantic assumes all responsibility for any and all direct loss from such damage caused by Bell Atlantic's employees, agents or contractors. Bell Atlantic shall not be liable to MCIm for any interruption of MCIm's service or for interference with the operation of MCIm's Communications Facilities.

14.2 MCIm shall exercise reasonable caution to avoid damaging the facilities of Bell Atlantic and of others attached to Poles, or occupying Conduits or Rights of Way, and shall make an immediate report to the owner of facilities so damaged and MCIm assumes all responsibility for any and all direct loss from such damage caused by MCIm's employees, agents or contractors. MCIm shall not be liable to Bell Atlantic for any interruption of Bell Atlantic's service or for interference with the operation of Bell Atlantic's communications facilities.

14.3 MCIm shall promptly advise Bell Atlantic of all claims relating to damage of property or injury to or death of persons, arising or alleged to have arisen in any manner by the erection, maintenance, repair, replacement, presence, use or removal of MCIm's facilities. Copies of all accident reports and statements made to MCIm's insurer by MCIm or others shall be furnished promptly to Bell Atlantic. Similarly, Bell Atlantic shall promptly advise MCIm of all claims relating to damage of property or injury to or death of persons, arising or alleged to have arisen in any manner by the erection, maintenance, repair, replacement, presence, use or removal of Bell Atlantic's facilities where MCIm Communication Facilities are involved in such claim. Copies of all related accident reports and statements made to Bell Atlantic's insurer by Bell Atlantic or others shall be furnished promptly to MCIm.

14.4 Except as expressly provided in this Attachment VI, the Parties indemnification and liability obligations with respect to the use of Poles, Conduits and Rights of Way shall be as provided for in Part A of the Agreement.

Section 15. Insurance

15.1 MCIm shall obtain and maintain insurance issued by an insurance carrier authorized to conduct business in Bell Atlantic's operating region and having an A.M. Best rating of not less than A-VII to protect Bell Atlantic and other authorized user of transport structures from and against all claims, demands, causes of actions, judgments, costs, including attorneys' fees, expenses and liabilities of every kind and nature which may arise or result from or by reason of any negligent or wrongful act of MCIm related to activities covered by this Attachment VI.

15.2 The amounts of such insurance:

15.2.1 against liability due to damage to property shall be not less than $2,000,000 as to any one occurrence and $2,000,000 aggregate, and

15.2.2 against liability due to injury or death of persons shall be not less than $2,000,000 as to any one person and $2,000,000 as to any one occurrence.

15.3 MCIm shall name Bell Atlantic as an additional insured and shall provide certificates by each company insuring MCIm to the effect that it has insured MCIm for all liabilities of MCIm covered by this Agreement and that it will not cancel any such policy of insurance issued to MCIm except after thirty (30) days written notice to Bell Atlantic.

15.4 All insurance required in accordance with Subsections 15.1 and 15.2 above must be effective before Bell Atlantic will authorize attachment to a Pole, or occupancy of Conduit or Rights of Way, and shall remain in force until such MCIm's facilities have been removed from all such Poles, Conduits or Rights of Way. In the event that MCIm shall fail to maintain the required insurance coverage, Bell Atlantic may pay any premium thereon falling due, and MCIm shall forthwith reimburse Bell Atlantic for any such premium paid.

15.5 Notwithstanding the foregoing, if MCIm's net worth exceeds $100,000,000, MCIm may elect to self-insure in lieu of obtaining any of the insurance required by this Section 15. If MCIm self insures, MCIm shall furnish to Bell Atlantic, and keep current, evidence of such net worth. If MCIm self insures, MCIm shall release, indemnify, defend, and hold Bell Atlantic harmless against all losses, costs (including reasonable attorney's fees), damages, and liabilities resulting from claims that would otherwise have been covered by the foregoing insurance requirements (including without limitation claims alleging negligence or breach of contract).

Section 16. Authorization Not Exclusive

Nothing herein contained shall be construed as a grant of any exclusive authorization, right or privilege to MCIm. Subject to the provisions of this Agreement, Bell Atlantic shall have the right to grant, renew and extend rights and privileges in a Non-Discriminatory manner to others not parties to this Agreement, by contract or otherwise, to use any Pole, Conduit or Right of Way covered by this Attachment VI.

Section 17. Assignment of Licenses

MCIm shall not assign or transfer any license or any authorization granted under this Attachment VI, and such licenses shall not inure to the benefit of MCIm's successors or assigns, without the prior written consent of Bell Atlantic unless such transfer of rights is made pursuant to an assignment of this Agreement pursuant to the provisions of Part A, Section 5 (Assignment). Bell Atlantic shall not unreasonably withhold such consent. In the event such consent or

consents are granted by Bell Atlantic, then prior to such assignment becoming effective the assignee shall be required to execute Bell Atlantic's generally available license agreement covering the affected licenses.

Section 18. Additional Terminations

18.1 Subject to provisions of Section 17 of this Attachment, should MCIm cease to provide its Telecommunications Services in or through the area covered by any license under this Attachment VI on other than a demonstrably temporary basis not to exceed six (6) months, then MCIm's rights, privileges and authorizations under any such license issued hereunder shall automatically terminate as of the date following the final day that such Telecommunications Services are provided.

18.2 Subject to Section 18.3 below and the Force Majeure provisions of Part A of the Agreement, Bell Atlantic shall have the right to terminate any license issued hereunder whenever MCIm is in default of any material term of this Agreement, including, but not limited to, the following conditions, as applicable to the affected facilities:

18.2.1 If MCIm uses its Communications Facilities or maintains such facilities in violation of any Applicable Law or in aid of any unlawful act or undertaking; or

18.2.2 Subject to Section 10.1 of this Attachment, if any authorization which may be required of MCIm by any governmental or private authority for the construction, operation, and maintenance of MCIm's Communications Facilities is denied or revoked; or

18.2.3 If MCIm's insurance carrier shall at any time notify Bell Atlantic or MCIm that the policy or policies of insurance, required under Section 15 hereof, will be canceled or if Bell Atlantic reasonably determines that the requirements of Section 15 of this Attachment will no longer be satisfied.

18.3 Bell Atlantic will promptly notify MCIm in writing of any condition(s) applicable to 18.1 and 18.2 above specifying the license and facilities in question. MCIm shall take immediate corrective action to eliminate any such condition(s) and shall confirm in writing to Bell Atlantic within thirty (30) days following receipt of such written notice that the cited condition(s) has ceased or been corrected. If MCIm fails to discontinue or correct such condition(s) and fails to give the required confirmation, Bell Atlantic shall so notify MCIm and thereafter may immediately terminate MCIm's licenses for the affected facilities under this Attachment VI. Notwithstanding the foregoing, in the event that such corrective action is incapable of correction within thirty (30) days, MCIm shall initiate such corrective action within the thirty (30) day period referred to above and shall be allowed a reasonable time to complete such correction before MCIm is considered in default under this Section 18. MCIm shall use its best efforts to complete such correction as soon as possible.

18.4 In the event of termination of this Agreement, MCIm shall remove its Communications Facilities from the affected Poles, Conduits and Rights of Way within six (6) months from the date of such termination; provided, however, that MCIm shall be liable for and pay all fees and charges pursuant to terms of this Attachment VI to Bell Atlantic until MCIm's Communications Facilities are actually removed from Bell Atlantic's Poles, Conduits and Rights of Way.

18.5 If MCIm does not remove its Communications Facilities from Bell Atlantic's Poles, Conduits and Rights of Way within the applicable time periods specified in this Attachment VI, Bell Atlantic shall have the right to remove them at the expense of MCIm and without any liability on the part of Bell Atlantic to MCIm therefor.

Section 19. Term of Licenses

19.1 All licenses issued hereunder shall continue in effect until the Agreement expires or is terminated, unless earlier terminated by MCIm in accordance with this Attachment VI.

19.2 Termination of licenses shall not affect MCIm's liabilities and obligations incurred with respect thereto prior to the Effective Date of such termination.

APPENDIX I

APPENDIX I

SCHEDULE OF FEES AND CHARGES

THIS APPENDIX I, effective as of _____, is an integral part of the License Agreement between Bell Atlantic - Pennsylvania, Inc. (Bell Atlantic) and MCImetro Access Transmission Services, Inc. (MCIm), dated _____ and contains the fees and charges governing the use of Bell Atlantic's Poles, Conduits and Rights of Way by MCIm's Communications Facilities.

1. Attachment, Utilization, and Occupancy Fees

1.1 General

a) Attachment, utilization, and occupancy fees commence on the date set forth in Section 7.5 of the License Agreement. Subject to clause c) below, such fees cease as of the final day on which the attachment or occupancy is physically removed or is discontinued.

b) A one (1) month minimum charge is applicable for all attachment and occupancy accommodations.

c) Fees shall be payable semi-annually in advance on the first day of January and July. No fees shall be refunded for any licenses terminated and attachments or occupancies removed during any period for which such advance payments have been made.

d) The total attachment, and occupancy fees due hereunder, shall be based upon the number of Poles and Duct feet of Conduit for which licenses have been issued before the first day of January and the first day of July each year. Each semi-annual payment shall include a proration of the monthly attachment, and occupancy charges applicable for attachments, or occupancy initially authorized by Bell Atlantic during the preceding six (6) month period. Any such fees shall be computed in accordance with Applicable Law.

2. Fees

2.1 Application and Engineering Survey Fee

a) Per Pole attached $

b) Per Manhole/per Duct run $

c) Right of Way (determined on a case by case basis)

2.2 **Annual Fee**

a) Horizontal Attachment
Per attachment $

b) Vertical Attachment
Per Pole attached ($/Vertical foot of occupancy) $

c) Per foot of cable placed in the
Conduit $

d) Right of Way (determined on a case by case basis as mutually agreed by the parties)

2.3 **Other Charges**

Computation

Charges for all work performed by Bell Atlantic or by its authorized representative in connection with the furnishing of Pole, Conduit and Right of Way accommodations as covered by this Agreement shall be based upon the cost to Bell Atlantic for performance of such work in accordance with Applicable Law, if any. Such charges will apply for, but not be limited to, Preliicense Survey; Make-Ready Work; inspection and removal of MCIm's Communications Facilities, where applicable; and supervision by one (1) employee, at the option of the Bell Atlantic, of MCIm-performed work in and around the immediate vicinity of a Conduit System limited to one (1) employee.

2.4 In the event that it is determined that MCIm has made attachment in or on any Pole, Conduit or Right of Way of Bell Atlantic for which a License has not been executed, MCIm shall be obliged to: a) apply for such license immediately; and b) pay to Bell Atlantic fees for said attachment for the entire period of time which can be reasonably established as the date of MCIm's attachment, but in no case less than one (1) year prior to date of discovery.

APPENDIX II

APPENDIX II

ADMINISTRATIVE FORMS AND NOTICES

THIS APPENDIX II, effective as of _____, is an integral part of the License Agreement between Bell Atlantic - Pennsylvania, Inc. (Bell Atlantic), and MCImetro Access Transmission Services, Inc., (MCIm), dated _____ and contains the administrative forms governing the use of Bell Atlantic's Poles and Conduit by MCIm's Communications Facilities.

INDEX OF ADMINISTRATIVE FORMS

FORM A-1 **APPENDIX II**

APPLICATION AND POLE ATTACHMENT LICENSE

Bell Atlantic - Pennsylvania, Inc.

In accordance with the terms and conditions of the License Agreement between us, dated _____, 19 _____, application is hereby made for a nonexclusive license to attach communication facilities to _____ Poles as indicated on Form A-2.
This request will be designated:

Pole Application #_____

Enclosed is a check in the amount of $ _____ to cover the cost of the Pre-License Survey. (Appendix I)

MCIm:_____

Signed:_____

Dated:_____

Tel. No:_____

.....

Permission is hereby granted to attach communication facilities to _____ Poles as indicated on the attached Form A-2.

Bell Atlantic - Pennsylvania, Inc. (Bell Atlantic)

Signed:_____

Dated:_____

Tel. No:_____

Applications shall be numbered in sequential ascending order by MCIm. Bell Atlantic will process applications in ascending order according to the applications numbers assigned by MCIm.

FORM A-2 **APPENDIX II**

Page _____

_____

(MCIm)

_____ _____

(Central Office Area) (Pole Application #)

POLE DETAILS

	Telephone Pole #	Power Pole #	Location	Type Attach		Make Ready
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

FORM B-1 **APPENDIX II**

APPLICATION AND CONDUIT OCCUPANCY LICENSE

Bell Atlantic - Pennsylvania, Inc.

In accordance with the terms and conditions of the License Agreement between us, dated _____ , 19_____, application is hereby made for a license to occupy the Conduit system shown on Form B-2, with the cable and equipment detailed on Forms B-3 and B-4. This request will be designated:

Conduit Application #_____

Enclosed is a check in the amount of $ _____ to cover the cost of the Pre-License Survey. (Appendix I)

_____
(MCIm)
Signed:_____

Dated:_____

Tel. No:_____

.....

Permission is hereby granted to occupy Bell Atlantic's Conduit system, as indicated on the attached Form B-2, with cable equipment and facilities specified on the attached Forms B-3. The Duct footage for this License is _____

Bell Atlantic - Pennsylvania, Inc.
(Bell Atlantic)
Signed:_____

Dated:_____

Tel. No:_____

Applications shall be numbered in sequential ascending order by MCIm. Bell Atlantic will process applications in ascending order according to the applications numbers assigned by MCIm.

FORM B-2

APPENDIX II
Page _____

_____
(MCIm)

_____ _____
(Area) (Conduit Application #)

SAMPLE CONDUIT SYSTEM DIAGRAM

CONDUIT SYSTEM DIAGRAM

FORM B-3 APPENDIX II

Page _____

_____
(MCIm)

_____
(Area)

_____
(Conduit Application #)

CABLE TO OCCUPY CONDUIT

	Type Cable		Weight Per Ft.	Maximum Voltage to Ground AC/ DC	Maximum Current in a Conductor	Type Sheath
1						
2						
3						
4						
5						

EQUIPMENT TO BE PLACED IN MANHOLES

	Location	Type	Height	Width	Depth	Weight
1						
2						
3						
4						
5						

Form B-4 **APPENDIX II**

AUTHORIZATION FOR MAKE-READY WORK

Following is a summary of the estimated charges for the following application:

Pole attachment application number _____

or

Conduit occupancy application number _____

or

Right of Way occupancy application number _____

Estimated cost $ _____

Note that in the event that an advance payment is required, actual costs will be billed at the conclusion of the work.

_____

(Bell Atlantic)

By: _____

(Signature of authorized person)

Its: _____

(Title of authorized person)

Date: _____

Telephone Number: _____

Order Number: _____

I hereby acknowledge and agree to pay all charges, as above, and authorize work to begin.

_____

(MCIm)

By: _____

(Signature of authorized person)

Its: _____

(Title of authorized person)

Date: _____

Telephone Number: _____

FORM C **APPENDIX II**
Page_____ Page_____

NOTIFICATION OF REMOVAL OF POLE ATTACHMENTS

In accordance with the terms and conditions of the License Agreement between us, dated _____, 19____, notice is hereby given that the following Pole attachments have been removed.

	Telephone Co. Pole	Joint Use Pole	Location	Date Removed
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

SUBMITTED: APPROVED:

_____ Bell Atlantic - Pennsylvania, Inc.
(MCIm) (Bell Atlantic)

Signed:_____ Signed:_____

Dated:_____ Dated:_____

FORM D

APPENDIX II
Page_____

NOTIFICATION OF REMOVAL OF CONDUIT OCCUPANCY

In accordance with the terms and conditions of the License Agreement between us, dated _____, 19____, notice is hereby given that the occupancy of the following Conduit has been removed.

	Conduit Location	Conduit Application #	Date Removed
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

SUBMITTED:

_____
(MCIm)

Signed:_____

Dated:_____

APPROVED:

Bell Atlantic - Pennsylvania, Inc.
(Bell Atlantic)

Signed: _____

Dated: _____

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Attachment VII
NUMBER PORTABILITY

ATTACHMENT VII

NUMBER PORTABILITY

Section 1. Provision of Number Portability

1.1 Each Party shall provide Number Portability in accordance with Applicable Law. Currently available Interim Number Portability ("INP") shall also be provided by each Party to the other in accordance with Applicable Law. Each Party shall use commercially reasonable efforts to provide INP with a minimum impairment of functionality, quality, reliability and convenience to subscribers of each other's services.

1.2 The donor Party will provide the porting Party INP and NP for subscribers moving to a different location (where Technically Feasible for INP), or staying at the same location, within the same Rate Center area. INP and NP are not available for other purposes, such as the creation of new vanity numbers.

Section 2. Interim Number Portability ("INP")

2.1 Each Party shall make available INP by Remote Call Forwarding ("RCF"), Flex Direct Inward Dialing ("FLEX-DID") or LERG reassignment (in full NXX codes only). The porting Party must order the appropriate services and facilities (*e.g.*, trunk groups) from the donor Party.

2.1.1 Remote Call Forwarding: RCF is an INP method to provide subscribers with service-provider portability by redirecting calls within the telephone network. When RCF is used to provide INP, calls to the ported number will first route to the Party's Switch to which the ported number was previously assigned. Such Switch will then forward the call to a number associated with the porting Party's designated Switch to which the number is ported. Each Party may order additional paths to handle multiple simultaneous calls to the same ported telephone number.

2.1.2 FLEX-DID is an INP method that makes use of direct inward dialing trunks. Each FLEX-DID trunk group used for INP is dedicated to carrying traffic between the donor Party's Switch and the porting Party's Switch. Traffic on these trunks cannot overflow to other trunks, so the porting Party must order a trunk group size it believes results in conservative engineering. Also, inter-Switch signaling is usually limited to multi-frequency ("MF"). This precludes passing calling line identification to the porting Party's Switch.

2.1.3 LERG Reassignment: Portability for an entire NXX of numbers shall be provided, when mutually agreed, by utilizing reassignment of the block to the

porting Party through the Local Exchange Routing Guide ("LERG"). Updates to translations in the donor Party's switching offices from which the NNX code is reassigned will be made by the donor Party by the date on which national LERG changes become effective.

2.2 **Other Currently Available Number Portability Provisions:**

2.2.1 Each Party shall exchange with the other Party SS7 TCAP messages as required for the implementation of Custom Local Area Signaling Services ("CLASS") or other features available in the their respective networks, as are Technically Feasible to exchange.

2.2.2 Promptly following receipt of an INP order for a number served by a particular End Office Switch, each Party shall disclose to the other any technical or capacity limitations that would prevent use of a requested INP method in a particular switching office.

2.2.2.1 In all cases in which installation or removal of INP is to be coordinated with the installation, modification, or removal of another service (*e.g.*, an Unbundled Local Loop), the Parties shall follow the coordination procedures set forth in Attachment VIII, Section 2.2.3.

2.2.3 When any INP method available hereunder is used to port a subscriber, the donor Party must maintain the LIDB record for that number to reflect appropriate conditions as reported to it by the porting Party and to provide such LIDB information in accordance with any LIDB agreement subsequently entered between the Parties.

2.2.4 The donor Party shall send a CARE transaction 2231 to notify the appropriate IXC that access is now provided by the porting Party for that number.

2.2.5 The INP service offered herein shall not initially apply to NXX Codes 555, 915, 950, or 976, or for Feature Group A or coin telephone service, because of the special billing characteristics of such services. Upon a Bona Fide Request from either Party, the provisions of INP for these services will be mutually negotiated between the Parties and provided to the extent feasible under negotiated rates, terms, and conditions. INP shall not apply for any arrangement that would render the forwarded call toll traffic.

Section 3. Number Portability ("NP")

3.1 The Parties acknowledge that they disagree on the form of NP that should be adopted and prescribed by the FCC, and accordingly hereby reserve their rights to advocate their respective positions before legislative, judicial, and regulatory bodies, notwithstanding any other provisions of this Agreement. To the extent that this Agreement includes

provisions regarding the implementation of the Location Routing Number ("LRN") method of NP, such provisions shall apply only if it is ordered that LRN shall be deployed in Pennsylvania, and only to the extent required by FCC Rules and Regulations, and the presence of such provisions in this Agreement shall not be deemed a waiver of Bell Atlantic's position that LRN should not be deployed in Pennsylvania. If another NP methodology is adopted for Pennsylvania, the Parties shall promptly modify any provisions of this Agreement that refer to or assume the implementation of LRN to replace it with such other methodology.

3.2 The requirements for NP, when available, shall include the following:

3.2.1 Notwithstanding any other provision of this Agreement, each Party shall provide NP service in accordance with FCC Rules and Regulations.

3.2.2 To the extent required by FCC Rules and Regulations and to the extent Technically Feasible, the donor Party's NP network architecture shall not subject the porting Party to any degradation of service compared to the donor Party in any material measure, including switching and transmission quality, call set-up time and post-dial delay, and the porting Party shall not be required to rely on the donor Party's network for calls completing to its ported subscribers; provided, however, that a Query On Release system may be used by donor Party if expressly permitted under Applicable Law.

3.2.3 After an office is equipped with NP, and after an NXX is defined as portable, translations will be changed in the donor's LNP-capable switches which trunk directly to such office to open the NXX(s) for database queries. Any NXX with at least one ported number in the NXX shall be defined as portable.

3.2.4 Upon introduction of LRN in a metropolitan statistical area/county, the associated tandems (local and access) shall be among the first converted, with no unreasonable delay. All portable NXXs shall be recognized in these tandems as portable, with queries launched from these switches.

3.2.5 During the process of porting a subscriber, the donor Party shall implement the 10-digit trigger feature when Technically Feasible. When the donor Party receives the porting request, it shall use reasonable efforts to apply the 10-digit trigger to the subscriber's line at least twenty-four (24) hours prior to the order due date in order to facilitate the smooth transitioning of the subscriber to the new provider.

3.3 **Joint Cooperation**

3.3.1 At such time that NP is available, both MCIm and Bell Atlantic shall:

3.3.1.1 Support emergency and Operator Services in a manner to be mutually agreed.

3.3.1.2 Use commercially reasonable efforts to use scarce numbering resources efficiently and administer such resources in a competitively neutral manner.

3.3.1.3 Cooperate with each other so that each carrier shall be able to rate and bill different types of calls.

3.3.1.4 Cooperate with each other to apply NP consistently.

3.3.1.5 Upon the agreement of the Parties or issuance of applicable FCC and/or Commission order(s) or regulations mandating the adoption of a NP arrangement, the Parties will commence migration from INP to the agreed upon or mandated NP arrangement as quickly as practically possible (and in any event no later than the migration dates set forth in the applicable FCC and/or Commission order(s) or regulations) while minimizing interruption or degradation of service to their respective subscribers. Once NP is implemented, either Party may withdraw, at any time and at its sole discretion, its INP offerings, subject to advance notice to the other Party and coordination to allow the seamless and transparent conversion of INP subscribers' numbers to NP. Upon implementation of NP pursuant to FCC or Commission regulation, both Parties agree to conform and provide such NP. To the extent NP rates or cost recovery mechanisms are not established by the applicable FCC or Commission order or regulation mandating the adoption of NP, the Parties will negotiate in good faith the charges or cost recovery mechanism for NP service at such time as a NP arrangement is adopted by the Parties.

3.4 Location Routing Number ("LRN")

3.4.1 If and to the extent that the FCC requires implementation of LRN as the NP methodology applicable in Pennsylvania, Bell Atlantic and MCIm shall work cooperatively to implement an LRN-NP solution when Technically Feasible.

3.4.2 A ten-digit code, consistent with the North American Numbering Plan, called the location routing number ("LRN") shall be used as a network address for each Switch that terminates subscriber lines, (*i.e.*, an End Office). LRN shall support existing six-digit routing and may be implemented without changes to existing Switch routing algorithms. In existing End Offices, the LRN shall be selected from one of its existing NPA-NXXs. New End Offices shall be assigned LRNs through normal administrative processes.

3.4.3 LRN employs an "N-1" query strategy for interLATA or intraLATA toll calls, by which the originating carrier will pass the call to the appropriate toll carrier who will perform a query to an external routing database and route the call to the appropriate terminating local carrier either directly or through an access tandem office. For a local call to a ported number, the originating carrier is the "N-1" carrier. It will perform an external database query and pass the call to the appropriate terminating carrier. The "N-1" methodology will be used to extend portability on a phased, region-by-region basis and it does not place Bell Atlantic, MCIm or other carriers needlessly in the call path.

3.4.4 The Parties shall furnish each other with the first six (6) digits of the originating LRN when they supply each other with the Jurisdiction Information Parameter ("JIP") in the Initial Address Message ("IAM"), assuming the necessary LRN software is available from the Switch manufacturer and is loaded in the specific Switch that will populate the JIP parameter per the timetable set by the FCC and Commission.

3.4.5 Each Party agrees to use commercially reasonable efforts to begin the introduction of LRN to end user subscribers who may begin changing local service providers and retaining their existing telephone number based on the time line set out by the FCC in its Telephone Number Portability Order (CC Docket No. 95-116), or as per a State order if such time for introduction of LRN set by the State is earlier than would result under the FCC Order.

3.5 Additional NP Requirements (when available)

3.5.1 In the absence of Query On Release, for local calls to a portable NXX, each Party shall query an external database as soon as the call reaches the first NP-capable Switch in the call path. An LRN-capable originating Switch shall query on a local call to a portable NXX native to another Central Office as soon as the LNP trigger is encountered and it is determined that it (the originating Switch) does not serve the dialed number.

3.6 SMS Administration

3.6.1 Each Party will work cooperatively with other local service providers to establish the NP service management system ("SMS"). The SMS shall be administered by a neutral third party, to provide for the efficient porting of numbers between carriers. Subject to Applicable Law, there must be one exclusive Number Portability Administration Center ("NPAC") per portability State or region, and each Party shall provide all information uploads and downloads regarding ported numbers to/from, respectively, the exclusive NPAC. Bell Atlantic and MCIm shall cooperate to facilitate the expeditious deployment of LRN-based NP through the process prescribed by the FCC and the Commission, including, but not limited to, participation in the selection of a

neutral third party and development of SMS, as well as SMS testing for effective procedures, electronic system interfaces, and overall readiness for use consistent with that specified for provisioning in this Agreement.

Section 4. Requirements for INP and NP

4.1 INP Cut-Over Process

The following cut-over coordination procedures shall apply for INP-ported numbers. NP cut-over procedures shall be reasonably agreed by the Parties at such time as the capability has been developed.

4.1.1 Upon request by the porting Party, the donor Party will apply the following coordination procedures to cut-overs of ported numbers.

4.1.2 The porting Party shall request the porting of a number from the donor Party by delivering to the donor Party a valid electronic transmittal service order (when available) or another mutually agreed-upon type of service order. Such service order shall be provided in accordance with industry format and specifications or such format and specifications as may be agreed to by the Parties. Within forty-eight (48) hours of the donor Party's receipt of such valid service order, the donor Party shall provide the porting Party the firm order commitment date and time according to the installation time frames set forth in Section 4.2 below.

4.1.3 On each porting order, the Parties will agree on a cut-over time at least forty-eight (48) hours before that cut-over. RCF cut-over time will be defined as a fifteen (15) to thirty (30) minutes per line window within which both Parties will make telephone contact to complete the cut-over. The cut-over window for other methodologies will be agreed to by the Parties.

4.1.4 Within the appointed fifteen (15) to thirty (30) minute cut-over time, the porting Party will call the donor Party to coordinate cut-over work and when the donor Party is reached in that interval, such work will be promptly performed.

4.1.5 If the porting Party requires a change in scheduling, it must contact the donor Party to issue a supplement to the original order. The negotiations process to determine the date and time of cut-over will then be reinitiated pursuant to Section 4.1.3 above.

4.1.6 If the porting Party is not ready within the appointed interval and if it had not called to reschedule the work at least two (2) hours prior to the start of the interval, the porting Party shall be liable for the non-recurring charge for such work for the missed appointment. In addition, non-recurring charges, if applicable, for the rescheduled appointment will apply.

4.1.7 If the donor Party is not available or not ready at any time during the appointed fifteen (15) to (30) minute interval, the Parties will reschedule and the donor Party will waive the non-recurring charge, if applicable, for such work whenever it is performed pursuant to an agreed-upon rescheduling.

4.1.8 Beginning nine (9) months from the Effective Date, if unusual or unexpected circumstances prolong or extend the time required to accomplish the coordinated cut-over, the Party responsible for such circumstances is responsible for the reasonable labor charges of the other Party. Delays caused by the subscriber are the responsibility of the porting Party.

4.2 **Installation Time Frames**

4.2.1 Installation time frames for RCF INP will be as follows:

4.2.1.1 Lines and Trunks:

4.2.1.1.1 For installations of RCF INP that are not installed and/or coordinated with in conjunction with any other service or service disconnect ordered from Bell Atlantic, installation time frames will be as follows: orders of 1-20 lines in four (4) business days; orders of 21-30 lines in seven (7) business days; orders over 30 lines will have an installment time frame as mutually agreed by the Parties; and

4.2.1.1.2 Notwithstanding Section 4.2.1.1.1, installation time frames for RCF INP when installed in conjunction with another service ordered from Bell Atlantic will be as follows: orders of 1-10 lines in six (6) business days; orders of 11-20 lines in ten (10) business days; orders of twenty-one (21) or more lines will have an installment time frame mutually agreed upon by the Parties.

4.2.1.2 The installation time frames set forth in Section 4.2.1.1 shall be applied as follows:

4.2.1.2.1 The time frames set forth in Section 4.2.1.1 shall apply on average to the order types and sizes specified therein; and

4.2.1.2.2 No individual order shall be installed in a time frame more than twice the length of the time frame specified in Section 4.2.1.1 for the order type and size, except in unusual circumstances. Unusual circumstances shall qualify to modify any time frame only to the extent that the unusual circumstances have

comparable effects on Bell Atlantic's customer services and INP services for other CLECs.

4.3 INP Call Referral Announcements

4.3.1 Within forty-five (45) days after the Effective Date, Bell Atlantic will provide MCIm a cost-based cost estimate and proposed implementation schedule for the development and implementation of the capability to allow MCIm to order all referral announcements, and specify the particular announcement from Bell Atlantic's standard set of call referral announcement options, on a per telephone number basis, for telephone numbers which MCIm has ported from Bell Atlantic to MCIm and for which INP measures, at MCIm's direction, have been terminated. Upon MCIm's acceptance of the cost estimate and proposed implementation schedule (adjusted as necessary to reflect any significant delay in such acceptance), Bell Atlantic will develop and implement said capability and MCIm will pay the cost thereof, as set forth in the accepted cost estimate.

4.4 Engineering and Maintenance

4.4.1 Bell Atlantic and MCIm will cooperate with the objective that the performance of trunking and signaling capacity shall be engineered and managed at Parity. Additional specific engineering and maintenance requirements shall apply as specified in this Agreement.