Exhibit No. ____(LR-1T)
Docket No. 003013

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

IN THE MATTER OF THE CONTINUED COSTING AND PRICING PROCEEDING FOR INTERCONNECTION, UNBUNDLED ELEMENTS, TRANSPORT AND TERMINATION, AND RESALE	)))))	**DOCKET NO. UT- 003013**

DIRECT TESTIMONY OF

LARRY RICHTER

COSTING-SPECIALIST

ON BEHALF OF

GTE NORTHWEST, INC.

SUBJECT: COLLOCATION COST STUDY INPUTS & TECHNICAL ISSUES

MAY 19, 2000

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, EMPLOYER, BUSINESS ADDRESS AND IN WHAT CAPACITY.

A. My name is Larry Richter and I am employed by GTE Service Corporation as a Costing-Specialist and am representing GTE Northwest Incorporated ("GTE") in this proceeding. My business address is 600 Hidden Ridge, Irving, Texas 75038.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE IN TELECOMMUNICATIONS?

A. I have a Bachelors Degree in Business Administration from Northwood University.

I have been employed by GTE for over 31 years. Upon joining GTE, I held craft positions in Outside Plant in California for five years. I was then promoted to management, where I have been primarily associated with Network Operations for GTE in varying capacities, each with increasing responsibilities. These included Service and Facilities Management and Outside Plant Maintenance responsibilities for various exchanges in Texas. I have held Administrative Support and Budget Analyst positions for Engineering and Construction for Outside Plant, Central Office, and Installation and Maintenance. In this capacity I was responsible for budget creation, tracking and results information for the department. I also held the position of Business Analyst for Capital and Expense budget creation and tracking for Engineering and Construction units for the Texas/New Mexico Region. I have held manager positions for Installation and

Maintenance Departments and Service Centers responsible for Dispatch, Assignment, Repair Answer, and Test Center. In my current capacity I have responsibility for gathering the data for the inputs to the EIS Collocation Cost Study.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE PUBLIC UTILITY COMMISSIONS ON GTE'S COLLOCATION COSTS?

A. Yes. I have testified before the California, Michigan and North Carolina Public Utilities Commissions on the costs that GTE incurs to provide collocation service.

Q. PLEASE STATE THE PURPOSE OF YOUR TESTIMONY.

A. I am filing testimony to explain the cost elements and composition of the GTE Expanded Interconnection Services Study Cost Study (EIS Study) for the state of Washington, which is attached to my testimony as Exhibit LR-2C. I am also responsible for the inputs and technical aspects of the cost study. GTE witness Callanan jointly sponsors the EIS Study, and explains the study methodology and how the EIS complies with FCC and Washington UTC requirements including TELRIC.

Q. HOW WAS THE EIS COST STUDY DEVELOPED?

A. The EIS collocation cost study was developed through a "bottoms-up" approach of analyzing all of the elements involved in GTE's provisioning of collocation. A team of costing personnel, SME's (Subject Matter Experts), field management employees, and technicians assisted in the data gathering. For activities provided by contractors, input was received directly from the contractors.

Q. FOR WHAT TYPES OF COLLOCATION DOES THE EIS STUDY PROVIDE COSTS?

A. As explained by GTE witness Callanan, the EIS Study provides costs for all elements for the following forms of collocation:

Single Cage	Shared Physical
Sublease Physical	Cageless
Adjacent	

Q. HOW ARE THE COLLOCATION COSTS ORGANIZED IN THE EIS STUDY?

A. Collocation costs are divided into two groups in the EIS Study: those that will be recovered through non-recurring charges and those that will be recovered through monthly recurring charges.[1] I will explain the functions and costs associated with each below.

[1] Although the EIS Study refers generally to recurring and non-recurring as categories of costs, not charges, the classification of these costs as recurring and non-recurring was done based on the method of cost recovery, as described by pricing witness Tanimura, rather than on the basis of cost characteristics. For example, there are costs included in the EIS Study as monthly recurring, although their cost characteristics suggest a non-recurring cost. This classification was done for ease of the reader in reviewing the EIS Study and accompanying testimony.

II. NON-RECURRING

Q. WHAT TYPES OF NON-RECURRING ACTIVITIES ARE PERFORMED TO PROVIDE COLLOCATION, AND WHAT ARE THE ASSOCIATED COSTS?

A. GTE will perform the following non-recurring activities, and incur the associated costs, to provide collocation: Engineering, Building modification, DC Power Facility, Fiber Cable Pull, Metallic Cable Pull, Cable Fire Retardant, Cable Splice, Facility Pull, Relay Rack, Telecommunications Equipment Cabinet, BITS, Premise Space Report, and Cable. I will explain each of these below.

Engineering Costs

Q. WHAT ENGINEERING COSTS DOES GTE INCUR TO PROVIDE COLLOCATION?

A. GTE incurs costs to plan and engineer how to accommodate a CLEC's request for collocation space within a central office. GTE personnel, including the Central Office Equipment Engineer, Land & Buildings Engineer, and the Outside Plant Engineer, meet at the central office to identify those arrangements that are necessary to provide collocation as requested by a CLEC. As part of this process, the future use of space within the central office is evaluated to determine the best location of the collocation area. Once the planning phase is complete, there is also the activity element in which the engineers work on the actual provisioning of space to accommodate the collocation

request. Status meetings are held throughout the engineering process to discuss the progress of the collocation activity.

Q. WHAT OTHER ENGINEERING ACTIVITIES MAY BE NECESSARY TO ACCOMMODATE COLLOCATION REQUESTS?

A. Depending on the collocation activity, it may be necessary to utilize contract building design engineers or architects to complete the activity. For example, contract building design engineers or architects would be responsible for drawing the blueprints that will be used by a general contractor to perform the necessary work.

Q. WHERE ARE THE PLANNING AND ENGINEERING COSTS DEVELOPED IN THE STUDY?

A. The engineering costs are detailed in pages 1 through 3 of the Workpapers, located in Section 8 of Exhibit LR-2C.

Building Modification Costs

Q. WHAT ARE BUILDING MODIFICATION COSTS?

A. Building modification costs include all costs associated with modifying the central office to accommodate a collocator. Due to the variability between central office collocation projects, there are several building modification cost elements presented in the EIS Study. Each cost element presented is the average cost incurred when

underlying work is completed for a project. Not all cost elements will be incurred on each project. The following cost elements are classified as building modification activities and costs:

Access Card Administration

Cage Grounding Bar

Overhead Superstructure

Cage Enclosure

Cage Gate

Q. WHERE ARE THESE BUILDING MODIFICATION ACTIVITIES AND COSTS PROVIDED IN THE EIS STUDY?

A. The building modification activities and costs are detailed in pages 6 through 10 of the Workpapers, located in Section 8 of Exhibit LR-2C.

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH "ACCESS CARD ADMINISTRATION".

A. The "Access Card Administration" function is the time necessary for the Security group to process the request for access cards in order to activate the card reader at the particular central office for which the collocator seeks access. Activities within this function range from card ordering, card activation, card reader activation, distribution of cards to the collocator, and maintenance of the records on cardholders. The Security

group will also make any necessary changes to access arrangements, as the CLEC's needs change.

"Access Card Administration" costs were developed in the EIS Study by the GTE personnel in the Security group who actually prepare the cards and program the card reader/controller for activation. The listing of the individual activities within this function, with associated time intervals, are provided in page 6 of Section 8 of Exhibit LR-2C.

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "CAGE GROUNDING BAR" ELEMENT.

A. The "Cage Grounding Bar" element addresses the functions and costs associated with placing a cage ground bar in the collocation cage. This cage ground bar will be used by the collocator to ground their equipment. A ground cable will be placed from the cage ground bar to the floor ground bar, which is connected to the central office network ground. The costs of providing the cage ground bar, including labor and material, are detailed in page 7 of Section 8 of Exhibit LR-2C.

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "OVERHEAD SUPERSTRUCTURE" FUNCTION.

A. The "Overhead Superstructure" activity captures the costs associated with placing cable racking from the existing racking to the collocator's area. The elements necessary to

accomplish this activity are engineering, installation labor, travel time, and materials. This cable racking is dedicated to the individual collocator and joins up with the existing cable racking in the central office. The costs of providing the overhead superstructure are detailed in page 8 of Section 8 of Exhibit LR-2C.

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "CAGE ENCLOSURE" AND "CAGE GATE" BUILDING MODIFICATIONS.

A. These two elements are necessary to build a collocators' cage. The Cage Enclosure includes the cost of fencing, poles, and the miscellaneous items necessary to build the cage. The Cage Gate provides access and security for the collocator's equipment within the cage. The fencing and associated material in the EIS Cost Study for these two elements is based on a cost per square foot of fencing material developed in pages 9 and 10 of Section 8 of Exhibit LR-2C.

DC Power Facility

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "DC POWER FACILITY".

A. The DC Power Facility includes the power cables run from the Battery Distribution Fuse Bay ("BDFB") to the collocator's individual location. The size of these cables will be engineered in accordance with the requested amps, the voltage drop, and the distance to the collocator's area. These required cables can be provided by the

collocator or they can be purchased from GTE. The cost of installing the required cables is based on the loaded labor rate and hours-per-unit of the Central Office Equipment Installer that performs this activity. The DC Power Facility costs are detailed at page 11 of Section 8 of Exhibit LR-2C.

Fiber Cable Pull

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "FIBER CABLE PULL".

A. The "Fiber Cable Pull" is the placement of fiber cable for the collocator from the first manhole outside the cable vault through the conduit system and cable vault to the collocators' equipment inside the central office. First, an Outside Plant Engineer must visit the location and determine the subduct assignment from the manhole to the cable vault. The actual installation activity includes time to set up at the manhole and cable vault, to prepare for the cable pull, and the actual pulling of the cable. Innerduct is also placed from the cable vault to the collocator's equipment location and the fiber cable is placed inside the innerduct.

The work times for pulling cable are based on Washington-specific data in GTE's Single Source Provider ("SSP") contractor bidding system. The cost for this function is provided at page 12 of Section 8 of Exhibit LR-2C.

Metallic Cable Pull

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "METALLIC CABLE PULL".

A. The metallic cable pull is similar to the fiber pull in that an Outside Plant Engineer must visit the cable vault and manhole to determine the cable duct to use. The pulling crew must then set up equipment at the manhole and cable vault in order to pull the cable. The pull rate is based on the SSP rates for the size of cable being pulled. The cost for this function is provided at page 13 of Section 8 of Exhibit LR-2C.

Cable Fire Retardant

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "CABLE FIRE RETARDANT".

A. The cable fire retardant activity is associated with filling the space around cables extending through walls or floors, with a non-flammable material, to prevent fire from spreading from one room or floor to another. This activity is performed when either DC power cable or transmission cable is run between floors or through a wall. Fire retardant material is removed from the hole to place cable and must be replaced after the cable is placed. Central Office Installers who perform this activity estimate the average time to perform this activity to be one hour.

Cable Splice

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "CABLE SPLICE".

A. A cable splice can be made on either fiber or metallic cable. The splicing function includes drafting a work order and determining where the splicing operation will be completed. The rates to splice these cables are based on the SSP rates. The cost for this function is provided at page 14 of Section 8 of Exhibit LR-2C.

Facility Pull

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "FACILITY PULL".

A. A "Facility Pull" is the placing of transmission cable inside the central office. There will be an engineering cost in completing the work order and determining how the cables will be run within the central office. Facility pull costs are developed for DS0 cable based on 100 pair, for DS1 cable consisting of 28 pair for transmit and 28 pair for receive, and for DS3 coaxial cable consisting of one transmit and one receive coax. One hour of travel time will be included in the cost for the Central Office Installer to drive to the central office to perform the activities. The cost for this function is provided at pages 15 and 16 in Section 8 of Exhibit LR-2C.

Relay Rack and Telecommunications Equipment Cabinet

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "RELAY RACK" AND THE "TELECOMMUNICATIONS EQUIPMENT CABINET".

A. The collocator has the option to place a relay rack or cabinet in its leased collocation space. Both types of equipment are secured to the floor and/or the overhead superstructure. GTE has developed material costs for the rack and cabinet, as well as engineering and installation of both in the event the collocator elects that GTE provide and install the rack or cabinet. The rack costs include the material cost provided in GTE's Advanced Materials System ("GTEAMS"), which is a material management system utilized by GTE to manage supplies in its operations, and the hours per unit necessary for installation. The cabinet costs include the material cost of a cabinet that GTE currently uses, and a SME estimate of the time required to install the cabinet. Cabinet installation requires two technicians. The costs for these functions are provided at pages 18-21 of Section 8 of Exhibit LR-2C.

BITS

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH BITS.

A. Building Integrated Timing Supply ("BITS") is the central office timing system that provides a common source for the frequency and phase synchronization necessary for any digital transmission network. BITS clocks are devices used to provide timing and synchronization information to the equipment elements of a digital transmission system or network. A collocator, at its option, may purchase BITS services from GTE at rates based on the cost to provide BITS.

The collocator has the option to request BITS timing. This cost is associated with the installation of an access port. The time is based on COEI HPU's to install shielded cable from the port to the collocators' equipment. The material cost is based on GTEAMS cost for the shielded cable. The engineering time is based on a SME estimate to engineer a port for BITS timing. The costs for these functions are provided at pages 15-17 of Section 8 of Exhibit LR-2C.

Premise Space Report

Q. PLEASE EXPLAIN THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "PREMISE SPACE REPORT".

A. The Premise Space Report is provided on a request basis and is the costs associated with engineers visiting the central office and creating a detailed report indicating the available collocation space within a specific central office. The costs for these functions are provided at page 22 of Section 8 of Exhibit LR-2C.

Cable

Q. PLEASE EXPLAIN THE COSTS ASSOCIATED WITH "CABLE".

A. GTE will sell transmission cables to CLECs upon request. The costs of these cables are based on GTEAMS. The costs for the cables are provided at page 23 of Section 8 of Exhibit LR-2C.

III. MONTHLY RECURRING

Q. WHAT TYPES OF COSTS FOR WHICH GTE PROPOSES RECOVERY THROUGH MONTHLY RECURRING CHARGES ARE INCURRED TO PROVIDE COLLOCATION?

A. Through explanatory field visits to central offices, meetings with employees at regional headquarters, and consultation with subject matter experts, GTE personnel identified the following as recurring costs: Floor Space, Floor Space for Relay Racks and Cabinets, Cable Space, DC Power Facility, DC Power Utility, Facility Termination, Building Modification, Cable Vault Splice, Cable Vault Utilization, Cable Rack Utilization, and BITS. Consistent with the long-run time horizon of the study, the costing of those processes has been adjusted to reflect any known and measurable expected changes in GTE collocation policies or changes in technology.

Floor Space

Q. WHAT ARE FLOOR SPACE COSTS?

A. Floor Space costs are those costs to provide environmentally conditioned floor space to the collocator, based on an average cost per square foot, plus costs to account for shared floor space. Floor space costs were determined by examining the building investment amounts, square footage, and monthly maintenance/utility expenses of a selected sample of central offices of varying switching technology and size utilized by GTE across the state of Washington. Information from these selected central offices was used to calculate the average cost per square foot in the EIS Study. The floor space cost calculations may be found at pages 32 to 34 in Section 8 of Exhibit LR-2C.

Q. HOW DID GTE DETERMINE THE BUILDING INVESTMENT COSTS?

A. GTE selected a number of central offices to serve as a representative sample, based on line size, wire center, and whether the building was purchased or built after 1945. Each central office was examined with reference to the original investment amount in its building relative to the date of investment, as well as all other incremental investments. GTE used factors from RS Means, an industry publication on building construction cost data,[2] to bring the original building investments to present value, and then divided the present value by the total square footage of the building to determine the cost per square foot.

Q. HOW WAS THE HVAC INVESTMENT DETERMINED?

A. The HVAC investment contained in the building cost was calculated and adjusted based on criteria identified in RS Means. This calculation was determined by: (1) removing the average building investment for HVAC, 16%, from the total value of the building; (2) determining the amount of HVAC investment necessary to cool the square footage of the building, excluding any equipment, based on the RS Means factor that 300 square feet of building space required one ton of HVAC; and (3) then adding back the adjusted amount of HVAC to the building investment.

[2] RS Means, "Building Construction Cost Data 55 Annual Edition 1997."

Q. HOW WAS LAND INVESTMENT DETERMINED?

A. Land costs were gathered from the same sample of central offices to add to the per square foot building values. The original investment values were used because there is no land index to calculate a present value. The result is a conservative estimate of land investment since the original land investments would be lower than the present value of the land.

Q. HOW DID GTE DERIVE MONTHLY MAINTENANCE AND UTILITY EXPENSES?

A. The monthly maintenance and utility expenses for each central office were taken from actual year-end 1998 expense reports, and added to the building investment costs.

Q. HOW DID GTE DERIVE SHARED BUILDING COSTS?

A. GTE used sixteen central offices from various states to determine the average amount of shared footage within the central office. Shared space includes building areas that all parties will use in their daily business operations, including hallways, restrooms, breakrooms, and, in some cases, staging areas.

To estimate the size of the hallway area, GTE calculated the square root of the square footage of the buildings to obtain an estimated walking length, and then multiplied this figure by 3 to account for a 3-foot hallway.

To estimate the size of the restrooms, staging areas, and breakrooms, GTE examined the actual building prints and measurements for the central offices being studied and derived an average amount of floor space size for each.

Floor Space for Relay Racks and Cabinets

Q. WHAT DOES THE COST FOR FLOOR SPACE FOR RELAY RACKS AND CABINETS REPRESENT?

A. Cageless collocators will use floor space for the placement of a relay rack or a cabinet to house its telecommunications equipment. The floor space necessary for a relay rack was determined by using a linear foot method based on the size of a standard relay rack (24 15/16 inches wide), guard rails (15 inches in length), and the space in front of and behind the rack to permit access to equipment in the rack (18 inches).[3] The floor space necessary for the cabinet was based on the dimensions of a standard cabinet used by GTE (29 x 33 inches), and the space in front of and behind the cabinet to permit access to the cabinet (18 inches). The calculations of the floor space necessary for relay racks and cabinets are provided at page 30 - 31 of Section 8 of Exhibit LR-2C.

[3] This represents half of the size of a 36-inch aisle because the equipment may be accessed by both sides of the aisle.

Cable Space

Q. WHAT DOES THE "CABLE SPACE" COST REPRESENT?

A. Cable space is the part of the conduit system occupied by CLEC entrance cable. The conduit system includes the manhole, and the conduit and/or the subduct from the manhole to the cable vault.

Q. HOW WAS THE CABLE SPACE COST CALCULATED?

A. The overall cost per linear foot was determined by calculating the material and labor costs of installing the manhole and conduit material. All materials costs were obtained from GTEAMS and all GTE labor costs were calculated by using time estimates and GTE's 1997 labor rates. For activities to be completed by vendors, costs were taken from SSP rates. In calculating these costs, GTE assumed that the conduit system has 32 conduits and that each conduit has 3 subducts. The calculation of the cable space cost is located at page 36 - 38 of Section 8 of Exhibit LR-2C.

DC Power Facility

Q. WHAT ARE THE COSTS ASSOCIATED WITH THE "DC POWER FACILITY" ELEMENT?

A. The DC Power Facility element are those material and labor costs incurred to provide DC power to the collocator's area. For example, GTE incurs power plant costs that are

necessary to serve the collocator, including such materials as batteries, rectifiers, main fuse panels, and electrical connections to the main power source. Costs also will be incurred to extend power from the power plant to the collocator's area, including material and labor costs for the associated power cable, fuse panels, relay racks, and distribution bays.

Q. HOW WERE THE DC POWER FACILITY COSTS CALCULATED?

A. The power plant cost to operate a switch was calculated based on central office line size using forward looking estimate for power plant equipment and labor from the current Integrated Cost Model ("ICM"). Power cable costs per amp were based on: the GTEAMS cost for 750 mcm flexible power cable; cable pulling based on hours per unit ("HPU"), an estimated length of 125 feet, and the loaded labor rate of a Central Office Equipment Installer ("COEI"); and the material cost and installation of a connector tap on each end for termination.

The per amp cost of the Battery Distribution Fuse Bay ("BDFB") was based on a RELTEC model 1293B2 equipped for 600 amps, with an engineering capacity of 80% (480 amps), and costs for the relay rack, common equipment, metering panels, and fuse panels. The hours to engineer and install the BDFB are based on information obtained by SMEs from field forces. Loaded labor rates for engineering and installation are applied to the SME times.

Material loadings from ICM are also applied to the cost of the power cable and BDFB. The development of DC Power Facility costs is shown in pages 39 - 45 in Section 8 of Exhibit LR-2C.

DC Power Utility

Q. WHAT ARE DC POWER UTILITY COSTS AND HOW WERE THEY CALCULATED?

A. DC Power Utility costs is the monthly electricity expense incurred to service the collocator's power requirements. The amount of commercial electricity necessary to power termination equipment was determined by examining the amount of electricity consumed in GTE buildings located within the state of Washington. GTE power engineers used a Lorain model V200D50 Rectifier to determine the efficiency and heat loss factor that will be incurred to provide the necessary amount of power. The Lorain model V200D50 is the type of rectifier that would be purchased by GTE today, not the type of equipment that may be found in the typical existing central office. The calculation of DC Power Utility costs is provided at pages 46-48 of Section 8 of Exhibit LR-2C.

Facility Termination

Q. WHAT ARE FACILITY TERMINATION COSTS?

A. Facility Termination costs are the labor and material costs incurred for facility termination of DS-O, DS-1, and DS-3 circuits. A separate cost is developed for each. The facility termination for a DS-O circuit is a 100 pair termination block mounted on a Main Distribution Frame ("MDF"). DS-1 termination is a 56-circuit panel located in a relay rack with other transport-type equipment. The DS-3 panel is a 20 module chassis, with individual modules per DS-3.

Q. HOW WERE THE FACILITY TERMINATION COSTS DERIVED?

A. For each of the three types of facility terminations, material, including the cost of the cross connect panels, and termination blocks, and labor costs were calculated using data from GTEAMS and COEI HPU's. A space occupation cost of the blocks and panels was also determined for each type of Facility Termination. For example, the DS-O circuit cost includes the cost of the frame that the block occupies, and the DS-1 termination cost includes the relay rack and floor space the rack occupies. The cost development for these three types of Facility Termination may be found at pages 49-54 of Section 8 of Exhibit LR-2C.

Building Modification

Q. WHAT BUILDING MODIFICATION COSTS DOES GTE PROPOSE TO RECOVER ON A MONTHLY RECURRING BASIS?

A. GTE proposes to recover the following building modification costs on a recurring basis: storage security, card reader, demolition and site work, dust partition, HVAC-minor, environmental conditioning, and electrical.

Q. WHAT IS THE STORAGE SECURITY COSTS?

A. The storage security costs is the costs incurred to modify existing cabinets to allow them to be locked. The development of this cost was based on estimates from contractors who perform this type of activity, based on an assumption that twenty cabinets need to be locked in each central office. The estimates include the installation of a lockable hasp on the cabinet, and the cost of the lock. The calculation of this cost is provided in page 55 of Section 8 of Exhibit LR-2C.

Q. WHAT IS THE "CARD READER" AND WHAT ARE ITS ASSOCIATED COSTS?

A. A card reader/controller may be necessary to provide collocators with secured access to a central office. The cost of the card reader were based on installation costs incurred by GTE in Texas and California, adjusted to reflect Washington-specific costs using factors provided by the National Construction Estimator, an industry-accepted manual used by

building engineers and contractors to estimate costs, labor and material, on a state or city basis. The calculation of this cost is provided in page 56 of Section 8 of Exhibit LR-2C.

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH DEMOLITION AND SITE WORK?

A. Demolition and site work activities are necessary to prepare an area within a central office for collocation, causing GTE to incur costs to remodel, repair and rehabilitate the central office. These costs are based on actual collocation occurrences in Texas and California. The calculation of this cost is provided in page 57 of Section 8 of Exhibit LR-2C.

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH THE "DUST PARTITION"?

A. A dust partition, usually plastic, is placed around a construction area to prevent dust and other foreign matters from being picked up through the central air conditioning system and distributed through the central office. This cost is based on actual occurrences in Texas and California in the collocation process. The calculation of this cost is provided in page 57 of Section 8 of Exhibit LR-2C.

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH MINOR HVAC?

A. "Minor HVAC" is the minor work that may be necessary to relocate or place air conditioning ducts to serve a particular collocation area. Duct work is necessary to ensure that cooling is provided to the area in which the heat-producing telecommunications equipment collocated by a CLEC is located. These costs are based on actual occurrences in Texas and California during provisioning for collocation. The calculation of this cost is provided on page 57 of Section 8 of Exhibit LR-2C.

Q. WHAT ARE THE ENVIRONMENTAL CONDITIONING COSTS?

A. The environmental conditioning costs are those incurred to provide air conditioning treatment for the heat dissipated by the collocator's electronic telecommunications equipment. The calculation used to develop the cost of air conditioning per DC amp is an accepted industry-wide formula and is applied based on the amount of DC power (amps) requested by the collocator. A typical collocation area of four collocators each occupying a 100 square foot cage and each requesting 80 amps was considered to establish the size of the air conditioning system required to condition the described collocation area. The cost of the air conditioning system was determined by using 1997 RS Means data. The calculation of the environmental conditioning costs is providing on page 58-61 of Section 8 of Exhibit LR-2C.

Q. WHAT ARE THE ELECTRICAL BUILDING MODIFICATION COSTS?

A. Electrical building modification costs include cost for lighting, an electrical outlet and a floor-grounding bar. The lighting costs are those incurred to install a two-bulb

fluorescent lamp in the collocation cage or in the relay rack area. GTE also will incur costs to place an electrical outlet within a collocator's cage or relay rack area for use in operating electrical devices for installing and maintaining equipment. A floor ground bar tied to the main central office ground also must be placed in the collocation area, causing GTE to incur the cost of the floor ground bar, ground cable in the conduit, connection taps, and the labor incurred to place these items. The development of each of these electrical costs is based on the material cost taken from the National Construction Estimator and is provided at pages 62-67 of Section 8 of Exhibit LR-2C.

Cable Vault Splice

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH THE CABLE VAULT SPLICE?

A. The cable vault splice is the cost of the closure material used in the splicing of fiber or metallic cable within the cable vault. GTE also incurs engineering and installation labor for placing the main distribution frame where the protection for metallic cable will be placed. Material costs are taken from GTEAM's, materials loadings are added, and loaded labor rates are applied. Cable vault splice costs are provided at pages 68-72 of Section 8 of Exhibit LR-2C.

Q. ARE THERE OTHER COSTS SPECIFIC TO THE SPLICING OF METALLIC CABLE?

A. Yes. Splicing of metallic cable also requires that protectors be placed on the Main Distribution Frame to ensure that stray voltage does not enter the central office through the metallic cable. These protectors consist of the base unit, module protector units and 100 feet of "stub" cable that will be run to the cable vault where the splice will be made.

Cable Vault Utilization

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH THE COLLOCATORS' USE OF THE CABLE VAULT?

A. The cable vault utilization is the area within the cable vault that the collocator's cable occupies. This was calculated based on the diameter of the collocators' cable. The calculation takes into account the unistrut racking for holding the cable and splice closures. This area is then used to calculate the amount of that space the cable will occupy on a cubic foot basis. The cable vault utilization calculation is on page 73 in Section 8 of Exhibit LR-2C.

Cable Rack Utilization

Q. WHAT ARE THE ACTIVITIES AND COSTS ASSOCIATED WITH THE COLLOCATORS' USE OF THE CABLE RACK?

A. Costs for "cable rack utilization" are the costs for the area that will be occupied by a collocators' cable when run through a central office superstructure to the MDF or DS-X panel, or to the collocation space of another collocator. The cable rack utilization cost was developed based on a quantity of cables that could be placed on a 24-inch cable rack. GTE's Network Design engineering group provided the estimate of cables that could occupy the 24-inch cable rack. Cable diameters and the diameter of innerduct housing fiber cable, were used to determine the amount of space occupied by the cable on a foot length of cable rack. The development of these costs may be found at pages 74-75 of Section 8 of Exhibit LR-2C.

BITS

Q. WHAT BITS COSTS WILL BE RECOVERED THROUGH A MONTHLY RECURRING CHARGE AND HOW WERE THE COSTS CALCULATED?

A. These BITS costs are the total material and labor (engineering and installation) costs for establishing BITS within a central office, based on a system used by GTE in its installation (Telcom Solutions DCD-519/2Ew/GPS). Costs for common control equipment and associated port cards are included, and appropriate material loading is

applied on the equipment investment. These costs are provided in pages 76-77 of Section 8 of Exhibit LR-2C.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.