Direct Testimony of Georganne Weidenbach

BEFORE THE
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

IN THE MATTER OF DETERMINING PRICES FOR UNBUNDLED NETWORK ELEMENTS (UNEs) IN QWEST CORPORATION'S STATEMENT OF GENERALLY AVAILABLE TERMS (SGAT)	))))	**CASE NO. TC01-098**

DIRECT TESTIMONY

OF

GEORGANNE WEIDENBACH

QWEST CORPORATION

OCTOBER 15, 2002

TABLE OF CONTENTS

I. IDENTIFICATION OF WITNESS

Q. PLEASE STATE YOUR NAME, EMPLOYER AND BUSINESS ADDRESS.

A. My name is Georganne Weidenbach. I am employed by Qwest Corporation ("Qwest") as a Director in the Technical Regulatory Group, Local Network Organization. My business address is 250 Bell Plaza, Salt Lake City, Utah 84111.

Q. PLEASE REVIEW YOUR WORK EXPERIENCE AND PRESENT RESPONSIBILITIES.

A. I hold a Bachelor of Science degree from Regis University at Denver. I have been in the telecommunications business for over 21 years. I have held numerous positions with Qwest Communications (formerly Mountain Bell and U S West Communications), including my current position as a director in the Technical Regulatory Group, Local Network Organization. In my current position, I am the Subject Matter Expert ("SME") for many topics relating to interconnection, such as CLEC to CLEC connections, line sharing, unbundled dark fiber, unbundled packet switching, collocation and other similar issues. Prior to assuming these responsibilities, I was Qwest's lead network engineer and project manager for collocation and had responsibility for analyzing,

planning, and engineering the designs of collocation jobs within Qwest's 14-state region. In this capacity, I supervised interoffice facility ("IOF"), outside plant ("OSP"), and power engineers in planning and designing of all types of collocation jobs, including caged and cageless, line sharing, design of terminations, space planning, entrance facilities, power and grounding.

My prior responsibilities also have included managing the network Design Services Center for Colorado and Wyoming; this position included managing design services and balancing work-loads on a daily basis among technicians, dispatchers, construction crews, fiber crews, and POTS technicians. I have also held positions as an outside plant engineer, and had responsibility for placing, aerial, buried, and underground outside plant ("OSP"). My responsibilities as an OSP engineer also encompassed many other areas of engineering, including, for example placing interoffice facilities ("IOF") and managing common engineering issues that arise in the field, such as issues relating to air pressure. At other points in my career, I have served as a residential marketing manager, a public policy liaison, a service representative, and a telephone operator.

II. OVERVIEW OF TESTIMONY

Q. PLEASE PROVIDE AN OVERVIEW OF YOUR TESTIMONY.

A. My testimony identifies and distinguishes between the two options Qwest provides for CLEC to CLEC connections and the network elements associated with CLEC to CLEC connections that are at issue in this docket. These descriptions and explanations are intended to assist the Commission and the parties in understanding Qwest's cost studies relating to CLEC to CLEC connections, which Qwest witness Teresa Million is presenting.

In addition to CLEC to CLEC connections, my testimony also addresses the unbundled network element ("UNE") known as unbundled dark fiber. I discuss the different steps that Qwest must take in response to CLEC requests for this UNE. This testimony demonstrates why the dark fiber cost studies that Ms. Million is presenting include certain activities and facilities.

My testimony further demonstrates why specific facilities and activities are essential in provisioning Line Sharing, Line Splitting and Loop Splitting.

Lastly, my testimony illustrates how CLECs access Qwest's Poles, Ducts, and Right of Way ("ROW"), including the network components and rate elements associated with this product.

Q. HAVE YOU FILED TESTIMONY BEFORE THE STATE OF SOUTH DAKOTA PREVIOUSLY?

A. No. However, I have filed testimony in cases before the regulatory commissions of Minnesota, Nebraska, Montana, Wyoming, and Utah.

III. CLEC TO CLEC CONNECTIONS

A. DESCRIPTION OF CLEC TO CLEC CONNECTIONS

Q. WHAT ARE CLEC TO CLEC CONNECTIONS?

A. CLEC-to-CLEC Connections allows CLECs to connect with each other within a Qwest premises for the purpose of mutually exchanging traffic. It also allows CLECs to connect their own non-contiguous collocation spaces. Qwest offers two distinct types of CLEC to CLEC connections:

- **CLEC to CLEC Direct Connection** - This option allows CLECs direct access to connect with each other within the same Qwest Premises for mutually exchanging traffic. The direct CLEC to CLEC configuration does not include any type of intermediate frame or bay.

- **CLEC to CLEC Cross-Connections** - This option allows CLECs to cross-connect at the Interconnection Distribution Frame ("ICDF") in the same Qwest Premises, by running jumpers on the shared frame.

B. CLEC TO CLEC DIRECT CONNECTION

Q. WHAT NETWORK COMPONENTS MAKE UP THE RATE ELEMENTS FOR QWEST'S DIRECT CLEC TO CLEC CONNECTIONS?

A. The network components that go into the rate elements for CLEC to CLEC direct connection are (1) order processing, (2) design and engineering, (3) virtual collocation connections and cable holes, if applicable, and (4) recurring charges for cable racking, including fiber management systems (cable racking specifically for fiber).

Q. WHAT ARE THE WORK ACTIVITIES ASSOCIATED WITH A CLEC TO CLEC DIRECT CONNECTION?

A. In order to understand the prices Qwest proposes in this case as recommended by Ms. Million, it's important to gain an understanding of the steps Qwest personnel must take to provide CLEC to CLEC connections.

A CLEC to CLEC order involves the necessary step of having personnel in Qwest's Collocation Project Management Center ("CPMC") review the

CLEC's request for completeness. During this task, Qwest prints all associated e-mails and forms from the CLEC to start a working file, or job folder. This includes assigning a Billing Account Number ("BAN") and entering the information into the collocation database.

Once all of the information is properly documented and entered into to the database, the CPMC determines which engineers (wire center specific) should receive the request.

Once all of the data has been thoroughly validated as being free of errors or questions, the CPMC forwards the work package information on to the appropriate engineers: The engineer who works in the Common Systems Planning Engineering Center ("CSPEC") and Interoffice Facility (IOF) Planner.

Once the CSPEC planner receives the work request from the CPMC, a Common Planning Document ("CPD") is opened. This database tracks all of the necessary information (material and labor) pertinent to each and every job. The CSPEC planner creates a CPD regardless of whether additional cable racking is required for a CLEC to CLEC request because all jobs require a CPD opened to track work.

Once the CPD is opened and populated with the scope of the job (synopsis of job), dates associated with the job, and the funding authorization for the job, the CSPEC planner will hand the job off to the IOF engineer for actual design. The IOF design engineer looks at the Central Office Equipment Facility Management ("COEFM") system, requests a "walk-through" of the central office in question, designs the job based on records and walk through report, and creates the design work package ("DWP"), which states what work is required.

Q. HOW DOES QWEST RECOVER COSTS AND PROVIDE EQUITABLE DISTRIBUTION OF THE COSTS ASSOCIATED WITH DEDICATED CABLE RACKING FOR ITS DIRECT CLEC TO CLEC OPTION?

In an attempt to recover costs and to provide an equitable distribution of the costs associated with dedicated cable or fiber racking for CLEC to CLEC direct connection, Qwest assumes a very small amount of footage (20 feet) five percent of the time, shared among three CLECs. This portion of the non-recurring costs amounts to four inches of new cable racking per CLEC to CLEC request. The reason Qwest chooses this cost recovery method over a per foot cost is so the first CLEC that requires the new cable or fiber racking will not bear the entire cost associated with the new cable or fiber racking that will inevitably be used by other CLECs. For

example, if CLEC A requests a CLEC to CLEC direct connection with CLEC C, the required cable or fiber racking, if on a per foot cost, would be absorbed by CLEC A. Later, if CLEC B requests to connect with CLEC E, the new cable or fiber racking constructed during the CLEC A to CLEC C job would be considered existing cable or fiber racking and CLEC B would be charged a smaller recurring per foot cost. Using this per foot example, the cost of the new cable or fiber racking cannot be distributed equitably among all CLECs because the cable or fiber racking installed during the CLEC A to CLEC C job would be considered existing for all jobs thereafter. On the other hand, Qwest's assumptions provide a more equitable way to distribute the costs among CLECs, in keeping with the FCC's theory that the first CLEC should not bear the entire cost associated with new construction specific to collocation.

Q. WHAT RATE ELEMENTS ARE SPECIFIC TO CLEC TO CLEC DIRECT CONNECTION IN THIS DOCKET?

A. The flat charge for design engineering and the fiber flat charge for design engineering are included in the CLEC to CLEC direct connection set of elements. The fiber flat charge includes necessary fiber management systems (special cable racking for fiber) and engineering a fiber path from one CLEC to another CLEC. The standard flat rates include metallic type cable racking only.

Q. ARE THERE OTHER RATE ELEMENTS THAT ARE SPECIFIC TO THE CLEC TO THE CLEC DIRECT CONNECTION OPTION IN THIS DOCKET?

A. Yes, the other rate elements included in the CLEC to CLEC direct connection option are cable racking, fiber racking, and cable holes (if applicable). Fiber is placed in a fiber management system (plastic cable racking specifically designed for fiber) in the central office. Fiber cannot be placed in standard metallic racking because it is much more delicate than copper cable. Placing fiber in standard metallic cable racking along with metallic cable would destroy the fiber due to the weight of metallic cable.

If a CLEC to CLEC direct connection is requested between two different floors in a central office, the cabling would be run between floors, thus requiring the opening and closing of a cable hole.

C. CLEC TO CLEC CROSS-CONNECTS AT AN ICDF

Q. PLEASE DESCRIBE CLEC TO CLEC CROSS-CONNECTIONS AT AN ICDF OPTION.

A. CLEC to CLEC cross-connections allow CLECs the capability to order a cross-connection from its collocation space in a Qwest premises to its non-adjacent collocation space(s) or to another CLECs collocation within the

same Qwest premises at an Interconnection Distribution Frame ("ICDF"). This is accomplished using the CLEC's Connecting Facility Assignment (CFA) terminations residing at the same ICDF and at the same service rate level.

In addition, the CLEC is responsible for providing the carrier facility assignment ("CFA") for each CLEC. The ASR must also include a request for regeneration, if required. Once the Qwest Customer Communications Technician ("CCT") designs the circuit, the CLEC receives a Design Layout Record ("DLR"). The DLR provides the CLEC with the exact location of the cross-connect in the central office.

Furthermore, CLEC to CLEC cross-connections provide a connection for collocation element to collocation element combination only and not for individual UNE combinations.

Q. WHAT NETWORK COMPONENTS MAKE UP THE RATE ELEMENTS FOR CLEC TO CLEC CROSS-CONNECTIONS?

A. The network components involved with CLEC to CLEC cross-connections are the provisioning process and the cross-connection (jumper) at the ICDF. These rate elements are reflected in the cost study filed by Ms. Million.

Q. WHAT NETWORK TASKS GO INTO THE CLEC TO CLEC CROSS CONNECT PROCESS?

A. A CLEC to CLEC cross-connect is provisioned when a CLEC submits an Access Service Request ("ASR"). An ASR must contain the appropriate carrier facility assignment ("CFA") for both CLECs. An ASR must also contain a request for regeneration, if needed.

Once Qwest receives an ASR for CLEC to CLEC cross-connections at the ICDF, the Qwest Service Delivery Coordinator ("SDC") who works in the Qwest Wholesale Service Delivery Center verifies and validates all of the information necessary specific to the element the CLEC is ordering. The SDC also assigns an order number, creates a circuit identification number, populates all of the critical dates associated with the order, and issues the order to the Integrated Access Billing System ("IABS"). After the order appears in IABS, the SDC populates all necessary screens and verifies all information, such as class of service, Universal Service Order Class ("USOC"), and any other additional information needed. Once all of the information is populated in IABS, the information flows into the Service Order Analysis and Control ("SOAC") system. This system automatically flows the order into Trunks Integrated Record Keeping System ("TIRKS") and the Service Order Processors (i.e., SOPAD).

After all of the up-front processes are complete, a Qwest Customer Communications Technician ("CCT") Screener in the Qwest Consolidated Design Center ("CDC") assigns specific orders to a Qwest CCT Designer.

The Qwest CCT Designer pulls the order from their specific assigned workload or list and begins the design process. The Qwest Design CCT pulls an order up in SOPAD to verify what type of service has been ordered and to look for any specific instructions regarding the order. Once the Design CCT has absorbed the information from SOPAD, the designer will pull up the Work Authorization ("WA") screen in TIRKS and populate the order number that was located earlier in SOPAD. The Qwest designer will move from the WA screen to the Design Related Information screen in TIRKS; this screen provides the CFA information. The designer verifies that all information populated on this screen is accurate and reflects the exact information needed to process this request.

In addition to verifying and populating the information mentioned above, the designer then moves to the Loop Administration screen in TIRKS to get the exact A to Z locations of the circuit. Once these steps are complete, the designer moves to the Circuit Detail ("CD") screen to design the circuit using the A to Z locations and assigns the path, the equipment, and the ties used for connectivity in an office. Once the design is complete, the designer moves to the distribution screen in TIRKS and sends the Design Layout Record to a specific CLEC location (i.e. a designated printer). After the DLR is sent out the designer issues the order into the balance of the service flow. This flow includes the dispatch center where the work is assigned to a

central office technician ("COT") who will run the jumper from one location on a frame to another location on a frame. The order the COT receives will depict the actual design and location the Qwest CCT created, thus allowing the COT to know exactly where in the central office to run the jumper.

Q. CAN THE CLEC ELECT TO RUN ITS OWN JUMPERS AT THE ICDF?

A. Qwest not only offers but also welcomes CLECs to run their own cross-connects at the ICDF. The CLEC to CLEC cross-connect fee is applied only if the CLEC requests Qwest to run the jumpers for them. In that case, Qwest is recovering the costs associated with the entire provisioning process including its central office technician ("COT") running the jumper on the CLECs behalf. If the CLEC chooses to run its own jumpers, no order is necessary.

Both CLEC to CLEC options are included in the elements used in Ms. Million's cost study.

IV. LINE SHARING

A. LINE SHARING DESCRIPTION AND BACKGROUND

Q. PLEASE BRIEFLY EXPLAIN LINE SHARING.

A. In order to understand Loop Splitting and UNE-P Line Splitting, it is necessary to understand line sharing in its entirety. From a technical perspective, Line Sharing, Line Splitting, and Loop Splitting are exactly the same thing (blocks, tie pairs, cross-connects and splitters in the central office). My testimony discusses these elements in depth.

Through the functional separation of the voice frequency from the data frequency, one loop can carry both voice and data traffic, thus enabling the different types of traffic to be carried by two different telecommunications carriers. Line sharing is the joint and simultaneous use by two different telecommunications carriers of distinct frequency ranges within a single loop. In a line sharing arrangement, Qwest provides voice service to the end-user using the voice band frequencies (4KHz and below), while the CLEC/DLEC (data local exchange carrier) provides data service on the frequency range above the voice band (e.g., 25 kHz and above).

Currently, line sharing is only possible in situations where CLECs and data local exchange carriers ("DLECs") intend to provide a data service that does not significantly degrade the voice service being provided by Qwest. Given current technology, many types of data services, including SDSL and HDSL, cause unacceptable levels of interference to voice service being carried on shared lines. The FCC recognized this in its "Line Sharing Order" and

determined that only three types of data services, ADSL being one, currently are compatible with voice service in a line-sharing environment.[1] These xDSL technologies do not use the frequencies immediately above the voiceband, preserving them as a "buffer" zone to ensure the integrity of voiceband traffic. ADSL technologies, including the relatively new Universal ADSL Working Group (UAWG) "G.Lite" standard, as well as Rate-Adaptive DSL and Multiple Virtual Lines (MVL) transmission systems reserve the voiceband frequency range for non-DSL traffic. Not every xDSL technology, however, avoids use of the voiceband frequency range. HDSL and SDSL are two systems that utilize voiceband frequencies. xDSL transmission systems that use the voiceband frequency range are not generally suitable for line sharing.

Q. PLEASE DESCRIBE HOW A TRADITIONAL VOICE CALL IS ROUTED THROUGH THE NETWORK WITH NO LINE SHARING.

A. A normal voice call comes in to a central office from a home, business, or other outside location on a loop that, depending on the type of frame in the central office, is connected to a COSMIC[2] frame or Main Distribution Frame ("MDF"). On the frame, the voice call cross-connects to either the Office

[1] In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Provisions of the Telecommunications Act of 1996, CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 98-98 at para. 71 (Rel. Dec. 9, 1999) (Line Sharing Order)

Equipment ("OE") side of the COSMIC or MDF, or connected through an Intermediate Distribution Frame ("IDF") to the OE. From there, the voice call is routed to the switch, which is connected to the Public Switched Telephone Network ("PSTN"), thereby allowing the call to route to its intended destination.

Q. PLEASE DESCRIBE HOW A TRADITIONAL VOICE CALL IS ROUTED FOR A CLEC/DLEC THAT HAS A COLLOCATION SPACE WITHIN A CENTRAL OFFICE.

A. When a CLEC/DLEC is collocated, a voice call comes in to the central office from a home, business, or other outside location on a loop (known as an outside plant pair) to the COSMIC or MDF, as described above. However, the difference between a call routed through Qwest's network and a call routed through a CLEC/DLEC network is the cross-connect on the COSMIC or MDF. For example, in the Qwest network, the cross-connect (at the COSMIC or MDF) is placed from the outside plant pairs to the Qwest office equipment ("OE") block that routes the call to Qwest's switch. In contrast, when a call is routed to a CLEC/DLEC collocation site, a cross-connect is placed from the outside plant block to a tie-pair block that appears on the IDF. A cross-connect is placed between the tie-pair block and the CLEC/DLEC 410 or 89-type block, located on the IDF. That 410 or 89-type CLEC/DLEC block is

[2] COSMIC is a trademark of LUCENT Technologies

connected to the collocation site via the CLEC equipment cabling. The CLEC/DLEC assumes responsibility for routing its calls to the intended destination.

Q. PLEASE DESCRIBE HOW A VOICE AND DATA TRANSMISSION ROUTE THROUGH THE NETWORK IN A LINE SHARING ARRANGEMENT.

A. Line sharing introduces new, unique requirements upon all parties involved in this type of arrangement. New equipment, cross connects, systems, and other complexities are introduced into the network in order to separately route voice and data traffic in a line sharing environment.

Generally, in a line sharing arrangement, the loop comes into a Qwest central office from a home, business, or some other outside location and connects to the COSMIC or MDF. From there, however, things begin to change. The loop cross-connects to a tie-pair block on the COSMIC or MDF. The tie-pair block appears on the IDF. A cross-connect is made from the block on the IDF to the splitter block that connects the line (voice and data) to the splitter shelf. The splitter separates the high-frequency data transmission from the low-frequency POTS voice transmission. The voice traffic is routed back through to a voice block on the IDF, the voice cross-connects back to a tie pair block that appears on a tie-pair block (OE) on the COSMIC or MDF, and then to the

Qwest switch. The data (high-frequency portion) is connected back to a data block on the IDF. The data block on the IDF cross-connects to the CLECs 410 or 89 type block on the other side of the IDF. CLEC/DLEC blocks are connected back to the collocation site via CLEC equipment cabling.

Q. PLEASE DESCRIBE THE PRIMARY PIECE OF EQUIPMENT THAT "SPLITS" THE VOICE AND DATA TRAFFIC.

A. As described above, this device is referred to as a splitter. It resides at both the central office and end-user locations. A splitter allows a single copper loop to be used for simultaneous voice and data transmission, potentially by different telecommunications carriers. Splitters usually come in two configurations: (1) a single splitter version designed for mounting at the end-user premise and (2) a multiple splitter version designed for mass terminations at the central office. POTS Splitters that reside in the central office (the multiple splitter version) are configured as bays, each of which can contain eight shelves or panels. Each shelf typically accommodates 96 shared lines, although this can vary depending on the manufacturer of the splitter. Splitters are passive devices requiring no external power source, yet they will still support lifeline services, such as 911, in the event of a power loss.

B. NETWORK ARCHITECTURE

Q. WHAT IS THE PRINCIPAL NETWORK ARCHITECTURE DECISION THAT MUST BE MADE PRIOR TO IMPLEMENTING A LINE SHARING ARRANGEMENT?

A. The principal decision a CLEC must make regarding line sharing network architecture is where to place the splitter within the central office. There are three options for splitter placement in Qwest's central office space: (1) placement of the splitter in a common area, (2) placement of the splitter on an IDF, or (3) placement of the splitter on an MDF. In addition to these options, the CLEC/DLEC can place the splitter in its own collocation area. Each alternative has unique costs, requirements, and benefits.

Regardless of whether the splitter is placed in a common area, within a central office, or within a CLEC/DLEC collocation space, placement of the splitter is referred to as "Splitter Collocation".

Q. DESCRIBE THE NETWORK ARCHITECTURE AND EQUIPMENT NEEDED WHEN PLACING THE POTS SPLITTER IN A COMMON AREA OF THE CENTRAL OFFICE.

A. When the splitter is placed in a common area of the central office, the shared loop comes in to the central office from an end-user premise and connects to

the COSMIC or MDF. The shared loop then is cross connected to an IDF which is, in turn, cross connected to a splitter located in a common area. At the splitter, the voice traffic is split from the data traffic, and the data traffic is routed back to an IDF where it is cross-connected to a DSLAM, which provides high speed data transmission and is located in the collocation area of the CLEC/DLEC. From there, the data traffic is routed to its intended destination over the CLEC/DLEC's network. The voice traffic also is routed from the splitter back to an IDF, but from there it is cross-connected back to the COSMIC or MDF. At the COSMIC or MDF, the voice traffic is cross-connected to a switch for routing to its intended destination over the PSTN. Exhibit GW-1, attached to my testimony provides a graphic representation of this option.

In this configuration, up to six cables must be placed in the central office: (1) between the COSMIC or Main Distributing Frame ("MDF") and the IDF for both voice and data traffic (called Interconnection Tie Pairs-ITPs), (2) between the IDF and the splitter for both voice and data traffic (included in the cost of the splitter options), (3) between the splitter and the IDF (or collocation area) for data traffic, (4) depending on the option chosen by the CLEC/DLEC, a fourth cable many need to be placed between the IDF and the collocation area of the CLEC/DLEC for data traffic (a termination), (5) between the splitter and the IDF for voice traffic (included in the cost of

the splitter options), and (6) between the IDF and the COSMIC or MDF for voice traffic (an ITP). Four cross-connects and three additional termination blocks, not to mention additional physical space, is required for placement of the splitter in this architecture. In addition, most of the necessary new cabling is specific to the installation of the splitters. All of these facilities placements require significant effort and cost to install.

When a network architecture that places the splitter in a common area is employed, the CLEC/DLEC can purchase the splitter itself or ask Qwest to procure it on the CLECs behalf. In either case, Qwest is responsible for the installation of the splitter in the common area and assumes responsibility for its maintenance and repair. The CLEC/DLEC must make special arrangements for test access to the splitter.

Q. DESCRIBE THE NETWORK ARCHITECTURE AND EQUIPMENT NEEDED WHEN PLACING SPLITTERS IN THE COLLOCATION AREA OF THE CLEC/DLEC.

A. Placement of the splitter in the collocation area of the CLEC/DLEC is much less complicated than placing the splitter in a common area of the central office because it requires significantly less equipment in the central office and, hence, involves substantially less installation time. For this reason, this

architecture results in shorter implementation time frames and significantly less cost to the CLEC/DLEC.

When the splitter is placed in the collocation area of the CLEC/DLEC, the shared loop comes in to the central office from an end-user premise and connects to the COSMIC or MDF. The loop is then cross-connected and routed to an IDF which, in turn, is cross-connected and routed to a splitter located in the CLEC/DLEC's collocation area. At the splitter, the voice traffic is split from the data traffic, and the data traffic is routed through a DSLAM to its intended destination over the CLEC/DLEC's network. The voice traffic, on the other hand, is routed back to the COSMIC or MDF via an IDF. From the COSMIC or MDF, the voice traffic is cross-connected to a switch for routing to its intended destination over the PSTN. Exhibit GW-2 provides a graphic representation of this option.

This architecture, therefore, requires placement of only four cables: (1) between the COSMIC or MDF and the ICDF (an ITP); (2) from the ICDF to the splitter for both voice and data traffic (a termination); (3) between the splitter and the ICDF (termination); and (4) to the COSMIC or MDF for voice traffic (an ITP). Four cross-connects and termination blocks will also be required. Much of the cabling, however, may already be in place in many central offices so that no additional installation costs are incurred. This is

because ITPs and terminations are commonly used UNEs in any type of collocation.

Where the splitter is located in the CLEC/DLEC's collocation area, the CLEC/DLEC purchases and installs the splitter and assumes responsibility for its maintenance and repair. As such, the CLEC/DLEC has the ability to install its own test access devices and has complete control over acquisition and installation of its splitters. This architecture affords the CLEC/DLEC the ability to take greater control over its equipment and timing, reducing reliance on Qwest.

C. CROSS CONNECTS

Q. DOES THE FCC RECOGNIZE THAT QWEST CAN RECOVER COSTS ASSOCIATED WITH INSTALLING CROSS-CONNECTS?

A. Yes. In the Line Sharing Order, the FCC stated (at paragraph 145):

> We would expect that the costs of installing cross connects for XDSL services in general would be the same as for cross connecting loops to the competitive LECs' collocated facilities, particularly where the splitter is located within the incumbent LEC's MDF. Accordingly, we find it reasonable to establish a presumption that, where the splitter is located within the incumbent LECs' MDF, the cost for a cross connect for entire loops and for the high frequency portion of loops should be the same. We would expect the states to examine carefully any assessment of costs for cross connections for xDSL services that are in excess of the

> costs of connecting loops to a competitive LECs' collocated facilities where the splitter is located within the MDF.

In making this statement, the FCC assumed that the splitter would be located "within" the ILECs' MDF or the COSMIC. In most instances, the CLEC/DLEC has chosen a bay-mounted splitter that will be located in close proximity to the IDF. However, the FCC stated (at paragraph 145):

> If the splitter is not located within the incumbent LEC's MDF, however, then we would expect the states to allow the incumbent LEC to adjust the charge for cross connecting the competitive LEC's xDSL equipment to the incumbent LECs' facilities to reflect any cost differences arising from the different location of the splitter, compared to the MDF. We would expect that this amount would be only minimally higher than for cross connecting a splitter located within the MDF to the competitive LEC's xDSL equipment.

This is exactly what Qwest seeks to do here.

Q PLEASE DESCRIBE THE PLACEMENT AND NUMBER OF CROSS-CONNECTS NECESSARY TO IMPLEMENT THE TWO DIFFERENT NETWORK ARCHITECTURES (POTS SPLITTER IN COMMON AREA OR COLLOCATION SPACE) DESCRIBED ABOVE.

A. As described above, when the splitter is placed in a common area, a total of four cross-connects, as many as six cables, and three termination blocks are required to implement line sharing. By contrast, when the splitter is placed in the collocation area of the CLEC/DLEC, four cross-connects, four

cables, and two termination blocks are required. The cost of cross connects and related equipment is therefore significantly less when the splitter is placed in the collocation area of the CLEC/DLEC.

D. SPLITTER COLLOCATION

Q. IF THE SPLITTER IS PLACED IN A COMMON AREA OF THE CENTRAL OFFICE, HOW DOES A CLEC/DLEC REQUEST SPLITTER PLACEMENT?

A. To initiate splitter placement, the CLEC/DLEC submits an application form to Qwest requesting line sharing. The CLEC/DLEC must provide the following standard information to Qwest on the application form:

1. The identity of the party that will provide the requisite cable and splitter(s).
2. The manufacturer name and serial number for the splitter(s).
3. The quantity of splitters to be placed in the central office.
4. The CLEC/DLEC's forecasted line sharing requirements.
5. The CLEC/DLEC's shelf requirements for the splitter(s).
6. The CLEC/DLEC's cable requirements, whether they are new or existing cables, to support the splitter placement. If the CLEC/DLEC intends to reuse cables, the CLEC/DLEC must identify the intended

cable pairs and their cable facility assignments (CFA), as well as whether it wants the cable to be shielded.

7. Any special cable requirements.

If establishment of a splitter collocation is feasible in the subject central office, Qwest prepares a quote identifying the charge for the placement. Before Qwest will begin installation of the splitter, the CLEC/DLEC must pay 100 percent of the quoted charge in advance.

Obviously, the CLEC/DLEC will not need to submit an application to place a splitter in its collocation area. If the CLEC/DLEC needs additional collocation space to accommodate placement of a splitter, it must submit a standard collocation request.

E. WORK NEEDED TO COMPLETE SPLITTER COLLOCATION

Q. PLEASE DESCRIBE THE PRELIMINARY ENGINEERING PROCESS USED BY QWEST WHEN ESTABLISHING A SPLITTER COLLOCATION, AND STATE THE AMOUNT OF TIME THAT IS REQUIRED TO COMPLETE THIS WORK.

A. When Qwest receives a request for splitter collocation, it engages in what is known is "Preliminary Engineering" of a job order. First, an in-house "Detail Engineer" retrieves detailed drawings from a database of the central office where the collocation has been requested. These drawings identify the central office layout, available space, and location and type of all equipment and supporting infrastructure. They show important details, such as cable racking that may be used for splitter collocation, type of existing equipment, and the type of bay infrastructure in a central office. The Detail Engineer reviews these drawings to determine what, if any, modifications and/or additions will be needed to accommodate the requested splitter collocation. After reviewing the drawings, the Detail Engineer also determines whether there are any on-going construction projects, or pending engineering jobs at this central office that should also be included in the drawings. If so, the Detail Engineer revises the drawings to reflect these projects/jobs and their location(s) within the central office. It is essential to reflect any ongoing jobs in the central office, as those jobs may affect the final configuration of the splitter collocation.

Based on the actual experience of planning splitter collocations within Qwest's territory, this preliminary engineering process requires, on average, about two hours to complete. Based on my engineering experience, I believe this to be an appropriate time interval to use in Ms. Million's cost study.

Q. PLEASE DESCRIBE THE WALK-THROUGH OR FIELD SURVEY THAT AN ENGINEER MUST CONDUCT WHEN ESTABLISHING A POTS SPLITTER COLLOCATION.

A. After making any necessary changes to the central office drawings, the Detail Engineer hands them off to a Field Engineer. It is the Field Engineer's responsibility to conduct a walk-through or field survey of the subject central office. The field survey serves two important purposes. First, the survey is necessary to permit a comparison of the drawings to the actual physical configuration of the central office. Because of rapid growth and the fast pace at which changes are being made in Qwest's central offices, at present Qwest engineers must conduct this type of comparison every time a CLEC/DLEC submits a splitter collocation request.

Second, a field survey is needed to ensure that the space designated for the splitter collocation is adequate. This evaluation requires activities by a Field Engineer. For example, the Field Engineer must conduct a load assessment to ensure that the weight-bearing capacities of the floor and ceiling where the collocation will reside meet the requirements of OSHA and NEBS. This evaluation requires the engineer to coordinate with other Qwest personnel whose responsibility it is to maintain the structural integrity of the property. The engineer also must take detailed cable measurements, identify the routing paths for the cables that will be used in the collocation, and determine if any

augments or additions of infrastructure are necessary. For example, additional cable racking may be needed.

In discussions with Field Engineers who have performed the actual field surveys for splitter collocation, it has been established that this process requires, on average, about five hours to complete. This interval does not include the travel time, which is an unavoidable part of the field survey process and can vary substantially from one central office to the next. Based on my experience, that is a reasonable estimate.

Q. AFTER COMPLETING THE PRELIMINARY ENGINEERING FOR A POTS SPLITTER COLLOCATION REQUEST, MUST QWEST PERSONEL PERFORM THE ACTUAL ENGINEERING FOR THE JOB?

A. Yes. Preliminary engineering relates only to the planning that is necessary for every splitter collocation job. The actual engineering phase involves the preparation of the detailed work prints and project management of the construction job. These phases are separate and distinct, and each phase is necessary for every request for splitter collocation that Qwest receives from a CLEC/DLEC.

Q. PLEASE DESCRIBE THE SPLITTER COLLOCATION ENGINEERING FUNCTION THAT QWEST MUST PERFORM, AND STATE THE AMOUNT OF TIME THAT IS REQUIRED TO COMPLETE THIS WORK.

A. Upon completing the field survey, the Field Engineer returns the central office drawings to the Detail Engineer with any corrections and/or updates resulting from the field survey. The Detail Engineer in turn makes those revisions to the drawing database. In many instances, jobs generated by splitter collocation requests will necessitate that database drawings be changed to reflect the locations of the cable placement, bays, cable racking, frames, floor bracing, and ceiling bracing. The Detail Engineer then orders the equipment needed for the splitter collocation job based on the revised drawings that now reside in the database. After ordering the equipment, the Detail Engineer is responsible for tracking its shipping and delivery.

As part of the engineering of a splitter collocation, a Detail Engineer must complete database forms to lay out the circuit count and configurations for the customer. The configurations specific to each customer are built into the SWITCH database to facilitate order processing.

After inputting the information into the SWITCH database, the Detail Engineer must complete the final engineering of the job. This part of the process requires the engineer to confirm receipt of the equipment and materials needed to complete the splitter collocation. The engineer must then "engineer" each circuit, which requires making virtual connections for each circuit through the database. If a customer orders 200 DS0s, for example, the detail engineer must establish 200 virtual connections in the database.

The engineering phase of splitter collocation requires, on average, about eight hours to complete as established by the Detail Engineers, in various work groups, who have performed the actual splitter collocations in Qwest central offices. This estimate is used in Ms. Million's cost study.

Q. WHAT IS THE FINAL PHASE OF THE ENGINEERING PROCESS THAT MUST BE COMPLETED BY QWEST WHEN ESTABLISHING A SPLITTER COLLOCATION?

A. The final phase involves verifying that the job has been engineered properly, constructed accurately, and that all documentation associated with the job is completed. As part of this process, the Detail Engineer must verify that all circuits have been properly assigned and that the cable and hardware have been properly placed. The engineer also must verify that the circuits have been transferred from the TIRKS database and established in the SWITCH

database. The Detail Engineer must document the location of the splitter and all associated cable counts on forms in a spreadsheet format. These forms are provided to the CLEC/DLECs and are essential to the process of placing orders for line sharing.

The experience of the Detail Engineers who have established splitter collocations determined that this final phase of the process requires, on average, approximately seven hours of engineering to complete a request.

Q. BASED ON THE DESCRIPTIONS OF THE WORK THAT MUST BE PERFORMED BY QWEST, HOW MANY HOURS ARE YOU RECOMMENDING BE INCLUDED IN A COST STUDY FOR A SPLITTER COLLOCATION?

A. Splitter collocation requires approximately twenty-two hours of work. Included in the twenty-two hours are (1) two hours for preliminary engineering, (2) five hours for a field survey, (3) eight hours for engineering, and (4) seven hours for job verification and completion of job forms and paper work. However, as efficiencies increase with repetition, Qwest has recommended that the cost study use 20 hours as a reasonable, conservative estimate of the amount of time that Qwest must invest to complete a splitter collocation. I support that recommendation based on my experience.

Q. WILL YOU OUTLINE THE NECESSARY STEPS TO INSTALL A SPLITTER SHELF INTO AN EXISTING RELAY RACK?

A. Yes. The actual installation of a splitter shelf requires the following activities:

1. Qwest's installation personnel must inventory all of the equipment that is required for the splitter installation.
2. All of the auxiliary framing and associated framework and relay racks must be placed. This activity requires the framework to be drilled, mounted and secured to the overhead structure and the floor of the central office.
3. The installer must unpack the splitter shelf and mount it into the relay rack securing it to the relay rack with mounting screws.
4. The installer must install the corresponding number of connecting blocks on the MDF or the COSMIC frame.
5. The installer must run cable from the connecting blocks vertically up to the ladder rack. Then the cable is routed through the central office to the relay rack that houses the splitter shelf. The cable must be secured to the relay rack and at all locations where the cable is loose and could be torn away from the connections.
6. The installer must terminate the cable at the connecting blocks. Before the cable can be terminated, each individual wire has to be stripped of

insulation, spread apart from the binder groups, and each individual wire must be wrapped down on the block one at a time.

7. The cable must be connected to the splitter shelf.
8. Continuity testing is conducted to ensure that there is a continuous connection between the splitter shelf and the connecting block.
9. The connecting blocks, splitter shelves and relay racks are stenciled.
10. Finally, an installer must revise all database drawings to reflect the changes in the central office, update existing records, and provide the updated records to the appropriate parties.

F. USE OF COSMIC FRAMES

Q. IS IT CORRECT TO ASSUME THAT ONLY MDFS WILL BE UTILIZED AND THAT COSMIC FRAMES WILL NOT BE USED?

A. No, real-world central offices include both MDFs and COSMIC frames. Qwest has been using MDFs in its central offices for decades and has been using COSMIC frames for the past 25 years. COSMIC frames, while similar to MDF's, utilize the Short Jumper Concept to provide a cross-connect point in a digital environment. Because they are smaller than MDFs, COSMIC frames allow Qwest to use the limited space within its central offices more efficiently. These frames allow for shorter single-sided jumper operations as contrasted with MDFs that utilize the traditional double-sided arrangement.

Without these frames, Qwest's overall operational costs would be higher. In addition, the space that Qwest saves through the use of COSMIC frames reduces overall building costs.

Q. WHY HAS AN INTERMEDIATE DISTRIBUTION FRAME (IDF) BEEN INCLUDED AS PART OF THE LINE SHARING ARCHITECTURE?

A. An IDF has been included in the architecture because a transition from the cables that plug into the splitter itself to the tie cables is physically needed. In other jurisdictions, CLEC/DLEC testimony has erroneously asserted that line sharing can be provided by just placing a 100 pair tie cable from the splitter location to the MDF or COSMIC frame for voice. Once that cable is in place, then placing another 100 pair cable for voice and data combined, and finally, placing a 100 pair tie cable from the splitter to the collocation area to carry data. This assertion ignores the fact that in a 96-line splitter, there are twelve 25 pair cables that must be connected into the back of each splitter. In this arrangement, there are four cables that carry data, four that carry voice, and four that carry combined voice and data. These twelve cables are not tie cables, but must "physically" connect to the three 100-pair tie cables that connect to the collocation area and the MDF or COSMIC frame. The IDF is used to make that physical connection.

G. AMOUNT OF LADDER RACKING REQUIRED FOR SPLITTER COLLOCATION

Q. HOW MUCH LADDER RACKING IS REQUIRED TO PROVIDE SPLITTER COLLOCATION?

A. Ladder racking is used in Qwest's central offices to place and secure the cables that are routed from the relay racks. Ladder racking is located above the relay racks, which house different types of equipment. Qwest has conducted a sample survey in central offices in which line sharing is being provisioned, which establishes that the actual average length from the main frame to the splitter location is 107.9 feet. Qwest is recommending the average length be rounded to a figure of 100 feet for purposes of this cost study. This assumption is based on actual lengths in the central offices studied, as illustrated in Exhibit GW-3. It offers a simple and relatively accurate representation of the costs Qwest will incur.

H. RELAY RACK CONFIGURATION

Q. HOW SHOULD A RELAY RACK BE CONFIGURED TO HOLD SPLITTER SHELVES?

A. While a relay rack can hold up to 14 splitter shelves, Qwest recommends a 60 percent fill rate for each relay rack, which is eight splitter shelves per relay rack for purposes of this cost docket. This figure is a conservative assumption supported by what is actually occurring in Qwest's central offices today. Our research shows that in Qwest central offices where splitters have been installed, there is currently an average of only three splitter shelves per relay rack. This amounts to an actual average utilization rate of less than 22 percent. As such, high utilization of relay racks used for the splitter collocation will probably never be achieved. Keeping these factors in mind, Qwest is recommending that a percent fill rate for relay rack utilization be set at 60 percent. While higher than the actual average, it can be used as an effective and reasonable representation.

I. SUMMARY OF TESTIMONY ON LINE SHARING

Q. PLEASE PROVIDE A SUMMARY OF YOUR TESTIMONY ON LINE SHARING.

A. With Line Sharing, Qwest provides voice service to the end-user using the voice band frequencies (4 kHz and below), while the CLEC/DLEC (data local exchange carrier) provides data service on the frequency range above the voice band (e.g., 25 kHz and above).

In addition, based on my review of the previously filed cost study, and my background in implementing line sharing arrangements, the assumptions and elements used in the previously filed line sharing cost study are consistent with, and reflect the real world deployment of line sharing.

V. LINE SPLITTING

Q. PLEASE DESCRIBE LINE SPLITTING.

A. In line sharing, Qwest provides the voice services to the end user customer while the CLEC/DLEC provide only the data services. However, in line splitting, Qwest is providing neither voice nor data. Qwest simply makes available the shared line, as a UNE-P POTS service, to a CLEC, who in partnership with a DLEC, offers voice and data services over the shared line. The CLEC will offer the voice services while the DLEC offers the data.

Q. HOW DOES THE NETWORK ARCHITECTURE OF LINE SHARING DIFFER FROM THAT OF LINE SPLITTING?

A. Line Splitting is essentially identical to Line Sharing in architecture and network configuration and follows the same guidelines for collocation of equipment as Line Sharing.

VI. LOOP SPLITTING

Q. PLEASE DESCRIBE LOOP SPLITTING.

A. Under a loop splitting arrangement, Qwest only provides an unbundled loop to a CLEC. That CLEC, in partnership with another entity, will then offer voice and data services over that loop. The CLEC and its partner will configure the loop as necessary. Again, Qwest provides only an unbundled loop.

Q. HOW DOES THE NETWORK ARCHITECTURE OF LOOP SPLITTING DIFFER FROM THAT OF LINE SHARING AND LINE SPLITTING?

A. Loop Splitting is quite similar to Line Sharing in architecture and network configuration and follows the same guidelines for collocation of equipment as Line Sharing with a notable exception: that Qwest provides only the unbundled loop with no UNE-P elements. Exhibit GW-4 provides a graphical comparison of Line Sharing, Line Splitting and Loop Splitting; this exhibit illustrates the similarities and differences between the three architectures.

VII. ASSUMPTIONS REGARDING DARK FIBER

A. DARK FIBER DESCRIPTION AND BACKGROUND

Q. PLEASE BRIEFLY EXPLAIN WHAT UNBUNDLED DARK FIBER IS.

A. Unbundled Dark Fiber ("UDF") is a deployed, unlit strand or pair of fibers within a fiber optic cable that connects two points within Qwest's network. UDF is a single, existing transmission path that terminates on a Qwest Fiber Distribution Panel ("FDP") or equivalent device, between two Qwest wire centers, between a Qwest wire center and a CLEC wire center, or between a Qwest wire center and an outside plant structure or end-user premises.

Q. WHAT DOES THE FCC SAY ABOUT UNBUNDLING DARK FIBER?

A. Section 271(c)(2)(B)(v) of the Act requires a Bell Operating Company ("BOC") to provide "local transport from the trunk side of a wireline local exchange carrier switch unbundled from switching or other services."[3]

In the UNE Remand Order, the FCC identified dark fiber as a new unbundled network element that must be unbundled in both the loop plant and interoffice facilities.[4]

---

[3] *See* 47 U.S.C. § 271(c)(2)(B)(v); *see also* 47 C.F.R. § 51.319(d) ("An incumbent LEC shall provide nondiscriminatory access . . . to interoffice transmission facilities on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service.").

Q. PLEASE LIST THE UNBUNDLED DARK FIBER ELEMENTS THAT ARE RELEVANT IN THIS DOCKET.

- **UDF-Interoffice Facility** ("IOF") provides a deployed route between two Qwest wire centers. Exhibit GW-5 provides a graphic representation of this configuration. The specific elements of this category of UDF are:

  - Order Charge per 1ST Pair /Route/Order
  - Order Charge each additional Pair /Same Route
  - Termination, Fixed Per Pair/Office
  - Fiber Transport, Per Mile/Pair
  - Fiber Cross-Connect Per Pair/Office

- **UDF-Loop** provides a deployed route between a Qwest wire center and the end-user premises. Exhibit GW-6 provides a graphic representation of this option. . The specific elements of this category of UDF are:

  - Order Charge Per 1st Pair/Route/Order
  - Order Charge each additional Pair/Same Route
  - Termination, Fixed Per Pair/Office
  - Termination, Fixed Per Route/Pair
  - Fiber Loop, per Route/Per Pair
  - Fiber Cross-Connect Per Pair/Office

[2] Third Report and Order and Fourth Further Notice of Proposed Rulemaking, *In the Matter of the Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, FCC 99-238 at ¶ 326 (rel. Nov. 5, 1999) ("*UNE Remand Order*").

- **Extended UDF** (E-UDF) provides a deployed route between a Qwest wire center and a CLEC wire center. Exhibit GW-7 shows an E-UDF configuration. The specific elements of this category of UDF are:

-

  - Order Charge per 1st Pair/Route/Order
  - Order Charge each additional Pair /Same Route
  - Termination, Fixed Per Pair/Office
  - Termination Fixed Per Pair/Premises
  - Fiber Transport, Per Route/Per Pair
  - Fiber Cross-Connect Per Pair/Office

- **Single Strand UDF-Interoffice Facility** ("IOF") provides a deployed route between two Qwest wire centers. Exhibit GW-5 provides a graphic representation of this configuration. . The specific elements of this category of UDF are:

  - Order Charge, Per First Strand/Route/Order
  - Order Charge, Each Additional Strand/Same Route
  - Termination, Fixed Per Strand/Office
  - Fiber Transport, Per Mile/Strand
  - Fiber Cross-Connect Per Strand/Office

- **Single Strand UDF-Loop** provides a deployed route between a Qwest wire center and the end-user premises. Exhibit GW-6 provides a graphic representation of this option. . The specific elements of this category of UDF are:

- Order Charge, Per First Strand/Route/Order
- Order Charge, Each Additional Strand/Same Route
- Termination, Fixed Per Strand/Office
- Fiber Transport, Per Mile/Strand
- Fiber Cross-Connect Per Strand/Office

- **Single Strand Extended UDF** (E-UDF) provides a deployed route between a Qwest wire center and a CLEC wire center. Exhibit GW-7 shows an E-UDF configuration. . The specific elements of this category of UDF are:

  - Order Charge, Per First Strand/Route/Order
  - Order Charge, Each Additional Strand/Same Route
  - Termination, Fixed Per Strand/Office
  - Fiber Transport, Per Mile/Strand
  - Fiber Cross-Connect Per Strand/Office

- **Initial Records Inquiry**
  - **Simple**
  - **Complex**

- **Field Verification and Quote Preparation**
- **Engineering Verification**
- **Unbundled dark fiber splice**

B. DARK FIBER ELEMENTS

INITIAL RECORDS INQUIRY

Q. PLEASE DESCRIBE WHY THE INITIAL RECORDS INQUIRY ("IRI") IS AN ELEMENT OF UDF?

A. The first step of the UDF ordering process is the inquiry process. The UDF inquiry determines if UDF is available between any two requested locations. For example, (1) between two Qwest wire centers, (2) between a Qwest wire center and an end user premises, (3) between a Qwest wire center and an outside plant structure, or (4) a Qwest wire center and a CLEC wire center. The CLEC must submit a UDF inquiry through its account team specifying the two locations and the specific number of fibers it is requesting. After receiving a request and conducting a UDF inquiry, there are three possible Qwest responses: (i) that UDF is available to satisfy the CLEC's request, (ii) that UDF is not available to satisfy the CLEC's request, or (iii) that, while some fiber is available, the CLEC request is denied on the ground that Qwest must retain maintenance spares in the specified route for emergency use as part of its obligations as a carrier of last resort.

There are two categories of IRI: Simple and the Complex.

Q. PLEASE EXPLAIN A SIMPLE IRI AS AN ELEMENT OF UDF.

A. A simple IRI begins after receipt of an e-mail document from the wholesale service support center. The Collocation Project Management Center ("CPMC") prints the e-mail and forms from the CLEC's request, creates a job folder, and enters the information into the dark fiber database. Once all of the information is properly documented and entered into to the database, the CPMC determines which engineer should receive the request.

Upon receiving the document from the CPMC, the engineer checks the request for completeness and accuracy. The primary focus of this step is to validate the Common Language Location Identification codes ("CLLI"). This step also involves checking the number and type of fibers requested, to determine whether it involves a single strand or a pair, make note of the required response date, and determine whether the customer is requesting fiber reservations.

The engineer uses Qwest's Trunks Integrated Record Keeping System ("TIRKS") to check the availability of spare fibers. The TIRKS database is an operational support system ("OSS") developed to mechanize circuit provisioning functions including circuit order control, circuit design, selection and assignment of equipment and facilities. In order for the engineer to check the TIRKS database, the engineer will log into the applicable TIRKS region,

make note of the A and Z locations requested by the CLEC, move from the logon screen to the CBLP screen (this screen provides high level representation of fiber availability). The engineer will type in the appropriate eight-character CLLI codes for the A and Z locations (from one location to another) requested. For IOF-UDF, the shortest most direct routes are examined first; if spare fibers are not available, more complex routing possibilities are researched. These complex routes could involve longer paths that might transit through several other central offices. For UDF-Loop, the OSP tactical planner will also verify for multiple routes using TIRKS and all other appropriate OSP records.

If a path or route is available, the related information and route details such as mileage, cross connects, terminations and number of spare fibers available are documented on the IRI request. The completed form is returned to the CPMC for processing. In addition, the engineer will issue a Circuit Layout Order to reserve spare fibers if requested by the customer, per the customer's contract. The engineer will also document the order number on the IRI.

Q. PLEASE EXPLAIN A <u>COMPLEX</u> IRI AS AN ELEMENT OF UDF.

A. A complex IRI occurs when a UDF request specifies a splice location. If the IRI is complex, the Field Verification and Quote Preparation processes are required.

A complex request will incorporate the same job functions from the CPMC as the simple request process discussed in the previous paragraph.

Q. DOES QWEST INVESTIGATE ALTERNATE ROUTES WHEN SEARCHING FOR UNBUNDLED DARK FIBER AVAILABILITY?

A. Yes. If there is UDF available, the UDF Inquiry Response will contain up to five available UDF routes between locations the CLEC has specified. If additional routes are available, a Qwest Service Manager will notify the CLEC that additional routes exist.

FIELD VERIFICATION AND QUOTE PREPARATION

Q. PLEASE EXPLAIN FIELD VERIFICATION AND QUOTE PREPARATION ("FV/QP") AS AN ELEMENT OF UDF.

A. The OSP tactical planning engineer will create a Common Planning Document ("CPD") that will create an Engineering Work Order to have the requested facilities verified by the Qwest design engineer and construction forces. The technician will report the actual field conditions back to the OSP engineer via the CPD. This information is then passed back through the CPMC to the wholesale account team and on to the customer.

Q. PLEASE CLARIFY THE PROCESS FOR ORDERING A UDF FIELD VERIFICATION AND QUOTE PREPARATION?

A. The second stage of the process is the Field Verification and Quote Preparation ("FV/QP"). This step is required if the IRI is complex, or if a splice is requested. The FV/QP is also recommended if UDF reservations are requested.

Qwest will verify the spare UDF and splice locations and observe the facility or manhole for entrance methods. The FV/QP process also includes preparing the quote and delivery timeline. It also outlines access to the existing structure or splice location. The FV/QP form is submitted once the CLEC receives results from Qwest on IRIs.

Q. WHO PERFORMS THE FIELD WORK ASSOCIATED WITH A FIELD VERIFICATION?

A. A design engineer and a minimum of two fiber technicians perform this function.

Q. WHAT ARE THE FIELD FUNCTIONS PERFORMED FOR THE UDF FV/QP?

A. The design engineer verifies the availability of the physical facilities at the requested location. The fiber technicians will ready the site by traveling to the site, setting up equipment and work area protection, which includes: establishing traffic controls, placement of cones, and traffic control signs (i.e., "men working")

The fiber technician will remove manhole lid and ventilate the manhole with a blower. The technician will then test for explosive gases with a gas meter. If the manhole is filled with water—which is often the case—it will be pumped clear. Even in states with low amounts of precipitation, the water lines and water systems often drain into the underground system, causing water to enter manholes. After clearing the manhole, the technician will un-strap the splice case from the side of the manhole in order to bring it up into the environmentally controlled truck or trailer. The technician will open up the splice case and set up the splice tray by pulling it out of the case. Then each individual fiber must be identified. Following this, the second technician must travel to the next testing location (there could be several locations). If the second location is a manhole, the whole process must start over again.

If the next location is in a building, the second technician must gain access to the telephone room in order to access the FDP in that building; at this point, the second technician will establish communication with the first technician. Then,

the first technician sets up the light source equipment for testing connectivity. Once connectivity is identified, the equipment is removed, the manhole is closed up and the technicians travel back to their originating locations and report back to the design engineer. The information relating to this job is noted in the CPD and passed back to the CPMC. During the field verification, the design engineer, located in the field, will also draw a detailed manhole drawing.

Q. IS IT NECESSARY TO DO THE UDF FIELD VERIFICATION WHEN THE UDF REQUEST IS COMPLEX? IF SO, WHY?

A. Yes it is. It is imperative that a field verification take place when a complex type of unbundled dark fiber is requested. To reiterate, a complex UDF request consists of the following: UDF connections at an OSP structure, UDF-IOF mid-span splice point, or a UDF requests access at a splice point. It is also recommended, as stated above, that a field verification be performed when a CLEC is reserving UDF.

Field verification is the only reliable method of verifying records and qualifying actual outside plant facility availability. This same method is used by Qwest for its own fiber placement and use. The field verification also ensures that the facilities are not damaged and determines whether the conduit is physically available for use by the CLEC. Without a field verification, damaged conduit or facilities may not be discovered in a timely manner. Thus,

the purposes of completing a field verification cannot be attained through a review of records.

FIELD VERIFICATION (ENGINEERING VERIFICATION)

Q. BRIEFLY EXPLAIN WHAT AN ENGINEERING VERIFICATION IS.

A. An Engineering Verification ("EV") is done during the preliminary phase of the Field Verification and Quote Preparation if the CLEC requests Qwest to search for splicing availability (a splice location between the two points specified in the IRI) in a specified route. The EV will apply if the CLEC requests Qwest to research the records (OSP FM, CIMAGE, or paper records) to determine the availability of a splice in order to create connectivity between two locations.

Q. WHAT ARE THE ENGINEERING FUNCTIONS PERFORMED FOR THE ENGINEERING VERIFICATION?

A. The OSP tactical planner will look for an existing fiber splice where fiber might be spliced to provide connectivity between two specific locations on a UDF-Loop or E-UDF request. The Qwest engineer will research all OSP records to determine splice locations.

Q. WHEN DOES THE ENGINEERING VERIFICATION FEE APPLY?

A. An EV is the preliminary phase of the FV/QP. This step is only required if the IRI is complex or if a splice is requested. If, after researching the records during the FV/QP stage, Qwest discovers that there is no possible route to justify Field Verification, Qwest will only recover the EV cost associated with the OSP records research. In other words, Qwest will only recover the EV costs associated with the preliminary phase of the research, instead of billing the CLEC for the entire FV/QP. The EV is a conservative and entirely appropriate way for Qwest to recover engineering hours associated with performing OSP records research without charging the entire FV/QP. This UDF element was created as a cost saving solution in cases where performing a Field Verification would prove fruitless.

Q. PLEASE EXPLAIN FIELD VERIFICATION AND QUOTE PREPARATION ("FV/QP") PROCESS FOR THE PURPOSES OF FURTHER DEFINING THE ENGINEERING VERIFICATION FEE.

A. The OSP tactical planning engineer will create a Common Planning Document ("CPD") that will create an Engineering Work Order to have the requested facilities evaluated by the Qwest design engineer and construction forces. The technician will report the actual field conditions back to the OSP engineer via the CPD. This information is then passed back through the CPMC to the wholesale account team and on to the customer.

Q. PLEASE CLARIFY THE PROCESS FOR ORDERING A UDF FIELD VERIFICATION AND QUOTE PREPARATION.

A. The second stage of the process is the FV/QP. This step is required if the IRI is complex, or if a splice is requested. The FV/QP is also recommended if UDF reservations are requested.

Qwest will verify the spare UDF and splice locations and observe the facility or manhole for entrance methods. The FV/QP process also includes preparing the quote and delivery timeline. It also outlines access to the existing structure or splice location. The FV/QP form is submitted once the CLEC receives results from Qwest on IRIs.

Q. WHO PERFORMS THE FIELD WORK ASSOCIATED WITH A FIELD VERIFICATION?

A. A design engineer and a minimum of two fiber technicians perform this function.

Q. WHAT ARE THE FIELD FUNCTIONS PERFORMED FOR THE UDF FV/QP?

A. The design engineer verifies the availability of the physical facilities at the requested location. The fiber technicians will ready the site by traveling to the site, setting up equipment and work area protection, which include:

establishing traffic controls, placement of cones, and traffic control signs (i.e., "men working").

The fiber technician will remove the manhole lid and ventilate the manhole with a blower. The technician will then test for explosive gases with a gas meter. If the manhole is filled with water, which is often the case, it will be pumped clear. (Even in states with low amounts of precipitation, the water lines and water systems often drain into the underground system, causing water to enter manholes.) After clearing the manhole, the technician will un-strap the splice case from the side of the manhole in order to bring it up into the environmentally controlled truck or trailer. The technician will open the splice case and set up the splice tray by pulling it out of the case. Then each individual fiber must be identified. Following this, the second technician must travel to the next testing location (there could be multiple locations). If the second location is a manhole, the whole process must start over again.

If the next location is in a building, the second technician must gain access to the telephone room in order to access the FDP in that building; at this point, the second technician will establish communication with the first technician. Then, the first technician sets up the light source equipment for testing connectivity. Once connectivity is verified, the equipment is removed, the manhole is closed up and the technicians travel back to their originating

locations and report back to the design engineer. The information relating to this job is noted in the CPD and passed back to the CPMC. During the field verification, the design engineer, located in the field, will also generate a detail manhole drawing.

Q. IS IT NECESSARY TO DO THE UDF FIELD VERIFICATION WHEN THE UDF REQUEST IS COMPLEX? IF SO, WHY?

A. Yes it is. It is imperative that a field verification take place when a complex type of unbundled dark fiber is requested. A complex UDF request consists of the following: UDF connections at an OSP structure, UDF-IOF mid-span splice point, or a UDF requests access at a splice point. It is also recommended, as stated above, that a field verification be performed when a CLEC is reserving UDF.

This function provides a reliable method of verifying records and qualifying actual outside plant facility availability. This same method is used by Qwest when it is placing and using fiber for its own use. The field verification also ensures that the facilities are not damaged and determines whether the conduit is physically available for use by the CLEC. Without a field verification, damaged conduit or facilities may not be discovered in a timely manner. Thus, the purposes of completing a field verification cannot be attained through a review of records.

UNBUNDLED DARK FIBER SPLICING

Q. PLEASE EXPLAIN WHAT PROCEDURES ARE FOLLOWED DURING THE ACTUAL PROVISIONING OF THE DARK FIBER.

A. The third stage of the ordering process is the actual provisioning phase. When the earlier steps have been completed and it is determined that UDF is available, the CLEC may order UDF. The CLEC places a UDF order and if necessary a job will be written to designate an existing, available, entrance duct. If splicing is required, it will be done in this stage as well.

Q. WHY IS SPLICING CONSIDERED AN ELEMENT FOR UDF?

The splicing element will apply if a CLEC requests Qwest to splice fiber at a particular location or request that Qwest create access to a splice at a particular location. The fiber technician will ready the site by traveling to the site, setting up equipment and work area protection, which includes establishing traffic controls, placement of cones, and traffic control signs.

The technician will remove the manhole lid and ventilate the manhole with a blower. The technician will then test for explosive gases with a gas meter. If the manhole is filled with water, the manhole will be pumped clear. After this

preparation of the site, the technician will splice the appropriate fibers to provide connectivity.

Q. PLEASE EXPLAIN UDF-IOF AND THE CROSS-CONNECTS FOR BOTH THE SINGLE-STRAND AND PER PAIR OPTIONS FOR DARK FIBER.

A. UDF-IOF provides a deployed route between two Qwest wire centers. The cross-connects are the fiber jumpers for fiber connections running from one FDP to another FDP.

Q. PLEASE EXPLAIN UDF-LOOP AND THE CROSS-CONNECTS FOR BOTH THE SINGLE-STRAND AND THE PER PAIR OPTIONS FOR DARK FIBER.

A. UDF-Loop provides a deployed route between a Qwest wire center and the end-user premises or OSP structure. The cross-connects are the fiber jumpers or fiber connections running from one FDP to another FDP.

Q. PLEASE EXPLAIN E-UDF FIBER AND THE FIBER CROSS-CONNECTS FOR BOTH THE SINGLE-STRAND AND THE PER PAIR OPTIONS FOR DARK FIBER.

A. E-UDF constitutes a deployed route between a Qwest wire center and a CLEC wire center. The cross-connects are the fiber jumpers or fiber connections running from one FDP to another FDP.

C. SUMMARY OF TESTIMONY ON DARK FIBER

Q. PLEASE SUMMARIZE YOUR TESTIMONY ON DARK FIBER.

A. Unbundled dark fiber is a deployed, unlit fiber optic cable or strands of cable that connects two points within the Qwest network.

Dark fiber is lit by attaching electronics. Each CLEC is responsible for obtaining and connecting electronic equipment, whether light-generating or light-terminating equipment, to the unbundled dark fiber.

Qwest provides dark fiber transport between two Qwest wire centers, or between the Qwest serving wire center and the CLEC's wire center. Qwest also provides dark fiber loop, which consists of an existing loop between a Qwest wire center and an end-user customer premises or OSP structure.

My review of the dark fiber cost studies indicates that the inputs relating to the activities and time estimates associated with providing dark fiber are accurate, reasonable, and reflect efficient practices.

VIII. POLES, DUCTS AND RIGHT OF WAY

A. DESCRIPTION AND BACKGROUND FOR POLES, DUCTS AND RIGHTS OF WAY (ROW)

Q. PLEASE BRIEFLY EXPLAIN QWEST'S POLES, DUCTS AND ROW PRODUCT.

A. Access to Poles, Ducts and Right of Way ("ROW") provides CLECs the ability to attach facilities to Qwest-owned or controlled poles, ducts, and ROW in order to provide telecommunications services. Access is available on a first-come, first-served basis to existing facilities that are not allocated for repair, emergency or projects in progress.

Q. PLEASE EXPLAIN THE CONFIGURATIONS ASSOCIATED WITH THE POLES, DUCTS AND ROW PRODUCT.

A. Access is offered in the following configurations:

- Pole Attachments provide CLECs access to available pole space to place aerial facilities that transmit telecommunications services.
- Qwest provides CLECs space in innerduct for the purpose of placing fiber facilities to transmit telecommunications services. Access to duct or conduit can also be arranged for copper facilities.

- Duct or conduit provides a single, enclosed raceway used for conductors, cable, and/or wire, including riser conduit between floors in a building. The duct or conduit may be in the ground, following streets, bridges and public or private ROW, or may be located in a portion of a multiunit building. Within a multi-unit building, the duct/conduit may traverse the building entrance facilities, building entrance links, equipment rooms, remote terminals, cable vaults, telephone closets or building riser.
- Innerduct is a pipe that fits inside the duct or conduit. Usually, one 4-inch duct accepts three 1-1/4" innerducts. Thus, a single duct typically carries three fiber cables (one in each innerduct). CLECs have the option of either placing the innerduct in an empty duct or conduit, or having Qwest place it.
- For construction of transport facilities, Qwest also provides access to land that Qwest owns or controls. CLECs are responsible for obtaining the necessary legal authority to occupy poles, duct/innerduct and ROW on municipal, governmental, Federal, Native American and private ROW Qwest owns or controls. A ROW may run under, on, above, across, along or through public or private property, including multi-unit buildings.

B. POLES, DUCTS AND RIGHT OF WAY NON-RECURRING ELEMENTS

Q. PLEASE DEFINE THE NON-RECURRING ELEMENTS ASSOCIATED WITH POLES, DUCTS AND ROW.

A. The non-recurring elements associated with the poles, ducts and ROW products are:

- Pole Inquiry Fee, per Inquiry
- Innerduct Inquiry Fee, per Inquiry
- ROW Inquiry Fee
- ROW Document Preparation Fee
- Field Verification Fee, per Pole
- Field Verification Fee, per Manhole
- Planner Verification, per Manhole
- Manhole Verification Inspector, per Manhole
- Manhole Make-Ready Inspector, per Manhole
- Access Agreement Consideration
- Transfer of Responsibility
- Make Ready

In the discussion that follows, I do not address all of the poles, ducts, and rights of way elements but, instead, only the elements that are relevant from a network perspective. Qwest's witness Mr. Easton will address the other elements that I do not discuss in my testimony.

Q. PLEASE EXPLAIN WHY THE POLE INQUIRY FEE IS A NON-RECURRING COST ELEMENT ASSOCIATED WITH THE POLES, DUCTS AND ROW PRODUCT.

A. The Pole Inquiry process involves the necessary step of having Qwest's CPMC review the CLEC's request for completeness. During this task, Qwest prints all associated e-mails and forms from the CLEC to start a working file. The CPMC searches the database for the appropriate CLLI code. The information will be entered into a database and a new job will be created. The new job includes all Billing Account Number ("BAN") information, CLEC information, and due dates. The Qwest CPMC will also provide the wholesale account team with the name and the contact number for the appropriate local field engineer for joint validation of the poles and route.

The entire bulk of information is then sent to the design engineer, who works in the field. Once the design engineer receives the package from the CPMC, the engineer reviews the package and coordinates with the CLEC to set up a joint meeting.

The project management center also makes a telephone call to the appropriate design engineer to make sure the engineer has received the work package. The project management center acts as the liaison between not only the design

engineers, but also the wholesale account team members for status, answering questions, escalating, and solving any issues that may arise.

Q. PLEASE EXPLAIN THE FIELD VERIFICATION FEE PER POLE AS AN ELEMENT OF POLES, DUCTS AND ROW.

A. The Field Verification Fee is a non-refundable pre-paid charge that recovers the estimated actual cost for a field survey verification required to determine the availability of and scope of any required make-ready work.

The field verification element involves identification of the pole number, street code, ownership of pole, and determining space availability on the pole. This verification provides and describes the necessary work required, cable rearrangement, anchoring (steel anchor that runs approximately 6 feet into the ground), guying (wire, sized appropriately, from the pole to the anchor), pole replacement, and documenting the results of the pole field inspection.

The CLEC may elect to do the field verification itself by so indicating on the forms submitted to the CPMC.

Q. PLEASE EXPLAIN WHY THE INNERDUCT INQUIRY FEE IS A NON-RECURRING COST ELEMENT ASSOCIATED WITH THE POLES, DUCTS AND ROW PRODUCT.

A. The innerduct inquiry fee is a non-refundable pre-paid charge used to recover the costs associated with performing an internal record review to determine if a requested route and/or facility is available. Qwest's CPMC will complete the database inquiry and prepare a duct/conduit structure diagram (flatline) that shows distances and access points (such as manholes).

Qwest's CPMC will print out all e-mails and forms associated with the request. Qwest is not provided with the CLLI for the wire center on the request; therefore, we must search our OSP FM records, using the CLEC's attached map, to find the CLLI and to insure that all of the information is correct. The information is entered into a database and a new job is created. The new job is assigned a database number; this includes all BAN information, CLEC information, and due dates.

Once the information has been validated and deemed correct, Qwest searches OSP FM, CIMAGE, or paper records for the route in question. If Qwest determines that the customer's specified route is available, Qwest creates a rough draft of the requested route and a spreadsheet showing all manhole numbers, the distance between each manhole, and the location of the manhole as it sits on the route according to the street intersections. The time associated with this task can vary greatly depending on the size of the route.

This information, the rough draft and the spreadsheet, will then be created electronically. Once again, the time will vary depending on the size of the route.

Q. PLEASE ILLUSTRATE THE FIELD VERIFICATION AND PLANNER VERIFICATION FEE, PER MANHOLE, AS ELEMENTS OF POLES, DUCTS AND ROW.

A. Qwest's CPMC will return the results of the innerduct inquiry to the CLEC via the wholesale account team. The CLEC has 30 days to proceed to the next step, which involves field verifications of manholes. In order to initiate that step, the CLEC must submit the appropriate fee and form. This form is forwarded from the account team to the CPMC. The CPMC reviews the form for accuracy and completeness, updates the database records, and makes copies of all of the documents for the file. Then, the CPMC creates a work package for the OSP tactical planner. This package consists of a copy of the Field Verification request, a copy of the original flat-line diagram, created in the inquiry process, a copy of the original CLEC map, and blank templates, used to display the duct structure of the manholes.

Then, the OSP tactical planner reviews all contents of this package and forwards the package to the appropriate field engineer. At this point, it has already been predetermined if the CLEC wants Qwest to do the verification, or

if the CLEC wants to perform this task itself. If the CLEC requests that Qwest perform the Field Verification, the Qwest field engineer either performs the task or has a contractor perform it. Typically, because of the short interval associated with this task, the field engineer contracts this work out.

The engineer or contractor takes steps to open each manhole. This includes pumping the manhole free of water, purging it of gases, setting up equipment and work area protection, which includes establishing traffic controls, placement of cones, and traffic control signs.

The contractor will remove manhole lid and ventilate the manhole with a blower. The technician will then test for explosive gases with a gas meter. If the manhole is filled with water, it is pumped clear.

Then, the field engineer or contractor will take the blank template, or butterfly, and sketches the duct structure on each manhole wall. This process is repeated for each manhole within the specified route.

Once the sketches are completed, the engineer or contractor returns to the office and converts all butterfly sketches to permanent drawings and returns these drawings to the OSP tactical planner. The OSP tactical planner reviews each drawing. The planner is looking for innerduct availability or/and conduit

availability; the planner also researches an available path associated with the CLECs original requested route. The planner examines the butterfly drawings, which indicate vacant and occupied innerduct, conduits, and knockouts. Then, the planner evaluates any outstanding jobs that could be using spare innerducts throughout the entire CLEC requested route.

The results of this research are forwarded to the CPMC. The CPMC receives the package and assesses for innerduct and conduit availability by reviewing the butterfly drawings. The CPMC creates a Field Verification report that portrays the results of the Field Verification. This report includes sections (1) where innerduct is and is not available, (2) where a conduit is or is not available, (3) where innerduct placement would be required, or (4) a section where conduit and innerduct is not available, referring to a blocked section. This report also includes the distance between manholes, and the number of core drills required. The CPMC then forwards this report to the customer via the account team.

Q. PLEASE EXPLAIN HOW THE MANHOLE VERIFICATION INSPECTOR TASK IS AN ELEMENT OF THE POLES, DUCTS AND ROW PRODUCT.

A. When the field engineer elects to have a contractor do the work, Qwest will send a contract inspector to inspect the work of the contractor. In other words,

the contract inspector makes sure the manhole is opened and closed properly using appropriate safety standards. If a CLEC elects to do the work itself, Qwest also must perform this inspection.

Q. PLEASE EXPLAIN THE MANHOLE MAKE-READY INSPECTOR AS AN ELEMENT OF POLES, DUCTS AND ROW.

A. The actual make-ready work relates to when the CLEC's contractor places the CLEC's innerduct into Qwest's existing conduit system. The make-ready inspector ensures that all safety standards are being met. The inspector makes sure that the CLEC places its innerduct according to accepted construction standards; the inspector also makes sure the assigned conduit is used for the innerduct.

Q. PLEASE DEFINE THE ROW INQUIRY FEE AS AN ELEMENT OF POLES, DUCTS AND ROW.

A. The ROW inquiry process involves Qwest's review of a request for completeness and resolution of any discrepancies in the request. The CPMC will print all e-mails and forms associated with the request.

The CPMC creates a log in the database and creates a new job. The new job is assigned a database number and dates are established in the computer as well.

The entire bulk of information is then sent out to the ROW agent for the particular area in question.

The ROW agent accesses available job-files in the document retention database. If the ROW agent locates any records, he or she makes copies, which are sent back to the CPMC. The records that could appear in the retention database include private ROW, BLM, Bureau of Reclamation, Forest Service documents. Regular permits via state and local are of public record; therefore, Qwest does not keep them on file.

The CPMC also makes a telephone call to the appropriate ROW agent to make sure the engineer has received the work package. The CPMC acts as the liaison between the ROW agents, and the wholesale account teams. The labor associated with the liaison position includes phone calls to ROW agents and account team members for status, answering questions, escalating, and solving issues that arise in general.

Q. PLEASE CLARIFY THE ROW DOCUMENT PREPARATION FEE AS AN ELEMENT OF POLES, DUCTS AND ROW.

A. The task requires that Qwest prepare a Quit claim deed when requested by the CLEC. Typically, the CLEC provides this to Qwest.

Q. PLEASE DEFINE THE ACCESS AGREEMENT CONSIDERATION FEE AND THE TRANSFER OF RESPONSIBILITY AS ELEMENTS OF POLES, DUCTS AND ROW.

A. Qwest's witness, William Easton, addresses both of these non-recurring elements in his direct testimony.

C. SUMMARY OF POLES, DUCTS AND ROW

Q. PLEASE SUMMARIZE YOUR TESTIMONY ON POLES, DUCTS AND ROW.

A. Qwest provides access to Poles, Ducts and ROW to CLECs with workable and reasonable methods of accomplishing interconnection with Qwest's network. The Qwest architectures provide CLECs access in a nondiscriminatory manner.

Moreover, based on my review of the poles, ducts and ROW network element inputs to the cost study, and my background in providing access to poles, ducts and ROW, the assumptions and network elements used in the cost study are consistent with, and reflect, the efficient, real-world tasks that engineers and other personnel must perform to provide poles, ducts and ROW.

IX. CONCLUSION

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

BEFORE THE
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

IN THE MATTER OF DETERMINING PRICES FOR UNBUNDLED NETWORK ELEMENTS (UNEs) IN QWEST CORPORATION'S STATEMENT OF GENERALLY AVAILABLE TERMS (SGAT)	))))	**CASE NO. TC01-098**

EXHIBITS

OF

GEORGANNE WEIDENBACH

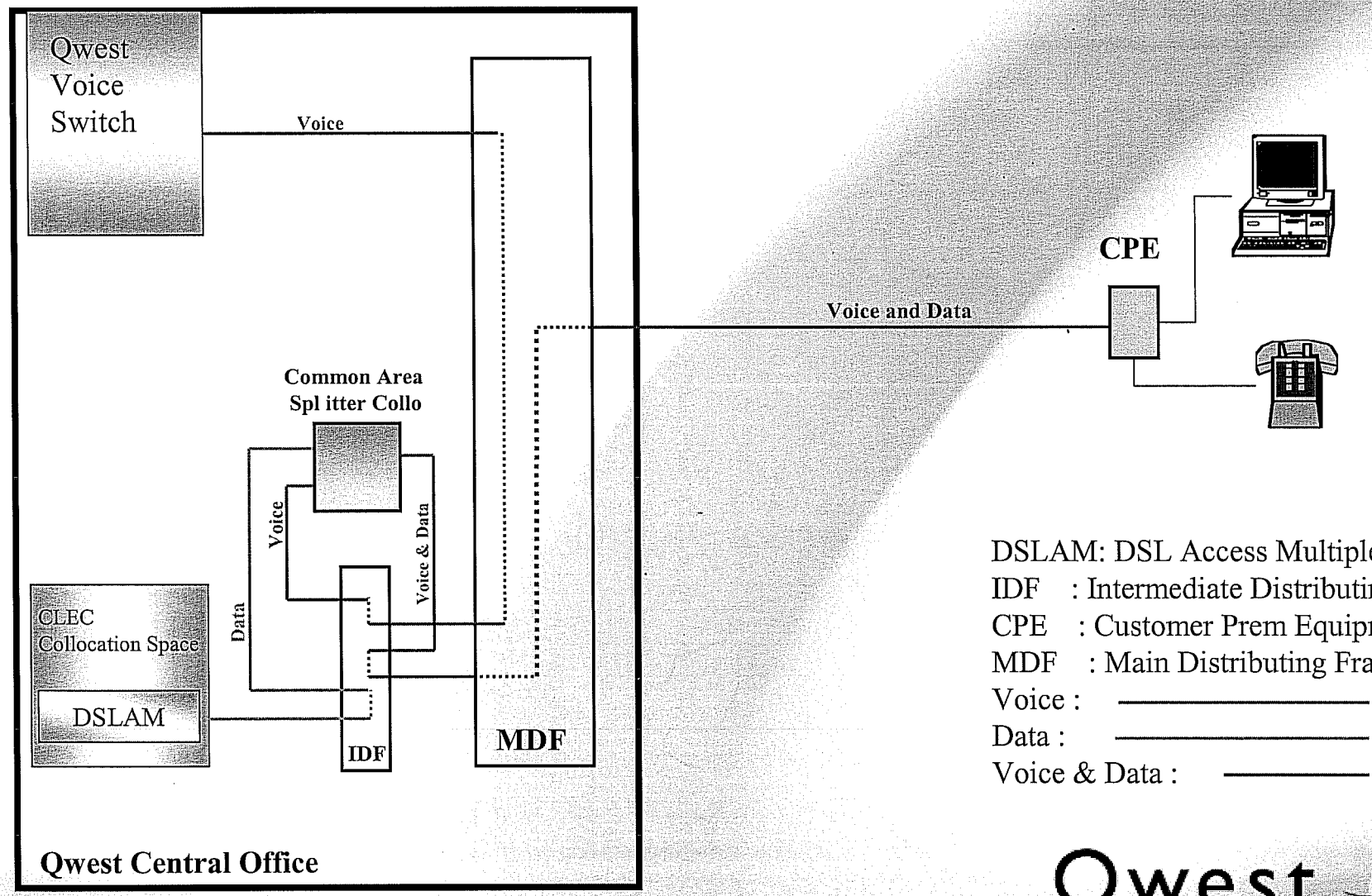
QWEST CORPORATION

OCTOBER 15, 2002
(Draft)

TABLE OF CONTENTS

Line Sharing
Splitter in Common Area

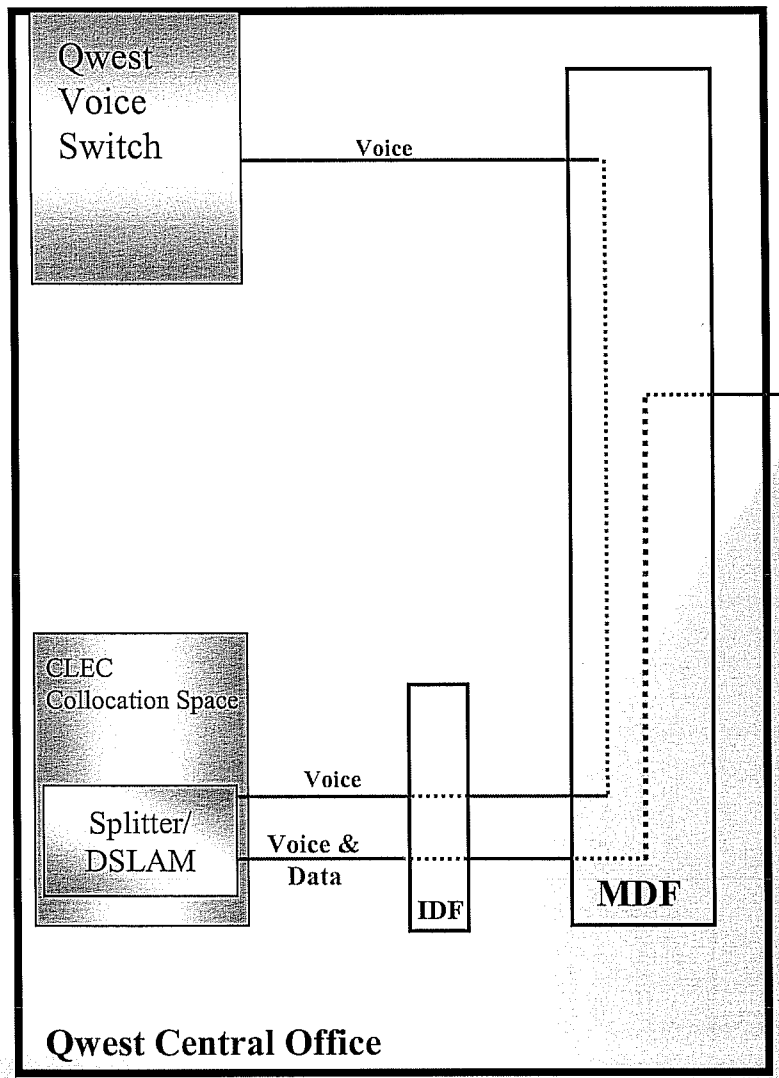
Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-1

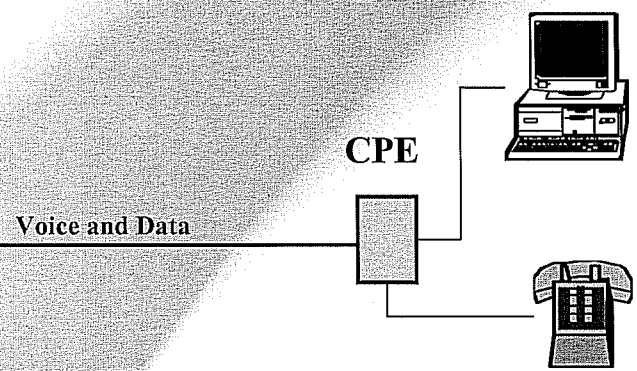


DSLAM: DSL Access Multiplexer
IDF : Intermediate Distributing Frame
CPE : Customer Prem Equipment
MDF : Main Distributing Frame
Voice : ———————
Data : ———————
Voice & Data : ———————

Line Sharing
Splitter in Collocation Area

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-2





DSLAM: DSL Access Multiplexer
IDF : Intermediate Distributing Frame
CPE : Customer Prem Equipment
MDF : Main Distributing Frame
Voice : ——————
Voice & Data : ——————

10/12/2002

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-3

BVAPP - (BVMV)	Cabling Type 1 Footage	BVAPP - (BVMV)	Cabling Type 1 Footage
71049	150	71886	85
71050	100	71903	20
71051	75	71847	120
71342	80	71895	120
71343	100	71893	220
71341	180	71815	120
71323	80	71896	50
71340	100	71805	100
71339	180	71852	100
71344	100	71911	65
71345	75	71897	65
71322	100	71905	100
71899	120	71817	220
71908	120	71830	50
71900	180	71910	50
71856	120		

Average Units **107.9**

Note : BVAPP and BVMV refers to actual job and order numbers that performed collocation cabling jobs within the Qwest network. The Footage is the actual amount of cable that was placed on a particular job. BVAPP and BVMV files identify the Central office location and the specifics of the cabling placements associated with a given collocation.

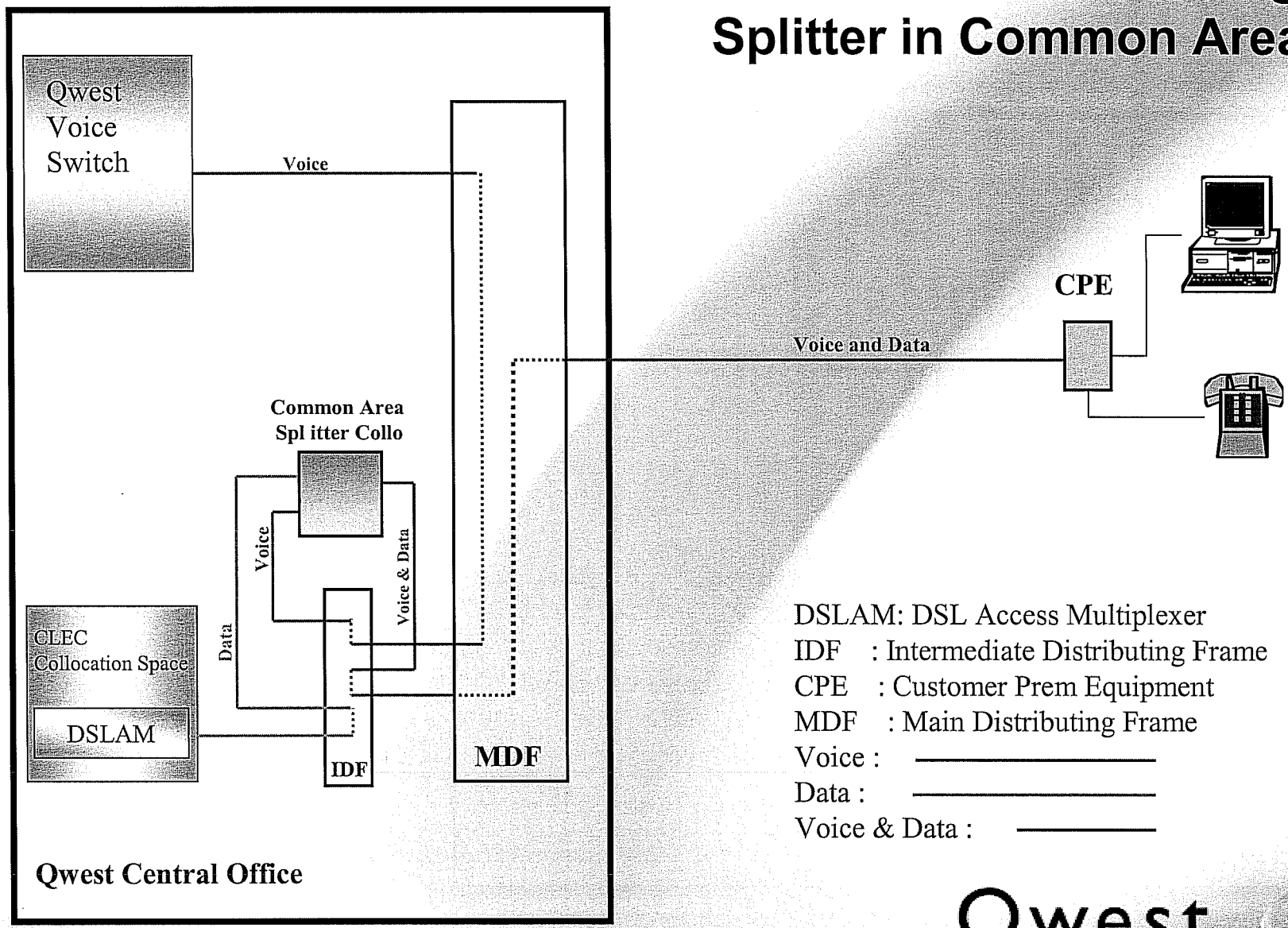
Qwest®

Comparison between Line Sharing, Line Splitting and Loop Splitting

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-4

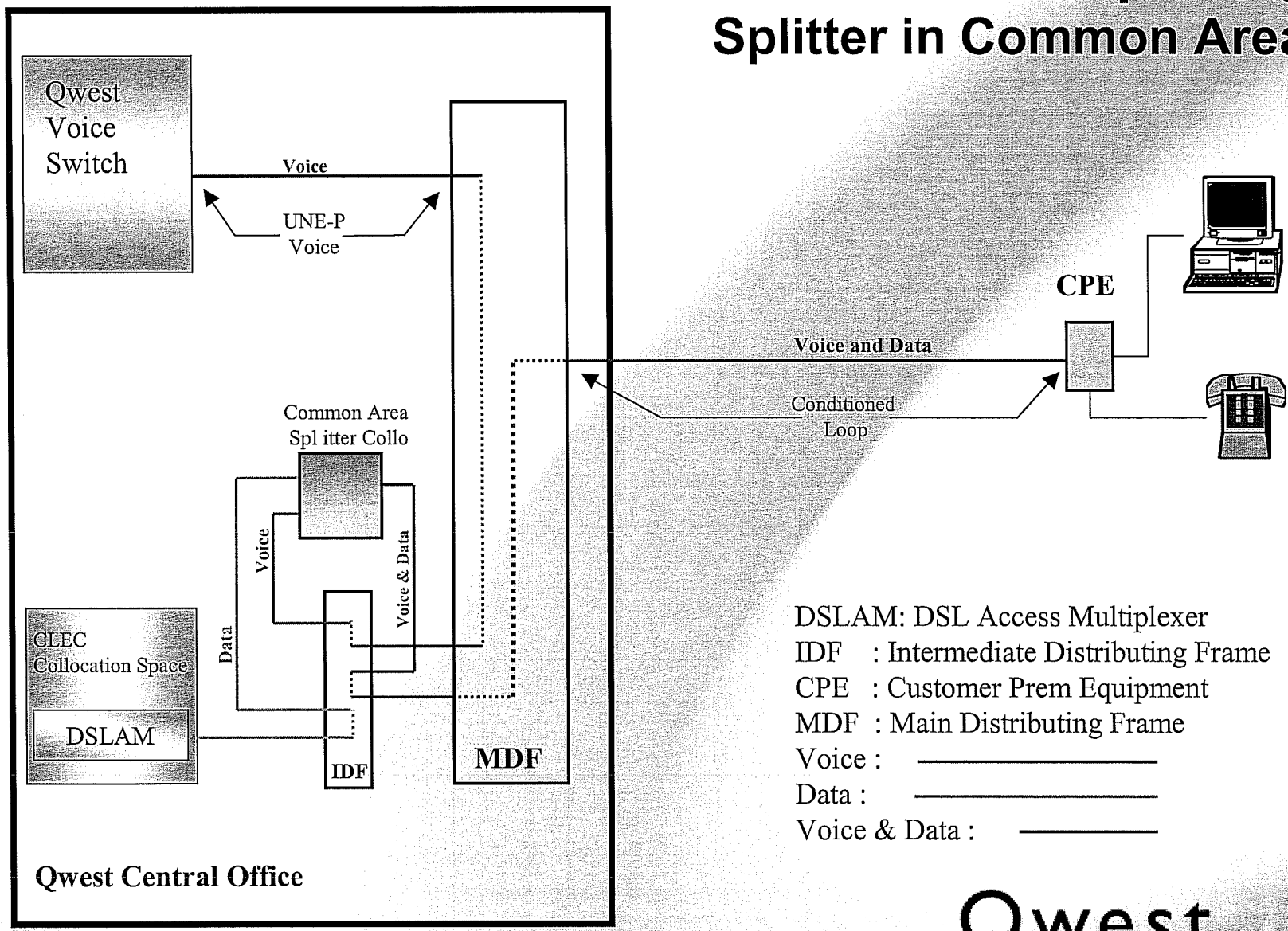
10/12/2002

Line Sharing
Splitter in Common Area



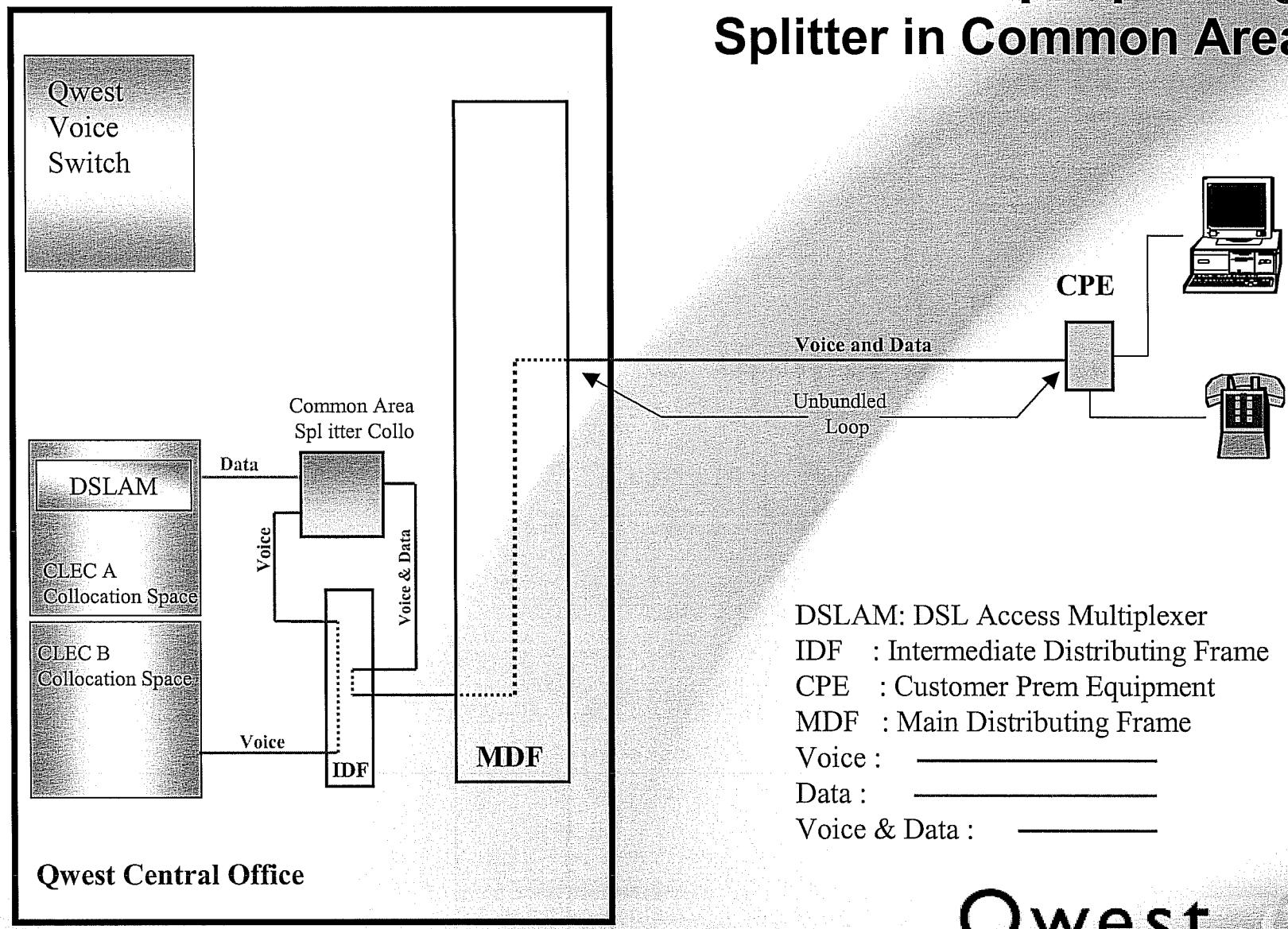
DSLAM: DSL Access Multiplexer
IDF : Intermediate Distributing Frame
CPE : Customer Prem Equipment
MDF : Main Distributing Frame
Voice : ——————
Data : ——————
Voice & Data : ——————

Line Splitting
Splitter in Common Area



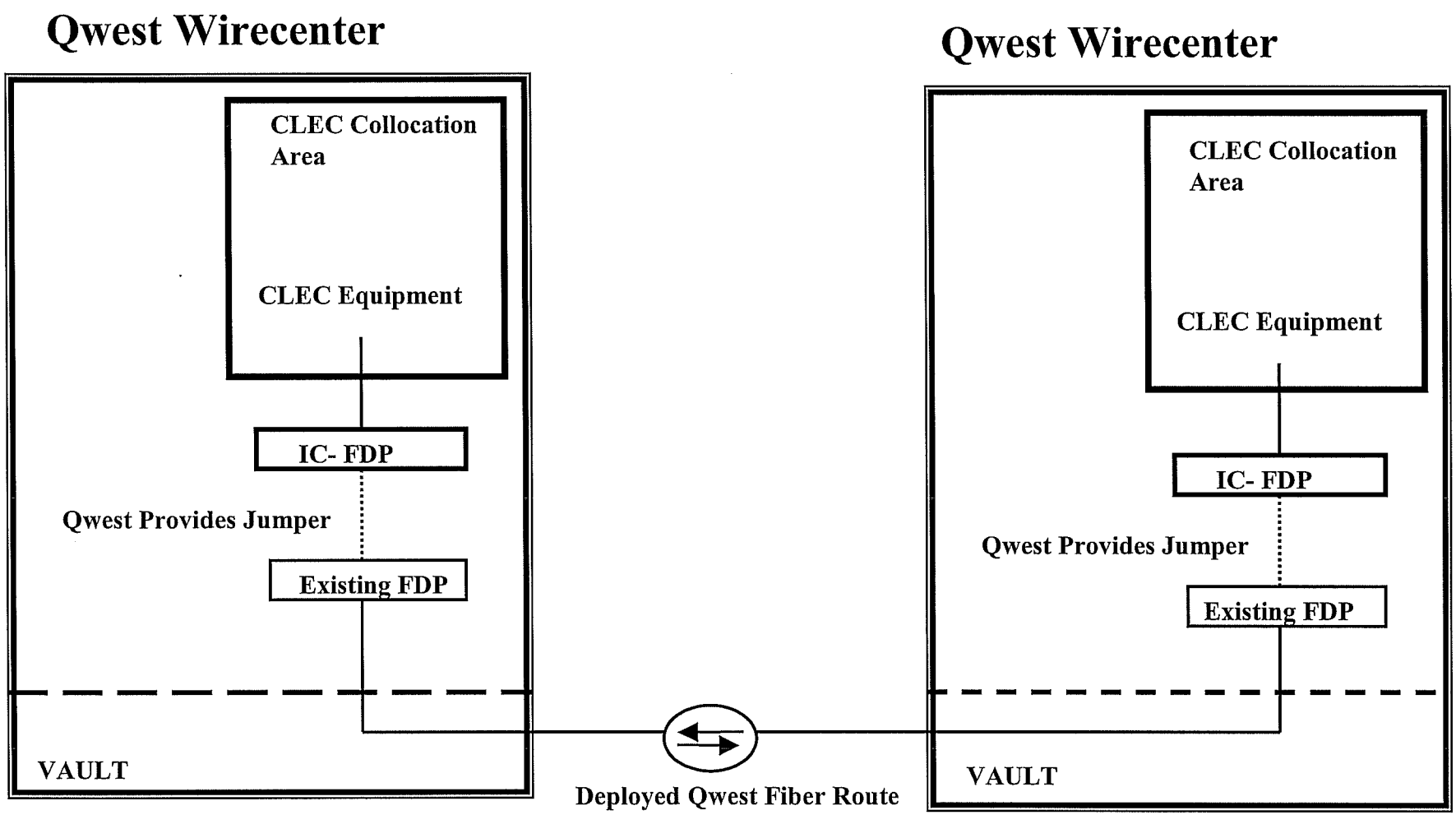
DSLAM: DSL Access Multiplexer
IDF : Intermediate Distributing Frame
CPE : Customer Prem Equipment
MDF : Main Distributing Frame
Voice : ———————
Data : ———————
Voice & Data : ———————

Loop Splitting
Splitter in Common Area



DSLAM: DSL Access Multiplexer
IDF : Intermediate Distributing Frame
CPE : Customer Prem Equipment
MDF : Main Distributing Frame
Voice : ——————
Data : ——————
Voice & Data : ——————

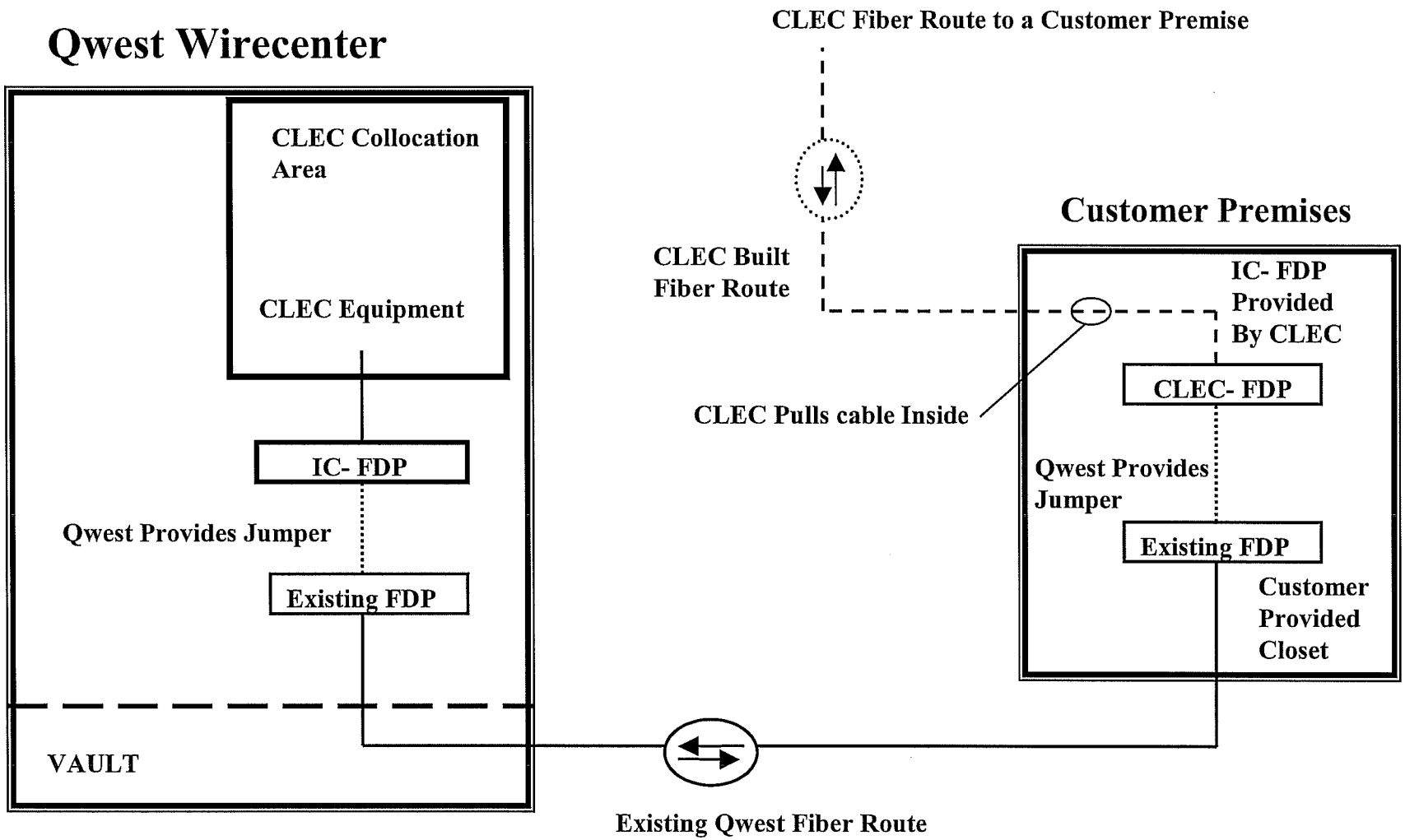
Dark Fiber Access Between Two Qwest Wirecenters



FDP : Fiber Distribution Panel
IC-FDP : Inter-Connector FDP

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-5

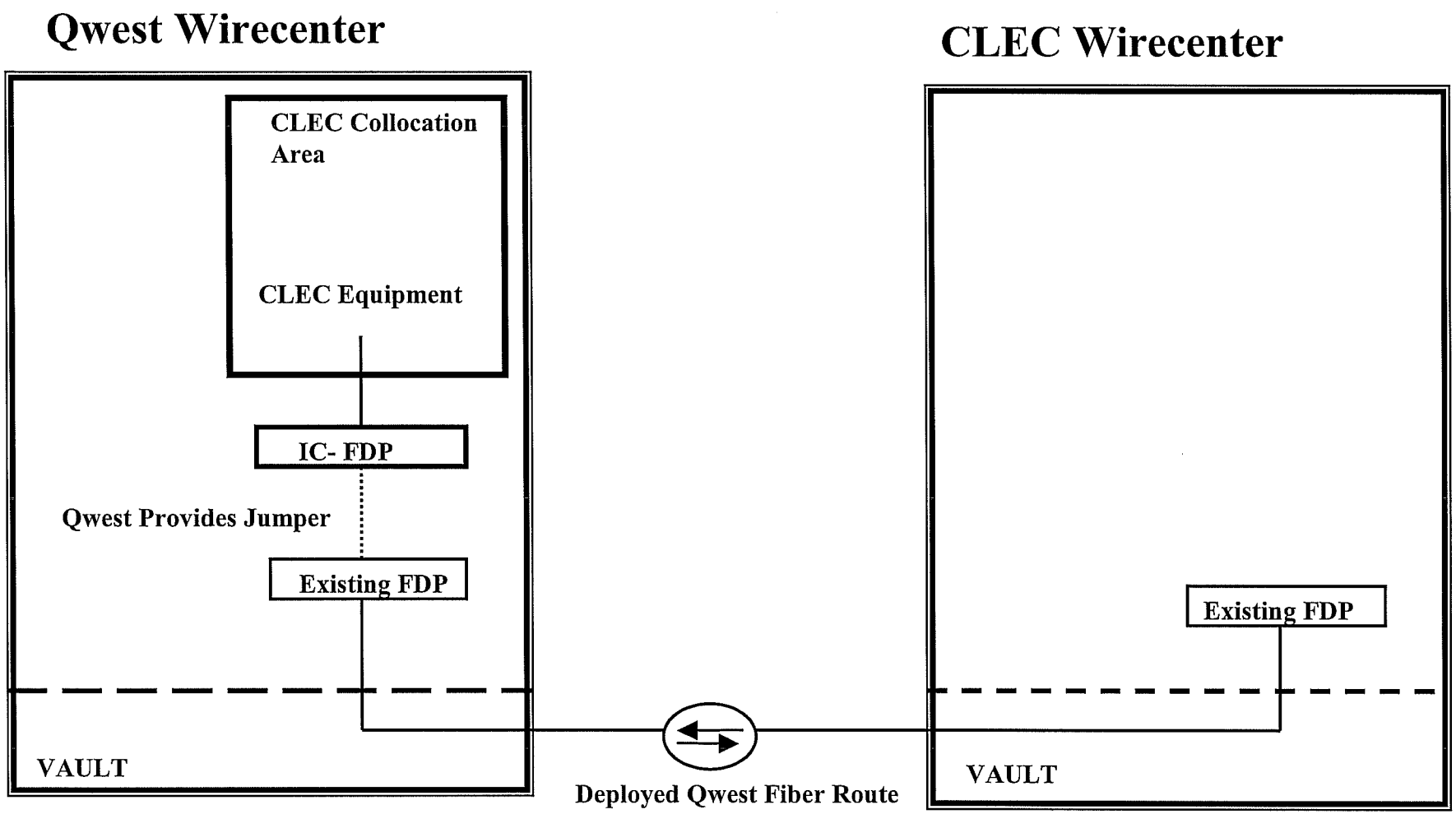
Dark Fiber Access At An End-User Customer Premises



FDP : Fiber Distribution Panel
IC-FDP : Inter-Connector FDP

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-6

Dark Fiber Access Between Qwest and CLEC Wire Centers



FDP : Fiber Distribution Panel
IC-FDP : Inter-Connector FDP

Qwest Corporation
Docket TC01-098
Exhibit to Testimony of
Georganne Weidenbach
Exhibit GW-7

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 14th day of October, 2002, the foregoing **Direct Testimony of Georganne Weidenbach and seven exhibits** was filed and served upon the following parties as follows:

Debra Elofson, Executive Director South Dakota Public Utilities Commission 500 East Capitol Pierre, SD 57501 Telephone: (605)773-3201 Facsimile: (605)773-3809 debra.elofson@state.sd.us	____ ____ [X] ____ ____	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to debra.elofson@state.sd.us
Harlan Best, Staff Analyst South Dakota Public Utilities Commission 500 East Capitol Avenue Pierre, SD 57501 Telephone: (605) 773-3201 Facsimile: (605) 773-3809 harlan.best@state.sd.us *Protective Agreement Executed*	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to : harlan.best@state.sd.us
Karen Cremer, Staff Attorney South Dakota Public Utilities Commission 500 East Capitol Avenue Pierre, SD 57501 Email: Karen.cremer@state.sd.us *Protective Agreement Executed*	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to karen.cremer@state.sd.us
Warren R. Fischer, Senior Consultant QSI Consulting 3333 East Bayaud Avenue - Suite 820 Denver, CO 80209-2945 Telephone: (303) 322-0109 Facsimile: (303) 333-1233 wfischer@qsiconsulting.com *Protective Agreement Executed*	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to wfischer@qsiconsulting.com
Timothy Gabes Sidney L. Morrison 917 W. Sage Sparrow Circle Highlands Ranch, CO 80129	____ ____ [X] ____ ____	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email

David A. Gerdes May, Adam, Gerdes & Thompson, LLP P.O. Box 160 Pierre, SD 57501 Telephone: (605) 224-8803 Facsimile: (605) 224-6289 dag@magt.com *Protective Agreement Executed*	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to dag@magt.com
Peter J. Gose 2912 Hickory Ridge Independence, MO 64057	____ ____ [X] ____ ____	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email
Marlon Griffing PhD QSI Consulting 1735 Crestline Drive Lincoln, NE 68506 bgriffing@qsiconsulting.com	____ ____ [X] ____ [X]	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email to bgriffing@qsiconsulting.com
Eric McPeak 5160 S. Hwy. 32 El Dorado Springs, MO 64744	____ ____ [X] ____ ____	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email
Mark Stacy 5300 Meadowbrook Drive Cheyenne, WY 82009	____ ____ [X] ____ ____	Hand Delivery U. S. Mail Overnight Delivery Facsimile Email

Brandi L. Gearhart

Brandi L. Gearhart, PLS
Legal Secretary to Mary S. Hobson
Stoel Rives LLP