Exhibit _____ - RJH-RT4

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

IN THE MATTER OF THE CONTINUED	**)**	
COSTING AND PRICING OF	**)**	**Docket No. UT-003013**
UNBUNDLED NETWORK ELEMENTS	**)**	
AND TRANSPORT AND TERMINATION	**)**	**Part A**

RESPONSE TESTIMONY

OF

ROBERT J. HUBBARD

July 21, 2000

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I.IDENTIFICATION OF WITNESS

PLEASE STATE YOUR NAME, EMPLOYER AND BUSINESS ADDRESS.

My name is Robert J. Hubbard. I am employed by Qwest Corporation (formerly known as U S WEST), as a Member of Technical Staff. My business address is 700 West Mineral, Littleton, Colorado 80102**.**

ARE YOU THE SAME ROBERT J. HUBBARD WHO FILED DIRECT TESTIMONY IN THIS DOCKET?

Yes.

WHAT IS THE PURPOSE OF YOUR TESTIMONY?

The purpose of my testimony is to reply to the rebuttal testimony of Michael Zulevic. Specifically, I reply to his testimony relating to the time and expense associated with the collocation of splitters. Mr. Zulevic's testimony includes several incorrect assumptions about the process for installing splitters and the costs involved in this type of collocation. I explain why his assumptions are wrong. On the other hand, my testimony also expresses agreement with some aspects of his direct testimony.

DISCUSSION OF THE ISSUES

The Work Needed to Complete Splitter Collocation

AT PAGES 7-12 OF HIS DIRECT TESTIMONY, MR. ZULEVIC IDENTIFIES THE WORK HE BELIEVES QWEST MUST PERFORM TO COMPLETE SPLITTER COLLOCATION. HAS HE ACCURATELY IDENTIFIED THE WORK U S WEST MUST PERFORM AND THE AMOUNT OF TIME THAT IS NEEDED TO COMPLETE THAT WORK?

No. Mr. Zulevic has failed to include a significant number of tasks that Qwest must perform for splitter collocation. It is interesting to note that while Mr. Zulevic lists the tasks he believes are necessary for splitter collocation, he provides very little discussion or description of the actual engineering process for this form of collocation. Qwest has actual experience with splitter collocation and has a very realistic understanding of what it takes to install splitters. I believe that this actual, hands-on experience is more reliable than Mr. Zulevic's speculation about the work that is required.

Q. DOES MR. ZULEVIC ACCURATELY ADDRESS THE AMOUNT OF PLANNING THAT IS REQUIRED FOR SPLITTER COLLOCATION?

A. No. Mr. Zulevic's testimony includes little explanation of the tasks and hours he has proposed for splitter collocation. However, it appears that the only tasks he is proposing for planning are "MDF Planning" and "Overhead Rack Planning." The planning phase includes two categories of work -- preliminary engineering and a walk-through or field survey. Each of these categories involves several steps that engineers must complete. The time required for these steps is not identified by Mr. Zulevic.

Q. PLEASE DESCRIBE THE PRELIMINARY ENGINEERING THAT QWEST MUST PERFORM FOR 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 must begin the job by having an in-house "detail engineer" retrieve from a database detailed drawings of the central office where the collocation has been requested. These drawings identify where equipment is located in the central office, including, for example, cable racking that may be used for splitter collocation. The drawings also indicate the type of equipment that is in a central office. For example, the drawings show the type of bay equipment in a central office. The detail engineer looks at the type of bay equipment to determine if extenders may be needed to carry out the splitter collocation. After retrieving the drawings, the detail engineer determines whether there are any ongoing

construction or engineering jobs at the central office that should be included in the drawings. If there are jobs that are in progress, the detail engineer marks up the drawings to reflect these jobs and their location within the central office. It is essential to reflect any ongoing jobs in the central office, as those jobs may affect the configuration of the splitter collocation.

My discussions with the detail engineers who have worked on the splitter collocations within Qwest's territory establish that the preliminary engineering process requires, on average, about two hours to complete. Based on my experience, this is an appropriate amount of time to complete this step.

Q. PLEASE DESCRIBE THE WALK-THROUGH OR FIELD SURVEY THAT AN ENGINEER MUST CONDUCT FOR SPLITTER COLLOCATION.

A. After making any necessary changes to the drawings, the detail engineer provides them to a field engineer who must then conduct a walk-through or field survey at the central office. The field survey serves two important purposes. First, the survey is necessary to permit a comparison of the drawings to the actual configuration of the central office. Because of the rapid pace of growth and changes in Qwest's central offices, Qwest engineers must conduct this type of comparison every time a CLEC submits a collocation request.

Second, a field survey is needed to ensure that the space designated for the splitter collocation is adequate. This evaluation requires several steps on the part of the 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 is occurring meet the requirements of OSHA and NEBS. This evaluation requires the engineer to coordinate with other Qwest employees in the real estate group who have information about the weight-bearing capacity 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 whether any additional cable racking will be needed for the job.

My discussions with the field engineers who have performed the actual field surveys for splitter collocation establish that this process requires, on average, about five hours to complete. This total does not include the travel time that generally is an unavoidable part of the field survey process.

AFTER COMPLETING THE PRELIMINARY ENGINEERING FOR SPLITTER COLLOCATION, MUST QWEST ENGINEERS PERFORM THE ACTUAL ENGINEERING FOR THE JOB?

Yes. Preliminary engineering refers to the planning that is necessary for every collocation job. The engineering phase involves the preparation of the

detailed work prints and project management of the construction job. These phases are separate from each other, and each phase is necessary for every request for splitter collocation that Qwest receives from a CLEC.

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

Upon completing the field survey, the field engineer returns the drawings of the central office to the detail engineer. The detail engineer adds any markings to the drawings that are needed as a result of the field survey and then enters the new drawings into the database. In many cases, because of this new job, the drawings must be changed to reflect the locations of the cable placement, bays, cable racking, frames, floor bracings, and ceiling bracings. The detail engineer then orders the equipment needed for the splitter collocation job based on the drawings that are in the database. After ordering the equipment, the detail engineer is responsible for tracking the shipping and delivery of the equipment.

As part of the engineering of 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, the detail engineer must complete the engineering of the job. This part of the process requires the engineer, first, 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 data base. If a customer orders 200 DSOs, 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 our central offices.

WHAT IS THE FINAL PHASE OF WORK THAT QWEST MUST PERFORM FOR SPLITTER COLLOCATION?

A The final phase involves verifying that the job has been engineered properly and completing the paper work associated with the job. 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 established in Qwest's TIRKS system, which is the Trunk Inventory Records Keeping System. The detail engineer also must fill out Excel spread sheets that set

forth the location of the splitter and the cable counts. These forms are provided to the CLECs and are essential to allow the CLECs to place their orders for line sharing.

The experience of the detail engineers who have carried out the splitter collocations have established that this final phase of the process requires, on average, approximately seven hours to complete.

HAS MR. ZULEVIC ACCURATELY IDENTIFIED THE WORK AND AMOUNT OF TIME REQUIRED TO COMPLETE THIS FINAL PHASE OF THE PROCESS?

No. The list of work he provides in his testimony does not appear to account for several of the tasks that must be performed in this phase as I explain below.

Q. AT PAGES 5-6 OF HIS REBUTTAL TESTIMONY, MR. ZULEVIC INDICATES THAT THE AMOUNT OF WORK QWEST MUST PERFORM FOR SPLITTER COLLOCATION VARIES DEPENDING ON THE TYPE OF SPLITTER COLLOCATION CLEC REQUESTS. ARE QWEST ENGINEERS REQUIRED TO PERFORM THE WORK YOU HAVE DESCRIBED REGARDLESS OF THE TYPE OF SPLITTER COLLOCATION THOSE CLEC REQUESTS?

A. Yes. Each phase of work that I have described is necessary, regardless

whether a CLEC seeks collocation of a splitter in a common area, in its cage, or at the MDF.

Q. BASED ON THE DESCRIPTIONS OF WORK YOU HAVE PROVIDED, HOW MANY HOURS ARE YOU RECOMMENDING BE INCLUDED IN A COST STUDY FOR SPLITTER COLLOCATION?

A. As my description of splitter collocation demonstrates, the average amount of time required to complete this type of collocation is approximately 22 hours; two hours for preliminary engineering; five hours for a field survey; eight hours for engineering; and seven hours for job verification and completion of job forms and paper work. Accordingly, I have 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.

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

A. Yes. The actual installation of a splitter shelf requires numerous activities. First, the installation department must inventory all of the equipment that is required for the splitter installation. Second, 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. Third, an installer must unpack the splitter shelf and mount it

into the relay rack. The splitter shelf is secured in the relay rack by mounting screws. Fourth, an installer must install the appropriate number of connecting blocks on the MDF or the COSMIC frame. Fifth, an installer must run cable from the connecting blocks vertically, up to the ladder rack and then the cable is routed through the central office to the relay rack that houses the splitter shelf. The cable has to be secured to the relay rack and at all locations where the cable is loose and could be torn away from the connections. Sixth, an installer must terminate the cable at the connecting blocks. Before the cable can be terminated, each individual wire has to be stripped of insulation and spread apart from the binder groups. Next, the individual wires have to be wrapped down on the block one at a time. Seventh, the cable must be connected to the splitter shelf. Eighth, it is necessary to conduct a continuity test to ensure that there is a continuous connection between the splitter shelf and the connecting block. Ninth, the connecting blocks, splitter shelves and relay racks are stenciled. Finally, an installer must mark all drawings to reflect the changes in the central office, update existing records, and provide the updated records to the appropriate parties.

Q. AT PAGES 11 AND 12 OF HIS DIRECT TESTIMONY, MR. ZULEVIC STATES THAT PLACING THE SPLITTER ON THE MDF IS THE MOST EFFICIENT FORM OF COLLOCATION. IS THAT A PRACTICAL SOLUTION TO SPLITTER COLLOCATION?

A. No. As Mr. Zulevic should recall from his experience as a technician in U S WEST's central offices, there is very limited space in central offices and on MDFs. If every CLEC were to place six frame-mounted splitters on the MDF, there would be probable space exhaustion that would benefit neither Qwest nor the CLEC. Moreover, this amount of space often is not even available on MDFs. If Qwest were to run out of space on the MDF, it would have to grow the MDF through, for example, a frame extension or by building an addition to the existing central office. Mr. Zulevic also seems to forget that Qwest has many other items of equipment within the central office that are needed to provide service to customers; line sharing equipment is not the only other equipment within central offices. Further, although it might be convenient to place a splitter bay across the aisle from the MDF, this is not a practical or realistic assumption.

B. Use of COSMIC Frames

Q. IS IT A CORRECT ASSUMPTION THAT ONLY MDFs WILL BE UTILIZED AND COSMIC FRAMES WILL NOT BE USED?

A. No, real-world central offices include both MDFs and COSMIC frames. Qwest, (formerly known as U S WEST), has been using MDFs in its central offices for decades and has been using COSMIC frames for the past 25 years. COSMIC frames, however similar to the 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 save space and, in turn, money in its central offices. These frames allow for single-sided jumper operations as contrasted with MDFs that utilize the traditional double-sided arrangement. The space that Qwest saves through the use of COSMIC frames reduces, for example, the building costs that Qwest incurs. Without these frames, Qwest's overall operational costs would be higher.

C. The Amount of Ladder Rack Required for Splitter Collocation

HOW MUCH LADDER RACK IS REQUIRED TO PROVIDE SPLITTER COLLOCATION?

Ladder rack is used in Qwest's central offices to place and secure the cables that are routed from the relay racks. The ladder rack is located above the relay racks,

which houses different types of equipment. Qwest has conducted a survey in which line sharing has been installed. This survey establishes that the average length from the main frame to the splitter location is 104 feet. Based on the results of this survey, I have recommended that we assume an average length of 100 feet. This assumption, based on actual lengths in the central offices studied, accurately represents the costs Qwest will incur.

D. Configuration of Relay Racks

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

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. Again, this figure is a conservative assumption supported by what is actually occurring in Qwest's central offices today. In Qwest's offices surveyed, where splitters have been installed, there is currently an average of only three splitter shelves per relay rack. In addition, there is substantial evidence indicating that line sharing will be short-lived technology, and that, therefore, there will never be high utilization of relay racks. For example, there has been much recent discussion in the industry about the emergence of Voice Over IP as a broad-based technology. In my view, technologies of this type limit the foreseeable life of line sharing.

III.CONCLUSION

DOES THIS CONCLUDE YOUR RESPONSIVE TESTIMONY?

A. Yes