Exhibit No. ______ (THW - 1T)
Docket No. UT-003013 Part B

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

IN THE MATTER OF THE CONTINUED COSTING AND PRICING OF UNBUNDLED NETWORK ELEMENTS, TRANSPORT, TERMINATION AND RESALE	**))))**	**DOCKET NO. UT-003013 PART B**

PART B RESPONSE TESTIMONY OF

THOMAS H. WEISS

ON BEHALF OF

JOINT INTERVENORS

NON-PROPRIETARY VERSION

October 23, 2000

I. INTRODUCTION

Q. MR. WEISS, PLEASE STATE YOUR BUSINESS ADDRESS AND OCCUPATION.

A. I am an engineer employed as President of Weiss Consulting, Inc. Our business address is 205 E. Spring Street, Fuquay-Varina, NC, 27526.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE IN THE PUBLIC UTILITY FILED?

A. I am a Registered Professional Engineer with a total of over thirty years of experience in the communications industry. My professional education includes a Bachelor of Science degree in electrical engineering and a Master of Science degree in business management with emphasis in finance and micro economics. My employment experience includes eight years in engineering and financial management positions with a major domestic telecommunications utility; and over twenty-two years as an engineering and economic consultant to federal and state governments, private businesses, and consumer groups.

My consulting practice has focused on telecommunications technology, management and regulatory issues, principally as those issues impact the service provided by, and the prices charged for service by domestic telecommunications utilities, including the former Regional Bell Operating Companies; the former GTE Telephone Operating Companies; AT&T and other interexchange carriers; and various independent telephone companies. I have presented expert testimony on communications engineering matters in Federal and state courts and, primarily on behalf of regulatory commission staffs, in over one-hundred and thirty proceedings before public utility regulators in twenty-three states and the District of Columbia. I also have testified on economic and regulatory issues before the Federal Energy Regulatory Commission.

Q. PLEASE BRIEFLY DESCRIBE YOUR WORK HISTORY AS A CONSULTANT IN THE TELECOMMUNICATIONS INDUSTRY.

A. In June 1994, I founded Weiss Consulting, Inc. to providing telecommunications technical, management and economic consulting services to federal and state governments, to businesses in their capacities as providers and consumers of telecommunications products and services, and to consumer groups. From October 1997 through March 2000, I served as a management consultant (with the title of Vice President – Operations Research) to a troubled mid-size independent telephone company in the northeastern United States. Working with the company's Chairman and Chief Executive Officer, I was charged with improving the company's cost and revenue performance, building an effective executive staff, and improving the company's relations with its regulators.

From 1986 to 1994, I was employed as Vice President of Baker G. Clay & Associates, Inc. (BGC&A), a public utility consulting firm located in Annapolis, MD. While with BGC&A, I provided technical and economic consulting services to federal and state governments, to businesses in their capacity as consumers of telecommunications products and services, and consumer groups; and electric, and natural gas transportation and distribution services in wholesale and retail and retail markets.

From 1978 to 1986, I was employed as Senior Consultant with Hess & Lim, Inc. (H&L), a public utility consulting firm headquartered in Greenbelt, MD. My duties and responsibilities at H&L were the same as those described above for BGC&A.

Q. EARLIER YOU OBSERVED THAT YOUR EMPLOYMENT EXPERIENCE INCLUDES EIGHT YEARS IN ENGINEERING AND FINANCIAL MANAGEMENT POSITIONS WITH A MAJOR DOMESTIC TELECOMMUNICATIONS UTILITY. PLEASE BRIEFLY DESCRIBE THAT EMPLOYMENT EXPERIENCE.

A. From January 1970, when I completed my professional education, until June 1978, when I accepted the position with H&L, I was employed by General Telephone Company of the Southeast, a local exchange operating company owned by GTE Corporation, in a series of progressively more responsible management positions as described below:

1970 - 1973 Supervising Plant Extension Engineer responsible to the General Plant Extension Engineer for development of capital investment deployment plans.

1973 - 1975 Alabama Division Engineering Manager responsible to the Vice President for all company plant (land, buildings, inside and outside plant) engineering activity, including capital budget development and administration, for the company's operations in the State of Alabama.

1975 - 1976 Revenues and Earnings Manager responsible to the Corporate Director of Revenues and Earnings for development and administration of rates, tariffs, and rate filings before the FCC and regulatory bodies in three state jurisdictions.

1977 - 1978 Corporate Budgets and Results Manager responsible to the Vice President of Operations for development and administration of seven-state telephone company operating expense budget.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND OTHER PROFESSIONAL EXPERIENCE IN THE COMMUNICATIONS INDUSTRY.

A. I received the Master of Science degree in Business Management from the Duke University Graduate School of Business Administration (now the Fuqua School of Business) in June 1973. I also hold a Bachelor of Science degree in Electrical Engineering granted in January 1970 by North Carolina State University at Raleigh in Raleigh, N.C.

I am a Registered Professional Engineer licensed to practice in Maryland and Missouri; a Member of the Institute of Electrical and Electronic Engineers

(IEEE), Communications Society, Computer Society, Network Society; a Member of the National Society of Professional Engineers and the Maryland Society of Professional Engineers, both of the Private Practice Divisions.

I am the author of *Public Utility Plant Investment Decisions in the Face of Advancing Technology and Regulatory Policy Reform*, Proceedings of the 27th Annual Regulatory Conference, Iowa State University, Ames (1988). I have been an invited speaker and panel member at the 1984 Public Utilities Conference, University of Georgia College of Business; and at the 1988 Iowa State University Regulatory Conference. I have served as a member of the faculty at the 1989 United States Telephone Association (USTA) Advanced Management Workshop sponsored by the University of Kansas at Lawrence.

Q. PLEASE BRIEFLY DESCRIBE YOUR EXPERIENCE AS AN EXPERT WITNESS BEFORE FEDERAL AND STATE COURTS.

A. On behalf of GTE Corporation, I presented my findings in expert testimony on telecommunications network management and engineering matters before the United States District Court for the Northern District of Dallas in Civil Action No. 3-96-CV-1970-D, GTE Card Services, Incorporated, *et al.* v. AT&T Corporation.

On behalf of Sun Company, Inc. (R&M), I presented expert testimony on telecommunications outside plant engineering and administration matters before the Washtenaw County (Michigan) Circuit Court in Case No. 93-689-NZ, Michigan Bell Telephone Company v Sun Company, Inc. (R&M).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. On behalf of ATG, ELI, NewEdge, NEXTLINK, Northpoint, GST, Global Crossing, WorldCom, Inc., AT&T of Pacific Northwest and TCG-Seattle (collectively referred to as "the Joint Intervenors"), I address certain aspects of the positions taken in testimonies filed in this Phase B of this docket on August 4, 2000 by Qwest and Verizon (collectively referred to as "the ILECs").

Q. WHAT ASPECTS OF THESE FILINGS WILL YOU BE ADDRESSING?

A. My testimony addresses the Non Recurring Charges (NRCs) proposed by the ILECs. I also address plant material investment cost analyses that form the bases of certain recurring rates proposed by both Qwest and Verizon.

As to non-recurring charges, my testimony focuses on NRCs proposed by Qwest and Verizon with respect to:[1] unbundled distribution sub-loops, first and additional; unbundled feeder subloops, first and additional; quotation preparation fees for field connection points; existing DS-1 capable and DS-3 capable loops, first and additional; new DS-1 capable and DS-3 capable basic loops, first and additional; DS-1 capable and DS-3 capable loops w/coordinated installation and testing, first and additional; existing DS-1 capable and DS-3 capable loops

[1] Listing reflects Qwest terminology.

w/coordinated installation but w/o coordinated testing, first and additional; DS-0 Enhanced Extended Link (EEL), first and additional; DS-1 EEL, first and additional.

I critically analyze the ILEC's proposed plant material investment costs for DS-1 capable loops, DS-3 capable loops, and the sub-loop elements that comprise these digital service facilities. Since these loop types are components of EELs and UNE-Ps, I also implicitly address those items. Ultimately, the recurring rates for EELs and UNE-Ps combine the recurring rates for certain individual components previously established by the Commission with the recurring rates for other elements being addressed in this proceeding. I also comment on Qwest's analyses of its investment cost for OC3 and OC12 interoffice transport.

Finally, I comment on technical aspects of Qwest's proposal to include the costs of inside wire and intrabuilding cable in the recurring rates that Qwest would charge for unbundled voice-grade (DS-0) distribution subloops.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. In Section II, I address the incremental plant material investment amounts which the ILECs claim as the basis for their recurring rate proposals. In Section III, I address the companies' claims for direct costs associated with installing UNEs for the benefit of CLECs (i.e., NRCs). In Section IV, I comment on Qwest's proposal to include the costs of house and riser cable in the investment associated with the distribution subloop.

II. RECURRING COST STUDIES

Q. FOR WHAT QWEST ELEMENTS HAVE YOU EVALUATED THE PLANT INVESTMENT FOR RECURRING COSTS?

A. DS-1 loops, DS-3 loops and DS-1 subloops. Due to the untimely arrival of the electronic version of Qwest's DS-1 Loop model (October 17, 2000), I have been unable to fully evaluate Qwest's model and its underlying assumptions. Thus, I would like to reserve the right to file supplemental testimony by no later than October 31, 2000 to address Qwest's DS-1 capable loop studies. I also present my observations regarding Qwest's development of incremental investments associated with OC3 and OC12 interoffice transport. Since Qwest filed a revised analysis of these transport circuit costs about <u>one month</u> after it filed its original analysis, I would like to present the results of my detailed review of the incremental investment costs of OC3 and OC12 transport no later than by October 31, 2000.

Q. PLEASE EXPLAIN YOUR UNDERSTANDING OF APPROACH TAKEN BY QWEST TO DEVELOP THE INCREMENTAL INVESTMENT COSTS OF UNE ELEMENTS.

A. First, Qwest describes the architecture(s) which it believes will characterize the provision of individual UNEs on a forward-looking basis. Using its assumed architecture as a basis, the company then estimates its cost to purchase the equipment required to place the architecture in its network. The company then estimates the incremental direct material costs of UNEs, by assumed architecture type, applying standard digital heirarchy relationships to the architecture-specific cost of materials. For example, to develop the direct material costs of a DS-3, the company applies the ratio of 3 DS-3s to 1 OC-3 to the cost of an OC-3 in order to compute the incremental material cost of a DS-3 from the material cost of an OC-3. Incremental material costs are then adjusted to reflect UNE fill or utilization; in-plant factors are then applied to the fill-adjusted material costs to produce estimates of the company's incremental direct investment cost of materials necessary to place UNE investments into the network.

Q. WHAT ARE YOUR FINDINGS WITH RESPECT TO QWEST'S APPROACH TO DETERMINING ITS INVESTMENT COST OF UNE ELEMENTS?

A. My review of the company's studies included a critical evaluation of the basic material costs (i.e., the costs charged to the company by the original equipment manufacturers (OEM)) claimed by Qwest to be applicable to each UNE. My review of the OEM costs claimed by Qwest showed that claimed costs of optical/digital material are in-line with the cost of such materials generally experienced by large telecommunications companies in the current market. For example, Qwest calculates the incremental direct material investment cost for a single DS-3 capable loop derived from a SONET architecture to be approximately

$[ ]; my calculation of that same figure is approximately [ ];. Accordingly, I do not propose adjustments to Qwest's claims for its OEM costs.

Qwest, however, has severely overstated the unit direct, in-plant investment costs of UNEs by applying very low, unsubstantiated plant utilization rates and very high, Total In-Plant Factors (TIF).[2]

For example, with respect to plant utilization, Qwest assumes, without substantiation, that on average, only [ ]; DS-3s will be used out of every [ ] DS-3s that it derives from OC-3s. That ratio represents an astoundly low [ ] percent ([ ]) utilization factor for DS-3s derived from OC-3s and, in effect, that assumption alone inflates the incremental direct material cost of DS-3-capable loops by over 140 percent. I have adjusted the company's proposed UNE plant utilization factors to better reflect forward-looking plant utilization rates that would be experienced in a competitive market.

As to TIF factors, Qwest, again without substantiation, inflates incremental direct material costs by as much as [ ] percent to account for installation costs, sales taxes, etc. of certain hard wired digital electronic circuit equipment (e.g., equipment shelves). In effect, use of TIF factors at such levels as proposed by Qwest implies that the company's cost simply to install digital electronic circuit

[2] The so-called Total In-Plant Factor (TIF) is used to convert UNE unit material costs to the level of UNE unit investment cost as the unit investment would appear on the company's books.

equipment (exclusive of the equipment cost) represents well over 100 percent of the direct material cost of the equipment alone. I have adjusted Qwest's proposed incremental UNE investment costs to reflect total incremental installed costs that are more consistent with my experience in the industry.

Q. HOW ARE YOUR PROPOSED INCREMENTAL DIRECT UNE INVESTMENT COSTS USED TO DEVELOP UNE RATES?

A. My proposed incremental UNE investments are provided directly to Mr. Klick to be converted to annual recurring costs and monthly rates for digital signal (DS) capable loops, and the related subloops. The following table shows my proposals for Qwest incremental investments in DS-3 capable loops compared with those offered by Qwest.

Table 1 [CONFIDENTIAL MATERIAL REDACTED]

The outside plant information which appears in Table 1 is used by Mr. Klick to develop UNE rates proposals for DS-3 capable subloops.

Since Qwest failed to provide its incremental direct investment cost analysis for DS-1 capable loops until October 17, 2000 (only 3 days before the scheduled filing of this testimony), I did not complete my review of Qwest's analysis of its claimed DS-1 capable loops in time to present my proposals with respect to it at this time. I would like to reserve the right to file supplemental response testimony with respect to Qwest's DS-1 capable loop and the associated subloops no later than October 31, 2000.

Q. SPECIFICALLY, WHAT ADJUSTMENTS DO YOU PROPOSE BE MADE TO QWEST'S DS-3 CAPABLE LOOP INVESTMENT COST ANALYSIS?

A. Based on my experience, I believe that a forward-looking fill factor of 85% is appropriate for a single DS-3 multiplexed from OC3. Use of the 85% fill factor implies that 10 DS-3s out of every 12 DS-3s derived from OC-3 will be used productively by Qwest; this assumption compares to Qwest's assumption that 5 DS-3s of every 12 DS-3s will be used productively.

With respect to the TIF factor, again based on my experience, I propose that Qwest studies be based on TIFs of 1.40 for hardwired circuit equipment and 1.20 for plug-in circuit equipment, with additives of 0.06 to each of these factors to allow for the costs of warehousing hardwire and plug-in inventory where appropriate.

Q. HAVE YOU REVIEWED VERIZON'S CLAIMS OF ITS DIRECT INVESTMENT COST TO PROVIDE DS-3 CAPABLE AND DS-1 CAPABLE LOOPS?

A. Yes. However, Verizon's cost studies with respect to DS-1 capable and DS-3 capable loops are cryptic at best with no support other than a breakdown of investment costs by sub-account, by OEM cost of material and by the costs of engineering and installation. With these studies, however, I was able to determine that Verizon's claimed unit OEM material costs are reasonable relative to what I know to be the OEM costs of material experienced by other similarly-situated large telecommunications service providers.

Thus, it appears that Verizon has based its incremental investment costs per DS-1 capable loop and DS-3 capable loop on sound OEM material investment cost amounts. However, this does not mean that I agree with Verizon's overall approach to developing its weighted investment costs in the various architectures used to produce such loops.

Verizon develops its claimed cost of DS-1 capable loops based on the weighted average cost of five different DS-1 capable loop architectures; for DS-3 capable loops, Verizon uses the weighted average cost of four different DS-3 capable loop architectures. That is, in both cases, the company appears to develops loop costs based on a mix of the circuit architecture that it has actually deployed in Washington state.

For the reasons described earlier with respect to Qwest's studies, I have advised Mr. Klick that, for loops derived from optical/digital multiplex arrangements, a reasonable fill factor is about 85%.

I have also advised Mr. Klick that the provision of DS-1 capable loops over metallic cable facilities does not represent a forward-looking loop architecture. Verizon's DS-1 capable loop cost analysis reflects the cost of metallic loop architecture for [ ] of DS-1 capable loops based apparently on Verizon's current actual DS-1 loop architecture deployment in the state. I have advised Mr. Klick that Verizon's mix of DS-1 capable loop architectures, as embodied in its costs study, should be modified to give no weight to the metallic loop architecture and shift the incidence of metallic loops to reflect them as being provisioned using the OC3/DS-1 technology.

Q. EARLIER, YOU PROPOSED THAT THE PLANT UTILIZATION FACTOR FOR SONET AND DIGITAL SIGNAL (DS) MULTIPLEX TECHNOLOGY SHOULD BE 85 PERCENT. PLEASE EXPLAIN WHY THE 85 PERCENT UTILIZATION RATIO IS APPROPRIATE FOR USE IN FORWARD-LOOKING COST STUDIES WHICH REFLECT THE DEPLOYMENT OF OPTICAL/DIGITAL TECHNOLOGY.

A. The recommendation of 85% reflects several factors. First, aside from consideration of the future market, today's market for communication services demands the deployment of optical/digital facilities. Thus, even those telecommunication services which are currently provided over metallic plant facilities are migrating toward optical/digital architecture. For example, the demand for Asymmetric Digital Subscriber Line (ADSL) service in the residential market is growing strongly and pressure is building in that same market for deployment of High-Speed Digital Subscriber Line (HDSL) service. This same residential market growth phenomenon is reflected in the business market but at an even higher rate. In short, growth in demand for digital service at the most fundamental levels of the network is fueling demand for digital service at ever higher levels in the digital signal hierarchy.

Second, one need look no further than the ILEC's cost studies in this case to see that optical/digital technology exhibits impressive economies of scale.[3] Given this fact, it is economically rational for the service providers (such as both the ILECs and CLECs in this case) to reject the concept of providing service using older, technologically obsolete metallic facilities, analog electronics systems and earlier-vintage digital electronic systems in favor of deploying lower cost current optical/digital technology. In fact, some ILECs have made the conscious decision to deploy digital systems <u>exclusively</u> throughout their networks, including that portion of the network known as the loop or access line. These ILECs even have specific objectives to migrate existing metallic facilities to digital. In short, because of end-user demand for and economies of scale exhibited by optical/digital technology, the industry is moving rapidly and with conviction to optical/digital technology.

Coupled with this demand phenomenon and, in large part, because of it, manufacturers of optical/digital equipment have designed their systems in a modular fashion. They have also developed highly efficient means of shortening the time interval between the event of a customer's order and delivery of the

[3] For example, see Verizon's study of its costs to provide DS-1 capable loops -- file designated "OutBd_WtHiCap" where the incremental costs of DS-1 capable loops is shown to drop precipitously as the optical channel (OC) rate increases.

ordered equipment. This means that the ILEC and CLEC consumers of this optical/digital technology have greater flexibility in their plant provisioning processes. In short, the time between when need for a new plant is first observed and the time when that plant is available for service is greatly shorter than it has been in the past. As a result, both ILEC and CLEC consumers of this modern equipment can engage in "Just-in-Time" (JIT) plant provisioning practices.[4] JIT practices enable the ILEC and CLEC consumers to delay bringing new optical/digital plant capacity on line until existing capacity is nearly 100% utilized -- that is, until the "fill factor" on existing plant approaches 100%. So as to give the ILECs (in this case) maximum benefit of any doubt with regard to their own plant provisioning practices and their effect on fill factor, I have <u>not</u> proposed that a purely JIT-based fill factor be used to determine the cost of optical/digital facilities in this proceeding. Instead, I recommended use of the 85 percent factor described earlier.

Q. ALSO EARLIER, YOU PROPOSE THAT THE ILEC'S COST STUDIES BE ADJUSTED TO REFLECT TOTAL IN-PLANT FACTORS OF 1.40 AND 1.20, RESPECTIVELY, FOR OPTICAL/DIGITAL HARD WIRED AND PLUG-IN PLANT INVESTMENTS. PLEASE DESCRIBE YOUR REASONING FOR PROPOSING THESE FACTORS.

A. My proposals with regard to TIF factors are grounded in my experience both as an engineering/economic consultant and as an executive officer of an operating

[4] JIT provisioning minimizes capital carrying costs, transportation costs and equipment storage costs.

telephone company. For optical/digital plant, I have observed TIF factors ranging from Verizon's [ ] for optical fiber terminal equipment to the over [ ] for the hardwired portions of digital multiplex equipment which appears in Qwest's studies.[5] All other TIF information to which I have access indicate that the costs of bringing OEM equipment into a telephone company plant base fall between Verizon's and Qwest's figures cited above. In general, my recommendations represent my observations of ILEC and independent teleco plant records which indicate that an appropriate TIF for modern optical/digital plant ranges from 1.35 to 1.55 for hardwired equipment and 1.10 to 1.25 for plug-in units. These ranges assume that the TIF includes sales taxes, telco engineering, and OEM installation charges; my TIF recommendations reflect these same components.

III. <u>NON-RECURRING CHARGES</u>

Q. PLEASE BRIEFLY DESCRIBE YOUR UNDERSTANDING OF THE TECHNIQUES WHICH QWEST AND VERIZON HAVE EMPLOYED TO DEVELOP THEIR POSITIONS ON THE DIRECT COSTS ASSOCIATED WITH NON-RECURRING CHARGES.

A. The ILEC's estimate the units of time and other resources which they believe to be necessary to achieve installation of various UNEs; they estimate the unit cost of the resources, then compute the product of the unit resources (time) requirements and unit resource costs (loaded labor rates); finally, they sum those products to yield its estimates of the direct non-recurring costs for them to make

[5] The 2.11 TIF for hardwired mix equipment in Qwest's studies is the highest TIF I have observed for a modern plant.

individual UNEs available for use by CLECs. Both contend that the results yielded by this approach conform to Total Element Long Run Incremental Cost (TELRIC) theory as espoused by the FCC as the means to estimate prices of UNEs for the purpose of effecting the transition to a competitive local exchange telecommunications network.

The ILEC NRC cost studies identify functions and estimate unit labor resource requirements basically at the work group level (e.g., at the level in the service provisioning organizations where several individual functional activities can be undertaken such as logging-in requests for service, order error correction, order entry, responding to inquiries, etc.). The studies do not recognize that automated OSS systems are available and would be used on a forward-looking basis to perform many service initiation functions that previously may have been performed manually. Qwest's proposed NRCs include costs that necessarily pertain to disconnection when service is terminated; Verizon's NRC proposals account separately for disconnection costs.

Q. PLEASE DESCRIBE YOUR UNDERSTANDING OF QWEST'S APROACH TO THE DEVELOPMENT OF UNIT RESOURCE REQUIREMENTS IN ITS STUDIES OF NRC COSTS.

A. The principal resource at issue in NRC cost studies is labor. Qwest's estimates of the amount of labor required to complete NRC-related activities are developed by employees that Qwest refers to as subject matter experts (SMEs); the SMEs provide single point estimates of the times required to perform NRC-related activities. For Qwest's NRC cost studies, it is this nominal estimate from the SME process that is multiplied by a labor rate to yield the cost for work groups to complete the activities necessary to bring UNEs to CLECs.

Verizon's approach to the development of direct NRC-related costs differs somewhat from that taken by Qwest. Verizon claims that its labor time estimates are the product of time and motion studies. In other respects, both Verizon's and Qwest's NRC-related cost studies are very similar.

Q. DID YOU REVEIW QWEST'S NRC COST STUDIES?

A. Yes, I did.

Q. WHAT ARE THE RESULTS OF YOUR REVIEW?

A. Qwest's studies of its direct NRC costs are flawed in several respects. First, Qwest's NRC cost study results improperly include costs of disconnecting UNEs in the NRC proposed for establishing the UNE on behalf of CLECs. Second, Qwest's claimed NRC costs wrongfully include costs of work activities that are performed currently on a manual basis but which, on a forward-looking basis, would be performed by an efficient Operations Support System (OSS). Third, the studies include instances where certain activities are incorrectly accounted-for twice (i.e., duplicate work activities). Fourth, the studies include some instances where unnecessary activities are reflected in the costs. Finally, Qwest's NRC cost studies are predicated, in error, on minutely detailed work activity listings which, as I noted above, form the work activity input assumptions for which the Qwest's SMEs provide their time estimates.

Q. HAVE YOU ADJUSTED QWEST'S NRC COST STUDIES TO REFLECT YOUR FINDINGS AND RECOMMENDATIONS TO THE COMMISSION?

A. Yes, I have. The results of my analysis are shown in Exhibit_THW - 2C.

Q. SPECIFICALLY, HOW HAVE YOU ADJUSTED QWEST'S NRC COST STUDIES?

A. First, to recognize that the costs of disconnecting UNE's are not properly recovered in the costs of providing UNEs to CLECs, I have simply removed Qwest's disconnection cost estimates from the company's NRC cost model. This proposal and recommendation is consistent with the Commission's earlier findings and decisions regarding disconnection costs.[6]

As to UNE ordering and associated plant record functions, I have removed the costs of activities associated with these functions so as to recognize that such activities will not be performed manually, as the company's study assumes, but, rather in an automated fashion by Qwest's OSS system. I understand that the

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[6] Docket No. UT-960369, et al., Eighth Supplemental Interim Order establishing costs for determining prices in Phase II; and notice of prehearing conference (May 11, 1998), ¶¶ 472, 474, 478, and 519.

costs of the OSS system will be recovered separately by Qwest according to the Commission's decisions on OSS cost recovery from Phase A of this proceeding.

My review of Qwest's NRC studies reveals that the costs of certain field and central office testing activities are duplicated in the studies. The duplication occurs because late in the service establishment process, the activities of Service Delivery Implementation group include circuit testing efforts that had been performed earlier in the service provisioning process by field and central office personnel. My recommended NRCs exclude the cost of this duplicate testing effort by the Service Delivery Implementation group.

Also in Qwest's NRC studies, I observed several instances where the company's proposed NRC includes activities in the nature of checking or verifying whether earlier work had been performed. Most such instances relate to activity that is performed in connection within the service ordering function where I have excluded most costs from the NRCs because the associated activities would be performed by the OSS system. However, the activities of the Service Delivery Implementation group (which occur toward the end of the service delivery process) include an activity described as "Verify Local Network Operations (LNO) Circuit. At this late stage in the service delivery process (where the Service Delivers Implementation group becomes involved) it is not necessary to verify whether a circuit may or may not be available, or whether it is the proper sort of circuit for the service being installed. That activity should be covered well earlier in the service establishment process and it should be maintained intact throughout the process.

Q. DO YOU HAVE ANY OTHER OBSERVATIONS WITH REGARD TO QWEST'S NRC STUDIES?

A. Yes. I note that the studies generally break out work functions into a series of several activities which, when completed, would complete the overall function. That is, Qwest separates its NRC-related work requirements into a large number of relatively simpler activities for which the SMEs are expected to estimate time requirements. The SME tends to view each one in the series of small activities as being mutually exclusive and provides work time estimates as that basis rather than estimating time requirements to perform the overall function. In effect, this approach fails to consider that certain work activities can be performed in parallel or in combination with other activities with the result being that the overall work function can actually be performed in less time than that indicated by the sum of the work times associated with individual activities. Qwest's NRC cost studies include examples of such tendencies to overstate time requirements -- for example, the time required the company to disconnect a customer from its network so that the customers can take advantage of a CLEC's offering. In Qwest's NRC cost study, the sum of the minutes required to perform the six individual activities associated with removing the customers from Qwest's system is 9 minutes; I estimate the overall time required to remove the customers from

Qwest's system at 3 minutes. My recommendations include that adjustment to Qwest's NRC cost studies.

Q. HAVE YOU REVIEWED VERIZON'S PROPOSALS FOR NRCS?

A. Yes, I have generally reviewed Verizon's NRC cost studies and I have observed several problems with them.

First, I note that while Verizon claims to have based its NRC work time estimates on time and motion studies, no effort has been made by the company to explain time studies or to provide documentation in support of the study results. In fact, Verizon's studies show the work time estimates as being hard coded into its NRC cost model. This is of concern especially since, in some cases, the time estimates appear to be very high given the description of the activity to which the estimate is related. For example, Verizon estimates that [ ] are required to do field work at the customer location for sub-loop distribution interconnection. From the detail included in the company's NRC cost analysis, it is not possible to know specifically what activities are included in the nearly [ ] work time estimate. However, since the activities pertain to work to unbundle the distribution sub-loop at the customer location, I conclude that the activity would involve disconnecting the distribution sub-loop from the intra-building cable. In either event, I do not see how the activity could consume well over two hours of an installer's time. While several time estimates appear to high in Verizon's NRC cost study, I can not say with any degree of certainty that the time estimates are faulty. Accordingly, I do not attempt to adjust these estimates at this time. I do note, however, that some of the estimates appear to be logically defective and, therefore, worthy of further investigation.

My review of Verizon's claimed NRC costs studies reveal that the proposed charges include costs of the company's OSS system. In my discussion of Qwest's NRC studies, I observed that the Commission has yet to decide on the method it would use to allow ILEC to recover its OSS-related costs and that the decision in that regard is expected with the Commission's decision in Phase A of this proceeding. Since the Commission has not ruled that OSS-related costs should be included in Verizon's NRCs, it is wrong for Verizon to attempt to include those costs in its NRCs at this time.

Like Qwest's NRC cost study, Verizon's NRC proposals also include the costs of service ordering and provisioning activities that would be handled, on a forward-looking basis, by an efficient OSS system. Since the NRCs at issue here should reflect forward-looking technology , work flows and methods, and since modern OSS systems represent that efficient paradigm, Verizon's NRC cost analyses should reflect that service ordering and provisioning activities are performed through the automated system. Accordingly, I recommend that the Commission require Verizon's NRCs to reflect service ordering and provisioning costs as being performed by the Verizon's OSS system.

Q. HAVE YOU PREPARED AN EXHIBIT WHICH SHOWS YOUR RECOMMENDATIONS REGARDING VERIZON'S NRCS?

A. Yes. I have prepared Exhibit_THW - 3C for that purpose.

IV. OTHER ISSUES

Q. QWEST PROPOSES TO INCLUDE THE COSTS OF HOUSE AND RISER CABLE IN THE RATES THAT IT PROPOSES FOR DISTRIBUTION SUBLOOPS. DO YOU HAVE ANY COMMENTS FROM AN ENGINEERING PERSPECTIVE WITH RESPECT TO THIS QWEST PROPOSAL?

A. First, I note that the FCC has required ILECs nationwide to provide CLECs with unbundled access to subloops at whatever point in the loop such access may be technically feasible.[7] The FCC defines "technically feasible points" to "..include a point near the customer premises, such as the point of interconnection between the drop and the distribution cable, the NID or the MPOE."[8] However, primarily with respect to ILEC claims that any given technically feasible point may not include space necessary to effect a CLEC's access to that point, the FCC found that, when such questions arise, they are best settled by state commissions because they can examine the incumbent's specific situation and determine

[7] FCC Docket No. 96-98 (FCC 99-238), Third Report and Order and Fourth Further Notice of Proposed Rulemaking, •205.

[8] Id. at •210.

whether, in reality, it is technically feasible to unbundle the subloop where a competing carrier requests.[9]

From an engineering perspective, in virtually all cases where distribution subloops enter a customer's premises, a readily-accessible point of demarcation exists between the distribution subloop and the premises inside wire, house cable or riser cable. Such a demarcation point is known variously as a NID (network interface device), a terminal, a backboard, and MPOE (minimum point of entry), etc. Regardless of how the point is designated, in every case, it represents a "technically feasible point" of interconnection because the network can readily be opened at that point and interconnections can readily be made there.

From the FCC's perspective, the only remaining question of technical feasibility is whether sufficient space exists in the vicinity of the terminal reasonably to allow the interconnection. From an engineering perspective, virtually all points of demarcation between distribution subloops and inside wire, house cable or riser cable are located in spaces that would readily allow access for interconnection. Only in very rare instances is it possible that space around the terminal is insufficient to allow for interconnection. Only in such rare cases, should the Commission become involved.

[9] Id. at •224.

Given the foregoing discussion, from an engineering perspective, the distribution subloop and the inside wire, house cable, or riser cable to which the distribution subloop is connected <u>must</u> both be considered as separate supplements of the loop and, therefore, priced as such.

Q. DOES THAT CONCLUDE YOUR RESPONSE TESTIMONY AT THIS TIME?

A. Yes, it does.