Exhibit No. ______ (THW-4T)
Docket No. UT-003013 Part B

BEFORE THE

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

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

PART B SUPPLEMENTAL

RESPONSE TESTIMONY OF

THOMAS H. WEISS

ON BEHALF OF

JOINT INTERVENORS

NON-PROPRIETARY VERSION

October 31, 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. ARE YOU THE SAME THOMAS H. WEISS WHO EARLIER FILED RESPONSE TESTIMONY ON BEHALF OF THE JOINT INTERVENORS IN THIS PROCEEDING?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY AT THIS TIME?

A. At the time when I filed my response testimony on October 20, 2000, I observed that the Joint Intervenors had only recently, on October 17, 2000, received a copy of the model upon which Qwest's DS1-capable loop recurring cost findings are based. I noted that such late receipt of the Qwest's DS1 cost model did not permit me to evaluate it prior to the October 20, 2000 filing date for the Joint Intervenors' response testimony. Also, in my response testimony, I observed that Qwest had filed a revised analysis of its recurring cost to provide interoffice transport at the OC3 and OC12 bit rates, and that it was not possible to complete review of the Qwest interoffice transport proposals in time to present my analysis of them by October 20, 2000. In both cases (i.e., the DS1 and the interoffice transport studies), I requested the right to file supplemental response testimony on

October 31, 2000. The purpose of the instant supplemental response testimony is to provide the Joint Intervenor's positions with respect to those Qwest studies.

Q. HOW IS YOUR SUPPLEMENTAL TESTIMONY ORGANIZED?

A. In Section II, I address the incremental plant material investment amounts that Qwest claims as the basis for its DS1-capable loop recurring rate proposals. In Section III, I address the incremental plant material investment amounts that Qwest claims as the bases for its OC3 and OC12 interoffice transport proposals.

II. DS1-CAPABLE LOOPS

Q. PLEASE DESCRIBE YOUR UNDERSTANDING OF THE APPROACH THAT QWEST HAS TAKEN TO THE DEVELOPMENT OF ITS CLAIMED INVESTMENT COSTS FOR DS1-CAPABLE LOOPS.

A. Qwest has predicated its investment cost analysis on a weighted composite cost of eight (8) different loop architectures, two (2) of which reflect access as being provided exclusively over metallic cable (i.e., metallic cable from the main distributing frame in the central office to the point of entry at end-user's premises). The investment costs of the remaining six (6) loop architectures are based on the more current Fiber In The Loop (a/k/a FITL) architecture which incorporates optical/digital multiplexing in the feeder portion of the loop and unshielded twisted metallic cable pairs (UTP) for distribution. Qwest claims that its total weighted investment cost per DS1-capable loops, including both the outside plant and the central office and customer premises circuit equipment, is

[ ] with the costs and weights of the various architectures as shown in the following table:

Table No. 1

Qwest-claimed DS1-capable Loop Investment Cost

Architecture	Cost	Weight	Wtd. Cost
HDSL, Soneplex	[ ]	[ ]	[ ]
HDSL, Loop Extender	[ ]	[ ]	[ ]
SONET Fiber MUX	[ ]	[ ]	[ ]
SONET Fiber MUX (HDSL)	[ ]	[ ]	[ ]
SONET Fiber MUX/ORB	[ ]	[ ]	[ ]
Digital Pair Gain	[ ]	[ ]	[ ]
Digital Pair Gain HDSL	[ ]	[ ]	[ ]
ASYNC MUX	[ ]	[ ]	[ ]
TOTALS		[ ]	[ ]

Having decided on the technologies to be reflected in its DS1-capable loop investment cost analyses, Qwest sets out to determine investment costs of single DS1-capable loops using each technology (see the column titled "Cost" in Table No. 1, above). This process involves a series of undertakings. First, Qwest identifies and defines its claimed OEM material cost of the common equipment and plug-in components employed to develop DS1-capable loops using each technology. The material costs are then broken down into the average incremental material costs for single DS1 units; for example, the material costs of individual OC3 add/drop multiplexers (ADM) are broken down into DS1 increments by dividing the ADM material costs by 84 DS1s per OC3. Where appropriate, the incremental material costs are then adjusted to add the material costs of spare equipment units needed for maintenance purposes.[1] Qwest then applies a utilization (a/k/a "fill") factor to the incremental material costs in order to recognize what it deems to be the rate at which the common equipment capacity involved in each architecture will be used to provide DS1-capable loops.[2] In effect, application of the utilization factor assigns the full material cost of common equipment to each DS1-capable loop. Finally, Qwest adjusts the incremental material costs to account for the installation and other costs that are necessary to add the equipment to its inventory of plant in service.[3] The product of the process is a series of installed material investment cost results by equipment component for each of the eight DS1-capable loop architectures assumed by Qwest; the sums of the resulting investment costs, by equipment component, are shown in Table No. 1 under the heading titled "Cost."

Q. WHAT ARE YOUR FINDINGS WITH RESPECT TO QWEST'S APPROACH TO DETERMINING ITS INVESTMENT COST OF DS1-CAPABLE LOOPS?

A. My initial concern with respect to Qwest's DS1-capable loop analysis was with the mix of loop architectures assumed by Qwest. There is little doubt that the

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[1] Only the incremental material costs of plug-in units are adjusted to add a cost increment for maintenance spares at the average rate of one (1) spare plug-in unit for each nine (9) plug-in units in service. No such adjustment is made or required for hard-wired capacity such as common equipment shelves.

[2] For example, Qwest assumes that [ ] percent of common ADM shelf equipment will be utilized in providing DS1-capable loops.

assumed mix of DS1-capable loop architectures reflected in the investment cost analysis is grounded in Qwest's embedded mix of the means by which DS1-capable loops are provisioned currently in Washington state. My principal concern in this regard is that Qwest's architecture assumptions include obsolete arrangements that should not be reflected in a forward-looking cost analysis. Notable in this regard are the first two DS1-capable loop architectures assumed by Qwest -- "HDSL, Soneplex" and the "HDSL, Loop Extender." Both of these architecture types deliver end-user access at the DS1 digital signal bit rate (1.544 Mbps) but by using obsolete and, relative to fiber optic cable, less reliable metallic feeder and distribution facilities. The "HDSL, Soneplex" and "HDSL, Loop Extender" architectures are deployed by ILECs in those instances where the emphasis is on delivery of high bit rate access to the network over embedded metallic loop plant technology. The other six loop architectures reflected in Qwest's DS1-capable loop investment costs analysis are of an optical/digital character and, therefore, they each represent what today is generally considered to be the forward-looking loop provisioning technology.

On a forward-looking basis for several reasons, ILECs in the United States now have specific objectives, plans and strategies to deploy optical/digital technology exclusively in the feeder portion of their loop networks.[4] First, optical/digital loop technology is less costly for ILECs on an incremental basis, both from initial

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[3] Qwest uses a "Total Investment Factor" (TIF) to add installation and other costs to its its incremental material investment costs. Known alternatively as "Total In-plant Factor," TIF is intended to recognize the costs of sales taxes on OEM purchases, telco engineering, and installation.

[4] For example, Verizon's operations in the Northeast United States reflect such a strategy.

investment and operating cost perspectives, than metallic loops.[5] Second, by deploying optical/digital loop technology, the ILECs substantially improve their revenue generation potential by expanding significantly the range of services that they could otherwise offer using metallic cable based technology. Third, ILECs recognize that the deployment of optical/digital technology will significantly expand the size of their potential markets. Fourth, ILECs clearly recognize that they will be hard-pressed to compete in future markets with CATV providers, wireless service providers, and with what we know today as CLECs unless the ILECs too offer a wide range of high bit rate access services to end users. Such access can only be offered efficiently through optical/digital loop architectures. For these reasons, I conclude that the ILEC's forward-looking loop networks are based on optical/digital systems and they do not include metallic cable in the feeder portion of the loop. Accordingly, my adjustments to Qwest's DS1-capable loop cost analysis reflect no weight as being given to the costs associated with the two metallic cable-based architectures that Qwest has identified as HDSL, Soneplex and the HDSL, Loop Extender. My analysis reflects the weight that Qwest assigned to metallic cable based architectures as being transferred to the SONEX Fiber MUX architecture.

[5] For example, see Table No. 1, herein, where Qwest's own computations of incremental investment costs for metallic cable based systems (i.e., HDSL Soneplex and HDSL Loop Extender) can be seen to exceed the weighted average incremental investment cost for the group of all other Qwest-assumed DS1-capable loop architectures.

My review of the company's studies included a critical evaluation of the basic material costs[6] claimed by Qwest to be applicable to each architecture assumed to be used in provisioning DS1-capable loops. As before, with respect to my response testimony on DS3-capable loops, my review of the OEM costs claimed by Qwest showed that claimed costs of optical/digital material are in-line with the OEM prices of such materials generally experienced by large telecommunications companies in the current market. Therefore, I do not adjust Qwest's claims as to its OEM material costs of the equipment used to provision DS1-capable loops.

Also, as before, however, I found that Qwest 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).

For example, with respect to plant utilization, Qwest assumes, without substantiation, that on average, only [ ] DS1s will be utilized out of the total capacity of [ ] DS1s available from OC3 multiplexing. That ratio represents an astoundly low [ ] utilization factor for DS1s derived from OC-3s and, in effect, that assumption alone inflates the incremental direct material cost of the common equipment associated with providing DS1-capable loops by over 170 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.

[6] The costs of equipment sold to ILECs by the original equipment manufacturers (OEM).

As to TIF factors, Qwest, again without substantiation, inflates incremental direct material costs by as much as 211 percent to account for installation costs, sales taxes, etc. of certain optical/digital equipment (e.g., fiber distribution panels and digital signal cross connect frames). 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 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 INVESTMENT COST RECOMMENDATIONS USED TO DEVELOP DS1-CAPABLE LOOP RATES?

A. My proposed incremental DS1-capable loop investments are provided directly to Mr. Klick to be converted to annual recurring costs and monthly rates for DS1-capable loops, and the related subloops. Table No. 2, which follows, shows my proposals for Qwest incremental investments in DS1-capable loops compared with those offered by Qwest.

Table No. 2

Adjustments to Qwest's DS1-Capable Loop Investments[7]

		Qwest Original Investment		Adjusted Investment	
Acct.	**Description**	**Category 1**	**Category 2**	**Category 1**	**Category 2**
357C	CCT, Digital	[ ]	[ ]	240.94	0.00
257C	CCT, Digital	[ ]	[ ]		
1C	Poles	[ ]	[ ]	2.40	0.00
3C	Wire	[ ]	[ ]	0.11	0.00
4C	Conduit	[ ]	[ ]	86.69	0.00
5C	UG Metallic	[ ]	[ ]	8.24	0.00
35C	Buried Drop	[ ]	[ ]	9.86	0.00
42C	Aerial Drop	[ ]	[ ]	1.69	0.00
45C	Buried Metallic	[ ]	[ ]	104.28	0.00
52C	Aerial Metallic	[ ]	[ ]	4.08	0.00
62C	Intrabuilding	[ ]	[ ]	25.27	0.00
85C	UG Fiber	[ ]	[ ]	71.83	0.00
845C	Buried Fiber	[ ]	[ ]	153.72	0.00
862C	Intrabuilding	[ ]	[ ]	1.79	0.00
	TOTALS	[ ]	[ ]	$2,350.12	$49.10

The outside plant information which appears in Table No. 2 is used by Mr. Klick to develop UNE rates proposals for DS1-capable subloops.

Table No. 3 shows a side-by-side summary comparison of my recommended DS1-capable loop investment costs, by architecture type, with Qwest's findings as reported in Table No. 1, above.

[7] Category 1 investment costs are direct, installed investment costs in OEM material. Category 2 investment costs represent the investment costs associated with warehousing required spare material units such as plug-in circuit cards.

Table No. 3

DS1-Capable Loop Investment Costs, <u>Architecture Weighted</u>
Qwest-claimed vs Adjusted

Architecture	Qwest	Adjusted
HDSL, Soneplex	[ ]	$0.00
HDSL, Loop Extender	[ ]	0.00
SONET Fiber MUX	[ ]	1,280.42
SONET Fiber MUX (HDSL)	[ ]	189.33
SONET Fiber MUX/ORB	[ ]	106.54
Digital Pair Gain	[ ]	82.65
Digital Pair Gain HDSL	[ ]	480.33
ASYNC MUX	[ ]	259.94
TOTALS	[ ]	$2,399.21

III. <u>Q. SPECIFICALLY, WHAT ADJUSTMENTS DO YOU PROPOSE BE MADE TO QWEST'S DS1-CAPABLE LOOP INVESTMENT COST ANALYSIS?</u>

A. Based on my experience, I believe that a forward-looking fill factor of 85% is appropriate for a single DS1s multiplexed from OC3. Use of the 85% utilization factor implies that 71 DS1s out of every 84 DS1s derived from OC-3 will be used productively by Qwest; this assumption compares to Qwest's assumption that only [ ] DS1s of every 84 DS1s derived from OC3 will be used productively.

With respect to the TIF factor, 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. MR. WEISS, CAN YOU DEMONSTRATE WHY A PLANT UTILIZATION FACTOR OF 0.85 IS APPROPRIATE FOR USE IN FORWARD-LOOKING COST STUDIES THAT REFLECT THE DEPLOYMENT OF OPTICAL/DIGITAL TECHNOLOGY.

A. My recommendation of 0.85 reflects the average utilization of optical/digital loop plant based on: 1) the demand for optical/digital circuits; 2) plant capacity reinforcement trigger levels; and 3) manufacturers' ordering, delivery and installation intervals. In any individual case of optical/digital plant deployments, depending on that portion of the demand curve at which utilization is reviewed, one may observe lower utilization ratios and in other individual cases, higher utilization rates may be observed. On average, however, a utilization rate of 0.85 will apply to optical/digital plant deployments generally. I have prepared Exhibit_THW-5 to help explain why a utilization factor of 0.85 should apply to optical/digital plant.

Exhibit_THW-5 is in three parts: 1) a graph at the top one-third of the exhibit which depicts normal growth in demand for DS1 circuits plotted along with the OC3 capacity additions (i.e., groups of 84 DS1 units) that would be necessary to accommodate the demand growth; 2) in the center of the exhibit, a table which summarizes the capacity and demand on the system at the beginning and at the end of each of six increasingly longer periods in the life of the system (table, rows 1, 2, and 3), the system DS1 utilization rates at the beginning and end of each of those same six periods and the average utilization rate for each period (table, rows

4, 5, and 6); and 3) a graph at the bottom one-third of the page which depicts the changes in utilization factors for the whole system over time.

The broad solid line on the graph at the top of Exhibit_THW-5 shows the progression of demand for DS1 circuits on an OC3 based multiplex system. The graph shows DS1 circuit demand growing from a level of zero circuits to 559 circuits over time. The narrower line on that same graph shows the progression of capacity additions that are designed to meet the demand growth, given that capacity is planned and added to the system in sufficient time for the additions to be in service when demand reaches 95 percent of existing capacity.

The graph shows that demand equals zero DS1 circuits at the origin when the capacity of the system equals 168 DS1 circuits (2 ea. OC3s); at this initial point, the system utilization factor is zero (table, row 4, column (B)). As the demand approaches 95 percent of the initial existing capacity of 168 DS1 circuits (table, row 5, column (B)), a new addition of 84 DS1 circuits is placed in service so as to bring the total available amount of DS1 capacity to 252 circuits; at that point, the utilization factor for the system drops from 95.24 percent (table, row 5, column (B)) to 63.49 percent (table, row 4, column (C)). Demand growth continues until demand reaches 94.84 percent of existing capacity (table, row 5, column (C)), when the addition of 84 more DS1 units causes system utilization to drop to 71.13 percent (table, row 4, column (D)). As demand growth continues and as capacity is added, the system utilization factor changes as shown at rows 4 and 5 of the table under columns (D) through (G).

Line 6 in the table on Exhibit_THW-5 shows the average system utilization rate[8] for each period depicted in the example. The average utilization rate obviously changes with time but it is always increasing and it approaches 85 percent within two capacity additions. Average utilization actually exceeds 85 percent during the period in which the third capacity addition is consumed by increasing demand (table, row 6, column (E)).

The graph at the bottom of Exhibit_THW-5 depicts the instantaneous utilization rates for the system as demand grows. Note from this graph that the utilization rates drop significantly when new capacity is added but that each drop in instantaneous utilization rate is smaller than the last one, with instantaneous utilization tending to settle within a range of from 0.80 to 0.95 and at an average somewhat above 0.88 (table, row 6, column (G)). My use of the 0.85 average utilization rate for optical/digital systems is grounded in this analysis and the in facts concerning the elements of utilization rates as described at pages 14 through 16 of my response testimony filed on October 20, 2000.

Q. BUT, MR. WEISS, THE ANALYSIS WHICH YOU PRESENT AT EXHIBIT_THW-5 SEEMS TO INDICATE THAT UTILIZATION RATES

[8] One-half of sum of the beginning and ending rates for each period.

RUN AS LOW AS 47 PERCENT IN THE EARLY GROWTH PERIODS. DOESN'T THAT TEND TO ARGUE IN FAVOR OF LOWER AVERAGE UTILIZATION RATES THAN THE 85 PERCENT THAT YOU HAVE PROPOSED?

A. No. First, the analysis depicted at Exhibit_THW-5 begins with the assumption that two OC3s (168 DS1s) are installed initially on the system when the demand for DS1s is zero. In fact, only one OC3 (84 DS1s) could have been installed to meet the initial demand. That would have resulted in a higher utilization factor in the initial period and, thereby, increase the overall average utilization. It also would have shortened the period between the initial installation and the time when the overall utilization factor tends to stabilize in the 80 percent to 95 percent range. In short, the assumption that two OC3s are installed initially biases the analysis toward lower, not higher, overall average utilization rates. Given the rate of initial demand growth depicted on Exhibit_THW-5, it would be prudent to install the capacity of two OC3s as opposed to only one, and that prudent action is reflected in the capacity growth figures used in the exhibit.

More important, however, is the fact that the analysis shown at Exhibit_THW-5 is for only one system of many such systems that exist in an ILEC's network. Some of the systems are in the early stages of their development, exhibiting relatively low utilization rates, while others are well into maturity and they, therefore, exhibit utilization rates at or near 95 percent. As the graph at the bottom of Exhibit_THW-5 shows, even a system in early stages of development approaches the 80-90 percent utilization range in short order. Thus, most optical/digital systems on an ILEC's network would exhibit utilization ratios in the 80-95 percent range and not the lower utilization rates that characterize totally new installations.

III. OC3 AND OC12 INTEROFFICE TRANSPORT

Q. HAVE YOU REVIEWED QWEST'S TRANSPORT MODEL (TM) AND THE INVESTMENT COST RESULTS PRODUCED FROM THE TM FOR OC3 AND OC12 UNBUNDLED DIGITAL INTEROFFICE TRANSPORT ELEMENTS?

A. Yes, I have. Qwest claims that its TM is a forward-looking model designed to develop investment costs for the fixed and variable components of interoffice (IO) transport facilities (IOF).[9] Fixed investment costs are those associated with the equipment located in the originating and/or terminating central office which may include Optical Channel (OC) Add-Drop Multiplexing (ADM) equipment, Digital Signal Cross connect (DSX) panels, Fiber Distribution Panels (FDPs), and other multiplex equipment. Variable investment costs are of two types: intermediate and line haul. The intermediate category of variable investment costs includes the equipment that is located in intermediate central office locations on an IO route or ring. Line haul investments are associated with the fiber cables and their related support structures. TM is designed to develop investment costs for a wide range

[9] TM computes investment costs only for circuits that extend between Qwest central offices; it is not intended to compute costs for those facilities that extend from central offices to end-users or to other carriers.

of switched and private line IO services and unbundled network elements from DS0[10] up to and including OC192 multiplexing.[11] The model is programmed as a MS Excel application associated with a Visual Basic graphical interface.

Because of limited resources on the part of Joint Intervenors, my evaluation and use of TM has been limited to only those elements of the model that pertain to OC3 and OC12 UDIT.

Q. IS THE TM A FORWARD-LOOKING MODEL AS QWEST CLAIMS IT TO BE?

A. As far as I was able to look into the model and the algorithms that comprise it, I believe that it is capable of producing forward-looking estimates of investment costs. However, whether the model produces forward-looking investment costs depends on the accuracy and of the inputs to it. In this respect, I found that significant portions of the TM inputs appear to be hard-coded[12] and those portions, therefore, cannot be critically evaluated. Specifically, the material cost inputs are hard-coded, making it impossible for me to determine their propriety.

With respect to equipment material costs, the user certainly is able to change the associated cell entries. However, the cells are not defined in such a way as to

[10] The digital signal equivalent of a single voice grade channel.

[11] Synchronized Optical NETwork (SONET) channel 9,953.28 Mbps – the equivalent of 129,024 voice grade (DS0) channels.

[12] That is, entered into the model input files as raw numbers with no evident support in other work sheets, files, etc.

enable an objective evaluation of Qwest's claimed equipment material costs. In the TM, Qwest broadly defines equipment components; thus, the prices associated with them are impossible to test for reasonableness. For example, the "Investments" worksheet in the model identifies equipment elements in generic terms such as "LINEAR ADD DROP OC12," at a channel termination (CT) point, assigning prices of [ ] for "Cards," [ ] for "Mountings" and [ ] for "Plugs."[13] From that sort of description, which characterizes all of the TM "Investments" inputs, it was not possible for me to evaluate whether Qwest's claimed OEM prices for equipment are reasonable. Nothing appears in Qwest's filing (no OEM names, equipment designations, etc.) to support the figures which appear on the "Investments" tab of the TM.

Other inputs to the TM also appear to be hard coded and without support. For example, transport mileage estimates are hard coded in each transport mileage band and for the transport mileage average. Prices of fiber cable and the associated support structures are hard coded. In neither of these cases does Qwest provide work papers or any other form of support for these inputs.

Finally, and perhaps, most importantly, the TM includes code (program instructions) that is not readily visible to the user. Thus, it is not possible to examine the mathematics that produces the program's output. This is a serious

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[13] TM run for Washington State, OC3PL, "Investments" tab.

drawback to the use of the model as a means for estimating UNE investment costs.

Q. GIVEN THE OBVIOUS PROBLEMS WITH THE MODEL AS YOU HAVE DESCRIBED THEM, CAN IT BE USED AS A MEANS TO ESTIMATE UNE INVESTMENT COSTS?

A. Without better documentation of the code used to create it and without substantial support for the inputs to it, TM should not be relied upon to develop reasonable estimates of the forward-looking investment costs for UNEs.

At this juncture, however, TM is all that is available to the Commission to estimate UNE investment costs. For that reason, I have used TM for to estimate the investment costs for OC3 and OC12 UDIT elements. My estimates are shown in Exhibit_THW-6 for OC3 UDIT element, and in Exhibit_THW-7 for the OC12 UDIT element. The investment costs shown at both Exhibit_THW-6 and Exhibit_THW-7 are presented to the Commission as alternatives to Qwest's OC3 and OC12 UDIT element investment costs.

My recommended alternative OC3 and OC12 UDIT element investment costs shown in Exhibit_THW-6 and Exhibit_THW-7, respectively, assume that the code behind Qwest's TM can be verified as being able accurately to combine the model inputs, and that the model's material price inputs can be verified as being reasonable. I have identified two categories of the model's inputs that are patently unreasonable in their specification: inside plant utilization factors and the associated TIFs. Adjusting Qwest's TM input files to reflect plant optical/digital plant utilization of 0.85, adjusting the hard wired plant TIF to 1.40 and adjusting the plug-in TIF to 1.20 produces the results that are reported at Exhibit_THW-6 and Exhibit_THW-7. The results shown at Exhibit_THW-6 and Exhibit_THW-7 have been provided to Mr. Klick for his use in computing the recurring cost rates for the OC3 UDIT element and the OC12 UDIT element.

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

A. Yes, it does.