Exhibit No. ____ (DGT-1T)
Docket No. UT-023003

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Review of Unbundled Loop and Switching Rates; the Deaveraged Zone Rate Structure; and Unbundled Network Elements, Transport, and Termination	)))))	DOCKET NO. UT-023003

REPLY TESTIMONY OF
DAVID G. TUCEK
ON BEHALF OF VERIZON NORTHWEST INC.

LOOP DEAVERAGING

APRIL 20, 2004

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND CURRENT POSITION.

A. My name is David G. Tucek. I am a Senior Vice President with Network Engineering Consultants, Inc.

Q. ARE YOU THE SAME DAVID G. TUCEK IDENTIFIED IN VERIZON NW'S PANEL TESTIMONY FILED ON JANUARY 26, 2004?

A. I am.

Q. WHAT IS THE PURPOSE OF YOUR REPLY TESTIMONY?

A. The principal purpose of this testimony is to address the loop deaveraging proposals presented by Staff and by AT&T. The program used by Staff to implement its methodology was submitted as Ex._TLS-7 to Mr. Spinks' testimony filed on January 26, 2004, and described at pages 3-4 of the subsequent testimony of Dr. Blackmon filed on February 9, 2004. See also Spinks Supplemental Direct Testimony at 14. AT&T's deaveraging methodology is described on page 37 of the testimony of Dr. Mercer filed January 26, 2004, and is illustrated by Attachment RAM-7 thereto. Although the program used by AT&T to implement this methodology was not included with that filing, it was included in amendments made to that filing that were filed on April 9, 2004. The workpapers underlying the exhibits to my testimony, as well as the electronic versions of those exhibits, have been provided in the zip file "WA_VZ_DeavgReplyWorkpapers_041904."

Q. SHOULD THE COMMISSION ACCEPT EITHER STAFF'S OR AT&T'S DEAVERAGING PROPOSALS?

A. No. Both Staff's and AT&T's deaveraging proposals are based on a flawed model, as explained in the testimonies of Verizon NW's witnesses Dippon, Flesch, Murphy, Richter, Tardiff, and Vander Weide, and in the joint testimony of Messrs. Mazziotti, Richter and West. These testimonies identify numerous defects in the HM 5.3 model, and demonstrate that it does not produce estimates of Verizon's forward-looking costs of making unbundled elements available to new entrants. With respect to the local loop for example, HM 5.3 disregards real-world constraints on the design and construction of a local exchange network, ignores the requirement that DLC configurations be compatible with Verizon NW's existing infrastructure, and creates distribution areas that are incompatible with established engineering guidelines. Indeed, HM 5.3 does not meet the FCC's requirement that it reconstruct the local network, since it rearranges its presumed customer locations into a rectangular grill.[1] Verizon NW also demonstrates in these testimonies how the costs derived by AT&T and Staff from HM 5.3 rely on inputs and assumptions that are unsupported and improper. Even though my testimony will rely on the lines and costs underlying AT&T's and Staff's specific deaveraging proposals, this should not be construed as an

[1] In a recent California technical workshop, Mr. Donovan acknowledged that HM 5.3 does not build a network that would be designed or constructed by an engineer. When asked if HM 5.3's modeled network reasonably conforms to the manner in which he would have designed it, Mr. Donovan stated: "I think that mischaracterizes what HM 5.3 is. HM 5.3 is not a model that builds a network. . . . It's not out there . . . trying to emulate what an engineer does. It's a costing model. " Rulemaking on the Commission's Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carriers Networks, Rulemaking 93-04-003, Investigation 93-04-002, Workshop Verizon UNE Phase at 3623 (CA PUC Jan. 15, 2004).

endorsement of either the estimated costs employed therein or of the specific deaveraging zone proposals.

Q. HAVE YOU IDENTIFIED ANY OTHER FLAWS IN THE STAFF AND AT&T COST STUDIES, APART FROM THEIR LOOP DEAVERAGING METHODOLOGY?

A. Yes. HM 5.3 also uses the wrong inputs for material and placement costs. In its June 2003 filing, Verizon NW has provided information concerning its actual costs for these items, which are based on records prepared and maintained in the regular course of business reflecting those costs. The model relied upon by Staff and AT&T disregards all of this actual data in favor of outdated information, in some cases from other parts of the country involving other carriers. For example, Mr. Donovan relies on relies on a seven-year old response to an FCC data request to support HM 5.3's input prices for poles (Donovan Direct at 27-28). Similarly, he relies on six-year old prices for BellSouth to support his material inputs for copper cable. (Donovan Direct at 44-45). These inputs are not what a carrier in Washington would expect to pay today for these network components; nor are they what Verizon NW would expect to pay. Consequently, any results based on them cannot reflect what Verizon NW would expect to incur in provisioning unbundled network elements as required by the FCC. The $417 used by HM 5.3 represents the installed cost of a pole, which would include such items as the costs of guy wires and anchors, inventory costs, and installation and engineering labor. With respect to the FCC pole data request, the pole prices reported by the former GTE companies did not include any of these costs.

Additionally, the labor cost reported to the FCC represented only the cost of installation and did not include any engineering labor. With respect to the BellSouth inputs from the Florida USF order relied on by Mr. Donovan, one need only look to the Florida Commission itself to determine how relevant those inputs are in a proceeding to determine the UNE rates for a specific ILEC:

> Verizon witness Tucek's belief that we "never determined that the GTD-5 switch was not representative of Verizon's costs – the only costs that are at issue in this proceeding" is correct. What differentiates between the USF docket and the present proceeding is that the USF docket was a generic proceeding where the outcome was applicable to every ILEC. In the current proceeding, the decision from the Verizon track will be applicable to Verizon alone.[2]

While the specific issue discussed in the above quote dealt with the use of the GTD-5 in Verizon Florida's switching study, the principle is clear: the inputs determined in the Florida USF docket relied on by Mr. Donovan are not appropriate for use in a UNE proceeding, particularly where actual current data is readily available. With respect to cable prices in particular, it is telling that no party (including AT&T) suggested that the BellSouth prices from the Florida USF order should be ordered for Verizon Florida in its UNE docket.

Second, HM 5.3 sizes copper distribution cable by dividing the number of lines to be served by a sizing factor of 0.75 and modeling the costs of the smallest sized cable that will accommodate the resulting number of required pairs. For example, if the lines served by a particular cable equaled 42, HM 5.3 would determine that 56 installed pairs are required and model the cost of a 100-pair cable, the smallest sized cable that will accommodate 56 pairs. Verizon's

[2] Final Order, Investigation into pricing of unbundled network elements (Sprint/Verizon Track), Docket No. 990649B-TP, at 146 (FL P.S.C. Nov. 15, 2002).

loop investment calculator operates in a similar fashion, although instead of dividing by a sizing factor of 0.75, it multiplies by 2.19, its sizing factor input.[3] VzLoop's input is based on the number of engineered pairs per lot, as shown in the column labeled "VzLoop" in Exhibit ___ (DGT-2). The input can be thought of as the ratio of required to working pairs, and is calculated by dividing the number of pairs per lot by the number of working lines per lot. As explained in the panel testimony, the number of pairs per lot is set at 2.50, which is consistent with Verizon NW's engineering guidelines, and, as Mr. Richter notes in his reply testimony, with prior testimony from AT&T in other proceedings. Starting from the bottom, the column labeled "HM 5.3" presents these calculations in reverse, showing that HM 5.3's sizing input is at the very end of Mr. Donovan's range of "1.5 to two lines per living unit" (Donovan Direct at 58), and is well below the range called for in Verizon NW's engineering guidelines.

II. LOOP DEAVERAGING PROPOSALS OF STAFF AND AT&T

Q. PLEASE SUMMARIZE THE DEAVERAGING PROPOSAL FOR LOOPS RELIED UPON BY STAFF.

A. Staff has now "developed its own optimization program based on minimizing the sum of squared error." (Spinks Supplemental Direct Testimony, as revised on April 2, 2004, at 14.) More specifically, it relies upon "the weighted sum of squared errors across all zones." (Blackmon Direct Testimony at 4.)

[3] In addition, VzLoop insures that at least 2 percent administrative spare is present in each copper cable modeled.

Q. HOW DOES THE STAFF'S METHODOLOGY COMPARE TO THAT EMPLOYED BY VERIZON NW?

A. A review of Staff's work papers reveals that their proposed methodology is based on minimizing the same line-weighted RMSE dispersion measure described at pages 12-14 of Verizon NW's supplemental direct testimony. The only difference between Staff's and Verizon NW's approaches is that Verizon NW constrained the application of the methodology to a subset of wire centers by identifying a break point in its costs to establish the highest-cost zone. Staff chose not to constrain the proposed zones in this fashion. However, as Staff's testimony and my testimony below show, it is clearly possible to implement the methodology without this constraint.[4]

Q. HOW DOES THIS METHOD COMPARE WITH AT&T'S DEAVERAGING OPTIMIZER PROGRAM?

A. AT&T, Staff, and Verizon NW have each used the wire center line counts to calculate a weighted dispersion measure to be minimized. However, as Dr. Blackmon explains, AT&T used a line-weighted error measure based on the absolute value of the difference between wire center cost and zone price, rather than the square of the difference as Staff and Verizon NW have done.[5] (Blackmon Direct Testimony at 5). As explained by Dr. Blackmon and elaborated

[4] Staff has used "BURLWAXX" instead of "BURLWAXA" as the CLLI for Burlington. Similarly, Staff has used "SWLYWAXX" instead of "SWLYWAXA" as the CLLI for Sedro Woolley. Also, Staff's workpapers place the Richland wire center in Zone 3 under the current rate structure, and North Richland in Zone 1. The current rate structure actually places Richland in Zone 1, and North Richland in Zone 3. None of these variances affects Staff's deaveraging proposal in this case.

[5] To be precise, AT&T's error measure is based on the absolute value of this difference divided by the zone price. As is shown below, this relative error measure suffers from the shortcomings identified by Dr. Blackmon in his testimony.

on below, this approach is biased, or skewed, towards minimizing the dispersion in Zone 1 at the expense of greatly increased variances in the other zones.

Q. WHAT IS THE REASON FOR THESE GREATLY INCREASED VARIANCES PRODUCED BY AT&T'S PROPOSED METHODOLOGY?

A. As noted at pages 12-13 of Verizon NW's supplemental panel testimony, one of the advantages of the RMSE dispersion measure is that squaring each error accounts for the impact of large deviations from the zone average. AT&T's relative absolute value methodology does not square each error and consequently does not avoid large deviations from the zone averages. Consequently, the resulting deaveraged zones fail to follow the cost curves shown in Exhibit ___ (DGT-3).

Q. PLEASE EXPLAIN THIS EXHIBIT.

A. As explained in Verizon NW's supplemental panel testimony, the problem of picking deaveraged zones can be viewed as approximating the curve formed by the average loop cost for Verizon NW's wire centers with a step function. Page 1 of this exhibit compares the step function for two 5-zone proposals, using the lines and loop costs sponsored by Mr. Spinks. The first graph on this page is based on minimizing the dispersion measure proposed by AT&T; the second is based on minimizing the line-weighted RMSE dispersion measure proposed by Staff and Verizon NW. Similar comparisons appear on the second and third pages of this exhibit, and are based, respectively, on the lines and costs proposed by AT&T and Verizon NW. In each instance it is clear that the line-weighted RMSE methodology produces a better approximation to the

corresponding cost curve. By comparison, AT&T's dispersion measure produces a flat step function that essentially disregards the costs in the zones beyond the first.

Q. ARE THERE ANY OTHER FLAWS IN AT&T'S DEAVERAGING PROPOSAL?

A. Yes. In developing his 5-zone proposal, Dr. Mercer has abandoned the methodology upon which his 3-zone proposal is based. Instead, he has simply used the existing tariffed zone assignments and AT&T's proposed costs to develop a new set of deaveraged rates. The resulting deaveraging proposal is not well-ordered – that is, some wire centers assigned to a given zone may have a lower loop cost than wire centers assigned to a lower-cost zone. For example, Manor Way (MRWYWAXA) is assigned to Zone 2 under Dr. Mercer's 5-zone proposal, even though AT&T's cost estimates place it as the third lowest Verizon NW wire center. In all, there are a total of 23 such misalignments associated with AT&T's 5-zone proposal. Exhibit ___ (DGT-4) identifies all 23 of these misalignments between loop costs and zone assignments.

Q. PLEASE COMMENT ON STAFF'S USE OF A 1.50 MULTIPLIER TO DEVELOP ITS PROPOSED RATES FOR 4-WIRE LOOPS.

A. The 1.50 multiplier for 4-wire loops is inappropriate for at least four reasons. First, loop costs are developed on a per-pair or voice-grade-equivalent basis so that, other things being equal, the ratio of the cost of a 4-wire loop to a 2-wire loop should be approximately two. Although AT&T has not proposed 4-wire loop costs in this proceeding, Dr. Mercer acknowledges that HM 5.3 is capable of modeling these costs. (Mercer Testimony at 18). Indeed, in the pending UNE

docket in California, Dr. Mercer has sponsored an average 4-wire loop cost that is 1.95 times as great as the corresponding 2-wire loop cost. (Declaration of Robert A. Mercer in Support of Opening Comments of Joint Commentors, Ex. RAM-8e (Nov. 3, 2003) (CA PUC Rulemaking 93-04-003, Investigation 93-04-002)). Based on the costs filed in this proceeding, as amended by AT&T in its filing of April 9, 2004, HM 5.3 would produce a 4-wire loop cost that is 1.93 times as great. However, both of these ratios are biased downward because the HM 5.3 results incorrectly weight the cost of the NID and exclude a portion of the concentrator investment in the 4-wire loop calculation.

Second, other things are not equal: the 2-wire loop cost relied on by Mr. Spinks assumes an IDLC termination at the Central Office for all loops served by DLCs. Because 4-wire loops are not used for switched services, they must utilize a UDLC termination, which is more costly than an IDLC termination on a per-pair basis.[6] Consequently, the cost of 4-wire UDLC loop relative to the cost of a 2-wire loop should be more than two times as great. Because Verizon NW's loop costs reflect a very high percentage (90.2%) of IDLC loops, it is reasonable to expect that the cost of a 4-wire loop will be significantly more than twice the cost of a 2-wire loop. The loop costs filed by Verizon NW bear this out: on a statewide basis, the 4-wire loop is 2.59 times as great as the 2-wire loop.

[6] The increased cost results from both the additional line cards at the Central Office Terminal (COT) and from the relatively more expensive 4-wire line card terminations required at both the COT and remote terminal. The plug-in investment for a 4-wire loop is almost 9 times greater than that required for a 2-wire IDLC loop.

Third, the appropriate deaveraged 4-wire loop rates, using Verizon NW's cost calculations, are identified in Exhibit ___ (DGT-5).[7] The ratio of 4-wire to 2-wire loop costs in this exhibit is seen to be 2.68, 2.27, and 2.14 for zones 1, 2, and 3, respectively. The ratio is not the same across all zones because there is a difference from zone to zone in the mix of lines between those served by DLCs and those served directly from the main distribution frame in the central office. Consequently, Mr. Spinks' assumption of a constant ratio across all zones is incorrect and is simply not reflective of the underlying cost structure.

Finally, Mr. Spinks' use of a ratio to establish 4-wire loop rates is unnecessary because the circumstances underlying the adoption of such a ratio have changed. The Commission adopted a ratio approach in April 1998 in the Eighth Supplemental Order in Docket No. UT-960369 /370/371. It did so because the Commission disagreed with US WEST's cost estimates in that case and because "Neither the Hatfield nor the Benchmark Cost Proxy Models report the difference in the cost of providing a two-wire versus a four-wire loop." (Order at ¶¶189-192). Additionally, while the 1.50 ratio ultimately ordered by the Commission was consistent with GTE's proposal in that case, the Commission adopted a ratio approach because it found that it could not determine how GTE's cost estimates had been determined. Circumstances have changed in the six years since the Eighth Supplemental Order was issued: Qwest's costs are not at issue in this docket; the successor to the Hatfield model now produces estimates

[7] This exhibit is in the same format as Exhibit RP-2 from Verizon NW's June 26, 2003 filing and is consistent with the VzLoop Version 7 results filed with Verizon NW's supplemental filing. It is provided here for the convenience of the parties. The cost studies underlying this exhibit, and a complete loop document set, have been made available on-line in VzCost.

of the 4-wire loop costs; and no party has claimed that it cannot determine how Verizon NW's 4-wire loop costs have been developed. There is thus no need for the Commission to fall back on a surrogate ratio approach.

Q. SHOULD THE COMMISSION ADOPT SEPARATE RATES FOR NONLOADED LOOPS AS STAFF HAS PROPOSED?

A. No. Unloaded loops are loops that meet the transmission requirements for advanced services such as ADSL. These requirements put limitations on copper loop length, and on the presence of bridge taps and load coils. The Commission need not, and should not, specify different rates for unloaded loops than for other unbundled analog loops.

The Commission *need* not specify a different rate because, in the real network, loops are unbundled on an end-user specific basis, and the loop serving a given customer location will either meet the transmission requirements for advanced services or it will not. If it does not, the CLEC can request that bridge taps and load coils be removed, subject to the corresponding non-recurring charges. If the specific loop does meet the transmission requirements for advanced services, then no additional work is required and the loop is no different than a basic 2-wire unbundled loop – the rates for such loops should therefore apply.

The Commission *should* not specify a different rate for unloaded loops because doing so creates the opportunity for arbitrage on the part of the CLECs. If the Commission were to accept Staff's proposal to set an unloaded loop rate that is less than the corresponding unbundled analog loop rate, a CLEC wishing

to provide POTS service to a given-end user would have an incentive to order that end-user's loop at the lower rate for an unloaded loop. Under these circumstances, the forward-looking costs upon which the unbundled loop rates are based would not be recovered.

Q. PLEASE ADDRESS STAFF'S AND AT&T'S PROPOSAL FOR DEAVERAGING HIGH CAPACITY DS3 LOOP RATES.

A. Most of the costs of a DS3 loop are driven by circuit equipment that does not vary by wire center geography -- on a statewide basis, the loop costs represent less than 13 percent of the recurring rate. Moreover, Verizon NW provisions less than 700 DS3 loops in only 26 wire centers, far less than the more than one million lines served in all 99 of Verizon NW's Washington wire centers. Consequently, the zone averages produced by HM 5.3 for DS3 loops are too dependent on the small number of such loops included in each zone. They are not reflective of Verizon NW's forward-looking DS3 costs in all wire centers, and the statewide average is the best forward-looking estimate of these costs.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REPLY TESTIMONY?

A. Yes.