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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

March 16, 1999

Ms. Magalie Roman Salas, Secretary
Federal Communications Commission
445 Twelfth Street, SW, Room TW-A325
Washington, D.C. 20554

RE: In the Matter of Performance Measurements and Reporting Requirements for Operations Support Systems, Interconnection, and Operator Services and Directory Assistance, CC Docket No. 98-56, RM-9101

Dear Ms. Roman Salas,

On December 11, 1998, Mr. Frank S. Simone, AT&T, memorialized through a filing with the Secretary of the Commission a meeting that had occurred between certain representatives of the Local Competition Users Group ("LCUG") and staff members of the Common Carrier Bureau.[1] Associated with that filing, Mr. Simone provided a copy of presentation material used in the meeting.

The purpose of this letter is to advise the Commission and its staff that the material Mr. Simone provided contains errors related to U S WEST's positions. Through this correspondence, we hope to correct those errors. As the purpose of this letter is solely to address and rebut the errors contained in the *ex parte* presentation materials provided by AT&T, nothing herein should be construed to indicate U S WEST's agreement with other points made in the referenced *ex parte* presentation.

Attached is a document prepared by U S WEST subject matter experts and our retained consultant, Dr. Michael Carnall. Dr. Carnall is referenced in U S WEST's opening Comments in

[1] AT&T Letter from Frank S. Simone to Ms. Magalie Roman Salas, Secretary, Federal Communications Commission dated Dec. 11, 1998, notifying the Secretary of the ex parte meeting held on December 10, 1998 by LCUG representatives on the subject of Performance Measurements and Reporting Requirements for Operations Support Systems, Interconnection, and Operator Services and Directory Assistance, CC Docket No. 98-56. The attachment to Mr. Simone's letter incorporates two items: 1) a document appearing to be printouts of a slide-type presentation entitled "Assessing Performance Using Statistics," The Local Competition Users Group, dated December 10, 1998 (presented in a "landscape" format); followed by 2) a document entitled "Status of State Statistical Discussions" (presented in a "portrait" format).

the above-referenced proceeding and contributed a substantive Appendix to that filing.[2] The Attachment hereto, like the aforementioned Dr. Carnall Comments on behalf of U S WEST Communications, Inc., focuses on methodological issues regarding performance measurements.

U S WEST respectfully submits an original and four copies of this letter and requests that these corrections be noted and filed in the record of the above-referenced proceedings.

Sincerely,

Kathryn Marie Krause

cc: Jake Jennings
Daniel Shiman
Florence Setzer
Alexander Belinfante
Andre Rausch

[2] See Comments of U S WEST Communications, Inc., and Motion to Accept Late-Filed Comments of U S WEST Communications, Inc., dated June 2, 1998, In the Matter of Performance Measurements and Reporting Requirements for Operations Support Systems, Interconnection, and Operator Services and Directory Assistance, CC Docket No. 98-56, RM-9101, at Appendix A, Comments of U S WEST Communications, Inc., Comments of Michael Carnall on Statistical Issues of Detecting Differences in Service Quality.

ATTACHMENT

1. Regarding the z-statistic, U S WEST has agreed to its use only in conjunction with a permutation test.

On page 2 of the LCUG presentation titled "Performance Results Should Be Assessed Using Quantitative Methodology," the statement is made that there is "specific agreement that the LCUG modified z-statistic is effective." U S WEST is then listed among five companies that purportedly agree.

U S WEST's position is not as broadly supportive of the modified z-statistic as the LCUG presentation material represents. U S WEST has agreed that the use of the z-statistic is appropriate only when used in a permutation test of the type advocated by U S WEST (and others, including AT&T) in Colorado[3] (see also comment 3 below). (A copy of the proposed rule language is attached.) It is important to note that the LCUG modified z-statistic, when used in conjunction with a standard Z-test, distorts the critical value and yields a test with an actual confidence level that is lower than specified. The reason is the standard Z-test assumes that the underlying distribution is normal. The result is that the Type I error of the test is too high (that is, for a 99 percent confidence test, more than one percent of the tests will fail, even if there is no actual difference).

2. The "Fisher's Exact Test" is not the same as the permutation test to which U S WEST agreed to in the Colorado docket.

The LCUG's presentation "Status of State Statistical Discussions," references a Colorado proceeding (Docket 97R-153T) and a "permutation analysis procedure." In the immediate preceding presentation material, that titled "Performance Results Should Be Assessed Using Quantitative Methodology," on the page titled "Technical Issues," LCUG states that the permutation test is also known as "Fisher's Exact Test."

The Commission should be aware that the "Fisher's Exact Test" is not the same permutation test to which U S WEST agreed to in Colorado, because it does not completely describe the test details agreed upon. In fact, this particular test name was never mentioned in the discussions in Colorado.

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[3] In the Matter of Amendments to the Public Utilities Commission's Rules Regulating Telecommunications Service Providers and Telephone Utilities, 4 Code of Colorado Regulations 723-2, to Add Rules Regarding Quality of Service and Facilities Offered by Incumbent Telecommunications Providers to Other Telecommunications Providers, Docket No. 97R-153T.

3. The description of state statistical discussions shown for Colorado Docket 97R-153T does not accurately reflect U S WEST's position.

Again in the presentation material titled "Status of State Statistical Discussions," on the first page, the statements are made that (a) "U S West agreed . . . that the LCUG modified z-statistic would be an acceptable statistical methodology," and that (b) "U S West has also agreed that the permutation analysis procedure is desirable, particularly for small sample sizes . . ."

Both these representations are in error. With reference to representation (a), as stated above with respect to Item 1, U S WEST accepts the LCUG modified z-statistic only when used in the described permutation test. With respect to representation (b), while the permutation test permits analysis of smaller sample sizes with more accuracy than the standard Z-test, minimum sample sizes remain appropriate, if only to address the facts that: (1) data errors will have an increasingly adverse impact on accuracy of the analysis with decreasing sample size, and (2) the materiality of findings will decrease as sample sizes decrease.

Proposed Rule Language

I. **FOR THE PURPOSE OF CONDUCTING STATISTICAL ANALYSIS ON PERFORMANCE MEASUREMENT DATA, A PERMUTATION TEST SHOULD BE USED FOR ALL TESTS OF DIFFERENCES OF MEANS. THE STEPS INCLUDE COLLECTING THE DATA, AND POPULATING THE CLEC AND ILEC DATA INTO A STANDARD INDUSTRY SOFTWARE PACKAGE (SUCH AS SAS OR ITS EQUIVALENT) AND CONDUCTING THE TEST AS SET FORTH IN ITEM II.**

II. **THE STEPS IN EXECUTING A PERMUTATION TEST ARE AS FOLLOWS:**

1. Read the data for the ILEC and CLEC samples.
2. Calculate the Z statistic for the actual arrangement of the data.

$$Z = \frac{\bar{x}_C - \bar{x}_I}{\sigma_D}$$

$\bar{x}_C$ = Mean of the monthly measurement for CLEC

$\bar{x}_I$ = Mean of the monthly measurement for ILEC (USWC)

$$\sigma_D = \sqrt{\frac{\sigma_C^2}{n_C} + \frac{\sigma_I^2}{n_I}}$$ and for relatively large n

$$\sigma^2 \approx s^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x}_i)^2}{n-1}$$

3. For up to 1,000 permutations of the data calculate the Z statistic for permuted data.
4. Count the number of times the Z statistic for a permutation of the data is greater than the actual Z statistic.
5. Compute the fraction of permutations for which the statistic for the rearranged data is greater than the statistic for the actual samples.
6. If the fraction is greater than α, one minus the confidence level, the test does not support the hypothesis of inequality and the test is passed.