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June 1, 2006

Mrs. Blanca S. Bayó
Director, Division of the Commission Clerk and
Administrative Services
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

Re: Docket No. 000121A-TP
**In Re: Investigation into the establishment of operations support
systems permanent incumbent local exchange Telecommunications
companies**

Dear Ms. Bayó:

Enclosed is Liberty Consulting Group's Final Report of the Re-Audit of BellSouth's Performance Assessment Plan for Florida. The enclosed final report replaces the version filed on May 25, 2006.

A copy of the same is being provided to all parties of record.

Sincerely,



Robert A. Culpepper

Enclosures

cc: All parties of record
Jerry D. Hendrix
James Meza, III
634953

CERTIFICATE OF SERVICE
Docket No. 000121A-TP

I HEREBY CERTIFY that a true and correct copy of the foregoing was served via

Electronic Mail and U.S. Mail this 1st day of June, 2006 to the following:

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**(+) Signed Protective
Agreement**

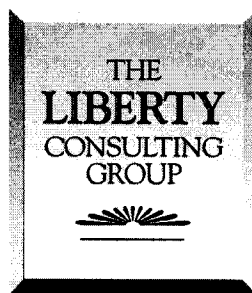
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**Final Report of the Re-Audit of
BellSouth's Performance Assessment Plan
for Florida**

Prepared for:

**The Staff of the
Florida Public Service Commission
and
BellSouth – Florida**

By:



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May 18, 2006

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I. Introduction

A. Background and Purpose of the Review

In April 2005, The Liberty Consulting Group (Liberty) completed an extensive audit for the Florida Public Service Commission (Commission) of BellSouth's Performance Assessment Plan for Florida, which includes its Performance Measurements Quality Assurance Plan (PMQAP), Service Quality Measurement (SQM) Plan, and its Self Effectuating Enforcement Mechanism (SEEM) Administrative Plan. In that audit, Liberty performed comprehensive reviews of BellSouth's documentation, raw data, performance measure calculations, remedy calculations, adjustments, reporting, and change control processes, concentrating on the reporting months of November and December 2003 and January 2004. Liberty described the audit and its results in its *Final Report of the Audit of BellSouth's Performance Assessment Plan for Florida* ("Liberty Florida Audit Report"), released on April 19, 2005. The Liberty Florida Audit Report included 59 specific audit findings. BellSouth introduced a number of changes to its performance measurements systems and documentation to address these findings.¹ Some of the changes that BellSouth made resulted in adjustments to some past remedy payments and in changes to the remedy payments going forward.

After reviewing the changes that BellSouth made, the Commission Staff identified the changes resulting from four findings of the original Liberty audit – Findings 52, 53, 54, and 55 – to be of particular concern, and requested that the "implementation of th[ese] Finding[s] and the resulting BellSouth SEEM recalculations, and adjustments be reaudited."² Subsequently, BellSouth and the Commission engaged Liberty to perform this review ("Re-audit") and specifically to verify three critical requirements for Findings 52, 53, 54, and 55:

- That the Change Requests (RQs), as implemented, resolve the issues as described in the Liberty Florida Audit Report
- That performance results and SEEM payments for a representative data month subsequent to RQ implementation are correct.
- That for a representative data month following implementation of RQs, recalculated payments and adjustments made by BellSouth to SEEM are correct.³

B. Liberty's Review Methods

Liberty drew from its experiences working on similar audits in conducting this Re-audit. In particular, Liberty drew from the knowledge it gained in conducting the original Florida audit. As noted above, however, this Re-audit is much more focused than the

¹ Affidavit of Alphonso J. Varner, BellSouth, September 8, 2005.

² September 30, 2005 letter from Lisa Harvey, Chief, Bureau of Regulatory Review, Florida Public Service Commission to Mary Rose Sirianni, Manager, Regulatory, BellSouth Telecommunications, Inc.

³ Email from Billy Entrekin, BellSouth, November 18, 2005.

original audit, as it only reviews information relevant to Findings 52, 53, 54, and 55 in the original audit.

Liberty obtained information from BellSouth through a series of data requests. These were supplemented by a limited number of interviews with BellSouth personnel via teleconference. Throughout this review, Liberty found the BellSouth personnel assigned to work with Liberty to be knowledgeable, responsive, and cooperative.

As the Re-audit proceeded, Liberty identified some potential new findings and notified BellSouth and the Commission Staff of these preliminary findings. BellSouth replied to these notifications with comments and additional information. Based on this input and additional analysis, Liberty developed the list of new findings included in this report.

C. Overview of BellSouth's Performance Assessment Plan for Florida

The BellSouth Performance Assessment Plan includes the SQM Plan, the SEEM Administrative Plan, and the PMQAP.⁴ The purpose of the SQM Plan is to define the service quality measures that BellSouth uses to measure its wholesale performance. The SEEM is a performance assurance plan, specifying certain payments that BellSouth must make to Competitive Local Exchange Carriers (CLECs) and the Commission if it fails to meet specified performance targets, and BellSouth defines the SEEM and its operation in the SEEM Administrative Plan. The PMQAP defines the change control and quality assurance processes that BellSouth uses in executing its performance assessment plan and other operations associated with its service quality measures systems.

The BellSouth SQM Plan describes in detail the service quality measures that BellSouth uses to report the quality of its wholesale and retail performance. The SQM Plan also identifies certain SQM performance measures that are measures used in the SEEM Administrative Plan. The SQM Plan provides the basic definition of BellSouth's performance measures, describes the business rules BellSouth applies to the measures, indicates what types of records BellSouth excludes from the calculations, provides the formulas BellSouth uses for calculating the measures, lists the report structure and data that are retained for the measure, and lists the disaggregations of each measure for both the SQM reports and SEEM calculations together with the performance standards (retail analogs or benchmarks) that apply to each disaggregation.

BellSouth organizes its performance measures using the following eleven domains:

- Operations Support Systems (OSSs), including Pre-ordering (PO)
- Ordering (O)
- Provisioning (P)

⁴ BellSouth implemented the Administrative Plan pursuant to an order issued by the Commission on September 10, 2001, in Docket 000121-TP.

- Maintenance and Repair (M&R)
- Billing (B)
- Operator Services (OS) and Directory Assistance (DA)
- Database Update Information (D)
- E911 (E)
- Trunk Group Performance (TGP)
- Collocation (C)
- Change Management (CM).

Within each domain there are between 2 and 13 performance measures. The SQM Plan identifies each measure by its domain as well as its specific measure number. For example, M&R-3 is a Maintenance and Repair measure that calculates Maintenance Average Duration, or the average time from BellSouth's receipt of a trouble report to the time Bell South clears the trouble. Most of the measures have disaggregations or sub-measures, which usually correspond to disaggregations of the measure by product type or transaction type.

The Commission adopted the SEEM Administrative Plan for Florida that was the subject of this review on September 10, 2001. The SEEM Administrative Plan provides for two tiers of remedy payments for non-compliance. BellSouth pays Tier 1 remedy payments directly to a CLEC when it provides non-compliant performance to that CLEC as measured by the Tier 1 SEEM measures. BellSouth pays Tier 2 remedy payments to the Commission or its designee when BellSouth's performance for a consecutive three-month period is not in compliance for CLECs in aggregate for a Tier 2 Enforcement Measurement Element. The SEEM Administrative Plan lists measures and specific sub-measures or disaggregations included in the SEEM. It also specifies the statistical formulas for each type of measure that BellSouth uses to determine compliance with the standards for each sub-measure. In addition, the SEEM Administrative Plan lists the fees for each type of non-compliance, describes the method for calculating remedy payments, and presents other policies associated with the SEEM. The relevant version of the SEEM Administrative Plan for this audit is version 2.7, updated June 16, 2003.

BellSouth uses a number of systems and processes to implement the Florida Performance Assessment Plan. For collection, storage, and selection of the measures' data and for calculation and reporting of measures, BellSouth uses the Performance Measurements Analysis Platform (PMAP). BellSouth uses the Parity Analysis and Remedy Information System (PARIS) to calculate and report the remedy payments required by the SEEM.

Remedy Payment Calculations

Because the issues in the findings that are the subject of this Re-audit are related to remedy payment calculations, this section provides more detail about the SEEM Administrative Plan and BellSouth's process for calculating remedy payments. The SEEM Administrative Plan contains two principal classes of service quality measures:

parity measures and benchmark measures. A parity measure is one in which BellSouth's performance to the CLECs is compared with that which it delivers to its own customers for the same or similar products. For example, for M&R-3, the standard for maintenance average durations for resale business customers is the maintenance average duration for retail business customers. A benchmark measure is one in which the SEEM standard is an absolute standard. For example, for O-3 and O-4, the standard for Residential Flow Through is 95%, a standard that does not vary from month to month. The SEEM Administrative Plan further subdivides these classes according to whether the measure's definition is that of a mean, a proportion, or a rate.

For parity measures, BellSouth uses various statistical tests, as specified by the SEEM Administrative Plan, to determine whether it is meeting or exceeding the performance standard. These defined statistical tests depend on which of the three types of measures are involved: mean, proportion, or rate. In addition, within each of these types, the specific test required depends on the sample size (i.e., the number of CLEC and ILEC transactions) in the data month.

The statistical tests for means, proportions, and rates generally produce an exactly reproducible result. The only exceptions to this are for some of the tests required for the mean parity measures.⁵ For such measures, the SEEM Administrative Plan requires BellSouth to use a type of statistical test called a "permutation test" when either the ILEC or the CLEC sample size is less than six. A permutation test requires a large number of calculations, and that number grows rapidly as either the number of ILEC or the number of CLEC observations becomes large.⁶ Thus, in accordance with the SEEM Administrative Plan, BellSouth performs an *exact permutation test* when the number of calculations is no more than 1,000, and performs a *random permutation test* when the number of calculations for an exact permutation test would have been greater than 1,000. The random permutation test draws 1,000 of the total possible calculations at random, and performs the permutation test using those 1,000.⁷

The output of all the statistical tests is a "Z-score," a number that shows the standardized difference between the ILEC mean, proportion, or rate and the CLEC mean, proportion, or rate. BellSouth defines the calculation such that the lower the score, the worse the performance delivered to the CLEC. A Z-score of zero indicates that the service delivered to the ILEC and that delivered to the CLEC during the month were exactly equal. Scores below zero indicate that the CLEC received substandard performance.

⁵ The two measures of this type that Liberty analyzed as part of this Re-audit are P-4 and M&R-3.

⁶ For example, for an ILEC sample size of 100 and a CLEC sample size of 5, the number of calculations required for an exact permutation test is 75,287,520.

⁷ In the case of a random permutation test, Liberty can reproduce the test by randomly drawing a sample of calculations to make, but the result of the calculations will not be exactly the same as BellSouth's, because the specific calculations in the sample will be different. However, the differences between the Liberty and BellSouth results should be within certain precision boundaries. As discussed in the description of its statistical test replication in Section III.A of this report, Liberty used the precision of the test to calculate the expected difference between the BellSouth and Liberty results in order to ensure that the actual difference was less than the expected difference.

A Z-score below zero may simply indicate natural statistical variation or it may indicate consistently substandard performance. However, the further below zero a Z-score is, the less likely the result is due to random variation. To minimize the impact of statistical variation on the results, the SEEM Administrative Plan specifies the calculation of a Balancing Critical Value (BCV). Remedies are paid only when the Z-score for a company and sub-metric combination is below the BCV. The BCV is set such that the chance of incorrectly paying remedies for natural statistical variation is equal to the chance of not paying penalties when true substandard service was delivered.

For the measures reviewed in this Re-Audit, the PARIS system begins with three datasets, called "relational tables," in order to calculate the Z-scores and BCV's. One relational table contains all provisioning information on service order requests that is necessary to calculate the parity Provisioning measures.⁸ Another relational table contains all the other information, except for information about lines in service, needed to calculate the Z-scores and BCV's for all parity Maintenance and Repair measures.⁹ The last relational table relevant to this audit contains information about the number of lines in service (by company, type of line, etc.) needed to calculate the M&R-2 rate measure.¹⁰

PARIS captures the calculations made using the data in the relational tables at two main points during the SEEM process. The first capture point is the "cell" level. A cell is the smallest grouping used for parity comparisons, and depends on the measure. For Maintenance and Repair measures, each company, wire center, dispatch type, product, and half-month comprise half of a cell. The other half is the BellSouth comparison data for the same wire center. At the cell level, BellSouth captures the average, proportion, or rate; calculates a cell Z-score (according to the statistical test specified in the SEEM Administrative Plan); and captures the relevant standard deviations and numbers of CLEC and ILEC observations.

The second capture point is the aggregate level.¹¹ At this level, BellSouth captures relevant SEEM results for each company and sub-measure combination appearing in the SEEM Administrative Plan, and calculates an Aggregate Z-score and BCV. It is these two calculations that lead to the determination of whether remedies are paid. If the Aggregate Z-score is below the BCV for a company and sub-metric combination, BellSouth is obligated to pay remedies.¹² BellSouth captures the Aggregate Z-scores and BCV's, along with the total number of CLEC transactions, in a PARIS dataset called Mean Aggregate Score Fact Report for mean measures and a dataset called Prop Aggregate Score Fact Report for rates and proportions.¹³

⁸ The name of this table is "so_rel."

⁹ The name of this table is "ticket_rel."

¹⁰ The name of this table is "service_line_rel."

¹¹ There are two uses of the word "aggregate" in this report. The first is related to the aggregate Z-score. The aggregate Z-score is an aggregation, for each sub-measure, of the cell Z-scores. BellSouth calculates the aggregate Z-score for each CLEC and for the "aggregate CLEC." The term "aggregate CLEC" refers to the aggregation of all CLECs, and is used for Tier 2 calculations.

¹² When there are fewer than 5 data points for the combinations, remedies are not paid.

¹³ Replication of these two BellSouth datasets was the first step in Liberty's review of Findings 52, 54, and 55 described in Section III.A. Note that the "aggregate" referred to in these reports is the Aggregate Z-score

PARIS creates a single table known as the Remedy Ap Fact Report, which shows all companies and sub-measures requiring remedies for the month in question. This table contains only those line items in the two aggregate fact reports where 1) the Aggregate Z-score is below the BCV, and 2) the number of CLEC items is at least five.¹⁴

For benchmark measures, the SEEM Administrative Plan specifies that no statistical test is required. Rather, when the number of CLEC transactions is above 30, a simple comparison of the monthly performance to the benchmark determines whether remedies are required, and the SEEM Administrative Plan includes a table that specifies the cutoffs for remedies. Liberty used this information in evaluating Finding 53, which involved the only benchmark measures in this audit.

D. Findings Subject to the Re-audit and Service Quality Measures Affected

Each of the findings of the original Liberty audit that are the subject of this Re-audit concern the methods that BellSouth uses to calculate remedy payments pursuant to the SEEM Administrative Plan. The findings are not related to issues regarding service quality measurement data or calculations. The SEEM process occurs after BellSouth calculates the service quality measurements. Because of this fact, Liberty's analysis in this Re-audit focused on the implementation of the SEEM Administrative Plan with respect to the affected measures and not on the service quality measurement data or calculations. Moreover, the findings subject to the Re-audit involved a limited subset of the measures included in the SEEM Administrative Plan. The table below gives each of the original Liberty findings that were included in this Re-audit, and a listing of the SEEM measures affected by the finding.

Finding Number	Finding	Measures Affected
52	BellSouth was not calculating the parity measures involving Tier 1 averages according to the SEEM Administrative Plan.	M&R-3 P-4
53	BellSouth did not make remedy payments for failures associated with the O-3 and O-4 (Percent Flow-Through Service Requests Summary and Detail) measures in accordance with the SEEM Administrative Plan.	O-3 O-4
54	BellSouth did not calculate the remedy payments for percentage parity measures (<i>i.e.</i> , M&R-1, M&R-4, M&R-5, P-3, and P-9) according to the SEEM	M&R-1 M&R-4 M&R-5 P-3

and not the Aggregate CLEC. These reports contain information about both individual and aggregate CLECs.

¹⁴ Replication of the items in this table was the second step in Liberty's review of Findings 52, 54, and 55 described in Section III.A. The final step was the verification that BellSouth correctly transmitted these remedy payments. This step reviews processes outside the PARIS system.

	Administrative Plan.	P-9
55	BellSouth did not calculate remedy payments for M&R-2 (Customer Trouble Report Rate) according to the SEEM Administrative Plan.	M&R-2

Thus, these findings involve the following service quality measures:

- O-3: Percent Flow-Through Service Requests (Summary)
- O-4: Percent Flow-Through Service Requests (Detail)
- P-3: Percent Missed Initial Installation Appointments
- P-4: Average Completion Interval (OCI) & Order Completion Interval Distribution
- P-9: % Provisioning Troubles within 30 Days of Service Order Completion
- M&R-1: Missed Repair Appointments
- M&R-2: Customer Trouble Report Rate
- M&R-3: Maintenance Average Duration
- M&R-4: Percent Repeat Troubles within 30 Days
- M&R-5: Out of Service (OOS) > 24 Hours

Findings 52, 54, and 55 resulted from issues related to the statistical calculations in PARIS. Finding 53 is related to the proper payment of penalties for the O-3 and O-4 measures, which are benchmark (not parity) measures. BellSouth's application of the SEEM Administrative Plan to the O-3 and O-4 measures during the time period relevant to the Re-audit was somewhat exceptional, because BellSouth performed the SEEM calculations for these measures outside of PARIS. The following provides a more complete description of each of the four findings from the original audit that are the subject of this Re-Audit.

Finding 52

Finding 52 resulted from incorrect calculation of the quantity δ .¹⁵ BellSouth uses this quantity in calculating the BCV. Thus, an incorrect δ impacts the pass/fail determination. Liberty found that BellSouth had incorrectly calculated this quantity, by using the same value for all cells in a sub-measure rather than allowing it to vary by company (CLEC) and sub-measure, as specified in the Florida SEEM Administrative Plan. As noted in the Liberty Florida Audit Report, Liberty used the November 2003 data for the measures M&R-3 and P-4 to estimate the impact of this issue. For those measures, BellSouth reported 95 Tier 1 failures in 896 tests. Had BellSouth used the value of δ specified in the documentation, the total number of failures would have been 63. Thus, in this case, BellSouth failed in an additional 32 instances due to this error.¹⁶

¹⁵ See SEEM Self-Effectuating Enforcement Mechanism Administrative Plan Florida Plan, Version 2.7, p. D-12, for a description of this constant.

¹⁶ Liberty Florida Audit Report, April 19, 2005, pp. 199-200.

Finding 53

In Finding 53, Liberty compared its calculations of remedy payments associated with the O-3 and O-4 measures with BellSouth records of remedy payment transmissions. Through this comparison, Liberty found a total of 42 cases for which BellSouth made no payment, but for which Liberty calculated that a payment should have been made. Conversely, Liberty found a total of 29 cases for which BellSouth made a payment, but for which Liberty did not calculate a failure. On subsequent analysis that did not appear in the Liberty Florida Audit Report, Liberty reduced the numbers of discrepancies to 13 – 6 cases where Liberty believed a payment was not made when it should have been and 7 cases where a payment was erroneously made. Liberty was unable to determine the exact nature of this issue, but believed it was due to company roll-up issues. BellSouth introduced changes to address these issues in the change control RQ4932, which BellSouth implemented in March 2004.

Finding 54

In Finding 54, Liberty found that BellSouth did not properly calculate the cell Z-scores for percentage measures. The SEEM Administrative Plan specifies that BellSouth combine cell Z-scores into Aggregate Z-scores for each company and sub-measure combination. As stated above, the pass/fail determination in the SEEM Administrative Plan uses the Aggregate Z-score. Liberty found that the miscalculations occurred when there was only one cell for a sub-measure (Number of cells = 1) and that BellSouth also used the incorrect statistical test in some cases.¹⁷ Liberty found that these issues led to the incorrect calculation of 1,557 out of 7,451 cell Z-scores for the related measures in the months from November 2003 through January 2004. Liberty also found 18 errors in the pass/fail determination for the same period.¹⁸

Finding 55

In Finding 55, Liberty found that BellSouth had incorrectly calculated both the Z-scores and the Balancing Critical Values for M&R-2. As stated earlier, both of these directly affect the pass/fail determination. Liberty found the same issues for M&R-2 as in Findings 52 and 54. In addition, Liberty found additional problems in the calculation of the BCV. Liberty found that in 318 instances for the time period November 2003 through January 2004, BellSouth determined a failure, when, in fact, no failure had occurred. In no instances did BellSouth determine that a company had passed a sub-measure when that company had failed.¹⁹

¹⁷ The SEEM report specifies different statistical tests, depending on the sample size and other factors.

¹⁸ Liberty Final Report, April 19, 2005, p. 202.

¹⁹ Liberty Final Report, April 19, 2005, p. 203-4.

E. Overall Conclusions of the Re-audit

In this Re-audit, Liberty found that BellSouth properly implemented corrections to its systems to address Findings 52, 53, 54, and 55 of the original Liberty Florida Audit in order to calculate the correct remedy payments for the measures involved in these findings. In particular, Liberty found that BellSouth correctly calculated the remedy payments for the two data months reviewed in the Re-audit: January and August 2005. However, Liberty found one instance in which BellSouth failed to make a correct remedy payment based on these calculations to a CLEC for the August 2005 data month by overpaying to that CLEC. In addition, Liberty found a few instances in which BellSouth failed to make correct adjustments based on the remedy payment calculations for the January 2005 data month. All but one of these instances involved Tier 2 payments and most were cases for which BellSouth failed to claim a credit that it was owed.

These considerations led to the following two new findings:

Finding R1: BellSouth incorrectly paid \$9,500 (instead of \$4,750) for one remedy related to the Maintenance Average Deviation (M&R-3) measure in August 2005.

Finding R2: BellSouth did not make appropriate adjustments for five company/sub-measure combinations for January 2005.

The remainder of this report provides the details of Liberty's analysis and describes the basis for its conclusions. In the next section, Liberty details its methods of analysis. In the third section, Liberty details the results of the analysis. In the final section, Liberty provides more detail about its conclusions and the two new findings.

II. Analysis Methods

The four findings from the Liberty Florida Audit Report that are the subject of this Re-audit all involve issues with the calculation or payment of remedy amounts. In none of the findings did there exist issues related to the calculation of the service quality measures themselves. Thus, Liberty began with BellSouth data tables that contained information on the outcome of the service quality measure calculations for each measure relevant to the findings. Liberty then replicated the remedy calculations in order to determine whether any failures occurred; that is, Liberty determined whether BellSouth failed to meet the standard for a particular sub-measure according to the tests specified in the SEEM Administrative Plan. Liberty traced each failure to ensure that BellSouth either properly transmitted a payment or had scheduled the payment for transmission. For each scheduled or transmitted payment, Liberty verified that the payment was for the correct amount.

BellSouth indicated that it implemented changes (RQs) that completed the resolution of the issues raised in Findings 52 through 55 beginning in March 2004 and ending in July 2005.²⁰ BellSouth also made changes in 2004 associated with company roll-up and line-splitting issues that were relevant only to Finding 53. Given the timing of the changes and with the concurrence of BellSouth and the Commission Staff, Liberty analyzed results from two months, January and August 2005, in order to assess the BellSouth corrections and the payments and payment adjustments resulting from them.

January 2005 was the last month before BellSouth implemented any changes that required adjustments to payments.²¹ Hence, Liberty used this month to assess the size of the adjustments and compare them to those BellSouth made. Liberty analyzed the August 2005 payments in order to ensure that BellSouth properly incorporated the changes into its systems going forward. Liberty chose to perform this review by fully replicating the results of the SEEM calculations for January and August 2005 for all SEEM measures related to the four findings. Such replication ensured that the changes issued to resolve the findings were successful and that no further problems were inadvertently introduced by the changes.

Because Findings 52, 54, and 55 all involve the replication and review of PARIS calculations, Liberty considered these findings together in its analysis. Thus, the analysis has two main parts. The first is a review of the Findings 52, 54, and 55. This involves replication of the PARIS process and the payment process for the relevant measures. The second is a review of Finding 53. This involves a replication of the SEEM calculations and payment process for the O-3 and O-4 measures.

²⁰ Responses to Data Requests R8 and R11. These changes were corrections to PARIS and addressed issues raised in Findings 52, 54, and 55.

²¹ Changes associated with Finding 53 were implemented in March 2004. Thus, for this finding, Liberty did not expect to discover any related adjustments in January 2005, but reviewed January for completeness.

III. Analysis Results

A. Review of Findings 52, 54, and 55

Liberty's review of Findings 52, 54, and 55 comprised three steps:

- Step 1. Replication of SEEM scores and values
- Step 2. Replication of remedy flags
- Step 3. Review of remedy payments and amounts

These steps trace the sequential steps in BellSouth's remedy payment process beginning with the performance measure calculations and ending with remedy payment transmission. The first step examines whether PARIS correctly calculated the Aggregate Z-scores and BCV's.²² The second step examines whether BellSouth identified the correct company sub-measure combinations for payments. The third step verifies whether BellSouth properly transmitted these payments.

Step 1: Replication of SEEM scores and values

In order to ensure that BellSouth had properly resolved Findings 52, 54, and 55, Liberty first replicated the CLEC counts (number of CLEC observations), Aggregate Z-scores and BCVs for each measure affected by the issues in the findings. In order to perform this replication, Liberty began with the PARIS relational tables that contained detailed results of BellSouth performance. Liberty then grouped the data and performed statistical calculations according to the SEEM Administrative Plan. Liberty calculated the number of CLEC observations, the Aggregate Z-score, and the BCV for every company and sub-measure listed in those relational tables.

Liberty checked these calculations of the CLEC counts, Aggregate Z-scores and BCVs against BellSouth's results, as recorded in the PARIS tables Proportion Aggregate Score Fact and Mean Aggregate Score Fact.²³ The Proportion Aggregate Score Fact tables contain the PARIS aggregate results for measures M&R-1, M&R-2, M&R-4, M&R-5, P-3 and P-9. The Mean Aggregate Score Fact Report contains the PARIS aggregate results for measures M&R-3 and P-4.

Liberty found 283 company/sub-measure combinations that were not listed in the Aggregate tables, but that Liberty found on the relational tables in PARIS. The following table shows the sub-measure for which Liberty found missing company/sub-measure combinations.

²² See section I.C for a brief explanation of the SEEM process.

²³ The BellSouth counts (number of BellSouth observations) are not directly recorded in the Aggregate tables. Thus, Liberty could not check these directly. However, differences in the aggregate BellSouth counts would generally appear as differences in BCVs or Aggregate Z-scores.

Sub-measure Prefix	Description	Sub-measure Number	Found in BellSouth Aggregate Tables	Not found in BellSouth Aggregate Tables	Total in Relational Tables
PMRA	Percent Missed Repair Appointments	M&R-1	795	55	850
CTRR	Customer Trouble Report Rate	M&R-2	1,272	73	1,382
MAD	Mean Average Deviation	M&R-3	795	55	850
PRT	Percent Repeat Troubles	M&R-4	795	55	850
OOS	Out of Service	M&R-5	706	45	751
PMIA	Percent Missed Installation Intervals	P-3	1,161	0	1,161
OCI	Order Completion Interval	P-4	981	0	981
PPT	Percent Provisioning Troubles	P-9	1,132	0	1,132
Total			7,637	283	7,920

BellSouth explained²⁴ that it had excluded the missing company/sub-measure combinations either because 1) the company type was “C” or “R” and such company types are not included in the SEEM Administrative Plan²⁵ or 2) the company had entered into a contract with these companies that excluded the company from remedy payments. BellSouth provided a list of all such excluded companies, and this list explained all 283 discrepancies.

After removing the 283 excluded companies, Liberty compared the counts, the Aggregate Z-scores and the BCVs of the remaining 7,637 company/sub-measure combinations. Liberty found 42 cases for the measure M&R-2 where the CLEC counts listed in the BellSouth's tables did not match Liberty's calculations. BellSouth explained that each of these differences was for Tier 2 and were due to transactions associated with test companies and BellSouth affiliate companies, both of which are excluded from Tier 2 payments.²⁶ In summary, BellSouth explained all the discrepancies in counts.

²⁴ Response to DR R32.

²⁵ Company type “C” designates an independent company and type “R” designates a wireless carrier.

²⁶ Response to Data Request R29. Liberty also issued Data Request R34 for an additional discrepant count, but BellSouth's response to Data Request R29 gave information about a test company whose exclusion explained the difference addressed in Data Request R34. These differences were not seen in Tier 1, because test companies are excluded from Tier 1. However, in Tier 2, for the aggregate CLEC, Liberty initially summed all lines to determine the denominator for MR-2 (without excluding the lines of test and affiliate companies).

Liberty next compared the Z-scores and the balancing critical values of the 7,637 company/sub-measure combinations. The table below summarizes the results.

Measure Number	Z-score Difference Beyond 95% Confidence Interval		Expected Maximum Number of Z-score Differences	No Difference	Total
M&R-1	0	0	0	795	795
M&R-2	0	0	0	1,272	1272
M&R-3	10	40	40	785	795
M&R-4	0	0	0	795	795
M&R-5	0	0	0	706	706
P-3	0	0	0	1,161	1161
P-4	15	49	49	966	981
P-9	0	0	0	1,132	1132
Total	26	89	89	7,612	7,637

As described in Section I.C, some of the statistical tests for the M&R-3 and P-4 measures require a random permutation test.²⁷ Because of the inherent randomness of this test, it does not produce the same result each time it is run. However, it is possible to calculate confidence bounds for the expected difference for two runs of the test. The chart shows the number of differences that were beyond the 95% confidence interval. This number should not be more than 5% of the total number of tests for the measure.²⁸ The column "Expected Maximum Number of Z-score Differences" displays 5% of the total tests performed. Thus, the column labeled "Z-score Difference beyond 95% Confidence Interval" should be less than or equal to the column labeled "Expected Maximum Number of Z-score Differences."

As shown, there were 10 and 15 differences in M&R-3 and P-4, respectively, and that number is below the expected number of 40 and 49 differences, respectively, given the use of the random permutation test.²⁹ Thus, Liberty concludes that the differences result from the use of the random permutation test rather than from any errors in BellSouth's code. For the other measures, Liberty expected and found no such differences, since the statistical calculations for these measures did not require use of the random permutation test.

²⁷ Approximately half of the M&R-3 and P-4 cells met the requirements for a random permutation test as described in Section I.C. For simplicity, Liberty assumed that all cells required the permutation test in calculating the confidences bounds for expected differences. Estimation of the expected number of differences is very complex without this assumption.

²⁸ This expected number of differences is non-zero only for the P-4 and M&R-3 measures because these were the only measures examined in the Re-audit that required a random permutation test.

²⁹ Because not all the P-4 and M&R-3 cells required a random permutation test, the calculated expected number of differences is somewhat exaggerated. However, the fact that the actual number of observed differences is well within the calculated expected number supports Liberty's conclusion that the differences do not result from errors in BellSouth's code.

In summary, Liberty replicated BellSouth's BCVs for all 7,637 company/sub-measure combinations. This first step in Liberty's analysis verified that BellSouth had resolved the principal issues related to Findings 52, 54, and 55, since these findings all involved the calculation of Aggregate Z-scores and BCVs. However, Liberty proceeded with the next two steps in order to ensure that BellSouth had properly made the payments and payment adjustments.

Step 2: Replication of remedy flags

The SEEM Administrative Plan specifies the same criteria for each parity measure with respect to remedies based on the calculated Aggregate Z-score and BCV. BellSouth must make a remedy payment if:

- The Aggregate Z-score for a sub-measure at the individual CLEC level is below the BCV and the CLEC count is at least five
- The Aggregate Z-score for a sub-measure at the aggregate CLEC level is below the BCV for three consecutive months.

Thus, once Liberty calculated the scores and values for the measures related to Findings 52, 54, and 55, Liberty checked these criteria for all measures relevant to Findings 52, 54, and 55. BellSouth lists all company/sub-measure combinations requiring a remedy payment in the Remedy Ap Fact Report. Liberty found that the Remedy Ap Fact Report contained all 184 failing company/sub-measure combinations in January and all 157 failing company/sub-measure combinations in August.

Step 3: Review of remedy payments and amounts

The next step was to determine whether BellSouth properly transmitted the payment for each failing company/sub-measure combination.³⁰ Appendices A-1 and A-2 of the SEEM Administrative Plan specify differing payments depending on the measure failed, the Tier (1 or 2), and the number of consecutive failures.³¹ The payment amounts required by the Florida Administrative Plan relevant for this Re-audit do *not* depend on the CLEC volume.

For January 2005, Liberty reviewed payments and adjustments related to each of the measures affected by the re-run of January data that included the changes BellSouth implemented to address the findings. Overall, BellSouth made 395 payments for the January data month, and 243 subsequent adjustments to those payments.³²

Liberty initially found several instances in which the BellSouth's payment amount did not correspond to the payment amount Liberty computed based on the SEEM

³⁰ For Tier 1, each failure on the Remedy Ap Fact Table should result in a remedy. For Tier 2, a failure on the Remedy Ap Fact Table only results in a remedy if there are three consecutive months of failure.

³¹ SEEM Self-Effectuating Enforcement Mechanism Administrative Plan Florida Plan, Version 2.7, p. A-1.

³² Not all of these adjustments may have been the result of the re-run related to the Findings 52, 53, 54, and 55, but Liberty reviewed all payments and adjustments for the January data month that were for measures relevant to the Findings 52, 53, 54, and 55.

Administrative Plan. BellSouth explained that the majority of these differences were due to the fact that "Force Majeure" was in effect.³³ The clause of the SEEM Administrative Plan related to Force Majeure events states that:

*BellSouth shall not be obligated for penalties under Tier-1 or Tier-2 Enforcement Mechanism for noncompliance with a performance measure if such noncompliance was the result of any of the following: a Force Majeure event...*³⁴

According to BellSouth, a Force Majeure situation was in effect in Florida from August 13, 2004, through October 2004, and some wire centers continued to have Force Majeure in effect in November 2004.³⁵ Because payments depend on the past six months of history, the Force Majeure condition affected several of the January 2005 adjustments.

Overall, BellSouth's explanations resolved the differences that Liberty had observed for all but five of these adjustments. Four of these cases were situations in which the re-run results showed a lower payment. The fifth was for a situation where the re-run result showed a higher payment. Liberty issued finding R2 to address this issue. BellSouth agreed that additional adjustments need to be made in all five of these cases.³⁶

For August 2005, Liberty reviewed all payments for measures related to the findings to ensure that BellSouth is properly paying on these measures. Although the principal focus of Liberty's analysis of the August 2005 data was on the payments rather than adjustments, Liberty also reviewed adjustments. In total, BellSouth made 164 payments and two adjustments related to measures for the data month of August.

Liberty found one instance in which BellSouth overpaid and no instances in which BellSouth underpaid, for August 2005. As a result of this, Liberty issued Finding R1. BellSouth concurred with the overpayment, and stated that an additional adjustment needed to be made.³⁷ Liberty found no instances in which BellSouth issued incorrect adjustments in August 2005.

B. Review of Finding 53

BellSouth performed SEEM calculations for the O-3 and O-4 measures using programs and tables that did not reside in the PARIS system. BellSouth calls measures that do not go through the PARIS SEEM process "Interim Solutions" measures. The issue that led to Finding 53 was not a related to the calculation of the service quality measures. Rather, it was related to the SEEM process. Thus, Liberty's goal was to replicate the calculations beginning with the point where the measure calculations were complete.

³³ Response to Data Request R35.

³⁴ SEEM Self-Effectuating Enforcement Mechanism Administrative Plan Florida Plan, Version 2.7, p. 4.

³⁵ The Force Majeure apparently resulted from the effects of Hurricane Charley in August 2004.

³⁶ BellSouth response to Data Requests R33 and R35.

³⁷ BellSouth response to Data Request R35.

Liberty requested the information necessary to replicate the January 2005 calculations in Data Request R22. BellSouth provided the flow-through information by sub-measure and by Operating Company Number (OCN). Liberty used this summary information to recalculate the percent flow-through and to roll up the percent flow-through by parent company code (since more than one OCN can be associated with the same company).

The measures O-3 and O-4 are benchmark measures; BellSouth therefore determines SEEM remedies by comparing the measure results to an absolute standard. After performing this comparison, Liberty checked its January 2005 results against the file of SEEM payments provided by BellSouth in response to Data Request R22. For the August 2005 results, Liberty used the remedy files in the PARIS system, as BellSouth had, by August 2005, begun using PARIS for the flow-through remedy information. For January, BellSouth issued 25 payments and no adjustments. For August, BellSouth issued 22 payments and no adjustments.

Liberty exactly matched all failures, payments, and adjustments for O-3 and O-4 for January and August 2005.³⁸

³⁸ Data Request R31 was issued because one of the failures appeared to be paid to the incorrect company code. BellSouth responded that this company code had changed in September of 2005, and thus BellSouth paid to the correct company code.

IV. Conclusions and Findings

Overall, Liberty found that BellSouth properly implemented the corrections to its systems and calculations associated with Findings 52, 53, 54, and 55 of the original Liberty audit. Liberty did note a few discrepancies in the payments and adjustments made for the data months of the Re-audit, and these are noted in Findings 1 and 2 below.

Finding R1: BellSouth incorrectly paid \$9,500 (instead of \$4,750) for one remedy related to the Maintenance Average Deviation (M&R-3) measure in August 2005.

Liberty found that BellSouth made two payments (totaling \$9,500) for company code 26161, for the measure Maintenance Average Duration (sub-measure of non-dispatch UNE DS1 Loop) for August 2005. Liberty found a SEEM failure for this measure in August 2005, but determined that BellSouth should have paid a remedy for this measure of only \$4,750. BellSouth agreed that a duplicate payment was made in the amount of \$4,750, and that an adjustment needs to be made.³⁹

BellSouth responded that it had determined that this situation had occurred because of a CLEC merger. BellSouth also noted that it had made the necessary update in the parent company rollup table, effective with the October 2005 data month, and will make the necessary adjustment as work load and system capacity permits.⁴⁰

As noted in Step 3 of Section III.A, this was the only payment problem of the 164 payments and two adjustments associated with the Findings 52, 54, and 55 for August 2005. Liberty does not believe that this error was associated with the changes BellSouth implemented in its systems to address these findings.

Finding R2: BellSouth did not make appropriate adjustments for five company/sub-measure combinations for January 2005.

Liberty reviewed BellSouth's calculated adjustments for the data month of January 2005 to ensure that BellSouth made the appropriate adjustments for items that it reran for that data month. An adjustment could either be in the form of a credit (payment reversal), when a sub-measure result changed from fail to pass, or an additional payment, when a sub-measure result changed from pass to fail. Liberty found five cases where the adjustments for January 2005 were incorrect. BellSouth concurred with Liberty's analysis for each of these five cases.⁴¹

Three of these cases of incorrect January 2005 adjustments affected Tier 2 (aggregate CLEC) payments:

³⁹ Response to Data Request R35.

⁴⁰ BellSouth Response to Preliminary Finding R1, April 12, 2006.

⁴¹ Responses to Data Request R33 and R35.

1. BellSouth made a Tier 2 payment of \$10,400 for a failure in one P-3 (Percent Missed Installation Appointment) sub-measure, although the rerun results showed that no remedy was required.⁴² Thus, BellSouth should have made an adjustment to reverse the \$10,400 payment, but did not do so.
2. BellSouth made an adjustment to reverse a \$10,400 Tier 2 payment for a failure in a different P-3 sub-measure, although the rerun result showed that a payment should have been made.⁴³ Thus, this adjustment is incorrect.
3. BellSouth made a Tier 2 payment of \$10,400 for a failure in one P-4 sub-measure (Order Completion Interval) when no remedy was required based on the rerun results.⁴⁴ Thus, BellSouth should have made an adjustment to reverse the \$10,400 payment, but did not do so.

Liberty notes that there were a total of ten Tier 2 payments in January 2005, of which BellSouth adjusted four. Liberty's analysis of the Tier 2 payments indicates that one of these adjustments was incorrect and that two additional adjustments that should have been made were not made. The other two cases of incorrect adjustments in January 2005 affected Tier 1 (individual CLEC) payments:

4. For company 23487, BellSouth paid \$6,650 for one sub-measure of P-9 (Percent Provisioning troubles within 30 days), but the rerun results showed no failure. Thus, BellSouth should have reversed the full payment amount of \$6,650.⁴⁵
5. For company 23800, BellSouth paid \$6,650 for one sub-measure for M&R-1 (Percent Missed Repair Appointment), which would have been appropriate for two consecutive months of failure. However, Liberty found that the re-run showed that there was only one month of failure.⁴⁶ Thus, BellSouth should have made an adjustment to reduce the payment by \$1,950.

Liberty notes that there were a total of 385 Tier 1 payments in January 2005, of which BellSouth adjusted 239. Liberty found only two Tier 1 adjustment errors. BellSouth needs to make five corrected adjustments for January 2005, as explained above. The net effects of these changes are to reverse (1) an overpayment for Tier 2 of \$10,400, resulting from three partially offsetting adjustments, (2) an overpayment for company 23487 of \$6,650, and (3) an overpayment for company 23800 of \$1,950. The two Tier 1 adjustment errors represent a small percentage of the total Tier 1 payments and adjustments for January 2005, but the three Tier 2 errors represent a relatively large percentage of the total Tier 2 payments and adjustments for that month.

BellSouth responded as follows:

⁴² The sub-measure was PMIA-NL-ULPN ("Percent Missed Installation Appointments (Non Dispatch < 10) -- 2W Analog Loop Non Design").

⁴³ This sub-measure was PMIA-DL-LSN ("Percent Missed Installation Appointments (Dispatch < 10) -- UNE Line Sharing w/o Loop Conditioning").

⁴⁴ The sub-measure was OCI-DL-ULPN "Order Completion Interval (Dispatch < 10) -- 2W Analog Loop Non Design").

⁴⁵ This was for PPT-IL-UNEPC ("Percent Provisioning Troubles w/in 30 Days of Service Order Completion (Non Dispatch Dispatch-In < 10) -- UNE Loop + Port Combo").

⁴⁶ This was for PMRA-D-UNEPC ("Percent Missed Repair Appointments Dispatch -- UNE Loop and Port Combo")

BellSouth concurs with Liberty's assessment of the calculated adjustments made for reruns for the January 2005 data month. As Liberty notes, it only found 5 adjustments which should be corrected. Bellsouth generated 240 total adjustments for the January 2005 data month resulting in 97.9% accuracy.

All of the aforementioned adjustments occurred as a result of human error, and not errors in processing the data. As such, BellSouth has modified its process for manual adjustments. The modified process will consist of three separate components: proposal, validation, and authorization. Each component will be overseen by a separate manager. This will require three approvals for a manual adjustment to be processed.⁴⁷

Liberty believes the increased oversight in the adjustment process that BellSouth proposed will make adjustment errors less likely. Liberty recommends special attention be given to potential Tier 2 adjustments, as they involve at least three months of data, and are thus more complicated to compute.

⁴⁷ BellSouth Response to Preliminary Finding R2, May 1, 2006.