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

000121A-TP

Prepared for:

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

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Table of Contents

I. Introduction and Approach 1

A. Background and Purpose of the Review 1

B. Overview of BellSouth's Performance Assessment Plan for Florida 2

C. Overview of BellSouth's Measures and Remedy Payment Systems 3

D. Audit Scope 8

E. Liberty's Review Methods 11

F. Overall Conclusions 11

II. General Review 19

A. Regulatory Compliance 19

B. Supporting Documentation 23

C. Metric Change Control 28

D. Findings and Recommendations 40

III. Data Validation and SQM/SRS Reports 59

A. Ordering Measures 59

B. Provisioning Measures 89

C. Maintenance and Repair Measures 114

D. Billing Measure 126

E. Compliance with PMQAP Data Validation Processes 137

F. Findings and Recommendations 141

IV. Remedy Payments 184

A. Remedy Payment Replication 184

B. Remedy Payment and Adjustments Process 195

C. Findings and Recommendations 199

Appendix A – Sub-Measure List 211

Appendix B – Findings by Severity 216

Appendix C – Findings Cross Reference 221

I. Introduction and Approach

A. Background and Purpose of the Review

Incentive plans or enforcement mechanisms, and the performance measures on which they are usually based, play vital roles in the local telecommunications competitive marketplace. Performance measures in areas such as ordering, provisioning, billing, and maintenance and repair (M&R) provide a method to correlate an incumbent local exchange carrier's (ILEC's) performance between its wholesale and retail services. The results of performance measures can be used to monitor whether there is a level playing field between the ILEC and competitive local exchange carriers (CLECs), also known as alternative local exchange carriers (ALECs). Along with performance measures, commissions have adopted enforcement mechanisms or similar performance assurance plans to encourage the ILEC to satisfy its commitments regarding the provision of services to CLECs. The ILEC's failure to meet certain standards of performance typically results in its making remedy payments to affected CLECs. It is therefore extremely important that the performance measures accurately and reliably reflect actual ILEC performance and that any remedy payments determined from those measures are correct.

The Florida Public Service Commission (Commission) selected The Liberty Consulting Group (Liberty) to perform an audit for the year 2003 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. The scope of the engagement includes:

- An audit to determine the completeness and accuracy of BellSouth's SQM data as reported in SQM/SRS[1]
- An audit to determine the completeness and accuracy of BellSouth's SEEM data and SEEM remedy payments as reported in the Parity Analysis and Remedy Information System (PARIS)
- A compliance audit of BellSouth's PMQAP.

Representatives from BellSouth, CLECs, and the Commission Staff provided input to the audit's scope and methods, resulting in a "Scope and Methodology Document" (Scope Document) that the Commission Staff issued on July 13, 2004. On July 22, 2004, Liberty submitted a high-level Audit Plan based on the Scope Document to the Commission Staff and BellSouth and submitted a final revised Audit Plan agreeable to the parties on August 27, 2004. The Audit Plan called for Liberty to produce a more detailed audit work plan following initial diagnostic interviews and documentation reviews. Liberty participated in an initial orientation session on September 15, 2004, conducted an initial set of diagnostic interviews,[2] and received a number of documents from BellSouth in response to Liberty's data requests. Based on this input, Liberty developed an Audit Work Plan, which it submitted to the Commission Staff for review. The Commission Staff provided comments to this plan, and approved a modified version on November 16, 2004.

[1] Single Report Structure (SRS) is the format for the monthly SQM reports.
[2] Interview Request #1, October 4-6, 2004.

B. 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.[3] The BellSouth SQM Plan describes in detail the performance 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 also SEEM measures. 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. The relevant version of the SQM plan for this audit is version 3.00, issued July 1, 2003.

BellSouth organizes its performance measures using the following eleven domains:

- Operations Support Systems (OSSs), including Pre-ordering (PO)
- Ordering (O)
- Provisioning (P)
- 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, P-7 is a Provisioning measure that calculates the Coordinated Customer Conversions Interval, or the average time BellSouth requires to complete a coordinated customer conversion ("hot cut"). Some measures also have related measures and are designated with the same number plus a letter. For example, P-7C measures the percentage of provisioning-related troubles within seven days of the completion of a hot cut order. For actual performance reporting, most of the measures have disaggregations or sub-measures, which usually correspond to disaggregations of the

[3] BellSouth implemented the Administrative Plan pursuant to an order issued by the Commission on September 10, 2001, in Docket 000121-TP. The current version of the SQM Plan reflects Commission Order Nos. PSC-02-1736-PAA-TP issued December 10, 2002, PSC-03-0529-PAA-TP issued April 22, 2003, and PSC-03-0603-CO-TP issued May 15, 2003.

measure by product type or transaction type. For example P-7C has two disaggregations, UNE Design Loops and UNE Non-Design Loops.

The Commission adopted the SEEM Administrative Plan for Florida 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). The version of PMAP reviewed in this audit is PMAP 4.0. BellSouth uses PARIS to calculate and report the remedy payments required by the SEEM. The version of PARIS reviewed in this audit is PARIS 2.0. The sections below describe PMAP and PARIS in more detail.

The PMQAP documents the systematic procedures that BellSouth uses to ensure that it produces accurate and reliable service quality measurement reports.[4] The PMQAP consists of four components: SQM Change Control, Requirement/Change Control, Production Validation, and SEEM Validation. BellSouth uses the SQM Change Control process to manage requests for changes to the SQM Plan. BellSouth uses the Requirement/Change Control process to manage changes to systems, plans, and processes. BellSouth uses the Production Validation process to identify problems or discrepancies in the data or PMAP software. The SEEM Validation Plan documents BellSouth's process for validating data contained in PARIS. All of these components were in the scope of the audit except for SQM Change Control.

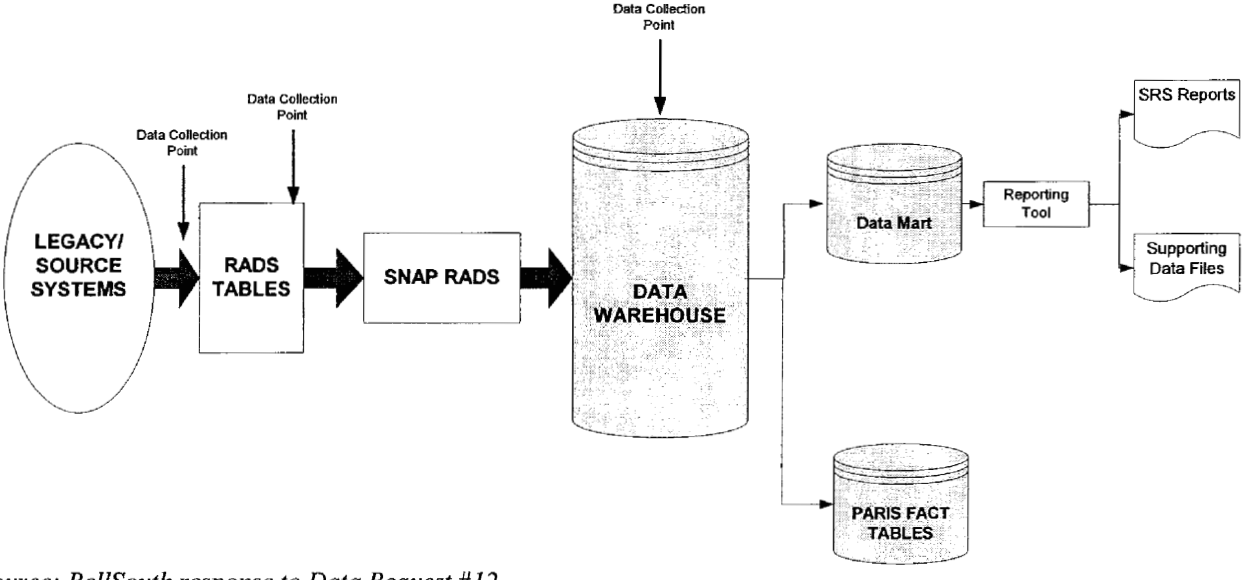
C. Overview of BellSouth's Measures and Remedy Payment Systems

PMAP consists of three principal sub-systems: The Regulatory Ad-hoc Data System (RADS), which collects and stores data from the BellSouth legacy and other source systems; the Data Warehouse, which organizes and designates the appropriate data to be included in measure calculations; and the SQM Mart, which prepares the data for calculation, performs the

[4] Response to Data Request #17, Performance Measurement Quality Assurance Plan, version 6.0, dated July 15, 2004.

appropriate calculation, and transmits the data to reports. PARIS uses data in PMAP for input in remedy payment calculation and reporting.

BellSouth's PMAP Data Warehouse is the repository for the data that BellSouth sends from its legacy source systems. At the Data Warehouse, BellSouth applies most of its business logic to the transactions in order to determine if individual transactions (*e.g.,* service orders, Local Service Requests, and trouble tickets) are included in, or excluded from, the measure and remedy payment calculations. The Data Warehouse is the source for the filtered data that BellSouth sends to the SQM Mart for measure calculations and to PARIS for calculating remedy payments. The following diagram illustrates the PMAP data flow:



Source: BellSouth response to Data Request #12.

This data flow is applicable to the majority of the in-scope measures in this audit, *i.e.*, O-9, P-3, P-4, P-7, P-7C, P-9, and M&R-1 through M&R-5.[5]

The raw data that BellSouth uses for the calculation of SQM and SEEM results come from 64 different source systems. RADS is an operational data store that pulls the data daily from various legacy OSSs and consolidates them into one database.[6] Although the primary use for these data is regulatory reporting, BellSouth also uses the data stored in RADS for various internal reporting functions. RADS operates on a SUN E10000 server with two UNIX domains. One domain is dedicated to data gathering, loading, and archiving, while the other houses the database that stores the data. Oracle is the database engine for RADS.[7] BellSouth retains RADS data for 36 months. BellSouth noted that, because of the sheer volume of data, some source system data (such as internal test orders) are not sent to RADS. Additionally, in order to reduce the amount of data that needs to be stored, BellSouth does not send some non-critical data fields

[5] The data flows for O-3, O-4, and B-1 are different and Liberty discusses them later in this report.
[6] Response to Data Request #17.
[7] Response to Data Request #17.

to RADS. According to BellSouth, all the data necessary for measure calculation are transmitted and stored in RADS.

Because BellSouth updates RADS daily, the system is too dynamic to be used for measurement calculation purposes. As a result, BellSouth takes a monthly snapshot of each of the RADS tables that contains data needed to create the monthly SQM/SRS and PARIS reports. The purpose of this snapshot is to create a static copy of the RADS tables. Each snapshot cycle begins on the last day of the month and continues until the ninth day of the following month.[8] BellSouth copies these snapshots to two other databases, one for archiving the data and the other, known as SNAPRADS, for warehouse processing. BellSouth retains the archival database copies for 18 months, and retains the SNAPRADS database for one to three months as needed.[9] The SNAPRADS database consists of approximately [redacted] tables that contain data needed for measure calculations. According to BellSouth, these tables contain raw data from the source systems, *i.e.,* BellSouth has not yet applied any business rules or exclusions at this point in the process. BellSouth has internal controls in place that allow it to perform some data quality control checks by comparing the data in SNAPRADS to that in RADS.

From SNAPRADS, the data flow to the PMAP Data Warehouse. The Data Warehouse operates on SUN E10000 and E12000 servers consisting of three domains. The Data Warehouse organizes many sections by domain or transaction type. Each specific warehouse (*e.g.,* ordering, provisioning) has three types of tables relevant for measure calculations. The first type of table, the fact table, contains data generally considered to be the base record. Four key fact tables for the purposes of this audit are: i) [redacted] which contains service order detail; ii) [redacted] which contains Local Service Request (LSR) detail; iii) [redacted] which contains trouble ticket detail; and iv) [redacted] which contains information on lines in service.[10] The records that BellSouth stores in the fact tables have already been processed through the SQM business rules. An additional fact table worth noting is [redacted] which BellSouth uses to capture any records that contained fatal errors preventing them from being included in the measure calculation.

The second table type is the lookup table. BellSouth has approximately 90 lookup tables that it uses to identify values such as product identification, Numbering Plan Area (NPA)-to-state relationships, and Operating Company Number (OCN)-to-company relationships. Most of these lookup tables are static and, as such, are maintained manually. The use of lookup tables removes the need to hard code values in the processing code.

The last of the table types found in the warehouse is the transition history table. The transition history table, also known as the transition table, contains all of the relevant transitions, along with their associated timestamps, that a specific record (*e.g.,* a service order) goes through during its lifecycle. BellSouth uses transition tables to calculate durations such as order completion interval. The M&R warehouse does not have transition history tables because the source

[8] Response to Data Request #17.
[9] Response to Data Request #17.
[10] In some cases, Liberty has adopted data table naming conventions for reader convenience. For example, BellSouth refers to the [redacted].

systems, Loop Maintenance Operations System (LMOS) and Work Force Administration (WFA), calculate the durations.

[redacted] Therefore each individual data row in a fact table can be marked as applicable for more than one SQM measure within SQM categories.

In the PMAP data flow, BellSouth next moves data from the Data Warehouse to the SQM Mart, which consists of measure-specific data mart (DM) tables that BellSouth uses to calculate and report measure results. Each measure has a transaction-level DM table and up to four aggregate-level tables. BellSouth creates the measure-specific DM tables by joining transactions marked for inclusion in the measure [redacted] from the fact tables with information from the appropriate lookup and transition history tables for those transactions. The system uses a reference table, the measure candidate position table, to identify the correct character in the membership map to use based on state, report family, and measure type code (*e.g.*, benchmark or parity). The DM table contains the lowest level of data needed for the calculation of the measure, and contains only those data fields necessary for the measure calculation. BellSouth creates a total of [redacted] SQM DM tables each month.

BellSouth uses the DM table in the SQM Mart to create the aggregate level data tables it uses for SQM results reporting. BellSouth also uses the DM table, along with other warehouse data, to create a Supporting Data User Manual (SDUM) table for each measure. The SDUM table contains transaction level data that CLECs can download from the PMAP web site. CLECs may obtain only the data for their specific company and the CLEC aggregate data. The SDUM table contains the data that a CLEC needs to replicate the state-specific, CLEC-level reports that BellSouth posts on the PMAP website.

BellSouth also moves data from the Data Warehouse to relational tables in PARIS. As part of its processing, PARIS creates relational tables by pulling transaction-level data from the Data Warehouse based on the measurement map, product groups, service order and trouble ticket attributes, date parameters, and other table join criteria. PARIS retrieves only those records and fields that it needs to calculate SEEM results.

The overall data flows for the B-1, O-3, and O-4 measures differ from that of the other in-scope measures. For the B-1 measure, BellSouth does not send data from its legacy billing systems directly to RADS. Instead, BellSouth loads selected data from its legacy billing and financial database systems into an Excel spreadsheet, which it uses to create an "external table" in RADS. From this point, BellSouth treats the data similarly to other measures. BellSouth captures the

[11] BellSouth also sometimes uses the character [redacted] to indicate a record that is not associated with a transaction in the reporting month and thus should be excluded.

relevant billing data in [redacted] tables in the Data Warehouse, and the remaining phases of the flow are similar to other measures.

For the O-3 and O-4 measures, BellSouth collects data from its legacy systems in RADS, and moves the data monthly to SNAPRADS tables. During the November 2003 to January 2004 period, data for the O-3 and O-4 measures did not flow to the Data Warehouse or PARIS.[12] As such, the data flow differed from that of the other in-scope measures. According to its data flow diagram, BellSouth sent processed data to a separate stand-alone flow-through data mart.[13] BellSouth then calculated SQM results and SEEM remedy payments using a manual process.

BellSouth employs a monthly PMQAP Production Validation process with an objective of identifying, as early as possible in the PMAP process, any problems or discrepancies in the data or the PMAP software.[14] [redacted]

BellSouth also uses a PMQAP SEEM Validation process with an objective to ensure the validity of data in PARIS. According to BellSouth, there are two deliverables from this process: i) approved remedy payments and ii) published sub-measure and remedy payment data.[15] The PARIS data validation cycle consists of four phases: i) trend analysis, ii) data analysis, iii) problem resolution, and iv) payment approval. The PARIS data covered by BellSouth's process include remedy payment amounts on a CLEC and sub-measure basis, affected volumes, and [redacted] and [redacted].

For the trend analysis phase, BellSouth uses a variety of automated routines to focus on trends and consistency in remedy payment data. The majority of BellSouth's SEEM validation focuses on the data analysis phase, the purpose of which is to validate correct remedy payments, and determine the cause of incorrect payment information. In the problem resolution phase, BellSouth addresses any data anomalies that it identified, coordinates the resolution of data and system problems, and adjusts remedy amounts. BellSouth uses the final phase, payment approval, to ensure that approved remedy payments are transmitted to Accounts Payable for payment processing.

[12] Response to Data Request #26.
[13] Response to Data Request #15.
[14] Response to Data Request #17.
[15] Response to Data Request #17.

D. Audit Scope

In the Scope Document, the Commission specified the following areas to be included in the audit:

1. Documentation Review
    a. Verify that supporting documentation for replication of PMAP 4.0 and PARIS 2.0 job flows are sufficient, clear, and complete
    b. Verify that documented procedures exist for the measure change process and are sufficient, clear, and complete
    c. Verify that BellSouth is in compliance with SQM and SEEM documentation and other Commission orders.

2. Data Validation
    a. Verify appropriate transaction flow from files in RADS to the PMAP Data Warehouse, SQM/SRS and PARIS data marts
    b. Verify the accuracy of data fields in the PMAP Data Warehouse, SQM/SRS and PARIS
    c. Verify the assignment of CLEC and BellSouth retail transactions to the appropriate cells for parity sub-measures where applicable
    d. Verify that BellSouth is in compliance with PMQAP for data validation processes.

3. Calculation Compliance
    a. For selected individual CLEC and aggregate SQM/SRS and PARIS reports, verify the accuracy of SQM/SRS reports and verify that PARIS accurately determines measurement compliance from the data in the PMAP warehouse. It is anticipated the auditor may need to address the following areas:
        i. Verify the correct application of benchmark standards
        ii. Verify the accuracy of computed benchmark results
        iii. Verify accurate determinations of compliance
        iv. Verify modified Z-scores are accurate for SQM/SRS reports
        v. Verify correct application of retail parity measures
        vi. Verify accurate determinations of compliance for SRS/SQM and SEEM evaluation purposes.
    b. For parity measures in SEEM it is expected that the auditor will also address the following:
        i. Verify truncated Z-scores are accurate in SEEM
        ii. Verify delta values are accurate

iii. Verify balancing critical values are accurate.

4. Remedy Calculations and Payments
    a. Verify the appropriate fee was utilized in the calculation of remedies
    b. Validate the accuracy of remedy payments made to CLECs compared to remedies calculated in PARIS
    c. Validate the accuracy of remedy payments made to the State of Florida compared to remedies calculated in PARIS
    d. Verify the correct implementation of Administrative penalty provisions.

5. Adjustments
    a. Identify the underlying causes for adjustments to SEEM payments and whether those causes are appropriate
    b. Determine if the required adjustments are appropriate
    c. Validate that adjustment amounts are accurate
    d. Validate that adjustments comply with Reposting Policy time frames
    e. Verify that adjustments were correctly made and completely applied.

6. Reporting
    a. Validate the accuracy and completeness of data reported in SQM/SRS and PARIS reports
    b. Verify Tier-1 Transmitted Payment accurately reflects PARIS calculations
    c. Verify Tier-2 State Payment accurately reflects PARIS calculations.

7. Metric Change Management Process
    a. Verify BellSouth is in compliance with the PMQAP for metric change management processes
    b. Validate compliance with established procedures for the metric change notification process
    c. Verify that changes to measures are consistent with SQM requirements
    d. Verify changes are accurate and comply with the Reposting Policy
    e. Verify the accuracy of impact statements in metric change notification reports.

In addition, the Scope Document specifies that although audit areas 1 and 7 will apply to all measures included in the SQM Plan and SEEM Administrative Plan, audit areas 2 through 6 will be restricted to the following "in-scope" measures:

- O-3/O-4 Percent Flow-Through Service Requests Summary/Detail
- O-9 Firm Order Confirmation Timeliness
- P-3 Percent Missed Initial Installation Appointments
- P-4 Average Completion Interval (OCI) and Order Completion

		Interval Distribution
•	P-7	Coordinated Customer Conversions Interval
•	P-7C	Hot Cut Conversions – % Provisioning Troubles Received within 7 Days of a Completed Service Order
•	P-9	Percentage 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
•	B-1	Invoice Accuracy

Each of these measures has a number of sub-measures, ranging from 2 to 125, for a total of 635 sub-measures associated with the 14 in-scope measures. Liberty worked with representatives from the Commission Staff to select which sub-measures would be included in the audit. Of the 168 sub-measures selected, approximately half were chosen from the list of those that had historically large remedy payments, and half were randomly chosen from the remaining sub-measures of the in-scope measures. Liberty added a few additional sub-measures to the list, principally in order to ensure wide product coverage. Appendix A lists the sub-measures chosen for inclusion in the audit. With the agreement of the Commission Staff, the time period for the audit of the in-scope measures was November 2003 to January 2004.

Liberty covered all seven audit areas specified in the Scope Document in its review, although these were restructured into the following work areas, the results of which are reported in the sections that follow.

- Regulatory Compliance (Audit area 1c, Report Section II A)
- CLEC Supporting Documentation (Audit area 1a, Report Section II B)
- Metric Change Control (Audit areas 1b and 7, Report Section II C)
- Data Validation (Audit area 2) and Measure Reporting Replication (Audit areas 3a and 6a for SQM/SRS) for
  - Ordering Measures (Report Section III A)
  - Provisioning Measures (Report Section III B)
  - Maintenance and Repair Measures (Report Section III C)
  - Billing Measures (Report Section III D)
- Compliance with PMQAP Data Validation Processes (Audit area 2, Report section III E)
- Remedy Payment Replication (Audit areas 3a and 6a for SEEM, 3b, and 4a; Report section IV A)
- Remedy Payments and Adjustments Process (Audit areas 4b, 4c, 4d, 5, 6b, and 6c; Report section IV B).

E. Liberty's Review Methods

Liberty drew from its experiences working on similar audits in conducting this audit. Liberty obtained information from BellSouth through a series of meetings and interviews with BellSouth personnel, as well as document and data requests. Throughout this audit, Liberty found the BellSouth personnel assigned to work with Liberty to be knowledgeable and cooperative. In a few areas, Liberty also sought information directly from CLECs operating in Florida. Liberty relied on the input and guidance of the Commission Staff during the audit.

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

F. Overall Conclusions

Overall, Liberty found that BellSouth has the systems and processes necessary to produce reasonably accurate performance results. And, for the most part, these systems and processes produced fairly accurate reported results and remedy payments for the in-scope measures during the period between November 2003 and January 2004. However, Liberty determined that BellSouth failed to produce completely accurate reports and payments in some areas. These deficiencies are noted in the findings listed below and more fully described in the remainder of this report.

Although Liberty had some findings in all areas of the audit, the majority of the findings fall into the following categories:

- Issues associated with compliance with the Florida Commission orders related to the BellSouth Performance Assessment Plan (These are noted in Section II C.)
- Issues associated with the accuracy and completeness of the data in PMAP and PARIS used for the calculation of the SQM/SRS reports and remedy payments (These are noted in Section III F.)
- Issues associated with the accuracy of the correct remedy payments (These are noted in Section IV C.)

Most of these findings affect relatively few sub-measures, have relatively small impact, or deal with process or documentation issues. In addition, BellSouth has concurred with most of these findings, and has either implemented, or plans to implement, changes to its systems to address the issues. However, there are several findings that Liberty believes have significant impact, particularly in the area of remedy payment accuracy.

As a guide to their importance and applicability, Liberty developed a classification convention for these findings in consultation with the Commission Staff. Consistent with the Scope

Document, Liberty formed the findings classification in part on the basis of the materiality criteria in BellSouth's SQM and PARIS Reposting Policy. The following table lists the criteria for the findings classification:

Classification	Description
1	Liberty has found an error in BellSouth's methods, procedures, or calculations (including clear inconsistencies with the published measures guidelines or other Florida Public Service Commission requirements) that, based on Liberty's estimates, either: a. will result in a greater than or equal to 2% change in calculated performance at the sub-measure level for sub-measures with benchmarks; b. will result in a greater than or equal to .5 change in the calculated Z-score at the sub-measure level for sub-measures with retail analogs; c. will shift the performance from an "in parity" condition to an "out of parity" condition; d. will result in a change in a calculated Tier 1 remedy payment or a Tier 2 remedy payment within the scope of Liberty's investigation; or e. does not meet criteria a-d above but is otherwise very significant.
2	Liberty has found an error in BellSouth's methods, procedures, or calculations (including clear inconsistencies with the published measures guidelines or other Florida Public Service Commission requirements) that, based on Liberty's estimates, either: a. does not meet the criteria a-d of classification 1 for the reported sub-measure results, remedy calculations, or data months within the scope of the audit but still has a measurable impact on the reported results or is otherwise significant; b. is likely to affect other reported sub-measure results, remedy calculations, or data months; c. is likely to affect the sub-measure results or remedy calculations but for which the extent of the deviation cannot be estimated for the data months within the scope of the audit..
3	Liberty has found a gap or potential flaw in BellSouth's methods, procedures, or documentation for which a change could lead to an improvement in the reliability of reported results or remedy payments.
4	Liberty has found an issue that is not a clear inconsistency with BellSouth's interpretation of published measures guidelines or other Florida Public Service Commission requirements but which should be clarified. For example, BellSouth had adopted conventions that are not documented in published guidelines and plans or has interpreted published guidelines and Florida Public Service Commission requirements in ways that Liberty agrees are consistent with the wording but for which other reasonable interpretations are possible.

The following lists the audit's findings and the classification and report page number of each.[16]

1: BellSouth was not reporting B-10 (Percent Billing Errors Corrected in "X" Business Days) according to the SQM Plan Reporting Requirements. Classification: 4 40

2: BellSouth was not reporting C-1 (Collocation Average Response Time) results according to the SQM Plan reporting requirements. Classification: 3 41

3: For measure CM-8 (Percent Change Requests Rejected), BellSouth was not reporting according to the SQM Plan reporting requirements. Classification: 3 42

4: BellSouth did not report the Z-scores according to the SQM Plan reporting requirements in the 12-month PMAP reports for measures P-2B (Percentage of Orders Given Jeopardy Notices), M&R-3 (Maintenance Average Duration), B-7 (Recurring Charge Completeness), and B-8 (Non-Recurring Charge Completeness). Classification: 4 43

5: The Florida SQM Plan and SEEM Administrative Plan contain several discrepancies regarding provisions found in Florida Order PSC-02-1736-PAA-TP. Classification: 4 44

6: For measure OSS-2 (OSS Availability – Pre-Ordering/Ordering), the availability report at BellSouth's Interconnection website is missing entries for many of the OSS listed in Appendix D of the SQM Plan. Classification: 4 45

7: BellSouth posts only the most recent month of PARIS reports for viewing by the CLECs on the PMAP website. Historical PARIS reports are not available. This is in contrast to BellSouth's practice of having previous months' reports available for a full year for the majority of SQM Plan reports. Classification: 4 46

8: BellSouth has provided no evidence that it complied with the Florida Reposting Policy in determining whether errors or changes required reposting. Classification: 3 46

9: The SDUM instructions for replicating the SQM/SRS reports were not easy to understand and use. Classification: 3 47

10: The SQL scripts contained in the SDUM document for M&R-2 (Customer Trouble Report Rate) did not replicate CLEC results properly. Classification: 4 50

11: BellSouth did not provide adequate documentation for replication of the results reported in PARIS. Classification: 3 50

[16] Findings 1 through 15 are located in Section II.D. Findings 16 through 51 are located in Section III.F. Findings 52 through 59 are located in Section IV.C.

12: The Impact Statements provided by BellSouth as part of the Notification Process were unclear and did not accurately state the effect of a proposed change on its associated performance measure. Classification: 3 52

13: The overall interval to process BellSouth's Change Requests was excessive. Classification: 3 54

14: BellSouth's tracking and monitoring of the metric change control process did not accurately track progress or permit BellSouth management to accurately monitor workflows to determine which process areas are in need of improvement. Classification: 3 55

15: BellSouth has not documented well its Performance Measurements Quality Assurance Plan. Classification: 4 57

16: BellSouth excluded transactions from the calculation for a measure because it lacked required information about these transactions that were necessary only for another measure. Classification: 2 141

17: The retail performance analog for the Local Interconnection Trunk product as documented in BellSouth's SQM Plan for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), P-9 (Percent 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 Trouble Reports within 30 Days) and M&R-5 (Out of Service >24 hours) measures is unclear and misleading. Classification: 4 144

18: BellSouth incorrectly reported certain LNP orders as INP Standalone orders in the O-9 (Firm Order Confirmation Timeliness), and P-9 (Percent Provisioning Troubles within 30 Days) results. Classification: 2 145

19: BellSouth has adopted a convention for treating related PONs in O-9 (Firm Order Confirmation Timeliness) that is not contained in the SQM Plan. Classification: 4 146

20: BellSouth omits coin orders from O-3 and O-4 (Percent Flow-Through Service Requests, Summary and Detail) reported results. Classification: 2 147

21: For the time period of this audit BellSouth was inappropriately excluding non-coordinated hot cuts from the calculation of the measure results for P-7C (Hot Cut Conversions – Percent Provisioning Troubles received within 7 Days of a Completed Service Order). Classification: 1 148

22: BellSouth did not include the translation time necessary to place the line back in full service when calculating the measure results for P-7 (Coordinated Customer Conversions Interval). Classification: 2 149

23: BellSouth was misclassifying certain orders with a "PR-17" (cancelled order) error code thereby incorrectly excluding these orders from the calculation of the P-3 (Percent Missed Initial Installation Appointments) results. Classification: 2 150

24: BellSouth reported the results for P-3 (Percent Missed Initial Installation Appointments) incorrectly because it included end-user-caused misses in the denominator. Classification: 2 151

25: BellSouth incorrectly excluded the majority of the hot cut orders from the calculation of the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received Within 7 Days of a Completed Service Order) measures and excluded a smaller subset of orders from the P-7 (Coordinated Customer Conversions Interval) measure. Classification: 1 152

26: BellSouth did not include disconnect service orders associated with Standalone LNP activity in the measure calculation for P-4 (Average Completion Interval & Order Completion Interval Distribution). Classification: 2 153

27: BellSouth incorrectly included certain record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measurement results. Classification: 2 154

28: BellSouth incorrectly excluded orders from the calculation of the P-7 (Coordinated Customer Conversions Interval) and the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measures that were properly included in the other in-scope provisioning measures. Classification: 2 155

29: BellSouth included orders with invalid conversion durations in the calculation of the P-7 (Coordinated Customer Conversions Interval) measure. Classification: 2 156

30: For P-3 (Percent Missed Initial Installation Appointments), BellSouth included certain cancelled orders in both the numerator and denominator of the SQM results calculation, but included the same orders only in the denominator of the SEEM results. Classification: 2 157

31: BellSouth incorrectly included deny and restore record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure results. Classification: 1 159

32: BellSouth overstated the CLEC circuit counts for P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) by doubling the SL1 (Non-Design) Loop volume. Classification: 2 161

33: During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded transactions from the retail analog of the resale ISDN product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2.....162

34: The logic used by BellSouth to determine dispatch type misclassified some UNE loop orders when calculating the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 3 163

35: BellSouth did not include certain wholesale products in its calculation of the SEEM remedy payments for the P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure. Classification: 2 164

36: The SQM and SEEM levels of disaggregation as documented in BellSouth's SQM Plan were inaccurate and misleading for the UNE-P product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 4.....165

37: BellSouth incorrectly classified UNE Line Splitting orders as UNE-P orders when calculating its results for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2 166

38: BellSouth neglected to calculate the total impact of multiple errors in determining whether it needed to repost the results for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measure. Classification: 2 167

39: BellSouth's documentation in the SQM Plan for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) is contradictory and misleading. Classification: 4 170

40: BellSouth was not including all orders for Local Interconnection Trunks in its calculation of the SEEM remedy payments for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order

Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2 170

41: BellSouth was not in conformance with the SQM Plan when calculating service order durations for the P-4 (Average Completion Interval & Order Completion Interval Distribution) measure. Classification: 2 171

42: BellSouth did not properly align the product IDs for troubles and the lines on which they occurred for M&R-2 (Customer Trouble Report Rate), causing mismatches and resulting in assignment of either the troubles or the lines to the wrong sub-measure in SQM reports and SEEM remedy payment calculations. Classification: 2 172

43: BellSouth included special access services in some of its retail analog calculations during the audit period and, after correcting the calculations, failed to perform a complete analysis to determine whether reposting was necessary. Classification: 2 173

44: BellSouth included orders with invalid maintenance durations in the calculation of the M&R-3 (Maintenance Average Duration) measure. Classification: 2 175

45: During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded ISDN-Basic Rate Interface (ISDN-BRI) Business Design troubles for the 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), and M&R-5 (Out of Service > 24 Hours) measures. Classification: 2.....176

46: For the B-1 (Invoice Accuracy) measure, BellSouth did not define the adjustments it includes in a report month consistently for all bills. Classification: 2.....177

47: BellSouth's manual process for preparing billing data for the B-1 (Invoice Accuracy) measure did not contain adequate quality control procedures. Classification: 3 178

48: BellSouth's process for determining the final adjustment values and the count of adjustments in the calculation of the B-1 (Invoice Accuracy) measure for both CLECs and BellSouth retail is incomplete and thus does not assure accurate reporting of this measure. Classification: 3 179

49: BellSouth's methods for defining revenues and determine which bills are included in the B-1 (Invoice Accuracy) measure are not addressed by the SQM Plan. Classification: 4 180

50: The BellSouth PMAP production validation process did not update the historical data used in trending analysis to reflect the effect of PMAP system changes. Classification: 3 181

51: BellSouth performed no validation to detect invalid zero dollar remedy payments during the audit period. Classification: 4 182

52: BellSouth was not calculating the parity measures involving Tier 1 averages according to the SEEM Administrative Plan. Classification: 1 199

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. Classification: 1 200

54: BellSouth did not calculate the remedy payments for percentage parity measures (*i.e.*, M&R-1, M&R-4, M&R-5, P-3, and P-9) according to the SEEM Administrative Plan. Classification: 1 201

55: BellSouth did not calculate remedy payments for M&R-2 (Customer Trouble Report Rate) according to the SEEM Administrative Plan. Classification: 1 203

56: BellSouth did not have adequate and consistent documentation for its SEEM remedy payment calculation process, which may have contributed to erroneous calculations. Classification: 2 204

57: BellSouth improperly excluded some data items and improperly included others in the calculation of SEEM remedy payments for the O-9 (Firm Order Confirmation Timeliness) measure. Classification: 1 207

58: The BellSouth CLEC Administration table update process caused delayed penalty payments to CLECs. Classification: 3 208

59: BellSouth does not have a process in place to ensure that all remedies for a given reporting month are eventually paid. Classification: 3 209

Liberty notes that the findings, conclusions, and recommendations contained in this report are the findings, conclusions, and recommendations of Liberty only and as such are not necessarily agreed to by BellSouth or the Commission.

II. General Review

A. Regulatory Compliance

1. Background

An important aspect of this audit is the review of the compliance of BellSouth's Performance Assessment Plan for Florida with regulatory requirements. BellSouth implemented the Performance Assessment Plan pursuant to Florida Commission orders, and these orders are therefore the principal source of requirements for the various components of the Performance Assessment Plan. However, BellSouth has also indicated to Liberty that there are other sources for some of the procedures, conventions, and policies it uses to implement the SQM Plan and the SEEM Administrative Plan.[17] For example, BellSouth implemented the CLEC metrics change notification process pursuant to Georgia Public Service Commission July 19, 2002, Order in Docket No. 7892-U and based the definition of the cells it uses in the SEEM calculations on Louisiana industry workshops. In addition, BellSouth has developed with the approval of the Florida Commission a policy for reposting SQM/SRS reports and remedy payments.[18] Liberty's objective in this task area was to determine the set of regulatory requirements governing the Florida Performance Assessment Plan and to assess whether the measure results and remedy payments reported by BellSouth comply with these requirements.

The Scope Document mandates that the examination of regulatory compliance be applied to all measures covered by the SEEM Administrative and SQM Plans. However, because only the in-scope measures will be examined in detail as part of the audit, the granularity of the regulatory compliance assessment was significantly greater for these measures.

2. Analysis and Evaluation

During its review of BellSouth's compliance with the SQM Plan, the SEEM Administrative Plan and other Commission orders, Liberty asked BellSouth and the Commission for the set of documents that embody the regulatory requirements for the Florida Performance Assessment Plan. In response, BellSouth identified Florida Commission Order Nos. PSC-02-1736-PAA-TP (issued December 10, 2002), PSC-03-0529-PAA-TP (issued April 22, 2003), and PSC-03-0603-CO-TP (May 15, 2003), as well as the orders and documents incorporated by reference in these Commission orders relevant to measure definition, measure implementation, measure reporting, remedy definition, remedy payment calculation, and remedy reporting.[19] The Commission confirmed that these are the relevant orders.

Liberty reviewed the Commission orders adopting the Florida Performance Assessment Plan and other relevant orders and documents. For all measures covered by these plans, Liberty examined the SQM Plan and SEEM Administrative Plan documents to assure compliance with

[17] Interview #1, October 4-6, 2004.
[18] Response to Data Request #13.
[19] Response to Data Request #84.

Commission requirements. Liberty also examined PMAP and PARIS reports, documentation, and notifications provided to CLECs, as well as internal BellSouth documents for evidence that BellSouth had properly implemented the requirements of the SQM Plan and the SEEM Administrative Plan. As appropriate, Liberty sought information from some CLECs active in Florida to support this investigation.

Liberty compared reports obtained from the PMAP website to the SQM Plan and SEEM Administrative Plan reporting requirements for all measures (not just those in-scope) for the months of November 2003, December 2003, and January 2004. Based on this analysis, Liberty determined the following:

- PMAP reports existed for all required CLEC Aggregate Florida measures for all three months.
- PMAP reports existed for all required CLEC Aggregate Regional measures for all three months.
- PMAP reports existed for all required CLEC-specific measures, with the exception of O-6 and TGP-2, for all three months.
    - BellSouth stated that it provides O-6 by subscription only; therefore, only CLECs who subscribe can view the O-6 report.[20] BellSouth implemented this practice due to the large size of the O-6 report, which contains detailed information on every LSR submitted by the CLEC each month. A CLEC can subscribe to the O-6 report by contacting their account representative or by submitting a request via the feedback icon on the PMAP website.[21] Liberty verified the subscription process in CLEC interviews.
    - BellSouth stated that TGP-2 reports are only available for CLECs with activity for this measure; therefore, only CLECs with data for this measure will see a TGP-2 report on the website.[22] Liberty noted that this was unique to the TGP-2 measure report. For other measures with no activity, BellSouth would publish a report on the website that contained a title and column headers but no rows of data. Liberty found Change Management metric reports to be the most common example of this situation.
- A few reports listed additional disaggregations not required by the Florida SQM Plan. Liberty did not issue findings for these reports as long as the required disaggregations were present.
- All benchmarks and interval reporting categories matched the SQM Plan.
- There were some discrepancies between the SQM Plan report structure requirements and the PMAP reported results:
    - For measure B-10 (Percent Billing Errors Corrected in "X" Business Days), the PMAP reports were disaggregated into three rows (*i.e.*, Interconnection, Resale, and UNE) even though this level of

[20] Response to Preliminary Finding 11.
[21] Response to Data Request #352.
[22] Response to Preliminary Finding 10.

disaggregation was not required by the SQM Plan definition, business rules, or report structure.[23] The totals must be manually calculated (*i.e.,* the user must take the sum of the three rows) to determine pass/fail for this measure.

- For measures C-1 (Collocation Average Response Time) and C-3 (Collocation Percent of Due Dates Missed), the PMAP reports were disaggregated at a higher level than specified in the SQM Plan during the audit period.[24] The SQM Plan report structure defines six disaggregations (*i.e.,* Virtual-Initial, Virtual-Augment, Physical Caged-Initial, Physical Caged-Augment, Physical Cageless-Initial, and Physical Cageless-Augment). Published PMAP reports list the higher level disaggregations of Physical and Virtual. By contrast, for measure C-2 (Collocation Average Arrangement Time), the PMAP reports follow the same SQM Plan defined disaggregations.
- For measure CM-8 (Percent Change Requests Rejected), the SQM Plan specifies that the report is to be disaggregated by the reason for rejection (*i.e.,* cost, technical feasibility, or industry direction).[25] However, the published PMAP reports did not specify rejection reason. The reports had just one row with number of requests and number of rejects.
- For measure P-2B (Percentage of Orders Given Jeopardy Notices), the PMAP 12-month reports are missing Z-scores for all product disaggregations on mechanized orders.[26]
- For measure M&R-3 (Maintenance Average Duration), the PMAP 12-month reports are missing Z-scores for the UNE Digital Loop < DSL and UNE Digital Loop ≥ DSL products.[27]
- For measures B-7 (Recurring Charge Completeness) and B-8 (Non-Recurring Charge Completeness), the PMAP 12-month reports are missing Z-scores for the resale disaggregation.[28]

During the course of its review, Liberty confirmed that all sub-measures were present in PMAP reports as required by the SQM Plan. BellSouth omits sub-measures that have no activity from its monthly reports. However, Liberty confirmed the existence of all appropriate sub-measures by examining the 12-month reports.

Liberty was not able to confirm the presence of all relevant measures and sub-measures in PARIS because BellSouth only publishes reports on the website for those measures that miss the reporting standard.

[23] Finding 1.
[24] Finding 2.
[25] Finding 3.
[26] Finding 4.
[27] Finding 4.
[28] Finding 4.

Liberty also examined each line item of the Florida orders listed above and verified compliance with all but a few items. Liberty discovered some minor discrepancies between the Florida orders and language found in the SQM Plan and the SEEM Administrative Plan. These are detailed in the Findings and Recommendations section.

Liberty also examined whether BellSouth adhered to the provisions set forth in the SQM Plan and the SEEM Administrative Plan, including required posting, notification, payments, and documentation to CLECs in a timely fashion. Liberty found that BellSouth complied with most reporting requirements, with a few exceptions:

- Liberty noted discrepancies between Appendix D and the list of OSS on the availability report currently posted on the interconnection website.[29] Additionally, the interconnection website states that the same availability report is also posted on the PMAP website. However, Liberty could not locate the report on the PMAP website. BellSouth removed the reference to the PMAP website from the interconnection website.[30]
- BellSouth posts only the most recent month of PARIS reports for viewing by the CLECs on the PMAP website.[31] Historical PARIS reports are not available.
- BellSouth revised their Data Reconciliation policy and posted it under the heading "CIG Inquiry Response Policy." Liberty suggests that BellSouth change the title of the heading on the website or create a new one that specifically states "Data Reconciliation Policy" even if it points to the same document.

In coordination with its investigation of data validity and replication of SQM/SRS reports and remedy payments described in the sections below, Liberty performed a more detailed evaluation of BellSouth's compliance with the list of requirements in the SQM Plan and the SEEM Administrative Plan for the in-scope measures. For these measures, Liberty examined whether BellSouth:

- Properly implemented required exclusions and business rules (see Section II, "Data Validation and SQM/SRS Reports")
- Adequately documented and justified conventions that BellSouth adopted which were not addressed in the Plans (see Section II C, "Metric Change Control")
- Calculated SQM Plan results as well as Tier 1 and Tier 2 remedy payments as required for all the sub-measures listed in Appendix A (see Section IV, "Remedy Payments")
- Adopted the correct measurement standards for all measures (see Section III, "Data Validation and SQM/SRS Reports")
- Followed data retention requirements (see Section III, "Data Validation and SQM/SRS Reports").

Liberty also examined BellSouth compliance with the Florida Reposting Policy. The Florida Reposting Policy (FRP) mandates that "BellSouth will make available reposted performance data

[29] Finding 6.
[30] Response to Data Request #292.
[31] Finding 7.

as reflected in the Service Quality Measurement ('SQM') reports ... and recalculate Self-Effectuating Enforcement ('SEEM') payments ..." under certain circumstances.[32] The following circumstances are among those listed in the FRP:[33]

- Performance sub-metric calculations that result in a shift in the performance in the aggregate from an "in parity" condition to an "out of parity" condition will be available for reposting.
- Performance sub-metric calculations with benchmarks that are in an "out of parity" condition will be available for reposting whenever there is a >2% deviation in performance at the sub-metric level.
- Performance sub-metric calculations with retail analogs that are in an "out of parity" condition will be available for reposting whenever there is a .5 change in the Z-score at the sub-metric level.

These conditions list very specific criteria that need to be met at the sub-measure level in order to determine whether a reposting is necessary. These criteria require that when an error has been found or BellSouth needs to make an adjustment in the methods it uses to produce the measure reports and determine the remedy payments, BellSouth should recalculate the sub-measure results and remedy payments and the Z-score, for those sub-measures with retail analogs, to determine whether reposting of reports and adjustments in remedy payments are necessary.

During the course of the audit, BellSouth was consistently unable to provide Liberty with the results of calculations to support their reposting decisions.[34] Therefore, in order to assess BellSouth's compliance with the FRP, Liberty provided a list of 20 changes that were included in BellSouth Data Notifications between April 2003 and February 2004 and requested BellSouth to provide documentation of the analysis performed to determine whether reposting was required due to these changes.[35] BellSouth indicated that it could not provide such documentation because "[u]nder the current Reposting Policy, BellSouth was not required to retain the information for a set period, nor is BellSouth required to publish any information beyond the requirements of the impact statements."[36] Liberty believes that this indicates an inadequacy in BellSouth's process for complying with the reposting policy as noted below in the Findings and Recommendations section.

B. Supporting Documentation

1. Background

On the PMAP website, BellSouth provides CLECs access to the measures data associated with the CLEC's own transactions, as well as instructions that can be used for replicating measure reports. BellSouth provides the Supporting Data User Manual (SDUM), which can be found on

[32] Response to Data Request #13.
[33] Response to Data Request #13.
[34] See for example, Findings 38 and 43.
[35] Responses to Data Requests #121, #297, and #298.
[36] Response to Data Request #384.

the PMAP website, to assist CLECs in replicating PMAP reports. According to the SDUM Executive Summary, this manual instructs CLECs on how to:[37]

- *Download supporting data files*
- *Import supporting data files into Microsoft Excel*
- *Manipulate data to recreate any number in the Performance Measurement reports for which there is supporting data.*

Supporting data files contain detailed information about specific LSRs, service orders, trouble tickets, and other items reported in the BellSouth SQM/SRS reports. The supporting data has two main uses:

- *Recreating performance measurement reports posted by BellSouth on the PMAP web site*
- *Enabling CLECs to create custom reports and disaggregate performance measurement reports.*

There is no similar documentation on the PMAP website to assist CLECs in replicating PARIS report results or remedy payments.

2. Analysis and Evaluation

The Scope Document mandates that the examination of supporting documentation be applied to all measures covered by the SEEM Administrative and SQM Plans. However, because only the in-scope measures were examined in detail as part of the audit, the granularity of the supporting documentation assessment was significantly greater for these measures.

SQM/SRS Reports

BellSouth asserts that there are no special hardware requirements for SQM/SRS report replication beyond sufficient storage on the computer.[38] BellSouth also indicates that a user would have the most success with a database platform such as Microsoft Access that can interpret SQL script. Before introducing SDUM, BellSouth provided the Raw Data Users Manual (RDUM), which was tailored to data manipulation using Excel, as the SQM/SRS report replication instruction documentation. In the middle of 2003, BellSouth migrated RDUM to SDUM, which relies on SQL scripts to describe the logic to replicate the measures. BellSouth updates the SDUM monthly in the event of changes in the measure calculations. CLECs wishing to access data from past months must have the version of SDUM in effect for that month in order to properly replicate report results.[39] CLECs accessing the PMAP website can only request the most recent month of data and SDUM documentation; however, BellSouth will provide information from past months upon special request. BellSouth expects and encourages CLECs to download the data they need on a monthly basis making special requests unnecessary.

[37] Response to Data Request #153. PMAP 4.0, Supporting Data Users Manual (SDUM), Version 4.408B Release, September 30, 2004 is also available on the PMAP website.
[38] Interview #5, November 10, 2004.
[39] Interview #5, November 10, 2004.

Liberty obtained copies of the SDUM for the audit timeframe to evaluate its accuracy, completeness, consistency, and usability.[40] Liberty also obtained input from volunteer CLECs with experience using the SDUM instructions.[41] Liberty performed a more detailed assessment of the accuracy and completeness of the SDUM procedural documentation for the in-scope measures by attempting to recalculate these measures using the SDUM replication instructions and CLEC supporting data files. Liberty then compared these replication results with the CLEC-specific reports published by BellSouth.

Liberty found the SDUM instructions for replicating the SQM/SRS reports difficult to understand and use.[42] The majority of the SDUM contains SQL scripts for replication without accompanying explanation on how to use them. As the instructions are currently written, a user would need to be skilled in the use of SQL to be successful. Liberty recognizes that the Florida measures are complex and that any procedures designed for replication will necessarily be complex as well. However, Liberty finds the SDUM misleading and incomplete in several areas:[43]

- Section 2 (Executive Summary) and Section 3 (Introduction)[44] do not mention the need for a database platform and indicate that Microsoft Excel, or something similar, is all that is needed to perform SDUM replication. The SDUM describes all the steps to download and import the data in Excel terms. Although able to successfully download PMAP data into Excel using the instructions, Liberty discovered a missing step in the PMAP documentation. Specifically, in section 3.4, before proceeding with step 3 (Click on the 'View/Extract SUPPORTING DATA' link) the user must first click on "View/Extract PMAP data' link. SDUM omitted this step.
- The user can theoretically use downloaded data to replicate SQM/SRS reports using spreadsheet manipulations in Excel; however, this would be extremely difficult and time consuming. The user would have to decode the SQL and transform it into Excel spreadsheet manipulations. When asked about this issue, BellSouth informed Liberty that the predecessor to SDUM was written for replication using Excel.[45] BellSouth updated the detailed replication instructions for each measure to use SQL scripts. However, Sections 2 and 3 (which contain the Executive Summary, the Introduction, and the download instructions) have not been updated to reflect the change from Excel to SQL. Excel is best suited for viewing and filtering the data, not replicating PMAP results.
- While the format for the replication instructions, provided in Section 4, is consistent across measures, BellSouth does not provide either a high-level explanation, to help the user interpret the detailed information contained in Section 4, or any examples for guidance. Instead, Section 4 begins with the first

[40] Response to Data Request #153.
[41] Interview with CLEC, November 29, 2004 and Interview with CLEC, February 1, 2005.
[42] Finding 9.
[43] These points are all included in Finding 9.
[44] Section 3 includes high-level steps to download and manipulate data in Excel.
[45] Interview #5, November 10, 2004.

measure and lists supporting data files, formulas, and SQL scripts. There are no procedures listed for how to implement these items. As it is currently written, only a user with SQL skills would be able to understand these instructions completely.

- The SDUM does not adequately emphasize the need for an Oracle Platform to maximize user success with replication. Significant SQL syntax changes would be necessary if attempting to use other database platforms (*e.g.,* Microsoft Access) to perform replication. Section 3.9 of the SDUM contains a small paragraph that hints at the need for Oracle 9i. If the Executive Summary of the document were updated to emphasize this point and to describe the issues/drawbacks associated with attempting to replicate using SDUM with other approaches, the user could make a more informed decision about which platform to use.
- BellSouth designed its SQL scripts to provide the SQM/SRS report results one line at a time; therefore, to replicate a report with multiple products and multiple time intervals could take hundreds of separate SQL runs, requiring that the user edit the script with different parameters (*e.g.,* product, interval) each time between runs. The SDUM does not explain how the user can get multiple rows in one SQL run. Liberty knows that replication of multiple rows is possible, because during a Liberty on-site visit, BellSouth demonstrated various methods to obtain multiple rows, and in some cases entire reports, by simply commenting out certain lines of the SQL script. The SDUM document does not contain any of these methods, although Liberty found them extremely useful. Without the availability of such additional instructions, a user would need to be skilled in SQL in order to perform replications without considerable inconvenience.
- Liberty also encountered minor syntax errors when executing the SDUM SQL scripts for in-scope measures:
  - The script for measures P-3 and P-4 contained an extra line space that causes an SQL syntax error.
  - The script for measure P-7 contained an erroneous ":" (colon) character that causes an SQL syntax error.
- Regarding completeness, Liberty performed an inventory of the SDUM document to verify that it included all measures with a CLEC-specific component. All measures were represented with four exceptions, O-3, O-4, O-6, and M&R-7. BellSouth stated that O-3 and O-4 are manual measures and not in the warehouse. Because the SDUM is based only on warehouse data, these measures cannot be in SDUM. O-6 represents the detailed LSR information that is used to calculate O-3 and O-4. For M&R-7, because all CLECs are notified via email simultaneously, by default the aggregate results will always equal the CLEC-specific results.

Liberty also examined the SDUM instructions for consistency across measures and found the replication procedures and data descriptions were presented in a consistent manner.

Using sample CLEC data, Liberty replicated SQM/SRS report results for the in-scope measures according to the SDUM procedures and SQL scripts for the November and December 2003 data months. Liberty compared the results of the replications with the published SQM/SRS reports

from the same timeframe. Liberty determined that all results matched with one exception. When Liberty replicated M&R-2, BellSouth's SDUM scripts improperly excluded all records with a zero numerator and a non-zero denominator.[46]

BellSouth encourages users who discover an issue/error in the SDUM documentation, want to propose changes or corrections, or need support for implementation, to submit items via the Feedback Loop.[47] BellSouth provides procedures for this process in its CLEC Interface Group documentation.

PARIS

Liberty could not identify any documentation on the PMAP website to assist CLECs in replicating PARIS report results or remedy payments.[48] Instead, BellSouth's "PARIS Remedy Replication Response Policy" instructs CLECs that they will be given access to the data and instructions to reproduce their specific PARIS calculations after coming on-site to the BellSouth Center in Atlanta, Georgia and signing a non-disclosure agreement. When Liberty requested access to the instructions referenced in the policy, BellSouth stated that the Florida SEEM Replication Manual is under development and offered the Georgia SEEM Replication Manual.[49]

Because no documentation or written instructions existed to replicate PARIS reports during the audit timeframe, CLECs would require significant direct assistance from BellSouth to accomplish this task. Liberty knows of only one CLEC that attempted to perform PARIS replication.[50] The CLEC required over ten visits of two to three days each, with significant assistance from BellSouth, to replicate the PARIS results for only five measures in the state of Georgia.[51] Given the lack of available documentation, CLECs would need to have invested a similar amount of time and effort during the audit period.

Liberty did not attempt to replicate Florida PARIS results for the audit timeframe due to the lack of SEEM replication documentation for Florida. Since replication in Florida was not possible, Liberty investigated analogous replication procedures available for the state of Georgia by interviewing BellSouth and participating CLECs to understand their experiences.[52]

BellSouth indicated that, in order to perform PARIS replications, a CLEC must come on-site to the Atlanta location and use BellSouth's hardware and software to perform the replications. The CLEC requires access to statistical software for analog measures. BellSouth provides access to S+ for this purpose; however, if the CLEC prefers a different statistical package (*e.g.,* SAS), it must provide its own. Because PARIS report replication is more complex than SQM/SRS report replication, BellSouth stated that a more sophisticated user, particularly someone with a

[46] Finding 10.
[47] Responses to Data Requests #81, #82, and #83.
[48] The PMAP website is located at http://pmap.bellsouth.com/content/documentation.aspx.
[49] Response to Data Request #89. This issue is discussed further in Finding 11.
[50] Although this CLEC attempted PARIS replication in 2002, which is outside the audit period, Liberty believes that its experience is representative of the status of this capability during the audit period.
[51] Interview with CLEC, November 29, 2004.
[52] Interview with CLEC, February 1, 2005.

statistical background, would have more success. Similar to PMAP, BellSouth makes available PARIS data from past months upon request. BellSouth includes all measures from the SEEM Administrative Plan in the SEEM Replication Manual.

One CLEC attempted to replicate PARIS reports at BellSouth's Atlanta, Georgia office for approximately 25 days in 2002.[53] BellSouth indicated that an employee is always on-site observing and helping out as necessary.[54] BellSouth also stated that, although the CLECs have access to the BellSouth transactions on-site during the replication process, they can only print out and take away final results that have no BellSouth proprietary information.

The CLEC attempted replication for the August, September, and October 2001 data months in the calendar year 2002. It used Georgia data and the Georgia SQM Plan and the SEEM Administrative Plan and attempted replication of measures related to:

- Order Completion Interval (OCI)
- Maintenance Average Duration (MAD)
- Missed Installation Appointments (MIA)
- Reject Interval
- FOC Timeliness.

At the time of the CLEC's replication, RDUM governed SQM/SRS report replication and no documentation existed for PARIS replication. The CLEC used RDUM primarily for identifying exclusions and computing the measure formulas and wrote its own programs for replicating PARIS calculations using SAS software. The CLEC performed its work on-site at BellSouth over the course of approximately ten visits, with each visit lasting two or three days. BellSouth provided the computer and SAS software used by the CLEC.

The CLEC used transaction-level detail for its study. It used both its own data (based on four different OCNs) and BellSouth retail data in its analysis and included both transactions expected to be included and those to be excluded in order to test exclusions. The files were extracted from NODS and BARNEY, which are BellSouth systems that were predecessors of PMAP 4.0.

C. Metric Change Control

1. Background

The management of changes can affect numerous parts of an organization, and requires a comprehensive and consistent process allowing for the control and tracking of the many types of changes according to their own individual processes and workflow. Common types of changes include those related to processes, documents, hardware, software applications, engineering,

[53] Interview with CLEC, November 29, 2004. Although this CLEC attempted replication outside the audit period, Liberty feels that its experience was representative of the difficulties faced by CLECs attempting to replicate PARIS reports.
[54] Interview #6, November 10, 2004.

facilities, maintenance, equipment, validation, and protocols. With the growing interdependence of computing systems and applications, as well as the diversity in user communities, change control and proactive notification to users of change has become even more important.

The main focus of Liberty's review in this area was to determine whether BellSouth complied with established procedures for the metric change notification process including:

- Existence of effective tools for tracking metric changes
- Sufficient internal controls to properly manage the process
- Timely and efficient processing of metric changes
- Effective use of change controls to improve its performance reporting processes
- Obtaining appropriate approval for changes implemented
- Testing of changes before releasing them for production
- Complete and clear Notification Reports
- Notification Reports that sufficiently and accurately state the impact of the proposed changes
- Existence of procedures to update or modify these reports
- Timely and complete distribution of Notification Reports.

Liberty's review also analyzed BellSouth's change management documentation, specifically Performance Measurements Quality Assurance Plan (PMQAP) Version 6.0,[55] to determine whether:

- The documentation is complete and easy to understand
- Any significant topics are omitted
- All measures, including all sub-metrics and disaggregations, are covered by the documentation
- Procedures are consistent across measures and domains
- Procedures exist for making changes or corrections to the documentation in the event of a process change
- Changes are communicated.

BellSouth uses "change control" as the generic term for the process of submitting, reviewing, approving/rejecting, monitoring, and managing all changes to its PMAP Production System. Normally, the term "change control" applies to *all* changes to the software, documentation, and system hardware.

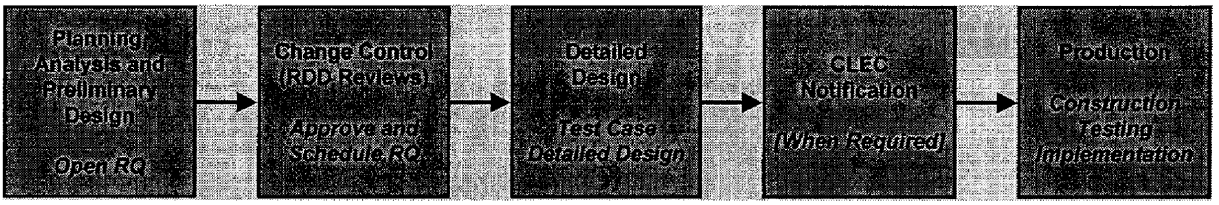
BellSouth uses the PMAP "Production Life Cycle & Change Control Processes" (PLC3P) to implement changes in the PMAP system.[56] While the primary purpose of the PLC3P is to manage the internal process within BellSouth, it also provides a means to manage, track, and

[55] This document was provided as part of Interview #1, October 4-6, 2004.
[56] BellSouth uses a separate process, the SQM Change Control Process, to manage requests for changes to the SQM Plan from CLECs, groups within BellSouth, or regulatory authorities.

build an audit trail for changes related to PMAP systems including PARIS. PLC3P follows a traditional software development life cycle and includes nine phases, 23 processes, 11 individual roles, and 15 status transitions.[57]

For ease of understanding, Liberty has condensed the PLC3P into five major steps, i) Planning, Analysis, and Preliminary Design; ii) Change Control; iii) Detailed Design; iv) Notification; and v) Production.

Condensed Production Life Cycle and Change Control Processes Flow Diagram



Planning, Analysis, and Preliminary Design

BellSouth begins the PLC3P with a Change Request (RQ) that it can open for one of four reasons: i) Regulatory Orders, ii) Audit Findings, iii) Mandated Changes, or iv) Discretionary Changes. Regulatory Orders include any action required by a state Public Service/Utility Commission as a result of docket or other Commission activity that would have an impact on PMAP or SEEM. Audit Findings include the implementation of changes, modifications, and corrections consistent with internal or external audit findings with respect to PMAP, SEEM, or related systems/process findings. Mandated Changes include any change required to maintain system functionality (*e.g.,* upstream or downstream changes that will affect results or output), compliance-related issues (*e.g.,* calculation corrections and modification), or external requests for changes in system functionality (*e.g.,* a CLEC request). Discretionary Changes include changes related to process improvements, code efficiency, resource allocations, and cosmetics.

When BellSouth creates an RQ, it also develops an RQ Definition which includes i) a determination of system impacts, ii) a Requirements Definition Document (RDD), iii) a determination as to whether BellSouth needs to issue a CLEC notification, iv) the creation of an Expected Results Document, and v) an estimate of the work required to implement the change.[58]

BellSouth uses an off-the-shelf management tool, TestDirector 7.5 by Mercury,[59] to monitor the status of RQs at all stages of the change control process. TestDirector also enables users to communicate progress, share data, and document issues.[60] BellSouth creates, for internal use,

[57] Interview #1, October 4-6, 2004.
[58] Interview #1, October 4-6, 2004.
[59] According to the Mercury website, TestDirector, "[s]upports the entire testing process - requirements management; planning, building, scheduling, and executing tests; defect management; and project status analysis - through a single Web-based application."
[60] Interview #1, October 4-6, 2004.

weekly reports of all RQs that are being processed. BellSouth does not maintain the approval dates associated with Release Packages directly in TestDirector.[61] Instead, BellSouth retains Functional Change Control Board (FCCB) and Organizational Change Control Board (OCCB) approvals as hardcopy artifacts of the approval process. Likewise, BellSouth records the dates for Notifications based on artifacts of the notification process; TestDirector does not reflect the actual notification dates.[62]

Change Control

As part of the *Change Control* step, BellSouth's FCCB and OCCB review pending RQs to determine their completeness, appropriateness, scheduling, and sequencing into various Release packages. The FCCB and OCCB meetings are the sole source of approval for all RQs. The OCCB communicates its decisions to other organizations within BellSouth via minutes and by the distribution of the Approved Release Report.[63]

Before the FCCB reviews an RQ, BellSouth subjects it to a RDD review or RDD Walkthrough. In this step, all preliminary RQs are reviewed by the Developers, Business Analysts, and Testers processing the change to: i) clarify all requirements, ii) review work effort estimates, and iii) ensure all affected system areas have been identified and documented.

The FCCB then prepares the "FCCB Package,"[64] which prioritizes the RQ for preliminary Release, and determines the necessary resources as well as scheduling considerations to implement the RQ. The FCCB then prepares the necessary documentation for submission to the OCCB. Although constituted as a "board," the FCCB in essence serves as a review and screening task team for the OCCB.

The OCCB, which is composed of the Director of Interconnection Services, Release Manager, PMO Manager and PMAP Notification Managers, makes the "Go"/"No Go" decision for all Releases. As part of its approval process, the OCCB reviews: i) the content of all proposed RQs, ii) the development and delivery risks of each RQ, and iii) the impact of Emergency RQs that are included in the proposed Release(s). The OCCB can either unconditionally approve a Release, or require the addition or deletion of specific RQs as a condition of approval. Any changes go back to the FCCB for modification of the Release per the OCCB's direction and reissuing for approval. When required, OCCB approval also triggers the preparation of a Notification Report discussed below.

[61] A Release may contain a number of changes or RQs. One major element of any change control process is the coordination of the various individual changes to ensure they do not conflict with one another in a Release or with other scheduled Releases. BellSouth processes its software changes as a packaged Release; however, regulatory notifications take place at the Change Request or RQ level.

[62] Interview #1,October 4-6, 2004

[63] Responses to Data Requests #300 and #301.

[64] "PMAP Change Control Detailed Processes: Meetings" Version 1.8 dated July 15, 2004 provided as part of Interview #1, October 4-6, 2004.

Detailed Design

Once the OCCB approves a Release Package, consisting of various RQs, the responsible Development Managers, PARIS Architect, Project Managers, Business Analysts, Subject Matter Experts, and Testers prepare a detailed design to implement the proposed changes and associated testing data. As part of this step, the OCCB identifies all areas within the system requiring change and prepares technical documentation. This technical documentation details all aspects of system design, provides information to the Test Team so that they can develop the necessary test data and test cases and other information necessary to assist in the validation of test results.[65]

Notification Reports

Pursuant to an Order of the Georgia Public Service Commission, BellSouth issues Notification Reports for "any change to the method by [which] its performance data is calculated."[66] BellSouth provides preliminary and proposed notifications each month to the Florida Commission as well as to the other Public Service/Utility Commissions in BellSouth's nine-state operating area. BellSouth files Preliminary Change Notifications 90 days before its intended implementation of changes, and files Proposed Change Notifications 60 days before its intended implementation of changes.[67]

BellSouth files each of these notifications on the first day of every month to inform CLECs of impending changes. After BellSouth files its notification, CLECs may file comments on the changes and discuss potential impacts with BellSouth on the PMAP Notification Call. If required by the Commission, BellSouth will adjust the RQ to address CLEC issues and concerns.[68]

Production

The final step, Production, actually includes five separate and distinct steps in the PLC3P before BellSouth places a Release or RQ into production, specifically: i) Construction and Unit Testing, ii) Functional Testing, iii) Regression Testing, iv) Implementation, and, finally, v) Production. During Construction and Unit Testing,[69] BellSouth makes changes to the code to meet the new requirements identified in the Detailed Design and tests the code to ensure that it meets these

[65] The Test Team consists of various individuals in the change process responsible for determining whether the proposed changes are properly coded and can be implemented without impacting other systems, reports, or outputs.
[66] Georgia Public Service Commission Order dated July 2, 2002 in Docket 7892 - Performance Measures for Telecommunications Interconnections, Unbundling and Resale, Page 2: "On the first business day of the month preceding the data month for which BellSouth proposes to make any change to the method by [which] its performance data is calculated, BellSouth will provide written notice of any such proposed changes (hereinafter referred to as 'Proposed Data Changes'). This notice will identify the affected measure(s), describe the proposed change, provide a reason for the proposed change, and outline its impact. At the same time BellSouth will provide written notice of any known changes BellSouth is considering making to the method of calculating performance data for the following data month (hereinafter referred to as 'Preliminary Data Changes'). This written notice shall be served electronically on all parties in Docket 7892-U and will be posted on the PMAP website."
[67] Interview #1, October 4-6, 2004.
[68] Interview #1, October 4-6, 2004.
[69] BellSouth performs Unit Testing to verify that the new or modified software performs as expected.

initial requirements. Functional Testing covers how well the system executes the functions it is supposed to execute using the new or changed code. In this step, BellSouth creates functional test cases and baseline results and compares them to actual run results. BellSouth then reviews and resolves any errors that it identified. In the final testing step, Regression Testing, BellSouth tests the software changes in a full production environment and resolves any unacceptable results.[70]

As part of the Implementation Step, BellSouth conducts a Production Run Planning Meeting (PRPM). At the PRPM, the Production Run Manager reviews any outstanding issues from the previous production run cycle, the status of the Regression Testing associated with the new Release or RQ, and the schedule of associated start-up activities. The Production Run Manager determines whether the Release or RQ is ready for insertion into the routine production environment. Once placed into Production, various testers undertake a final validation of source files, data warehouse, data marts, web-related materials, and PARIS. If the validation is successful, BellSouth considers the Release or RQ implemented and the RQ closed. If, however, the Production Run does not generate the desired results from an IT processing or business process perspective, BellSouth initiates an Emergency Change Process to correct the problem.[71]

Emergency Change Process

If errors are encountered during the Production step, BellSouth initiates an Emergency Change Process. Last minute errors could be caused by new requirements or upstream defects previously undetected. Based on the time available to complete the production of the Release or RQ, BellSouth will make the necessary corrections and then run through a series of tests to retest the Release, going through as much of the change control cycle as is feasible.[72]

2. Analysis and Evaluation

As part of its analysis and evaluation of BellSouth's Change Control process, Liberty reviewed all documentation associated with the process, interviewed BellSouth managers and subject matter experts, and conducted an independent review of the Change Control Process. In addition, Liberty evaluated compliance with the Notification process. As part of this analysis, Liberty reviewed all filings made with the Georgia PSC[73] from July 1, 2003, to February 2, 2004, as well as the associated internal tracking and monitoring conducted by BellSouth for these RQs. Liberty reviewed a total of 183 RQs,[74] including 79 that required Notification Reports,[75] as part of its audit.

[70] Also referred to as verification testing, BellSouth initiates regression testing after a programmer has attempted to fix a recognized problem or has added source code to a program that may have inadvertently introduced errors. This quality control measure ensures that the newly modified code still complies with its specified requirements and that unmodified code has not been affected by the maintenance activity. Interview #1, October 4-6, 2004.

[71] Interview #1, October 4-6, 2004.

[72] Interview #1, October 4–6, 2004 and documentation provided as part of Interview #1, October 4-6, 2004..

[73] Changes to elements of the SQM Plan are submitted for comment pursuant to Georgia PSC Order in Docket 7892-U for all jurisdictions.

[74] Responses to Data Requests #110 and #184.

BellSouth has a well-developed change control process in place to identify, monitor, and implement the various changes needed as part of its SQM Plan. BellSouth designed the process to accomplish two tasks, i) to orchestrate multiple changes to its SQM Plan that occur over its natural life cycle as a result of regulatory order, upstream or downstream system changes, or process improvements; and ii) to notify various regulatory and CLEC users of pending changes, the nature of those changes, and their impact.

Tracking

BellSouth uses a combination of TestDirector, copies of meeting minutes, and written approvals to track, monitor, and record progress and decisions in its the metric change process. Liberty tested the capability of BellSouth's tracking systems by reviewing tracking data for RQs from July 2003 to February 2004. This review included 183 RQs consisting of a possible 2,013 status tracking data points.[76] In its initial response, BellSouth excluded or left blank 520 tracking data points, almost 26 percent of the sample, with little or no explanation. After additional discussion and analysis, BellSouth was able to explain all but 49 of the blank entries. While some of these exclusions appear to be logical (*e.g.*, a number of the RQs did not require Notification, hence BellSouth did not note completion data for this activity), others appear to be the result of data not being available, error, or oversight.

The following table summarizes Liberty's findings:

Description of "No Data"	Number of Tracking Data Points	Percent of Total Tracking Data Points
Not Reported because RQ is a Parent[77]	154	7.7
No CLEC Notice Required	124	6.2
Coded but not marked[78]	81	4.0
Data Not Available	49	2.4
Worked Not Marked[25]	39	1.9
Other	73	3.6
Total – No Data	**520**	**25.8**
Total Data Points Provided	1493	74.2
Total – All Tracking Data Points	2013	100.0

Liberty found that BellSouth took an average of 153 days to complete an RQ from end-to-end, almost six months from start to finish.[79] In Liberty's experience, this appears to be excessive.

[75] Responses to Data Requests #121 and #183.

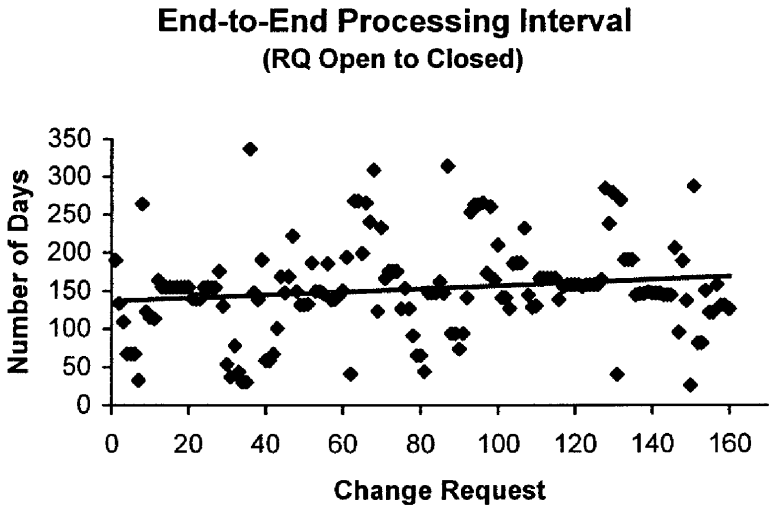
[76] Responses to Data Requests #110 and #184. Liberty considered each RQ Status Definition, as defined in *PMAP Production Life Cycle and Change Control Processes: Status Definitions and Flow*, as a status tracking data point. These data points are shown in the Production Life Cycle and Change Control Processes Diagram provided by BellSouth and were discussed as part of Interview #1, October 4-6, 2004.

[77] BellSouth issues Parent RQs for control and tracking purposes; they do not contain specific change requirements. Child RQs contain the actual changes but in the event of multiple changes these may not be tracked.

[78] These RQs did not move through each individual status in TestDirector because of an oversight. BellSouth did work this RQ per the normal development process, and updated the final status to be correct once the work was complete.

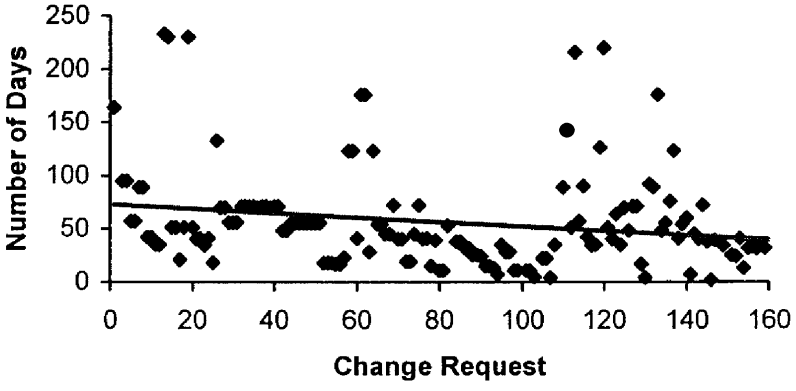
[79] Liberty based its calculations on 160 RQs for which BellSouth provided end-to-end dates.

Moreover, as can be seen from the following chart, the interval is trending upward and Liberty found significant variation in the end-to-end processing times:



Nineteen RQs took more than 200 days with the longest taking 315 days from start to finish.

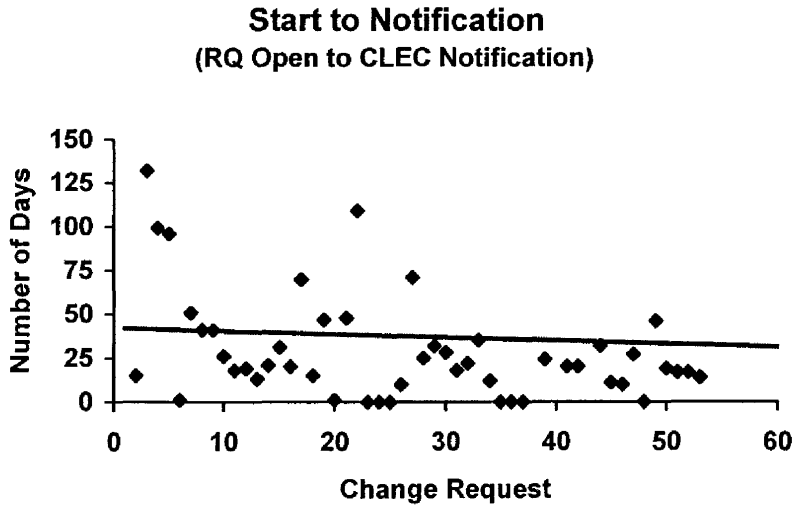
Within the average 153-day end-to-end interval, Liberty found the average time from when BellSouth originated an RQ to when the OCCB approved the RQ was 58 days.[80] As can be seen from the following chart, while this interval is trending downward, there is little consistency in BellSouth's initial approval process:



With respect to Notification Reports, Liberty's analysis found the average interval from when BellSouth opened an RQ to when it updated the tracking data with a "Notification" was 37

[80] Liberty based its calculations on 155 RQs provided by BellSouth that were listed as "Open to OCCB Approval."

days.[81] As can be seen from the following chart, while the interval is trending slightly downward, once again there is little consistency in interval from when an RQ is opened until when the necessary notification is made:



Liberty also compared 58 RQs, which indicated that BellSouth made a Notification, to the actual filings made with the Georgia PSC to determine the accuracy of the tracking data provided.[82] Liberty found that 24 percent of the RQs had some kind of discrepancy as shown in the following table:

Discrepancy	Quantity
Incorrect Dates	3
RQ Number Different	3
RQ had no Preliminary Filing	3
RQ not in Filing Data	5
Total	**14**

The tracking of Metric Changes conducted by BellSouth as part of the PL3CP while adequate, needs improvement. Liberty's review suggests that BellSouth's documentation of progress is inconsistent and that BellSouth does not adhere to its own practices with respect to monitoring workflow. In addition, BellSouth uses a combination of mechanized and manual tracking methods that make the collection, monitoring, and review of tracking data problematic. Of the 2,013 process data points Liberty reviewed, BellSouth omitted almost 20 percent (*i.e.*, 396 data points) with 13 different explanations for the omissions. The explanations included posting

[81] Liberty based its calculations on 150 RQs that had "Open to CLEC Notification" data provided. For the purposes of this analysis, Liberty reset negative intervals (suggesting a CLEC Notification was made prior to the RQ being opened) to zero.

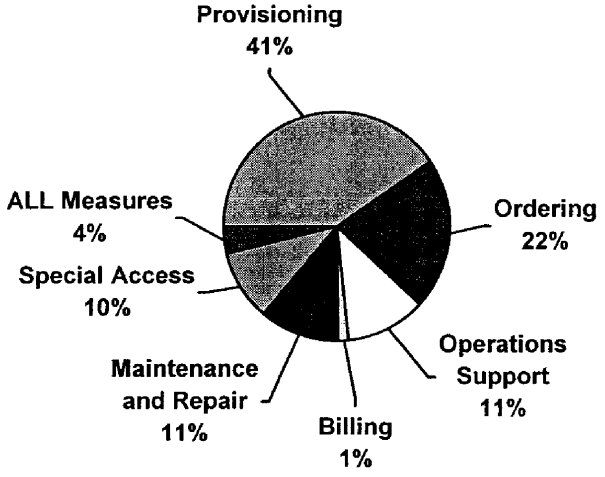
[82] In response to Data Request #184, BellSouth provided CLEC Notification dates for only 58 of the 73 changes identified in the Preliminary Data Notifications provided in its responses to Data Requests #121 and #183. BellSouth did not provide any explanation for the missing notification dates.

errors, scheduling errors, and human errors. Additionally, with respect to tracking of RQs requiring Notification, Liberty observed a number of discrepancies between the actual filings and the tracking data provided.

Notification

As part of its analysis, Liberty reviewed eight Notification Reports filed from July 2003 to February 2004.[83] The eight filings studied included 79 specific proposed changes of which 68 had a direct effect on Florida. Pursuant to the Georgia PSC's July 19, 2002, Order in Docket No. 7892-U, each proposed change should "identify the affected measure(s), describe the proposed change, and outline its impact."

As shown in the following chart, almost half of the RQs processed in this timeframe were related to Provisioning measures:



Based on the requirements established by the Georgia PSC, Liberty categorized BellSouth's impact statements into three categories, i) Acceptable, ii) Partially Acceptable, and iii) Unacceptable. Liberty considered an "Acceptable" impact statement to include an accurate and useful assessment of ALL metrics reflected in the RQ.[84] Liberty categorized an impact statement as "Partially Acceptable" if it was accurate in its assessment, but only reflected the impact of the change on one of many metrics or described the change in an indirect manner. Liberty considered an Impact Statement "Unacceptable" if it clearly omitted any meaningful impact or it measured the impact on elements of the metric in a way that made it impossible to assess the true impact without considerable additional effort. Based on these criteria, Liberty found less than half of the filed Impact Statements to be Acceptable and slightly over one-third to be Unacceptable.

[83] Responses to Data Requests #121 and #183.

[84] Another issue is that most impact statements discuss only the effect on a single state's results even if the same issue affects multiple states. Therefore the impact statements do not provide directly relevant information to a commission or to CLECs in a state whose results are not quoted. Liberty's categorization does not reflect this issue.

1
2 The following table provides examples of each category:

Category	Impact Statement as filed
Acceptable	Based on February 2003 data, the Percent Provisioning Troubles within 30 will be reduced 0.33%.[85]
	Based on March 2003 data, the results would change as follows: ADSL provided to Retail would change from 16.32% to 9.94% regionally and CLEC Line Share would change from 10.66% to 3.86% regionally.[86]
	For May 2003 data, PMAP reported 100% and the percentage should have been 99.99%.[87]
	For May 2003, there were 17 non-coordinated conversions that were not reported, none of which had troubles.[88]
Partially Acceptable	Based on February 2003 data, the Customer Trouble Report Rate is reduced from 2.74% to 2.4%. Maintenance Average Duration for ADSL provided to retail will increase by an average of .89 hours. Repeat Report Rate will be reduced by an average of .003% across all states for ADSL provided to retail.[89]
	Based on February 2003 data the Customer Trouble Report Rate for UNE Combo Other would increase from 4.26% to 4.45%.[90]
	For May 2003 for both Retail and Wholesale, 198 of 3,337,331 records (0.0005%) were marked as missed appointments without a valid missed appointment code.[91]
	For June 2003 Georgia 271 data, PMAP posted 98.76% of Service Inquires for Electronic Loop Make-up completed within one minute and the percentage should have been 98.05%.[92]
Unacceptable	For May 2003, 224 of 38,947 records had an additional day in the durations. For SA-6, ASR Receipt Date to FOC Due Date, 6 out of 9,827 records were affected, for ASR Receipt Date to Order Completion Date, 34 out of 18,356 records were affected and for ASR Receipt Date to Requested Due Date, 41 out of 9,822 records were affected. For SA-7, Past Due Circuits, 143 out of 143 records were affected.[93]
	For March 2003, 17 orders would be affected by this change[94]
	The reports will reflect the correct interval buckets[95]
	CLEC CTRR for 2-wire analog loops non-design will approximately double.[96]

[85] July 1, 2003 filing, Proposed August 2003 Data Notification, Item # 2.
[86] August 1, 2003 filing, Proposed September 2003 Data Notification Item #8.
[87] November 2, 2003 filing, Proposed December 2003 Data Notification Item #2.
[88] December 1, 2003 filing, Proposed January 2004 Data Notification Item #6.
[89] July 1, 2003 filing, Proposed August 2003 Data Notification, Item # 4. The change is reported for metrics M&R-1, M&R-2, M&R-3, M&R-4, and M&R-5 but BellSouth does not provide an impact assessment for either M&R-1 or M&R-5.
[90] August 1, 2003 filing, Proposed September 2003 Data Notification Item #9. BellSouth reports this RQ for all M&R metrics, but only provides the impact on M&R-2.
[91] September 2, 2003 filing, Proposed October 2003 Data Notification Item #5. Based on this statement, it is not clear whether the reported impact is the new result or a difference to be applied.
[92] November 3, 2003 filing, Proposed December 2003 Data Notification Item # 1. BellSouth reports this RQ for all states, but only provides the impact for Georgia.
[93] August 1, 2003 filing, Proposed September 2003 Data Notification Item #12. The Impact Statement reports the effect on the record elements of the metric, not the impact on the metric results.
[94] August 1, 2003 filing, Proposed September 2003 Data Notification Item #7. This RQ involves nine metrics with five different types of orders.
[95] October 1, 2003 filing, Proposed November 2003 Data Notification Item #3.
[96] January 2, 2004 filing, Proposed February 2004 Data Notification Item #7.

Liberty also analyzed the underlying data supporting BellSouth's Notifications and found the type, age, and accuracy of the data to be questionable. The data used to support the Impact Statements were on average six months old and in some cases as much as eight months old. In certain cases, the use of stale data was exacerbated by additional processing delays. In other instances, the Impact Statement was predicated on a single metric when the proposed change affected multiple metrics. In addition, Liberty found data to be missing or in error and, in six instances, found no impact statement at all, in spite of the requirement to provide one.

Internal Controls

Liberty reviewed the internal controls and control environment associated with BellSouth's Metric Change Process.

BellSouth submits all requests for metric changes related to PMAP via TestDirector and uses the PL3CP to track and observe progress.[97] Once BellSouth completes the Planning, Analysis, and Preliminary Design step, the FCCB and OCCB hold meetings to review and authorize proposed RQs. The OCCB communicates its decisions regarding PMAP metric changes via written minutes and the distribution of the approved Release report.[98] BellSouth also records the RQ's approval in TestDirector.[99]

The PL3CP has no documented classifications for change requests; however, most requests fall under the following informal classifications: i) PSC/FCC Orders, ii) Defects (as determined by the Measurements Analysts), iii) Audit Findings (as determined by the Audit Team), and iv) System Performance Changes.[100] The PL3CP has no established processing intervals or process benchmarks to help measure the efficiency of the change process. As such, processing intervals can range from one day for an emergency change request, to an indefinite period for change requests not identified for a particular Release.[101]

BellSouth has no formal training or training materials associated with the metrics and change management process. Instead, BellSouth relies on "on-the-job training" techniques and existing documentation to meet its training needs.[102] Liberty was unable to ascertain the continuity or depth of institutional memory that is critical when using on-the-job training methods.[103]

BellSouth uses password authorization to control access to the various systems. BellSouth has a number of password protections in place to ensure access to authorized users only. These

[97] Response to Data Request #118 and Interview #1, October 4-6, 2004.
[98] Responses to Data Requests # 300 and #301.
[99] Interview #1, October 4-6, 2004.
[100] Responses to Data Requests #115 and #116.
[101] Response to Data Request #119.
[102] Response to Data Request #109.
[103] Response to Data Request #120.

protections include complex rules regarding password creation, expiration dates, and idle (dominant account) access lockout.[104]

BellSouth's internal controls and control environment are adequate to prevent unauthorized access and changes to the various metric measures. However, given the level of operational, regulatory, and process complexity, the continued use of only on-the-job training could weaken the current controls, if it has not done so already.

Documentation

Liberty reviewed the documentation associated with BellSouth's Metric Change Process, specifically, Performance Measurements Quality Assurance Plan (PMQAP) Version 6.0.[105] Liberty found BellSouth's documentation to be generally complete, adequate, and consistent with the processes being documented. Liberty noted, however, that BellSouth does not have sufficient documentation in place to resolve the numerous process issues resulting in missing, delayed, or erroneous data. Additionally, the Change Request Status Definitions reflected in the *PMAP Production Life Cycle and Change Control Processes: Status and Definitions and Flow* do not address the multitude of status results provided in response to Liberty Data Requests.[106]

Liberty also notes that the PMQAP is poorly labeled and difficult to follow. In response to a request from Liberty for the PMQAP document, BellSouth provided a folder containing 23 Microsoft Word documents and two Adobe Acrobat files.[107] One of these documents describes the PMQAP at a very high level, and lists and categorizes the supporting documents that provide more detail on a number of topics.[108] A separate one-page document named "PMQAP – Contents" also lists and categorizes the supporting documents, but uses different names. Liberty found that the actual file names of the supporting documents frequently differ from those mentioned in either of these two summary documents. Furthermore, because the files in the folder are ordered alphabetically, they are not in the logical order of the content.

D. Findings and Recommendations

Finding 1: BellSouth was not reporting B-10 (Percent Billing Errors Corrected in "X" Business Days) according to the SQM Plan Reporting Requirements. Classification: 4

For measure B-10 (Percent Billing Errors Corrected in "X" Business Days), the PMAP reports are disaggregated into three rows (*i.e.,* Interconnection, Resale, and UNE) even though there is no requirement to do this in the SQM Plan definition, business rules, or report structure. More

[104] Interview #1, October 4-6, 2004.
[105] BellSouth provided this documentation as part of Interview #1, October 4-6, 2004.
[106] Response to Data Request #110.
[107] Response to Data Request #17.
[108] This document is called "Performance Measurements Plan_Marva."

importantly, to determine pass/fail for this measure, the totals must be manually calculated (*i.e.,* the user must take the sum of the three rows).

BellSouth states that "the current format of the B-10 PMAP report is the original configuration created for this measure during its inception. As these reports were converted over to the new SRS format, the reports were left unchanged and forwarded to the Commission and CLECs for review. Although as you pointed out, the reports go [to] the next level of unnecessary disaggregation, no issues have been raised as to the format of the report and the necessity of having to sum the rows in order to determine pass/fail."[109]

Because the B-10 report structure does not strictly conform to the SQM Plan, the Commission and CLECs cannot immediately read the expected data from the reports. They must manually total the non-required disaggregations to obtain the B-10 results as defined in the SQM Plan and determine pass/fail. BellSouth stated that they have two courses of action to eliminate this discrepancy. The first would be for BellSouth to submit a change control and modify the report structure to strictly adhere to the SQM Plan. The second would be for BellSouth to submit an SQM clearinghouse request to modify the SQM Plan allowing the current disaggregations displayed in the B-10 report structure. BellSouth feels the second choice may be preferable because CLECs and other PMAP report users may have become accustomed to the current report format. BellSouth indicated that it would like to solicit the advice of the Florida Commission on how to proceed with a correction.[110]

Correcting the reporting discrepancy to add a line for the total would be a minor programming change to implement. Liberty recommends that BellSouth consult with the Commission to determine what further steps are necessary. This discussion should consider the options of proceeding with an official change request to conform to the SQM Plan reporting requirements or seeking a red-line change to the SQM Plan to match the current format of the B-10 report.

Finding 2: BellSouth was not reporting C-1 (Collocation Average Response Time) results according to the SQM Plan reporting requirements. Classification: 3

For measures C-1 (Collocation Average Response Time) and C-3 (Collocation Percent of Due Dates Missed), the PMAP reports are disaggregated at a higher level than specified in the SQM Plan. The SQM Plan report structure defines six disaggregations (*i.e.,* Virtual-Initial, Virtual-Augment, Physical Caged-Initial, Physical Caged-Augment, Physical Cageless-Initial, and Physical Cageless-Augment). Published PMAP reports use higher level disaggregations such as Virtual and Physical-Caged. By contrast, for measure C-2 (Collocation Average Arrangement Time), the PMAP reports follow the SQM Plan disaggregations.

When Liberty identified this issue, BellSouth stated for C-1 that "[s]ince this is a very low volume measure, for reporting purposes, they are rolled up [into] the three main categories of

[109] Response to Data Request #357.
[110] Response to Preliminary Finding 26.

Caged, Cageless, and Virtual. This format was accepted with the roll out of the SRS reporting system."[111]

BellSouth also stated that for C-3, "RQ5331 implemented with Release 4.4.09 changed the report format to match the Florida disaggregations."[112] Liberty has verified that the PMAP reporting disaggregations for C-3 match the SQM Plan requirements beginning in September 2004 but did not match them during the audit timeframe.

Measure C-2 (Collocation Average Arrangement Time) has the same level of disaggregation reporting and is in compliance. The volume for all three measures is low, but roughly the same. There appears to be no reason for BellSouth to conform to the disaggregation reporting requirements for C-2 (and now C-3), but not for C-1. However, BellSouth has noted that the C-3 change "came at the request of the Florida PSC staff and during an SQM workshop. There was no request to change the structure of C-1, therefore the structure remained as established."[113]

Because BellSouth withholds the proper level of disaggregation for C-1, CLECs do not have ready access to valuable information for future decision making. Although not the case during the audit period, BellSouth has corrected the report format for C-3 so that it now conforms with the SQM Plan.

In reply to this finding, BellSouth noted:[114]

> *[T]he volumes for the C-1 metric are extremely low and for reporting purpose, the products are rolled up into the three main categories of Caged, Cageless and Virtual. Since the SQM is in the process of being changed, BellSouth does not propose to change the current reports at this time. Also, since we have not received any requests for the more disaggregated data, it has not significantly impacted users ability to monitor BellSouth's performance.*

Liberty recommends that BellSouth consult with the Commission to determine what further steps are necessary. This discussion should consider the options of modifying C-1 to conform to the SQM Plan reporting requirements or seeking a red-line change to the SQM Plan to correctly state the format of the C-1 report.

Finding 3: For measure CM-8 (Percent Change Requests Rejected), BellSouth was not reporting according to the SQM Plan reporting requirements. Classification: 3

For CM-8, the SQM Plan specifies that the report is to be disaggregated by the reason for rejection (*i.e.*, cost, technical feasibility, or industry direction). However, the published PMAP

[111] Response to Data Request #358.
[112] Response to Data Request #358.
[113] Response to Preliminary Finding 28.
[114] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

reports do not specify the rejection reason; instead, they have just one row listing the number of requests and the number of rejects.

When Liberty identified this issue, BellSouth stated "BellSouth agrees that the report for CM-8 (Percent Change Requests Rejected) needs to be modified to fulfill the specified disaggregation requirements of the SQM Plan as it applies to the reason for rejection. BellSouth has issued RQ6071 to initiate the changes necessary to satisfy these requirements."[115]

Because BellSouth withholds the proper level of disaggregation showing the reason for change request rejection, CLECs do not have access to valuable information for future decision making. BellSouth issued RQ6071 to update the SQL script and, when completed, this change should correct the issue.[116]

Finding 4: BellSouth did not report the Z-scores according to the SQM Plan reporting requirements in the 12-month PMAP reports for measures P-2B (Percentage of Orders Given Jeopardy Notices), M&R-3 (Maintenance Average Duration), B-7 (Recurring Charge Completeness), and B-8 (Non-Recurring Charge Completeness). Classification: 4

Liberty identified four measures that were missing Z-score entries for some disaggregations on the 12-month PMAP reports:

- P-2B (Percentage of Orders Given Jeopardy Notices) – Z-scores are missing from all product disaggregations for mechanized orders. BellSouth stated that it has initiated RQ6115 to correct this issue.[117]
- M&R-3 (Maintenance Average Duration) – Z-scores are missing for only the products UNE Digital Loop < DSL and UNE Digital Loop >= DSL. BellSouth stated that it has initiated RQ6112 to correct this issue.[118]
- B-7 (Recurring Charge Completeness) and B-8 (Non-Recurring Charge Completeness) – Z-scores are missing for the resale disaggregation only. BellSouth stated that RQ6110 has been initiated to correct this issue.[119]

Without complete PMAP reports, CLECs do not have access to valuable information for future decision making. BellSouth issued RQ6115, RQ6112, and RQ6110 to correct these issues and, when completed, these changes should correct the issues.[120]

[115] Response to Data Request #359
[116] Response to Preliminary Finding 27.
[117] Response to Data Request #371.
[118] Response to Data Request #371.
[119] Response to Data Request #371.
[120] Response to Preliminary Finding 39.

Finding 5: The Florida SQM Plan and SEEM Administrative Plan contain several discrepancies regarding provisions found in Florida Order PSC-02-1736-PAA-TP. Classification: 4

Liberty examined each of the Florida Commission orders to verify compliance. Liberty noted some discrepancies between provisions in Florida Order PSC-02-1736-PAA-TP and language in the SQM Plan and the SEEM Administrative Plan:

- **Page 12, line item 27**: New language to be inserted in section 2.9 of the SEEM Administrative Plan document is incorrect. It should read "...PMAP home page on the Current Month Site Updates Link." However, it currently reads "...P W home page ....." BellSouth agrees that the language should be clarified. BellSouth stated that it will modify the SEEM Administrative Plan at the direction of the FPSC at the conclusion of the Liberty audit.[121]
- **Page 13, line item 38**: BellSouth only partially implemented a language change in the OSS-3 (OSS Availability – M&R) section in the SQM Plan. "LNP" was to be changed to "LNP Gateway." BellSouth completed the change in Appendix C, but not in two locations under "Data Retained" for OSS-3 on pages 9-10 of the SQM Plan. BellSouth agrees and stated that it will modify the SQM Plan at the direction of the FPSC at the conclusion of the Liberty audit.[122]
- **Page 14, line item 47**: BellSouth did not implement a language deletion in the P-4 (Average Completion Interval) section of the SQM Plan. BellSouth should have removed the text "Residence and Business reported in day intervals = 0, 1, 2, 3, 4, 5, 5+" from the Report Structure section of P-4 on page 61 of the SQM Plan. BellSouth agrees and stated that it will modify the SQM Plan at the direction of the FPSC at the conclusion of the Liberty audit.[123]
- **Page 27, line item 132**: BellSouth did not implement a language change in the B-10 (Percent Billing Errors) section of the SQM Plan. In the calculation section, the text "responses due" should be present for B-10 on page 134 of the SQM Plan. BellSouth agrees with Liberty's interpretation of the order. BellSouth stated that "responses due" can be added to the language for the calculation in the SQM Plan and indicated that the monthly reported data is actually based on responses due. BellSouth also noted that this measurement has been recently discussed with the CLECs and the Florida PSC as a part of the current six-month review and different language in the calculation section may result from these discussions.[124]
- **Page 42, referring to D-1 (Average Database Update Interval) and D-2 (Percent Database Update Accuracy):** The order states that the Report Structure documentation should be updated to reflect geographic scope. KPMG Consulting concluded that BellSouth's SQM Plan report for D-1 and D-2 is reported on a regional and state-specific basis. D-1 on page 145 and D-2 on page 146 of the SQM Plan reflects Region only. BellSouth agrees and stated that it will modify

[121] Response to Data Request #367. In this response, BellSouth stated that it would modify the SQM Plan; however, Liberty believes that BellSouth intended to say that it would make changes to the SEEM Administrative Plan.
[122] Response to Data Request #367.
[123] Response to Data Request #367.
[124] Response to Data Request #367.

> the SQM Plan at the direction of the FPSC at the conclusion of the Liberty audit.[125]

The language in the SQM Plan and the SEEM Administrative Plan is important for the proper interpretation and implementation of the Florida performance measures. While the discrepancies listed above are minor, correcting them will minimize confusion. BellSouth stated that they will modify the SQM Plan and SEEM Administrative Plan at the direction of the FPSC at the conclusion of the Liberty audit.[126]

Finding 6: For measure OSS-2 (OSS Availability – Pre-Ordering/Ordering), the availability report at BellSouth's Interconnection website is missing entries for many of the OSS listed in Appendix D of the SQM Plan. Classification: 4

When possible, Liberty verified the availability of measure performance reports and related information on the PMAP website during the audit timeframe. However, when Liberty was unable to verify the existence of such information during the audit period, Liberty examined the current status of the information instead.

OSS-2 measures the availability of the Pre-Ordering and Ordering OSS. The OSS-2 definition in the SQM Plan states that scheduled availability is posted on the Interconnection website. Also, Appendix D of the SQM Plan lists the OSS that should be included in OSS-2.

Liberty noted discrepancies between Appendix D and the list of OSS on the availability report currently posted on the interconnection website. Specifically, Appendix D includes PSIMS, TAG, COG, SOG, DOM, DOE, BOCRIS, SONGS, RNS, and ROS in the list of OSS interfaces for OSS-2. However, BellSouth does not post the scheduled availability of any of these interfaces on the interconnection website.[127] Additionally, the interconnection website states that the same availability report is also posted on the PMAP website. However, Liberty was not able to locate the report on the PMAP website.

BellSouth provided a logical explanation for the absence of each of the OSS listed above from the interconnection website, and indicated that it "will pursue a Red Lined SQM to reflect the changes."[128] Additionally, BellSouth stated that the note referencing the availability report has been removed from the Interconnection website.

The inconsistencies present between Appendix D of the SQM Plan and BellSouth's interconnection website can cause unnecessary confusion for CLECs. However, Liberty finds

[125] Response to Data Request #367.
[126] Response to Preliminary Finding 44.
[127] Liberty also notes that the website name listed in OSS-2 (and OSS-3) of the SQM Plan has a typographical error. It should read www.interconnection.bellsouth.com/oss/oss_hour.html. (The underscore in the middle of "osshour" is missing in the SQM Plan.)
[128] Response to Data Request #292.

that BellSouth is attempting to resolve the issue. When completed, the proposed changes to the SQM Plan should correct the issue.

Finding 7: BellSouth posts only the most recent month of PARIS reports for viewing by the CLECs on the PMAP website. Historical PARIS reports are not available. This is in contrast to BellSouth's practice of having previous months' reports available for a full year for the majority of SQM Plan reports. Classification: 4

Section 2.4 of the SEEM Administrative Plan for the state of Florida states that "Final Validated SEEM reports will be posted on the 15th day of the month, following the final validated SQM report or the first business day thereafter." Section 2.8 states that "BellSouth shall retain the performance measurement raw data files for a period of 18 months and further retain the monthly reports produced in PMAP for a period of three years."

On BellSouth's PMAP website, BellSouth currently makes available the PARIS (SEEM) and SQM Plan reports. A CLEC can log in and view the most recent 12 months of their CLEC-specific SQM Plan results. However, the CLEC can only view the most recent month of PARIS reports.

Although not a literal violation of Commission requirements, BellSouth's practice for the PARIS reports is inconvenient and contrary to reasonable expectation. BellSouth has shown the capability to allow access to the historical SQM Plan reports. There appears to be no valid reason to be more restrictive for PARIS reports.

Keeping only the most recent month of PARIS reports online places an unnecessary burden on the CLEC. Each CLEC would be forced to download each month's PARIS reports in order to perform month-to-month comparisons. Since these reports specify direct financial implications for the CLECs, it seems appropriate that they be made available for as long as feasible. BellSouth stated that it "has augmented its retention of SEEM remedy data by implementing" RQ5949, which will allow for the archiving of PARIS Reports beginning with September 2004 PARIS data.[129] BellSouth followed that change control with RQ6008, which will make the archived PARIS Reports accessible on the PMAP website. When completed, these changes should correct the issue.

Finding 8: BellSouth has provided no evidence that it complied with the Florida Reposting Policy in determining whether errors or changes required reposting. Classification: 3

BellSouth has consistently been unable to provide Liberty with the results of calculations to support their reposting decisions.[130] Therefore, in order to assess BellSouth's compliance with the FRP, Liberty provided a list of 20 changes that were included in BellSouth Data Notifications

[129] BellSouth Response to Preliminary Finding 3.
[130] See for example, Findings 38 and 43.

between April 2003 and February 2004 and requested BellSouth to provide documentation of the analysis performed to determine whether reposting was required due to these changes.[131] BellSouth indicated that it could not provide such documentation because "[u]nder the current Reposting Policy, BellSouth was not required to retain the information for a set period, nor is BellSouth required to publish any information beyond the requirements of the impact statements."[132]

In addition, BellSouth sent Liberty a copy of a new version of the "PMAP 4.0 Data Notification Process" document, which it claimed would alleviate the problem of missing documentation for reposting analysis by requiring that "the analysis and decisions pertaining to the rerun/reposting policy will be formally documented."[133] However, this document focuses on the related Data Notification process. The only reference to reposting is the following,[134]

> *At this time the [Industry Call Coordinator] and Notification Team will determine if reposting is necessary based on the changes and the impact outlined in the change request (RQ). Once the Legal Review is conducted ..., the Reposting Analysis Document will be attached to each RQ on the Proposed Data Notification List and will include the rationale for each change request which requires reposting.*

In particular, the document contains no requirement that BellSouth complete and maintain internal documentation of the recalculations necessary to determine whether reposting is required. Nor does it provide any guidance as to the calculations necessary to determine whether reposting is required.

The CLECs and the Commission rely on BellSouth's internal processes to provide reliable measure reports and remedy payments. Unless BellSouth conducts the complete analysis necessary to determine whether reposting is necessary, these parties cannot rely on the measure reports nor be assured that they are receiving the correct remedy payments. Liberty recommends that BellSouth reexamine, update, and completely document its reposting procedure to assure that its analysts fully comply with the requirements of the Reposting Policy. This procedure should include, at a minimum, the requirement that the analysts perform all the calculations required by the Reposting Policy for the measures and jurisdictions affected by any defect potentially requiring reposting, that they document those calculations in sufficient detail as to be auditable, and that the documentation be maintained for a reasonable period of time.

Finding 9: The SDUM instructions for replicating the SQM/SRS reports were not easy to understand and use. Classification: 3

The majority of the SDUM document contains SQL scripts for replication but with no accompanying explanation as to how to use them. As the instructions are currently written, a user

[131] Responses to Data Requests #121, #297, and #298.
[132] Response to Data Request #384.
[133] Response to Data Request #384.
[134] Response to Data Request #384 and Preliminary Finding 56.

would need to be skilled in the use of SQL to be successful. BellSouth provides CLECs access to the measures data associated with their own transactions, as well as instructions that they can use for replicating measures reports.

Liberty recognizes that the Florida measures are complex and that any procedures designed for replication will necessarily be complex as well. However, the SDUM is misleading and incomplete in several areas:

- Section 2 (Executive Summary) and Section 3 (Introduction) do not mention the need for a database platform and indicate that Microsoft Excel, or something similar, is all that is needed to perform SDUM replication. The SDUM describes all the steps to download and import the data in Excel terms. Liberty discovered a missing step in the PMAP documentation. Specifically, in section 3.4, before proceeding with step 3 (Click on the 'View/Extract SUPPORTING DATA' link) the user must first click on "View/Extract PMAP data' link. SDUM omitted this step.
- The user can theoretically use downloaded data to replicate SQM/SRS reports using spreadsheet manipulations in Excel; however, this would be extremely difficult and time consuming. The user would have to decode the SQL and transform it into Excel spreadsheet manipulations.
- While the format for the replication instructions, provided in Section 4 (Recreating Reports), is consistent across measures, BellSouth does not provide either a high-level explanation, to help the user interpret the detailed information contained in Section 4, or any examples for guidance. Instead, Section 4 begins with the first measure and lists supporting data files, formulas, and SQL scripts. BellSouth does not list procedures for how to use this information.
- The SDUM does not adequately emphasize the need for an Oracle Platform to maximize user success with replication. Significant SQL syntax changes would be necessary if attempting to utilize other database platforms (*e.g.,* Microsoft Access) to perform replication.
- BellSouth designed its SQL scripts to provide the SQM/SRS report results one line at a time; therefore, to replicate a report with multiple products and multiple time intervals could take hundreds of separate SQL runs, requiring that the user edit the script with different parameters (*e.g.,* product, interval) each time between runs. The SDUM does not explain how the user can replicate multiple rows in one SQL run.
- Liberty encountered minor syntax errors when executing the SDUM SQL scripts for in-scope measures.

In response, BellSouth stated that the SDUM can be effective regardless of the user's tool of choice and lists their assumptions for the user community. BellSouth also claimed that the majority of SDUM users use Excel, and instructions for Excel are explained in sections 3.7 & 3.8. BellSouth stated that in order to recreate reports in Excel, or other tools, a user must simply filter data and perform the appropriate calculations and aggregations.[135] Liberty notes that

[135] Response to Preliminary Finding 25.

section 3.7 describes how to use auto-filter in Excel and then refers the user to Section 4 (which contains SQL) for detailed instructions. Section 3.8 only focuses on how to manipulate product roll-ups. Although it is certainly possible to replicate using these instructions, Liberty was judging the usability of the SDUM. Liberty disagrees that it is easy to replicate using Excel with the SDUM instructions.

BellSouth also asserts that the targeted user groups would intuitively find the location of the BellSouth raw data files on the PMAP website. Liberty agrees, but still believes it makes sense to update the SDUM instructions to be as accurate as possible.

The SDUM can be greatly improved from a usability standpoint if BellSouth expanded the document to include more preliminary explanations and some examples. Specifically, Liberty suggests that BellSouth add more description of i) the different tools and platforms available to perform data manipulation and replication, ii) the advantages and drawbacks of the different platforms, and most importantly iii) how to apply the SDUM instructions to each platform. Specific examples for the most commonly used tools would be most helpful (*e.g.,* show how to interpret the SQL script to perform manipulations and replications as an Excel user for a specific measure). Additionally, the list of assumptions for the user community provided by BellSouth should be added to the SDUM. If BellSouth added this information to the SDUM, the users would be able to make a much more informed decision when deciding which tool to use to meet their specific needs, and would have a higher probability of success. BellSouth did indicate that it has taken steps to correct the minor syntax errors discovered in the SDUM SQL scripts and have introduced RQ4338 to do so.[136]

BellSouth noted in reply to this finding:[137]

> *BellSouth believes the current SDUM Replication Manual is sufficient and is functional for the purpose for which it was created. As with any system, improvements are possible. BellSouth has to balance the realistic aspects of functionality, development cost and support in any decisions involving these systems. It is BellSouth's position that it has sufficiently met the requirements set forth by the Commission with the current SDUM Replication Manual. No other party has indicated that the SDUM Replication Manual was insufficient.*

Liberty recommends that BellSouth consult with the Commission and the CLECs to determine whether further steps are necessary. This discussion should include, at a minimum, an assessment of the extent of the CLECs' requirements for and use of the SDUM and the cost effectiveness of implementing and maintaining an improved SDUM Replication Manual.

[136] Response to Preliminary Finding 25.
[137] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

Finding 10: The SQL scripts contained in the SDUM document for M&R-2 (Customer Trouble Report Rate) did not replicate CLEC results properly. Classification: 4

When Liberty replicated M&R-2 using SDUM, it discovered a discrepancy with the PMAP results. BellSouth's SDUM scripts improperly excluded all records with a zero numerator and a non-zero denominator from the SDUM report results. After Liberty brought this to BellSouth's attention, BellSouth confirmed it to be true and issued RQ6044 to correct the SQL script in the SDUM document.[138]

Any CLEC attempting to replicate M&R-2 results using the SDUM would have encountered incomplete results. BellSouth issued RQ6044 to update the SQL script and, when completed, this change should correct the issue.

Finding 11: BellSouth did not provide adequate documentation for replication of the results reported in PARIS. Classification: 3

An objective of Liberty's audit was to verify that supporting documentation for replication of PARIS 2.0 job flows are sufficient, clear, and complete. BellSouth said that its Florida SEEM Replication Manual was "under development."[139]

The Exhibit section of BellSouth's PMAP website contains a document entitled "PARIS Remedy Replication Response Policy." It states that "CLECs interested in replication of PARIS reports must agree to come on-site to BellSouth Center, 675 West Peachtree Street, Atlanta, where they will sign a non-disclosure agreement and be given access to the data and instructions necessary to reproduce their specific PARIS calculations." Liberty asked BellSouth for a copy of these instructions, and BellSouth responded with a copy of the Georgia SEEM Replication Manual along with a statement that the "Florida SEEM Replication Manual is under development." Liberty verified with BellSouth that no SEEM replication documentation or written instructions for PARIS payment replication existed during the 2003 audit period.[140] Thus, BellSouth failed to meet the criterion that the documentation be sufficient, clear, and complete.

Because no documentation or written instructions existed to replicate PARIS reports during the audit timeframe, any CLEC would have required significant direct assistance from BellSouth to accomplish this task. Liberty knows of only one CLEC that attempted this task. Although their efforts were in the 2002 calendar year and thus their experience is not directly relevant to the time period of the audit, they required over ten visits of two to three days duration each with significant assistance from BellSouth to replicate the PARIS results for only five measures in the state of Georgia. Given the lack of available documentation, a similar investment in time and effort on the part of a CLEC would have been required during the audit period.

[138] Interview #22, January 11 and 12, 2005.
[139] Response to Data Request #89.
[140] Interview #5, November 10, 2005.

Results reported in PARIS can be important to CLECs' operations and finances. Therefore, BellSouth should make available to CLECs the documentation that would permit relatively easy replication of those results.

BellSouth responded that "CLEC replication of SEEM results was not envisioned, or planned to be an ongoing event once an audit had been completed. The intent of the Replication Manual is for use by the Auditors, and not the CLECs. Therefore, we disagree with Liberty's position that 'BellSouth should make available to CLECs the documentation that would permit relatively easy replication of those results'. We do not believe it is possible to produce 'documentation that would permit relatively easy replication of those results."[141]

Liberty agrees that it will be difficult to produce documentation that would permit relatively easy replication of results. However, Liberty does not agree that PARIS replication instructions are intended for auditors. In BellSouth's own response to the finding, it quotes the PARIS Replication Policy. The first sentence begins "CLECs interested in replication..." Furthermore, Liberty would not have been tasked by the Commission to "[v]erify that supporting documentation for replication of PMAP 4.0 and PARIS 2.0 job flows are sufficient, clear, and complete" if the intended audience for the documentation were auditors. More CLECs might consider performing PARIS results replication and analysis if the documentation were available to do so.

In response to this finding, BellSouth noted:[142]

> *The PARIS Replication Document was originally created to assist Third-Party Testing Auditors in their replication efforts. However, as various CLECs and Public Service Commissions began requesting the document for their use, the scope of the document was expanded. BellSouth also maintains that PARIS and PMAP systems are very complex and that CLECs and Auditors would need the necessary information technology (IT) skills to replicate the measures. Entities that possess this "IT" knowledge would be able to accurately replicate their metrics. The current documentation provides instructions in the most specific manner possible and is patterned after the instructions provided by other companies. Further, experience contradicts Liberty's recommendation. Previously, BellSouth had less detailed instructions and the level of interest in replicating SEEM was about the same as it is currently.*

Liberty recommends that BellSouth consult with the Commission and the CLECs to determine whether further steps are necessary. This discussion should include, at a minimum, an assessment of the extent of the CLECs' requirements for and use of remedy payment replication and the cost effectiveness of implementing and maintaining an improved remedy payment replication process.

[141] Response to Preliminary Finding 1.
[142] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

Finding 12: The Impact Statements provided by BellSouth as part of the Notification Process were unclear and did not accurately state the effect of a proposed change on its associated performance measure. Classification: 3

As part of its analysis, Liberty reviewed eight Notification Reports filed from July 2003 to February 2004. The eight filings studied included 79 specific proposed changes of which 69 had a direct effect on Florida.[143] Pursuant to the Georgia PSC's July 19, 2002, Order in Docket No. 7892-U, each proposed change included an identification of the affected measure, a description of the change being made, and a statement regarding the impact of the change. Each of the proposed changes was also discussed in an industry conference call as prescribed by the Georgia PSC's Order.

Although the 69 Impact Statements that Liberty reviewed technically complied with the Georgia PSC's Order, Liberty does not believe the process provided timely and sufficient information for the Commission and CLECs to assess the true effect of many of the changes. Liberty identified the following issues with the information provided:

- The Impact Statements reviewed did not calculate the effect on the associated measure. Instead, the Impact Statements stated the effect of the proposed change on only selected elements of the measure.
- BellSouth used outdated data to assess the impact of a proposed change.[144] The delays in implementation noted below exacerbated this problem.
- Despite the 30-day time interval between a Preliminary Data Notice and a Proposed Data Notice, BellSouth updated its impact assessment with more current data in only three instances.
- In four instances, BellSouth delayed issuing Proposed Change Notices for at least one month after issuing the Preliminary Change Notice. Although BellSouth referenced the delay in its Proposed Change Notice, it did not mention the delay in the next proposed filing where, under normal circumstances, this change would have been made.
- About one-third (30 percent) of the changes filed required a correction or involved a delay in implementation.
- Eleven of the changes encountered a delay in implementation of one to two months. However, BellSouth did not update the associated Impact Statements to reflect information that is more current.
- Thirteen of the changes required post implementation corrections. However, BellSouth did not provide revised Impact Statements.
- Additionally, Liberty observed a number of errors or misleading statements involving the assessment of impact (See Finding 25, Finding 30, and Finding 32).

[143] BellSouth provides preliminary and proposed monthly notifications to the Florida Commission as well as to the other Public Service/Utility Commissions in BellSouth's nine-state operating area. BellSouth files a Preliminary Change Notification 90 days before its intended implementation of a change and a Proposed Change Notification 60 days before its intended implementation of a change.

[144] Liberty noted that the average age of the data used to assess the impact of a proposed change varied from four to eight months, averaging about six months.

The CLECs and the Commission depend on the BellSouth Metric Change Notification Reports to learn about errors in the SQM reports and potential changes in the remedy payments BellSouth paid. Without access to additional information and calculations than those currently provided in these reports, it is impossible for CLECs and the Commission to determine the full effect of a change on the measures undergoing revision. Additionally, the number of corrections and delayed implementations in BellSouth's Change Notification Reports make it difficult for the CLECs and the Commission to rely on the information provided or the timing of the implementation of the changes.

In response to Liberty's preliminary finding on this matter, BellSouth stated that it was in compliance with the Georgia PSC Order and the Change Notification Policy in effect during the audit period.[145] It also noted that it is working with the Commission and CLECs in SQM workshops, and this may address some of the issues identified by Liberty.

Liberty recommends that these workshops address the possibility of establishing a standard impact assessment policy and practice to guide the analysis associated with any change in performance measures. Key elements of this policy should be:

- Impact assessments performed on a state specific basis
- The development of a rating scale that clearly articulates the severity of any proposed change. For example, a **Level 1 Impact** could include a change or correction that would alter previously published performance results from a met to miss or vice versa. A **Level 2 Impact** could be where there is no change in the met or miss criteria, but the absolute measures have changed by ±5 percent.[146] A **Level 3 Impact** could indicate an error or required change that does not influence performance results. Level 1 and Level 2 impacts would generally require Notification.
- The use of a minimum of three months of the most recent data associated with the measure undergoing change.
- Expand the list of Reasons for Change to include at least Regulatory Orders, Metric Formula Corrections, Process Improvements, Maintenance Changes, and the addition of New Products/Services. BellSouth should also include the Reason for Change in both internal tracking and any Notification submitted to a regulatory body.
- An affirmative statement in the Notification with regard to whether a Proposed Data Notification has been updated since filed as a Preliminary Data Notification.
- Notifications should include information regarding whether a reposting was required because of the change.

[145] Response to Preliminary Finding 31.
[146] Alternatively, a Level 2 Impact could be defined as any change or result that would cause reposting besides those identified as Level 1.

BellSouth replied to this recommendation by stating that "BellSouth has a Change Notification Policy that is currently in effect. The Florida Public Service Commission has adopted the plan and BellSouth believes the plan is sufficient. No changes should be required."[147]

Finding 13: The overall interval to process BellSouth's Change Requests was excessive. Classification: 3

Liberty tested BellSouth's end-to-end change control processing intervals by reviewing tracking data for RQs from July 2003 to February 2004. This review included analysis of 183 RQs and used data provided by BellSouth from TestDirector[148] and other tracking sources.

Liberty found that BellSouth took an average of 153 days to complete an RQ from end-to-end, almost six months from start to finish. In Liberty's experience, this is an excessive interval. Moreover, the interval was trending upward during this period. In addition, Liberty found significant variation in the end-to-end processing times. End-to-end processing intervals ranged from two days to 315 days including 19 RQs (ten percent of the total) that took taking more than 200 days to complete.

Excessive processing times prevent required changes from being implemented in a timely fashion, which in turn can delay remedy payment adjustments and the reposting of measure results.

BellSouth replied that it disagrees with Liberty's assessment that the interval for processing Change Requests is excessive. BellSouth stated[149]

Our priority order for working RQ's is as follows:

1. *Mandated orders (PSC, FCC, Regulatory)*
2. *RQs associated with Audit findings*
3. *Discretionary RQs (i.e. system performance, etc.)*

For RQs that impact the CLEC's reports and are not ordered changes, BellSouth has a 90-day notification period that must be met before the changes can be implemented. In some instances, this may lengthen the timeline for any given RQ. As information, RQs for PSC orders may be put in months before we receive the order as place holders for future work. If Liberty utilized any such RQs, this would have falsely inflated the actual length of time required to implement the associated RQ. Although Liberty used TestDirector data in developing this finding, it's important to note the time length in Test Director for an RQ has no impact on our timeliness of delivery. Mandated orders and RQs associated with

[147] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.
[148] According to the manufacturers website, TestDirector, "[s]upports the entire testing process - requirements management; planning, building, scheduling, and executing tests; defect management; and project status analysis - through a single Web-based application."
[149] Response to Preliminary Finding 60.

audit findings are implemented within given state ordered dates and/or compliance with the CLEC Change Notification process.

While Liberty acknowledges that, in theory, the 90-day notification period could influence end-to-end process intervals, in reality this does not appear to be the case. Based on the data BellSouth provided, Liberty recalculated the average end-to-end interval without the 76 RQs that included the Notification step. The resulting average end-to-end interval was 146 days, which was not a significant difference. Liberty also tested for differences in the type of RQ. For those RQs BellSouth identified as **Mandated** and **Discretionary,** the average end-to-end interval was 115 days and 164 days, respectively. There were no RQs identified as **audit-related** in the data BellSouth provided. There were, however, an additional 34 uncategorized RQs with an average end-to-end interval of 147 days. This analysis does suggest that BellSouth's prioritization of mandated changes may be producing somewhat shorter intervals for these changes.

With respect to the use of TestDirector data, Liberty's use of these data was predicated on three interviews with BellSouth, a review of PMAP documentation, and a number of Data Requests. At no time has BellSouth indicated that the TestDirector data is inaccurate. The fact that it has no impact on the timeliness of delivery is irrelevant. Furthermore, Liberty's assessment of the process was not meant to suggest that BellSouth is not meeting its requirements. It was only meant to note that the data suggests that overall processing intervals are excessive based on Liberty's experience. Liberty therefore recommends that BellSouth consider ways to improve its change management process in order to expedite the implementation of its Change Requests.

Finding 14: BellSouth's tracking and monitoring of the metric change control process did not accurately track progress or permit BellSouth management to accurately monitor workflows to determine which process areas are in need of improvement. Classification: 3

BellSouth uses a combination of TestDirector, copies of meeting minutes, and written approvals to track, monitor, and record progress and decisions in the metric change process. Liberty tested the capability of BellSouth's tracking systems by reviewing tracking data for RQs from July 2003 to February 2004. This review included 183 RQs consisting of a possible 2,013 status tracking data points.[150] In its initial response to Liberty's data request, BellSouth left blank 520 tracking data points, almost 26 percent of the sample, with little or no explanation. After further discussion and analysis, BellSouth was able to explain all but 49 of the blank entries.[151] While some of these exclusions appear to be logical (*e.g.,* not all RQs require Notification, hence no completion data for this activity were noted), others appear to be the result of data not being available, error, or oversight. Thus, almost 20 percent of the data used to monitor and track progress was missing or incorrect.

In spite of using state-of-the-art tracking software, BellSouth still relied during the audit period on manual inputs and the collection of process artifacts to document progress. In addition,

[150] Responses to Data Requests #110 and #184. Liberty considered each RQ Status Definition as a potential progress-tracking element.
[151] Response to Data Request #184 and Interview #17, November 29, 2004.

BellSouth did not track scheduling changes once an RQ was approved. Although the tracking and monitoring process did provide useful information for monitoring the authorization and flow of metric changes, it did not accurately record progress or permit BellSouth management to monitor workflows to determine on-going resource requirements.

The inability to accurately monitor the status and progress of RQs and software releases makes it difficult to accurately allocate resources to the change management process. The lack of accurate tracking data is particularly significant during the Requirements Definition Document and FCCB process where BellSouth determines resource and scheduling considerations to implement an RQ. The inability to accurately forecast the availability of resources will delay changes from being implemented in a timely fashion, which in turn can delay remedy payment adjustments and the reposting of measure results.

BellSouth disagreed with Liberty's assessment that there is a "lack of accurate tracking data" in the Planning, Analysis and Change Control processes. It noted:[152]

> *Available resources are accurately forecasted using input from the Development Manager. While maintained by the Release Manager, these documents are used by Project Management and/or the Development Manager to determine whether or not additional work can be added to a release. As indicated to Liberty previously, the statuses in Test Director have no impact on the delivery or quality of current or future releases, nor does it impact resource availability.*
>
> *BellSouth also disagrees with Liberty's assertion that scheduling changes are not tracked once an RQ is approved. Changes to previously scheduled releases are documented in the monthly FCCB agenda and on the corresponding OCCB approval form. Also, status transitions after "scheduled" status are not used in our process to determine ongoing resource availability.*

Liberty's use of the data quoted in this finding was predicated on three interviews with BellSouth, a review of PMAP documentation, and a number of Data Requests. However, if BellSouth now takes the position that it does not rely upon TestDirector to manage its change process, and instead relies upon minutes and manually noted documents from the FCCB and OCCB processes, Liberty's finding remains unchanged. Based on Liberty's experience, the accountability and controls associated with such a process, no matter how carefully managed, are deficient, and this appears to result, in part, from insufficient tracking data. Liberty recommends that BellSouth consider ways to improve its change management process in order to improve the monitoring, accountability, and controls in the process.

[152] Response to Preliminary Finding 61.

Finding 15: BellSouth has not documented well its Performance Measurements Quality Assurance Plan. Classification: 4

As part of Liberty's audit of BellSouth's compliance with the Performance Measurements Quality Assurance Plan (PMQAP), Liberty examined the PMQAP documentation. Liberty found areas where the documentation of the process could be improved.

First, the PMQAP document is poorly organized and difficult to follow. In response to Liberty's request for a copy of the latest version of the PMQAP, BellSouth provided a folder containing 23 Microsoft Word documents and two Adobe Acrobat files.[153] One of these documents describes the PMQAP at a very high level, and despite describing the PMQAP as presenting "all the existing documentation and processes as an integrated plan," this document simply lists and categorizes the supporting documents that provide more detail on a number of topics.[154] A separate one-page document named "PMQAP – Contents" also lists and categorizes the supporting documents, but uses different names. Liberty found that the actual file names of the supporting documents sometimes differ from those mentioned in either of these two summary documents. Furthermore, because the files in the folder are ordered alphabetically, they are not in the logical order of the content.

Second, the individual supporting documents within the PMQAP package often provide insufficient detail about the processes. Most of the individual documents that are part of the overall PMQAP documentation simply describe the existing procedures at a high level. As examples,

- For the data validation documents, there are often no standards or guidelines for evaluating the analysis results or sufficient documentation of subsequent actions to be taken as a result of an analysis failure. The *Measurement Analyst Data Validation Process* document simply provides references to several other documents by file pathname on BellSouth internal file servers. While Liberty was able to obtain copies of these documents, Liberty found that these documents, along with the *PMAP Production Validation Process* document contained high-level process documentation and general validation steps and tools but lacked detail regarding actual validation standards used and the corresponding enforcement mechanisms or action steps to be followed in the event of a validation anomaly.
- The PMAP data validation documents, such as *Measurement Analyst Data Validation Process* and *PMAP Production Validation Process*, do not fully highlight that there are strong scheduling ties between production validation and functional and regression testing. The multiple responsibilities of the PMAP Validation Team and other circumstances may require decisions where priority dictates that some validation activities are not completed. It would help to document procedures to use in order to reconcile these priorities.
- The Change Request Status Definitions reflected in the *PMAP Production Life Cycle and Change Control Processes: Status and Definitions and*

[153] Response to Data Request #17.
[154] This document is labeled *Performance Measurements Plan_Marva.*

> *Flow* do not address the multitude of status results provided in response to Liberty Data Requests.[155]

In response to this finding, BellSouth stated that it[156]

> *disagrees with Liberty's assessment that the Performance Measurements Quality Assurance Plan (PMQAP) hampers effective implementation of the processes and prevent[s] ready assessment of compliance. As noted in the Executive Summary, "the PMQAP presents all of the existing documentation and processes as an integrated plan." It's important for Liberty to understand that the PMQAP is an internal document, and is maintained on our website.*
>
> *In the 2004 revision of the PMQAP, BellSouth used input from representatives of each of the subject areas to develop a document to support how it actually being used and implemented in the applicable work groups. The PMQAP was organized to reflect the life cycle of service quality measurement – that being Change Control, Production and Validation. We believe that this approach is logical, and it was also recommended by our work groups. And, as indicated in the scope of the PMQAP, high level views are provided (in the PMQAP) for each component, with more details on the measures being found in the SQM Plan documentation, located on the PMAP website.*

BellSouth also indicated that it found only three instances of inconsistent naming conventions for the files "and has made the appropriate corrections."[157]

Liberty believes that since the PMQAP provides the procedures that BellSouth uses to ensure that it produces accurate and reliable service quality measurement reports, the poor organization and high-level nature of most of the PMQAP documentation can hamper effective implementation of the processes. In addition, Liberty notes that assessment of compliance with the PMQAP was one of the requirements of this audit, and the shortcoming noted in this finding limit the ability to assess such compliance. Liberty recommends that BellSouth consider updating its PMQAP documentation to address the areas noted above.

[155] Response to Data Request #110.
[156] Response to Preliminary Finding 64.
[157] Response to Preliminary Finding 64.

III. Data Validation and SQM/SRS Reports

A. Ordering Measures

1. Introduction

There are three in-scope ordering measures: O-3, Percent Flow-Through Service Requests (Summary); O-4, Percent Flow-Through Service Requests (Detail); and O-9, Firm Order Confirmation Timeliness.

The O-3 and O-4 measures report the percentage of Local Service Requests (LSRs) submitted electronically that flow through to the service order processor and for which BellSouth issues a Firm Order Confirmation (FOC) without manual intervention. The SQM Plan lists the following exclusions:

- Fatal rejects
- Auto clarifications
- Manual fallout (for percent flow-through only)
- CLEC system fallout
- Scheduled OSS maintenance.

The SQM Plan provides the following formula for the O-3 and O-4 Percent Flow-Through measures:

Percent Flow Through =a / [b-(c+d+e+f)] X 100, where
a = Total number of LSRs that flow through LESOG/LAUTO and reach a status for a FOC to be issued
b = Number of LSRs passed from LEO/LNP Gateway to LESOG/LAUTO
c = Number of LSRs that fall out for manual processing
d = Number of LSRs that are returned to the CLEC for auto clarification
e = Number of LSRs that are returned to the CLEC from the LCSC due to CLEC clarification
f = Number of LSRs that receive a Z status.[158]

The formula for the O-3 and O-4 Percent Flow-Through Achieved measures is as follows:

Percent Achieved Flow Through =a / [b-(c+d+e)] X 100, where
a = Total number of LSRs that flow through LESOG/LAUTO and reach a status for a FOC to be issued
b = Number of LSRs passed from LEO/LNP Gateway to LESOG/LAUTO
c = Number of LSRs that are returned to the CLEC for auto clarification

[158] LSRs that receive a Z status are those for which BellSouth receives a supplemental LSR submission prior to final disposition of the original LSR.

d = Number of LSRs that are returned to the CLEC from the LCSC due to CLEC clarification
e = Number of LSRs that receive a Z status.

BellSouth reports O-3, a Tier 2 measure, on a regional CLEC aggregate basis and reports O-4, a Tier 1 measure, on an individual CLEC basis. Both measures have the same standard, which is based on product type:

- Residential – 95 percent
- Business – 90 percent
- UNE-L – 85 percent
- UNE-P – 90 percent
- LNP – 85 percent.

The O-9 measure reports BellSouth's performance in providing a FOC within the standard interval. The SQM Plan lists as exclusions service requests cancelled by the CLEC prior to being confirmed and LSRs categorized as projects. For partially mechanized and non-mechanized LSRs and Access Service Requests (ASRs), the SQM Plan indicates that BellSouth should also exclude designated holidays and non-business hours from the time interval calculation.

The SQM Plan provides the following formula for the O-9 Firm Order Confirmation Timeliness measure:

Firm Order Interval Distribution = (e/f) X 100, where
e = Service requests confirmed in designated interval
f = Total Service Requests Confirmed in the Reporting Period

BellSouth reports O-9, a Tier 1 and Tier 2 measure, for individual and aggregate CLECs on a state and regional basis. The performance standard depends on the level of order mechanization:

- Fully mechanized – 95 percent within 3 hours
- Partially mechanized – 95 percent within 10 hours
- Non-mechanized – 95 percent within 24 hours.

The standard for trunks, regardless of the level of mechanization, is 95 percent within 48 hours.

* * *

As part of its audit of BellSouth's procedures for processing the ordering performance measures, Liberty obtained an overview of the business processes and systems that generate the data used for the measures. Liberty sought to determine whether key data field definitions were consistent with the SQM Plan, to assess whether BellSouth correctly applied logic to derive values from the source data, and to determine if all relevant records are included in the measure. Liberty also reviewed whether BellSouth correctly applied any exclusions specified in the SQM Plan. Liberty examined the validity of the ordering data as it moved through the PMAP system. To check the

reliability of reported results, Liberty recalculated CLEC aggregate and CLEC-specific results for selected sub-measures.

Liberty found that BellSouth produced generally reliable results for the O-3, O-4, and O-9 performance measures. Liberty successfully replicated the results for all three measures for the November and December 2003 data months. Liberty also found that BellSouth generally follows the SQM Plan by correctly applying exclusions and properly defining the logic and data fields that it uses to calculate the denominators and numerators in the measure calculations.

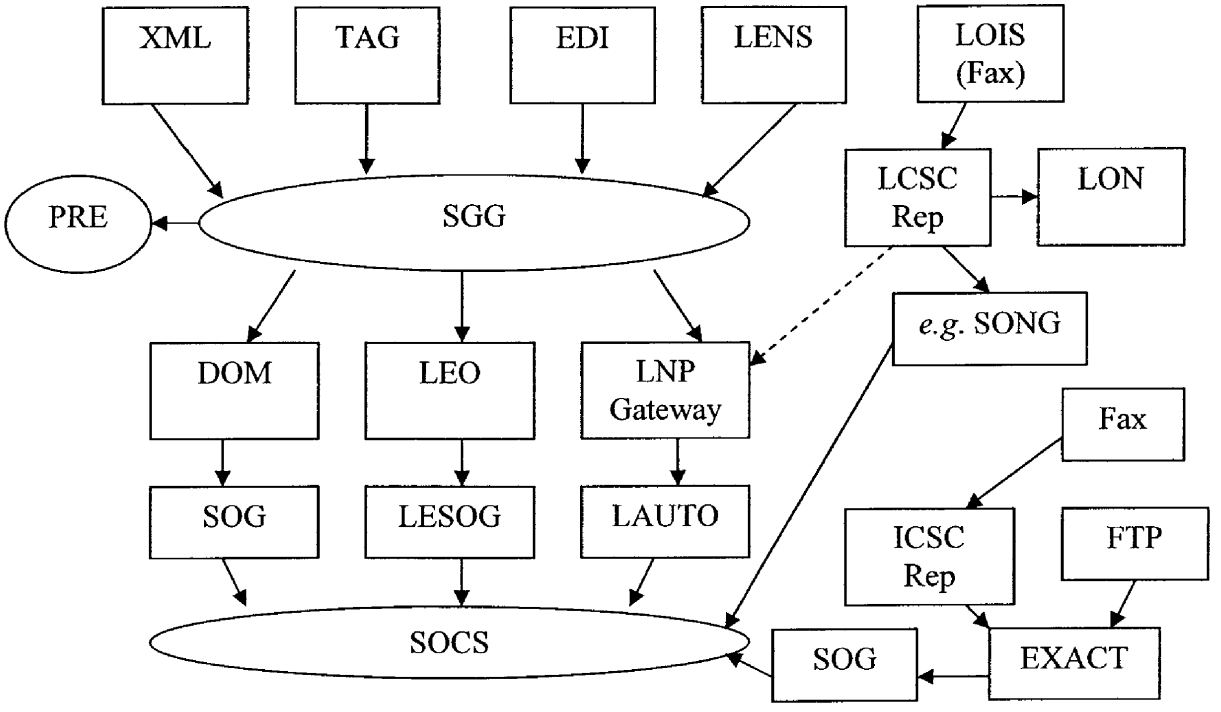
2. Analysis and Evaluation

a. Background

BellSouth Ordering Systems and Processes

BellSouth has four methods to receive CLEC mechanized LSR submissions: Local Exchange Navigation System (LENS), Electronic Data Interchange (EDI), Extensible Markup Language (XML), and Telecommunications Access Gateway (TAG). LENS is BellSouth's Web GUI. Some CLECs use EDI, a protocol that allows the CLEC and BellSouth systems to interact peer to peer, to submit orders (service requests) in batch, and BellSouth provides an interface to accept CLEC orders as standard EDI transaction sets. TAG was an application program interface (API), which allowed a CLEC's system to interface in real time with BellSouth's ordering system. BellSouth also provides an API to accept CLEC orders in XML format. Both TAG and the XML interface were available during the audit period, but BellSouth was phasing out TAG and completed the phase-out by the end of March 2004. BellSouth noted that it receives most CLEC orders through LENS.

The diagram below illustrates BellSouth's ordering flow in effect during the audit period.[159]



Orders that BellSouth receives via these four methods flow to the ServiceGate Gateway/Customer Order Gateway (SGG/COG, typically referred to as SGG).[160] SGG, a Telcordia product, is the gateway between the interfaces and BellSouth's service order processors (SOPs). The ordering gateway performs first level edits on orders using an editor module called PRE. The PRE portion of SGG performs front-end order validation and can fatally reject an order, sending notice to the CLEC back through the interface over which the order came.

Orders that come into the SGG can flow to the LNP Gateway, to the Local Exchange Ordering (LEO) system, or to the Delivery Order Manager (DOM) system, each of which functions as a data collection point. Most LSRs go to LEO. The Local Exchange Service Order Generator (LESOG) system creates service orders for LSRs coming through LEO. LNP orders go to the LNP Gateway and on to LAUTO, which validates LSRs and issues service orders. If an LSR has any LNP component at all, it flows to the LNP Gateway. BellSouth's DOM system handles xDSL, EEL, and UDC (Universal Data Channel) orders. Orders that come in through DOM flow to the Service Order Generator (SOG). The LAUTO, LESOG, and SOG systems feed into the Service Order Control System (SOCS).[161]

[159] Interview #12, November 22-23, 2004, Interview #13, December 1, 2004, and Interview #25, January 31, 2005.
[160] The Customer Order Gateway (COG) at times performs like a component of SGG and at other times performs like part of the DOM system. To avoid confusion, Liberty refers to the gateway as SGG.
[161] Interview #12, November 22-23, 2004 and Interview #13, December 1, 2004.

BellSouth calls its wholesale ordering system configuration (including the interfaces, such as LENS or XML; the gateway; the ordering systems, such as LEO or DOM; and the service order generators, such as LAUTO or LESOG) Encore. BellSouth began using the EDI LSOG Mechanization Specification 6 (ELMS6) industry map with the release of Encore version 14 (Encore 14) on November 23, 2003. The Telecommunications Industry Forum (TCIF) standard is an industry standard for submitting local service requests to the incumbent. BellSouth supports TCIF version 9 (TCIF9), but discontinued the TCIF version 7 (TCIF7) industry map when it released Encore 14.[162]

TAG, EDI, and XLM accept orders in both TCIF9 and ELMS6 formats (and previously accepted orders in TCIF7 format). LENS uses only the latest version of the industry ordering standard. During the audit period, LENS used TCIF9 until BellSouth released Encore 14, at which time it switched to ELMS6. BellSouth uses an LSR Router application to determine whether an order submitted in TCIF9 is LNP or not, and routes the order to the LNP Gateway or LEO as required.[163] Both the LNP Gateway and LEO process orders in TCIF9 and ELMS6 formats; DOM processes orders in TCIF9 format only.[164]

BellSouth has a fax server, the Local Order Information System (LOIS), which receives faxed LSRs from CLECs. LOIS routes faxed LSRs to printers at the Local Customer Service Center (LCSC) in Atlanta, Georgia or Birmingham, Alabama. Personnel at these centers retrieve orders from the fax printer and enter the orders into the Local Order Number (LON) tracking system. Service representatives both create an order and keep track of it in LON. If BellSouth receives an LNP order via fax, the LCSC representative also inputs the LNP order directly into the LNP Gateway.[165] For non-LNP orders, the representative uses one of BellSouth's order generation tools, such as the Service Order Negotiation Generation (SONG) system to generate a service order, which then flows to SOCS. The LCSC representative is responsible for sending clarifications or FOCs on these manual LSRs as required. BellSouth system representatives also use LON to track mechanized LSRs that dropped out and were subsequently handled manually.

CLECs can submit ASRs for access or interconnection trunks electronically via ConnectDirect, a file transfer protocol, or fax them to a separate ASR fax server. BellSouth representatives in the Interconnection Customer Service Center (ICSC) enter ASRs manually into the Exchange Access Control Tracking (EXACT) system, which performs order management functions, using the Carrier Access Front End (CAFÉ) GUI. ASRs flow from EXACT to the SOG, which generates a service order that subsequently flows to SOCS.[166]

When a CLEC submits an LSR electronically, one of the following happens:

[162] Interview #12, November 22-23, 2004 and Interview #13, December 1, 2004. BellSouth noted that there were no CLECs still using TCIF7 in November 2003.
[163] The LSR Router uses the REQ type of the order to determine whether a TCIF9 order is LNP. This review is not necessary for ELMS6 orders.
[164] Interview #12, November 22-23, 2004 and Interview #13, December 1, 2004.
[165] Interview #13, December 1, 2004.
[166] Interview #25, January 31, 2005. BellSouth noted that the EXACT SOG was a separate system from the DOM SOG.

- The order flows through the system to the service order processor. The system then generates a service order and returns a FOC to the CLEC.
- The order is missing information or contains basic errors. SGG rejects the order back to the CLEC (a "fatal" reject).
- The order passes the gateway but the service order processor detects missing information or basic errors. The service order processor then rejects the order back to the CLEC (also a "fatal" reject).
- The order passes the gateway and service order processsor, but encounters errors further downstream. The system sends an auto clarification, also known as a reject, to the CLEC.

In many cases, BellSouth's ordering systems can process the order automatically. However, during the course of processing, some orders drop out for manual handling. BellSouth service representatives then review these orders and either create a service order and send a FOC, or send an auto clarification back to the CLEC.

Because fatal rejects in SGG do not flow through to the service order processors, the CLEC can resubmit the order with the same purchase order number (PON) and version number. If the service order processor rejects an LSR, the CLEC can resubmit the order with the same PON but must increment the version number.[167] BellSouth treats each version of a PON as a separate order. In some cases, a CLEC submits a new version of a PON in order to supplement an existing order to, for example, change the due date or cancel the order. If a CLEC submits an LSR to cancel an existing LSR for which BellSouth has not already created a service order, BellSouth issues a "dummy FOC." If the service order had been created and then cancelled, BellSouth would send a real FOC.[168]

Some fatal rejects occur in LEO, LNP, and DOM because SGG cannot determine that, for example:

- The LSR has missing, incomplete, or invalid information
- The CC/PON/Ver[169] combination is a duplicate
- A LSR is attempting to supplement a LSR that has already completed
- A supplemental LSR has a version number not higher than the previous submission
- A LSR is attempting to supplement a non-existing original LSR.

In general, such instances occur when LEO, LNP, or DOM can determine that the LSR cannot be processed.[170]

Auto clarifications occur when BellSouth's ordering system encounters errors further downstream, past the service order processor. For example, a CLEC could submit an LSR on an

[167] Interview #12, November 22-23, 2004.
[168] Response to Data Request #265.
[169] CC/PON/Ver refers to the company code, purchase order number, and version number of the LSR.
[170] Response to Data Request #355.

inactive account or an account not owned by the submitting CLEC, or one for products or services not offered in the specified central office.[171]

BellSouth's LEO system also includes an application called EASY, which operates behind the scenes on LEO orders that encounter an error condition and fall out for any reason. Normally, such orders would fall directly to the service representatives. However, there are certain types of errors that BellSouth always fixes in the same way, and it uses the EASY application to pick up LSRs with these types of errors. EASY can in some cases fix the error in the LSR and send the order on its way. The corrected order can flow through and receive a FOC, but it can also fall out again later for another reason. In some cases, EASY cannot fix the order and it mechanically sends the order back to the CLEC as an auto clarification or puts the order in a queue for the service representative to retrieve for further processing.[172]

BellSouth records a significant amount of data during the life cycle of an order. Two of the more important fields are the receipt time and the FOC time for the order. BellSouth captures order receipt and confirmation time stamps at various points in the process, depending upon the interface and source system involved. BellSouth uses certain time stamps as primary ones for the purposes of calculating duration intervals, and uses others as backup in the event that the primary one is missing. Generally, BellSouth captures the time stamp closest to the CLEC as the primary time stamp.[173] BellSouth's time stamp source matrix relevant to the audit period is summarized below.

Database/ Source System	Interface/ Gateway	Primary Time Stamp		Backup Time Stamp	
		Inbound	Outbound	Inbound	Outbound
LEO/LESOG	TAG/XML	SGG	SGG	LEO	LEO
LEO/LESOG	EDI	EDI	EDI	SGG	SGG
LEO/LESOG	LENS	SGG	LEO	LEO	None
LNP/LNP Gateway	TAG/XML	SGG	SGG	LNP	LNP
LNP/LNP Gateway	EDI	EDI	EDI	SGG	SGG
LNP/LNP Gateway	LENS	SGG	SGG	LNP	LNP
DOM/SOG	TAG/XML	SGG	SGG	DOM	DOM
DOM/SOG	EDI	EDI	EDI	SGG	SGG
DOM/SOG	LENS	SGG	SGG	DOM	DOM
LON	LON	LOIS[174]	LOIS	None	LON
EXACT	EXACT	EXACT	EXACT	None	None

[171] Response to Data Request #355.
[172] Interview #12, November 22-23, 2004. In the O-3 and O-4 calculation, if EASY corrects the order and sends a FOC or sends an auto clarification, BellSouth treats the order as a flow-through or an auto clarification, respectively. In some cases EASY claims the LSR but cannot correct or clarify it, and a service representative must then reclaim the order. If the representative then sends a FOC, BellSouth classifies the order as a BellSouth error; if the representative sends an auto clarification, BellSouth classifies the order as a CLEC error.
[173] Response to Data Request #291 (revised) and Interview #25, January 31, 2005.
[174] BellSouth uses the fax date from LOIS as the primary inbound time stamp.

BellSouth explained that TAG, XML, and LENS act more like pass-through systems and do not have their own independent time stamps. As such, BellSouth uses SGG time stamps as the primary receipt (inbound) and FOC (outbound) time stamps for orders coming through these applications. The secondary time stamps come from the ordering system (LNP Gateway, LEO, or DOM). The one exception is a LEO order that comes through LENS. In this case, the FOC does not go back through SGG but rather directly to LENS, and therefore LEO provides the primary outbound time stamp. EDI has its own server and BellSouth uses the time stamps from the EDI server as the primary receipt and FOC time stamp, with the backup time stamps coming from SGG.

For faxed LSRs, BellSouth uses time stamp data from LOIS for inbound and outbound activity (the representative enters the fax time stamp in LON). BellSouth does not have a secondary inbound time stamp for manual orders, and it uses LON as the backup source for outbound time stamps. BellSouth explained that LON tells LOIS to send a confirmation, but LOIS actually sends the fax message. The time stamp used for fax orders is that of the first valid attempt to send the message to the CLEC. Both inbound and outbound time stamps for ASRs come from EXACT, and there is no backup.[175]

BellSouth Ordering Data

BellSouth captures a vast amount of ordering data, most of which it organizes by ordering system. For LEO, BellSouth stores the data on TCIF9 and ELMS6 format orders separately. BellSouth captures primary information about each order in one of several data base tables, and uses a series of auxiliary tables to capture additional information about orders, such as inbound and outbound time stamps, order status, and related PONs. BellSouth uses a unique key (*e.g.*, CC/PON/Version or Transaction ID[176]) to identify each version of an order, and uses this unique key to link order-specific data in the many data tables. For example, BellSouth records primary information on LEO and DOM orders in base LSR tables, and uses audit tables to record each significant event that happens to the order, such as when it enters the ordering system, moves to the service order generator, or falls to a service representative. BellSouth also captures information about fatal rejects that occur in SGG or the service order processor, auto clarifications, and non-fatal errors that make an order fall out for manual handling.[177]

BellSouth sends data from its ordering systems to RADS. Using data from RADS tables, BellSouth creates approximately [redacted] corresponding SNAPRADS tables each month from which it selects source data for the O-3, O-4, and O-9 measures. BellSouth selects records to move into SNAPRADS based on a defined set of criteria. Generally, BellSouth extracts more data from RADS than needed, and applies more precise logic later in the process to select those orders actually relevant for the reporting month.[178]

[175] Interview #13, December 1, 2004.

[redacted]

[177] Interview #12, November 22-23, 2004 and Interview #13, December 1, 2004.
[178] Interview #8, November 11, 2004.

BellSouth uses data from the SNAPRADS tables to create the [redacted] tables in the Data Warehouse. The [redacted] contains relevant data about an order, and the [redacted] table contains FOC and reject time stamp information about the order. BellSouth uses a different set of criteria for each order type (*e.g.*, LEO6, LEO9, LON) to determine whether it should process a given record into the Data Warehouse for the month. BellSouth typically captures at least two months of data in the Data Warehouse.

BellSouth assigns a unique key, the [redacted] to each record in the [redacted] BellSouth uses the [redacted] to link data in the [redacted] with the time stamp and duration information in the [redacted] As it processes orders from the SNAPRADS tables, BellSouth examines the combination of six fields: OCN, PON, version, received date, source system, and status code. If BellSouth identifies that there are no other records in the [redacted] table with this combination, it adds the order to the table and assigns it a unique [redacted].

As BellSouth moves records to the [redacted] it determines the value for certain key data fields such as state code, product ID, and mechanization code. BellSouth's logic for determining states differs for orders coming from each of the service order processors, and BellSouth typically sets up a hierarchy of steps to identify state, with the most reliable method applied first. For example, for LEO orders, BellSouth first looks at the [redacted] of the service order number [redacted] denote Florida) to determine state. If there is no service order number, BellSouth can use the NPA or the state of the end user to assign the state for the order.[179]

In the [redacted] table, BellSouth also assigns a product ID and mechanization code to each order, which it derives from specific fields in the SNAPRADS tables. BellSouth provided Liberty with the product derivation rules in place during the audit period.[180] To derive product ID, BellSouth may examine such SNAPRADS data fields as source system, request type, class of service, and service type To derive the mechanization code, which indicates whether the order was fully mechanized, partially mechanized, or non-mechanized, BellSouth examines specific fields in the SNAPRADS tables that denote whether the order was manually handled, and if so, whether it dropped out from the mechanized process.

While creating the [redacted] table, BellSouth populates the membership map field for each record. The [redacted] character of the benchmark membership map relates to O-9 for Florida SQM purposes, and the [redacted] relates to O-9 for Florida SEEM purposes. BellSouth uses the FOC date to determine whether a given record should be included in the reporting month for O-9. If the FOC date falls outside the reporting month, BellSouth places a [redacted] in the first character of the benchmark membership map field and excludes the record from the measure.[181] If the order is eligible for O-9, BellSouth places a [redacted] in the appropriate position in the membership map field.

[179] Interview #13, December 1, 2004.
[180] Response to Data Request #34.
[181] In certain cases, an order is outside the reporting month for O-9 but not other ordering metrics, and such cases the system places a [redacted] in the O-9 position to exclude the orders from O-9 only.

If the system determines that the order is eligible for the reporting month but should be excluded, it places a [redacted] in the appropriate position in the benchmark membership map field, and the order will not move forward to the data mart tables and thus will be excluded from reported results. The SQM Plan lists as valid exclusions orders that the CLEC cancelled before BellSouth sent a confirmation and projects.[182]

If during processing BellSouth detects an error with a particular record, such as a failed company lookup, it includes the record in the [redacted] table with an appropriate error code, but also sends a copy to an [redacted] table.[183] BellSouth marks the record with a [redacted] in the membership map fields to indicate that the record should not be used for calculating any of the ordering measures. The most typical error is a failed lookup, such as that for [redacted] or [redacted] If BellSouth assigns an error code in the [redacted] table, it does not add the time stamps associated with the order to the [redacted] table.

For each order that it places into the [redacted] table, BellSouth places one or more records in the [redacted] table. For example, if BellSouth confirms but then later rejects the same PON version, there will be two records in the history table, one for the reject and one for the confirmation. When BellSouth processes the SNAPRADS records containing time stamp data, it uses the [redacted] already assigned to the order in the [redacted] and applies the same [redacted] to the transition history record.[184]

BellSouth also records the source for the time stamps it records in the [redacted] table. For example, a designation of [redacted] for a LNP order indicates that BellSouth used the primary inbound time stamp from SGG (from a [redacted] table) as the start time and the secondary outbound time stamp from the LNP Gateway as the FOC or stop time. A designation of [redacted] means that the receipt and FOC time stamps were both from EDI. BellSouth noted that it can record more than one outbound time stamp on each PON version, and that it generally uses the first one for the purposes of O-9.[185] BellSouth also noted that it has no way to identify if it re-sent a confirmation at the CLEC's request or due to a BellSouth error.[186]

For each record in the [redacted] table, BellSouth calculates the duration of the FOC or reject interval in terms of minutes, based on the "start and stop times," *i.e.*, the order receipt date and time and the FOC or reject date and time. Prior to calculating the interval, BellSouth determines which OSS service availability schedule applies for the order. All of BellSouth's OSS schedules have some amount of down-time. BellSouth's PMAP documentation contains a table that summarizes the criteria BellSouth uses to determine which of the 25 possible OSS schedules to apply when calculating the duration for a given order.[187] For

[182] Interview #25, January 31, 2005. BellSouth stated that valid project numbers begin with the state abbreviation, followed within several characters by the OCN. BellSouth noted that for cancelled orders, it sends a dummy FOC to confirm the cancellation; however, it does not record the dummy FOC in the warehouse, but rather in a SNAPRADS audit table.
[183] Response to Data Request #349.
[184] Interview #13, December 1, 2004.
[185] Interview #12, November 22-23, 2004. BellSouth noted that the only exception to using the first one occurs when BellSouth sends an auto clarification by mistake.
[186] Interview #13, December 1, 2004.
[187] Response to Data Request #68.

example, the applicable schedule that applies to a fully mechanized order submitted via LENS and processed by LEO is different from the schedule for the same order if it was partially mechanized (*i.e.,* it dropped out for manual handling). In general, the FOC interval calculations for orders that are not fully mechanized reflect the operating hours of the service centers, which tend to be shorter than mechanized systems.

BellSouth mechanized its process for handling related PONs[188] when it implemented Encore 14 and the ELMS6 industry format in November 2003. According to BellSouth, related PONs flow as a group, and if one LSR falls out for planned manual handling, all LSRs in the group fall out also. BellSouth adopted the convention of using the inbound time stamp of the last LSR it receives in a related PON group as the inbound time stamp for all LSRs in that group.[189]

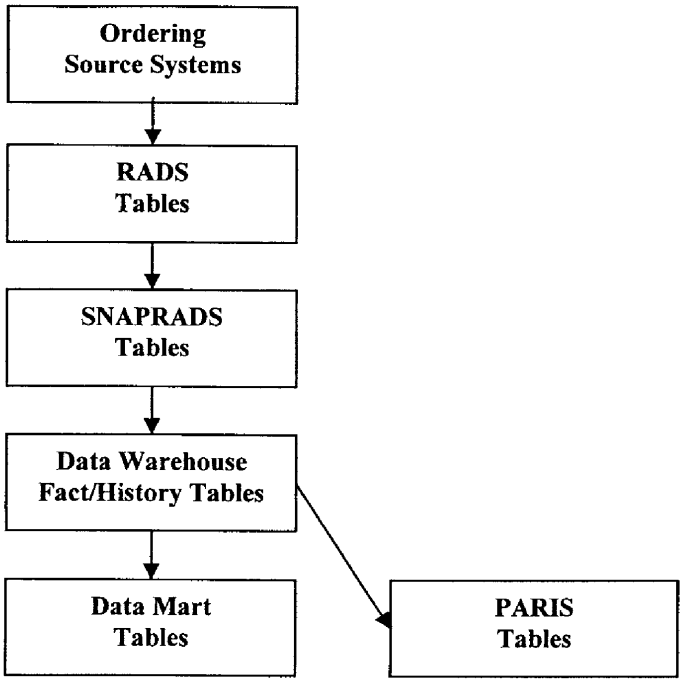
BellSouth uses data from the [redacted] and [redacted] tables to calculate many of the ordering measures, including O-9. BellSouth does not, however, use the Data Warehouse tables to calculate O-3 and O-4 flow-through measures, and instead uses data directly from SNAPRADS.

O-9 - Firm Order Confirmation Timeliness

The O-9 measure reports the percentage of orders for which BellSouth provided a FOC within the standard interval. The O-9 measure has a benchmark standard interval that depends on the level of order mechanization, *i.e.*, fully mechanized, partially mechanized, or non-mechanized.

[188] Related PONs are only allowed in ELMS6 and thus are applicable to LEO and LNP, but not DOM.
[189] Response to Data Request #279.

The diagram below shows the data flow for the O-9 measure.



BellSouth creates the [redacted] and [redacted] tables in the warehouse using the data from SNAPRADS. Rather than calculating the measure with warehouse data directly, BellSouth instead creates the Firm Order Confirmation Timeliness (FOCT) table in the Data Mart with which it calculates results. To create the FOCT DM table, BellSouth copies selected data from the [redacted] table for those records that have the appropriate value [redacted] in the O-9 membership map position [redacted] For each fact table record that BellSouth uses for the FOCT DM table, BellSouth retrieves FOC interval information associated with order from the [redacted] table.

Because firm order confirmation results are broken out into time intervals on the SQM report, there are multiple records in the FOCT table for each order, one for each time interval into which the order falls. For mechanized orders, for example, there are 13 time intervals categories with associated time interval IDs, some of which are actual FOC interval durations (*e.g.*, 0-15 minutes or 24-48 hours), and some of which are sub-total intervals (*e.g.*, 0-3 hours). If the FOC interval for an order were, for example, ten minutes, the FOCT table would contain two records for the order, one with a time interval ID of 9 (0-15 minutes) and one with a time interval ID of 100 (0-3 hours). Records in the FOCT table are at the product ID level. To calculate results for each reported product group, BellSouth aggregates specific product IDs based upon its product rollup rules.[190]

[190] BellSouth provided the product rollup rules in response to Data Request #152.

BellSouth does not exclude non-CLEC orders from the FOCT data mart, and thus the table will contain BellSouth orders or test orders. BellSouth excludes these orders from reported results when it calculates the measure, and selects only those orders submitted by CLECs.[191]

BellSouth creates parity aggregate and company aggregate tables in the data mart using the data in the FOCT DM table. BellSouth also creates an SDUM DM table for use by CLECs in conjunction with the PMAP website. The FOCT parity aggregate table contains a record for each sub-measure, *i.e.*, product and mechanization combination, for each state. For Florida, for example, there are 56 records in all. Each record contains the product group ID, the mechanization code, the benchmark value, the time interval standard for which the percentage applies (*e.g.*, less than three hours, less than 24 hours), the CLEC numerator and denominator, as well as the calculated percentage timeliness. BellSouth calculates the denominator as the number of LSRs or ASRs, and the numerator as the number of orders for which BellSouth sent a FOC within the time interval specified. The parity aggregate record also contains the cumulative number of minutes for all orders in the sub-measure group (dividing the cumulative minutes by the denominator and again by 60 to convert to hours yields the reported average interval). Each record also contains an equity result, yes or no, based on the comparison between the CLEC result and the benchmark for the sub-measure (95 percent in all cases), and also shows the chart direction that illustrates improved performance (up).

Like the FOCT table, the FOCT company aggregate table contains two or more records for each Company Code/state/product/mechanization combination. These multiple records correlate to the specific time intervals into which the CLEC's orders for a given sub-measure fall, and also indicate the number of the company's orders that fell in that interval. As an example, a CLEC had three orders for a mechanized product and BellSouth sent an FOC in ten minutes on two of the orders and in 25 minutes on the other. There would be three records in the company aggregate table, one with a time interval ID of 9 (0-15 minutes) with a count of 2, one with a time interval of 33 (15-30 minutes) with a count of 1, and one with a time interval ID of 100 (0 to 3 hours) with a count of 3. Each record also contains the cumulative number of minutes for the orders by the CLEC for the mechanization/product group and time interval. In the example above, the first record would contain an entry of 20 cumulative minutes (two orders of ten minutes each), the second record would contain an entry of 25 minutes, and the third would contain an entry of 45 minutes (the total minutes for all three orders).

To calculate remedy payments, PARIS accesses the [redacted] and [redacted] tables, and pulls into PARIS a copy of all records that should be included in the measure, based on the membership map. BellSouth uses the measure candidate position lookup table to determine the position in which the relevant character for the O-9 measure is located [redacted] for SEEM). BellSouth aggregates the data by mechanization type, Company Key, and state. BellSouth then rolls up these records to the parent company level.

BellSouth executes a procedure in PARIS that inserts the PARIS view data into the [redacted] table. Once the data are in the [redacted] table, a trigger procedure compares the calculated percentage for each record to the appropriate benchmark percentage to

[191] Response to Data Request #380. BellSouth designated CLEC orders with a Company Type of 1.

determine pass or fail, and then the trigger procedure updates the pass/fail flag field in the [redacted] table. BellSouth then retrieves all failures from the [redacted] table in PARIS to calculate penalties.[192]

O-3 and O-4 - Percent Flow-Through Service Requests, Summary and Detail

The O-3 and O-4 measures report the percentage of LSRs CLECs submit electronically that flow through and reach a status for BellSouth to issue a FOC without manual intervention. The measure focuses on only mechanized LSRs, and excludes orders that CLECs submit manually.[193] Percentage flow-through essentially measures how many LSRs (PON versions) flowed through that had the opportunity to flow through. BellSouth reports LNP results separately from other LSRs (*i.e.,* LEO and DOM orders).

The SQM Plan states that orders that by definition cannot flow through, specifically fatal rejects and auto clarifications, should be excluded from the measure. The SQM Plan defines a fatal reject as an error that prevents an electronically submitted LSR from being processed, such as an incorrect character in the PON field. Auto clarifications, also known as automated rejects, occur due to invalid data in the LSR, such as an invalid address. For auto clarifications, the service order processor logs the order but the order does not contain enough information for processing and the service order processor sends the order back to the CLEC for more information. Similarly, the SQM Plan states that orders that cannot flow through for a reason not subject to BellSouth's control, *i.e.*, orders that fall out for manual handling due to a CLEC error, should also be excluded.

Planned fallout, or orders that are designed to fall out for manual handling, are excluded from percentage flow-through. Certain LSRs are designed to fall out of the mechanized order process, and these are processed manually by the LCSC. The SQM Plan lists fourteen categories of manual fallout, including complex, directory listings, and LNP-only orders. Appendix E of the SQM Plan contains a list of services and identifies whether LSRs for each product are eligible to flow-through. The SQM Plan also lists scheduled OSS maintenance as an exclusion; however, that exclusion is not relevant for flow-through, because the O-3 and O-4 measures do not measure duration.[194]

BellSouth reports both percentage flow-through and percentage flow-through achieved, although BellSouth uses the latter for diagnostic purposes only and so it is not subject to benchmark standards. The formulas for both measures are the same except that percentage flow-through achieved does not exclude manual fallout. The SQM Plan formulas subtract "Z status" orders, *i.e.*, LSRs that have been supplemented before BellSouth processed the original LSR, from the calculation of percentage flow-through and percentage flow-through achieved. For these orders, BellSouth stops processing on the first version, assigns it a Z status, and continues processing the

[192] Interview #23, January 5, 2005.

[193] The Business Rules refer to three gateway interfaces (*i.e.,* TAG, EDI, and LENS), but BellSouth also has the XML interface. BellSouth completed its phase-out of TAG after the audit period (by March 2004). The SQM Plan formulas also refer to LESOG and LAUTO, but do not mention SOG or DOM.

[194] The metrics measure the percentage of orders that flow through in a given reporting month, therefore the FOC or reject interval is irrelevant.

new version. According to BellSouth, the Z status applies to any type of supplement, including cancels. BellSouth counts all FOCs on an LSR in reported results, even those it sent to confirm a cancellation.[195]

The SQM Plan defines total system fallout as errors that require manual review by the LCSC to determine if the error is caused by the CLEC or is due to BellSouth system functionality. If the error is CLEC-caused, the LCSC sends the LSR back to the CLEC for clarification. If the error is BellSouth-caused, the LCSC representative corrects the error and sends the order on for further processing.

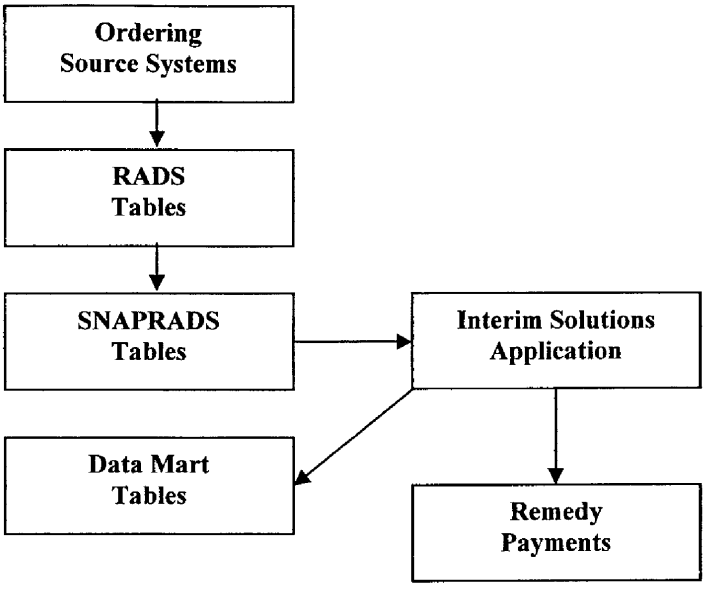
BellSouth considers total mechanized orders as all LSRs it receives through LENS, EDI, and TAG/XML, excluding all fatal rejects. Mechanized LSRs will fall into one of four categories: valid LSRs, manual fallout, auto clarifications, or pending supplement (Z status) orders. BellSouth considers an LSR valid when it passes edit checks to ensure the data are correctly formatted and complete, does not fall out for a planned manual reason, and is not superceded prior to sending the CLEC a response. BellSouth bases O-3 and O-4 results on submitted valid LSRs, or those eligible to flow through. Valid LSRs can either flow through or fall out due to errors caused by the CLEC or BellSouth.

BellSouth calculates the denominator for percentage flow-through as the number of valid LSRs less those that fell out due to CLEC error. The numerator is the number of valid LSRs that actually flowed through. To calculate flow-through achieved, BellSouth includes planned manual fallout in the numerator and denominator of percentage flow-through.[196]

The flow-through report on the PMAP website is an Excel spreadsheet with multiple tabs. In addition to reporting percentage flow-through and percentage flow-through achieved, BellSouth also reports the number of fatal rejects in a separate tab as part of the O-4 reporting requirements. Under the SQM Plan, BellSouth is required to maintain a count of errors by error code. Because there can be more than one error on a single LSR, there are more total errors on the error analysis report than LSRs with errors.[197] BellSouth provides a count of errors by error code for fatal and non-fatal errors under separate tabs in the flow-through report. BellSouth reports its error analysis not because it is required to do so under the SQM Plan, but because it has historically provided such information.[198]

As discussed previously, BellSouth does not use data from the Data Warehouse to calculate the flow-through measures, but instead processes SNAPRADS data directly using an Interim Solutions flow-through application. The diagram below shows the data flow for the O-3 and O-4 measures.

[195] Interview #12, November 22-23, 2004.
[196] Interview #12, November 22-23, 2004.
[197] Interview #12, November 22-23, 2004.
[198] Response to Data Request #275.



The Interim Solutions application uses a large number of SNAPRADS tables to calculate flow-through results, as well as results for fatal rejects and errors. BellSouth limits the data for O-3 and O-4 to that of mechanized orders that came through EDI, TAG, XML, or LENS. BellSouth applies all business rules within the flow-through program application.

BellSouth's flow-through program package contains several major modules, including flow-through, LNP flow-through, LNP fatal rejects, non-LNP fatal rejects, error analysis, and CLEC LSR information (for O-6). The output of the flow-through package is a set of six "final" tables. Four of the tables, LSR flow-through final, LSR fatals,[199] LNP flow-through, and LNP fatals, are relevant for the O-3 and O-4 measures.[200]

The final LSR and LNP flow-through tables contain, for each mechanized LSR in the reporting month, a record that includes, among other fields, the CLEC, PON, version, and product, as well as a series of indicator fields representing each possible outcome (*e.g.*, flow-through, manual fallout, BellSouth error). The final LSR and LNP fatals tables contain a record for each PON version fatally rejected during the reporting month.

BellSouth uses additional programming logic to aggregate the records in the final LNP and non-LNP LSR flow-through tables by CLEC, mechanized interface (TAG, LENS and EDI), and product and to place the results in a text file. The text tables show, by CLEC, the number of LSRs through each mechanized interface (with TAG and XML combined under TAG), along

[199] LSR fatals are orders that are fatally rejected by the ordering interface or the service order processor.

[200] Interview #12, November 22-23, 2004. BellSouth explained that it is required to provide very detailed information about each order a CLEC submitted under O-6 upon request. The sixth "final" table is actually a set of temporary tables that BellSouth compiles to help it fill any request for an O-6 report.

with the number of manual fallouts, auto clarifications, Z status orders, CLEC-caused fallout errors, and BellSouth-caused fallout errors. If a CLEC ordered via more than one interface, there will be a separate record in the table for each interface/product combination. The text versions of the fatal reject tables contain essentially the same information as the final tables.

The flow-through data are organized by product category: residential, business, UNE-P, UNE-L, and aggregate (and also combined UNE for those states that report this category). BellSouth's flow-through business analyst uses the text files to create Excel spreadsheets that contain CLEC-specific information. The business analyst loads information from the text files into tabbed input sheets and applies macros to create a separate results sheet for each product. The analyst sends the Excel spreadsheets, with CLEC identifications masked, to the PMAP website to be used for current month reporting. Only current month results are available on the website.[201] During the audit period, BellSouth reported CLEC-specific results at the OCN level in Florida, but now reports at the parent level.[202]

BellSouth inputs the spreadsheets into [redacted] which then sends data to the Percent Flow-Through (PFT) tables in the data mart. BellSouth also uses archived data in [redacted] to create the LNP flow-through, regular flow-through, and regular flow-through achieved 12-month reports and summary charts on the PMAP website.

BellSouth creates a [redacted] table in the Data Mart using the data in the PFT DM table. The [redacted] table contains results by state (because this is a regional measure, the state results are all the same) for residential, business, UNE-P, UNE-L, and LNP products, combined UNE results for those states that report this product, and aggregate/summary results. The [redacted] table contains percentage flow-through results for all products, and percentage achieved flow-through results for all products except LNP. Each record in the table contains the sub-measure code, the benchmark percentage for flow-through (there is no benchmark percentage for achieved flow-through as it is a diagnostic), the numerator, denominator, and calculated percentage. Each record also contains an equity result (yes or no), based on a comparison between the CLEC result for that product and the standard. Each record also contains a field indicating the direction on 12-month performance charts, up or down, that illustrates improved performance (up for O-9).

During the audit period, no O-3 and O-4 data flowed directly into PARIS, and BellSouth did not create a [redacted] table as it does for other benchmark measures. Instead, BellSouth calculated payments within the Interim Solutions application and then loaded remedy information into the PARIS AP Interface.

b. Data Validation

The overall objective of data validation for the ordering domain is to ensure that the data BellSouth uses to generate the SQM/SRS and PARIS reports and to calculate remedy payments

[201] Interview #12, November 22-23, 2004. If a CLEC requires data from a prior month, it must submit a request for it; BellSouth then extracts the relevant data from archived Excel spreadsheets.
[202] Interview #12, November 22-23, 2004.

for O-3, O-4, and O-9 are complete and accurate. BellSouth's calculations for the O-3 and O-4 flow-through measures and the O-9 confirmation timeliness measure rely upon many of the same data fields. As such, Liberty combined its investigation for these measures as much as possible.

Some of the specific goals of the data validation task area are as follows:

- Determine whether data fields are accurate and remain the same as they flow from RADS through to SQM and remedy payment calculations
- Determine whether data collection is sufficiently comprehensive, and whether the appropriate data ultimately are input to the performance measurement and remedy payment calculations
- Determine whether data manipulations or calculations are performed appropriately and accurately
- Determine whether key characteristics of transactions (such as product type or mechanization level) are accurately captured and used to identify the correct transactions included in specific sub-measures
- Determine whether exclusions are accurately applied, and whether data excluded from results are readily identifiable
- Determine whether the transition history tables are complete and accurate.

Liberty first examined BellSouth's process for extracting data from RADS. As discussed earlier, using data from RADS tables, BellSouth creates approximately [redacted] corresponding SNARADS tables each month from which it selects raw data for the O-3, O-4, and O-9 measures. BellSouth selects records to move into SNAPRADS each month based on a defined set of criteria. BellSouth designed the criteria it uses to create the SNAPRADS tables to capture all possible data necessary for the reporting month, and therefore they include more data than necessary. For approximately one-third of the SNAPRADS tables it creates, BellSouth copies the entire RADS table into SNAPRADS. For the others, BellSouth generally extracts from RADS data for transactions in the current month, the prior month, and several days into the following month. For example, for a November reporting month, BellSouth may copy into SNAPRADS records on orders that BellSouth received between October 1st and December 4th.

BellSouth uses data from the SNAPRADS tables to create the [redacted] and [redacted] tables in the Data Warehouse. The criteria that BellSouth uses to select the records it processes into the Data Warehouse each month differ depending on the SNAPRADS table involved, but in all cases it includes the equivalent of the order receipt date field.[203] BellSouth moves a record from SNAPRADS into the warehouse if the order receipt date is within a certain range, typically up to two months prior to the reporting month or several days into the following month.[204] BellSouth also moves data such as time stamps from other auxiliary SNAPRADS tables into the warehouse based on a similar date range.

[203] BellSouth uses the following fields and tables: for LNP, [redacted]; for COG, [redacted] with additional criteria for Module and Message State from [redacted]; for LEO6 and LEO9, [redacted] from LEO6_LSR and LEO9_LSR; for EXACT, [redacted] with additional criteria from [redacted]; and for LON, [redacted] from [redacted].

[204] Generally, a SNAPRADS table contains data for the two months before the reporting month only if BellSouth copied the entire RADS table into SNAPRADS each month. In most cases, however, the SNAPRADS tables will

Liberty believes that BellSouth's approach for selecting RADS and in turn SNAPRADS data for each reporting month generally ensures that BellSouth has captured all relevant data for the reporting month in the warehouse. Instances in which a confirmed order is never captured would only occur if BellSouth sent a confirmation several months after it received the order, *i.e.*, where the receipt date is before the date range BellSouth uses to create the SNAPRADS tables. Liberty believes that such instances are rather rare.

While selecting SNAPRADS records to bring into the warehouse, BellSouth excludes orders marked with a test indicator, and does not bring them into the warehouse at all. Not all test orders are marked with the indicator, however, and thus some test orders flow to the warehouse. Typically, BellSouth designates test orders with specific OCNs, giving them a BellSouth company type code. BellSouth excludes these non-CLEC orders when it calculates the measures.

Data Validation for O-9

Liberty selected a random sample of 300 transactions from SNAPRADS to track through the PMAP data flow for O-9. Liberty tracked these sample transactions through the downstream systems and databases to the DM tables that BellSouth uses to calculate SQM results. Liberty sought to determine whether the data maintain their integrity as they flow from table to table while BellSouth applies various logic or data transformations. Additionally, Liberty tested whether BellSouth properly included or excluded orders from the measure.

To identify the relevant population from which to draw the sample, Liberty requested that BellSouth provide Liberty with a list of unique transactions from each source system (*i.e*, LEO, DOM, EXACT, LON, and LNP) for November 2003 and for December 2003. To create the sample population for each month for each source system, Liberty requested that BellSouth use the same date range criteria that it uses to determine if SNAPRADS records should flow into the warehouse that month, *i.e.*, two months prior to the reporting month and several days into the following month. Liberty requested that BellSouth not exclude test orders marked with the test product indicator.

BellSouth provided Liberty with a list of orders meeting its criteria.[205] Each order was identified by a unique ID, such as CC/PON/Version, or, for LNP orders, Tracker ID.[206] Liberty used these lists of transactions as the populations from which it selected its samples. Liberty drew 150 orders each from the November and December 2003 populations. Liberty used the volume of orders processed through each ordering system during November and December 2003 as a guide to choose the size of the samples from each source system. Liberty selected its 150 orders per month as follows: 75 from LEO, 30 from LNP, 15 from DOM, 20 from LON, and 10 from EXACT. Liberty then randomly selected samples of these sizes from the appropriate source system populations.

not contain data two months prior to the reporting month, because BellSouth only copies data from one prior month from a RADS table into a SNAPRADS table.

[205] Response to Data Request #345.

[206] In the LNP Gateway, BellSouth assigns a unique ID, referred to as a Tracker ID, to LNP orders; BellSouth uses this unique ID to join information on LNP orders from various SNAPRADS tables.

Liberty specifically designed the sample population in such a way that it expected a certain number of orders not to be relevant for the reporting month. For example, Liberty chose to include in its sample those orders with key dates that fell across a wider time period than the reporting month. In this way, Liberty would have opportunities to substantiate that BellSouth properly determined the membership map for orders confirmed or not confirmed during the month.

Using these samples, Liberty examined the flow of data from SNAPRADS to the DM table. Liberty first extracted data associated with the sample orders from the [redacted] and [redacted] warehouse tables and from the FOCT DM table. Liberty examined each sample SNAPRADS order to determine whether it should be in the warehouse, and if not, why. For example, certain orders with a test indicator did not appear in the warehouse.

When tracing transactions from SNAPRADS to the warehouse, Liberty found that four LON orders that otherwise should have appeared in the warehouse did not. BellSouth researched these orders and informed Liberty that the service representative did not record a received date in LON from the fax for these orders. BellSouth does not include such orders in the warehouse because there would be no way for it to determine duration.

Next, Liberty verified that BellSouth assigned the membership map entry correctly for each sample order. BellSouth marked orders with a FOC date within the month with a [redacted] or [redacted]" marked orders with an error code with a [redacted]" and marked orders not within the reporting month with a [redacted] Liberty verified that each order with a [redacted] in the O-9 membership map position was reflected by at least two records in the FOCT DM table, as each order falls into at least two reported time intervals. Similarly, Liberty verified that none of the orders marked with a [redacted] or [redacted] were included in the FOCT table.

Liberty did not continue to trace the sample to PARIS because during the audit period, BellSouth did not create separate [redacted] tables for O-9. Instead, PARIS used a view of warehouse data and calculated penalties using records that were marked as applicable to SEEM, *i.e.*, those with a [redacted] in the correct membership map position. Liberty compared the values in both the O-9 SQM and SEEM membership map positions (positions [redacted] respectively) to validate that they were the same in all cases.[207] Thus, Liberty was satisfied that PARIS would select the same orders for the purposes of penalty payments as BellSouth selects for SQM/SRS reporting purposes.

As part of its data validation review, Liberty tested BellSouth's derivation of key data fields such as mechanization code and product ID, which are important in order to correctly categorize orders in the sub-measures. Liberty selected a broad subset of orders from its sample, and verified that BellSouth assigned the correct mechanization code and product ID in the [redacted] table based on the values contained in specific fields in the SNAPRADS tables. Liberty was satisfied that BellSouth performed these conversions correctly.

[207] The order was either marked with a [redacted] in the first character of the membership map and therefore excluded from both SQM and SEEM, or both membership map positions contained a [redacted] or a [redacted]

Another focus of Liberty's review was BellSouth's calculation of FOC interval durations. To verify that BellSouth correctly calculated durations, Liberty selected a broad subset of orders from each ordering system as its sample. In each case, using the start and stop times in the [redacted] table and the indicated OSS service availability schedule, Liberty substantiated the FOC interval duration. Consistent with the SQM Plan, BellSouth assigns an interval of one minute to any order that it receives and works manually after business hours.

During the audit period, BellSouth calculated FOC intervals for ASRs differently from intervals for LSRs. At that time, BellSouth measured trunk FOC intervals in days. When BellSouth placed the FOC interval information into the warehouse tables it converted the FOC interval from days to minutes by multiplying it by 1,440 minutes (24 hours times 60 minutes). If BellSouth received an ASR and sent a FOC in the same day, BellSouth did not record an interval of "0" days in the [redacted] table but instead adopted the convention of using one-third of a day (*i.e.,* eight hours).[208] If BellSouth received an ASR after 2:00 p.m., it considered it as having been received the next day for the purposes of calculating the interval in terms of days.[209]

A companion issue to the calculation of FOC interval durations is that of time zones. Time intervals for service requests are measured from start time (last receipt) to stop time (FOC). The time stamps that BellSouth records in the SNAPRADS tables reflect the actual time zone used by the respective system.[210] When BellSouth creates the warehouse tables, it converts the time stamps as necessary to reflect all times in Central time in the [redacted] table.[211] If both the receipt and FOC times are in the same time zone, then the calculation of the interval is relatively straightforward. Liberty investigated whether this was true in all cases.

EDI, LENS, LEO, DOM, and EXACT are all on Central time. The LNP Gateway, TAG/XML, and SGG are all on Eastern time.[212] BellSouth stated that as long as a FOC goes back over the same interface that accepted the order, the time zone would be the same for both receipt and FOC times.[213] In cases where a mechanized order falls out for manual handing, the service representative sends the FOC or auto clarification for the order back through the same interface over which the order came in. Therefore, the receipt and FOC times would be in the same time zone.[214]

Manual LSRs are the exception. BellSouth has fax printers and service centers in both the Eastern and Central time zones. LOIS receives fax orders from CLECs and routes them to the fax printer at one of the service centers. Clerical personnel at the centers input the faxed information into LON with the local time stamp from the fax. When BellSouth records time stamps in LON, it also records the time zone. When service representatives create a service

[208] This convention is not included in the SQM Plan. BellSouth subsequently changed its method for calculating ASR intervals to minutes, the same as for LSRs.
[209] E-mail response to follow-up question from Interview #25, dated February 9, 2005.
[210] Responses to Data Requests #374 and #376.
[211] Interview #25, January 31, 2005.
[212] Responses to Data Requests #374 and #376.
[213] Interview #25, January 31, 2005.
[214] Response to Data Request #377.

order, he or she views a FOC screen to create a fax page. When the representative hits the button, the system records the local time as the FOC time.

As discussed in more detail below, during the audit period BellSouth incorrectly calculated FOC duration in a few instances because of differences in time zones. BellSouth explained that in some cases, the service center that initially entered the order in LON could be busy and ask the other to take care of some orders. If service representatives in both time zones touch the order, the inbound and outbound time stamps can be in two different time zones.

Warehouse Sample

As an added test of data validity, Liberty examined the O-9 data flow starting with the Data Warehouse. Liberty selected orders from the [redacted] table and traced them forward to the FOCT table in the Data Mart, and backward to the appropriate SNAPRADS tables. Key questions included: i) whether the order correctly had an associated record in the [redacted] table, ii) whether the order was properly included in or excluded from the FOCT table based upon the membership map field, iii) whether field values in the FOCT table were the same as those in the Data Warehouse tables, and iv) whether the data in selected fields in the Data Warehouse tables were consistent with data from the associated SNAPRADS tables.

Liberty created a sample of 96 orders, consisting of four observations for each of the 24 O-9 sub-measures that Liberty had selected for replication and listed in Appendix A.[215] For each sub-measure, Liberty randomly selected two orders with the appropriate mechanization level and product ID from the November 2003 [redacted] table and two from the December 2003 table. Liberty did not exclude orders with an error code from the relevant sampling population. In order to focus the sample on those orders eligible for the reporting month, Liberty selected orders with a FOC date within the month.

After selecting the sample orders, Liberty extracted data for these orders from the [redacted] table and linked it with the associated data from the [redacted] table using the [redacted][216] Liberty then extracted all records from the FOCT table associated with any of the [redacted] in its sample. Using the benchmark membership map field from the [redacted] table, Liberty determined whether each order should have been included in the FOCT table. Liberty found that all the orders in the [redacted] table had a [redacted] in the appropriate position in the benchmark membership map field in the [redacted] table, and vice versa. In cases where the sample order was not in the FOCT table, Liberty substantiated that it was correctly marked with a [redacted] or [redacted] in the membership map. Liberty investigated why BellSouth had excluded each order missing from the FOCT table. In all cases, the order either had an error code associated with it (and therefore was excluded by BellSouth from all ordering measures) or was a project, and thus was properly excluded under the SQM Plan. Liberty was satisfied that BellSouth treated each sample order correctly.

[215] Liberty selected 25 O-9 sub-measures for replication; Liberty did not have a sample for the non-mechanized resale Centrex sub-measure because BellSouth had no orders for this product during this period.

[216] In some cases, the [redacted] table contained more than one record for a given [redacted], due to a reject on the same order.

Liberty substantiated that the values in certain key data fields in the [redacted] table [redacted] were reflected correctly in the FOCT table, and that the duration (*i.e.*, FOC interval) in the [redacted] table matched that in the FOCT table. Liberty substantiated that the FOCT table contained the correct number of records for each order, one for each time interval into which the order fell.

For six of the 96 orders in the sample, Liberty found two records for the order in the [redacted] table because BellSouth confirmed and rejected the same PON version. In two cases, BellSouth had confirmed the order, and then rejected it later. BellSouth explained that at times it confirms an order, but the order later encounters a problem downstream and the system sends an auto clarification, *i.e.*, rejects the same PON version.[217] For the four other orders, Liberty found that BellSouth had rejected a PON version first, and then confirmed it later. Liberty asked BellSouth why it would first reject and then confirm an order. BellSouth speculated that this was due to either a system error that incorrectly rejects orders, or errors by the service representatives.[218] BellSouth's FOC interval calculation reflects the effect of the delayed confirmation, because BellSouth uses the same "start" time stamp for both the rejection and confirmation.

Liberty also traced these 96 orders back to specific SNAPRADS tables. Liberty substantiated that BellSouth correctly assigned the company ID, product ID, and mechanization code in the [redacted] table, based on the values in specific fields in the SNAPRADS tables. Liberty also validated the start and stop time stamps that BellSouth recorded in the [redacted] table for these sample orders. Liberty tested each interface/SOP/format combination to determine if BellSouth drew the primary or secondary time stamp from the same SNAPRADS table listed in the time stamp source matrix. Because each SNAPRADS table may contain many time stamps associated with the order, Liberty also verified that BellSouth selected the correct one for the receipt date and time and for the FOC date and time.

Drawing from its sample of 96 orders, Liberty tested each ordering system/interface combination for TCIF9 format orders, as well as manual LON orders. For ELMS6, Liberty also tested LEO and LNP orders that came through LENS, and LEO orders that came through EDI.[219] There were no EXACT orders in Liberty's warehouse sample, and Liberty used orders from its SNAPRADS sample to test EXACT time stamps. For each sample item, Liberty substantiated that BellSouth recorded the inbound and outbound time stamps correctly in the [redacted] table.

O-9 Issues

BellSouth made changes to its process relating to the O-9 measure before, as well as during, the audit period. For example, before the audit period BellSouth used a time stamp from LEO or

[217] Interview #25, January 31, 2005.
[218] Interview #25, January 31, 2005.
[219] There were relatively few ELMS6 orders, and Liberty was unable to test ELMS6 orders coming through TAG/XML.

LNP for orders that came through TAG servers. Beginning in October 2003, the orders went through SGG and BellSouth began to use the SGG time stamp for the receipt date and time.[220]

BellSouth made a significant number of changes during the audit period, many of which were associated with the implementation of Encore 14. For the November 2003 reporting month, BellSouth put into place logic for processing related PONs, in which it uses the inbound time stamp associated with the last PON received as the time stamp for all orders in the group.[221] Under RQ2976, BellSouth made changes to its programming in order to begin excluding wireless orders from LNP product results. Under RQ4830, BellSouth made changes to accommodate situations in which a CLEC supplements one LSR in a group of related PONs. Under RQ4586, BellSouth added new programming logic to provide an alternative method to identify the state for LEO orders that otherwise would have been marked with an error code.

BellSouth also identified and corrected problems in the same time frame. Before the audit period, BellSouth was incorrectly counting certain completion notices as FOCs for LNP products, which it corrected for the April 2003 data month under RQ1753. As another example, RQ2692 dealt with situations in which a representative worked an order but did not "claim" it on the system, which meant that such orders were incorrectly classified as fully mechanized when they were actually partially mechanized. BellSouth implemented a solution to the problem in May 2003.

During the audit period, BellSouth found that the changes it previously made in order to use the SGG time stamp for receipt date and time for LEO and LNP orders through TAG were incomplete. BellSouth issued RQ4815 to complete the modifications. In December 2003, BellSouth found that it was incorrectly classifying certain COG LSRs that came in through EDI as coming through TAG, and issued RQ4783 to correct the problem. Prior to January 2004, BellSouth was reporting some access trunks as interconnection trunks. It completed RQ4608 and RQ4776 to correct the problem.

After the audit period began, BellSouth had several RQs that related to its implementation of Encore Release 15 and 16, which were not to correct problems per se. In other cases, BellSouth made changes that had no effect on audit period results. In February 2004, BellSouth changed how it reported UNE combinations of loop, transport, and multiplexer. BellSouth reported these as UNE Combo-Other, but starting in February 2004 BellSouth began reporting them with EELs.[222] Until July 2004, BellSouth was calculating the FOC duration of trunks in days, rather than hours. Under RQ5160, BellSouth began calculating the duration in hours and made the correct program changes to take into account non-business hours.[223]

Other changes, however, did deal with problems that existed during the audit period. In January 2004, BellSouth fixed a situation under RQ4623 in which it was incorrectly identifying certain

[220] RQ2028 and RQ3978.
[221] RQ4381.
[222] RQ4388.
[223] Interview #25, February 16-17, 2005. BellSouth's impact statement indicated that BellSouth was not excluding non-business hours from interval calculations for ASRs. During the interview, BellSouth said that this was not the actual problem, because it was taking into account weekends. Instead, the RQ focused on changing the interval calculation to hours rather than days.

LNP orders as fully mechanized when they were actually partially mechanized.[224] BellSouth indicated that the error had a relatively small effect, and estimated that it incorrectly categorized 29 of 6,609 LNP orders for July 2003 due to this error.

Two of BellSouth's RQs dealt with problems with differences in time zones. BellSouth found that it counted some non-mechanized LSRs in LON with multiple clarifications or FOCs twice. BellSouth noted that this situation occurred when a service representative re-faxed a FOC or reject in a different time zone from the original FOC or reject. At the time, BellSouth assumed when calculating duration that the time zone of the inbound time stamp was the same as the time zone of the outbound. BellSouth found the problem because in certain cases it calculated a negative interval (*i.e.*, the inbound time stamp was in the Eastern time zone and the FOC was Central time). BellSouth acknowledged that there may have been situations in which the interval was one hour longer than it should have been. BellSouth corrected part of this problem under RQ4785 in March 2004 and completed further changes under RQ5601 in October 2004.[225] For both changes, BellSouth had estimated the impact on reported results for non-mechanized orders of 0.09 to 0.17 percent.

In June 2004, BellSouth corrected a situation under RQ5134 in which it was not using the correct FOC time stamp for certain ASRs. In July 2004, BellSouth corrected a situation in which it was not capturing the appropriate FOC or reject response time for ELMS6 LNP orders. BellSouth explained that in this case the transaction ID was missing in SGG, so it used the secondary time from the LNP Gateway. BellSouth added logic under RQ5188 to check another field in the SGG data so it could properly identify the SGG time stamp. BellSouth pointed out that the primary and secondary time stamps usually differed by seconds, so there was relatively little effect on results.[226] In terms of impact, BellSouth estimated that it incorrectly reported the time stamps for 83 of 3,405 LNP orders for March 2004.

Early in the audit, BellSouth told Liberty that CLECs could not order INP in Florida during the audit period. Liberty found that BellSouth reported results for this product in O-9 Standalone INP Non-mechanized for November and December 2003. BellSouth explained that it misclassified LNP records as INP because the CC/PON/Version recorded for non-mechanized orders in LON did not match that in the LNP Gateway.[227] BellSouth service representatives enter this information manually in both systems. BellSouth noted that it was still investigating an alternative method to identify these records that would allow it to process them accurately.[228]

[224] Interview #25, February 16-17, 2005. BellSouth explained that Oracle had a particular way of dealing with nulls. When a logic statement checks if a null field is equal to a value and not equal to a value, neither will be true. BellSouth had a flaw in its logic statements so that orders with a null in the CUID field were incorrectly identified as fully mechanized

[225] Interview #25, February 16-17, 2005.

[226] Interview #25, February 16-17, 2005.

[227] Interview #13, December 1, 2004. BellSouth explained that its service representatives use LON for tracking faxed orders and that they use the LNP Gateway for accepting LNP orders. BellSouth processes all LNP orders through the LNP Gateway, but if a CLEC submits an LNP order via fax, the BellSouth service representatives manually enter the information about the order into both LON and the LNP Gateway.

[228] Response to Data Request #19.

BellSouth subsequently stated that it had proposed changes in the Florida Proposed SQM (version 3.1) concerning product disaggregations that would address this issue. BellSouth stated that if the changes are accepted it would initiate a change request to modify the system.[229]

Data Validation for O-3 and O-4

Because BellSouth does not use the warehouse tables for the O-3 and O-4 measures, Liberty developed a different type of data validation review for these measures. As discussed previously, BellSouth produces six "final" tables as output of the Interim Solutions flow-through application, four of which contain data on LSR and LNP-only orders, as well as LSR and LNP-only fatals. The final tables are quite lengthy, and contain a separate record for each order. BellSouth uses these tables to create the PFT DM table.

Liberty selected two CLECs for the November 2003 data month, one for flow-through and one for LNP flow-through, as well as two for the December 2003 data month. Liberty asked BellSouth to provide all records from the final tables, both the order and fatals tables, for these CLECs.[230]

The purpose of Liberty's examination was to confirm that all records from the final tables for these CLECs had been correctly aggregated and reported in the flow-through reports. Liberty sorted the data that BellSouth provided by [redacted], and then sorted company-specific records by product type (*e.g.*, residential, UNE-P) and mechanical interface (LENS, EDI, or TAG). Liberty then counted the total number of orders for each product group and interface combination in each report category: auto clarification, manual fallout, pending supplements, BellSouth and CLEC fallout, total mechanized orders, and total valid LSRs. For the fatal error data, Liberty counted the number of fatal error records associated with each CLEC. In all cases, Liberty replicated the reported results for these CLECs for flow-through and fatals.

Liberty reviewed BellSouth's flow-through application program in some detail. As noted earlier, there are several major modules in BellSouth's flow-through program package, including flow-through, LNP flow-through, LNP fatal rejects, non-LNP fatal rejects, error analysis, and CLEC LSR information (for O-6). BellSouth's programming is set up in such a way that BellSouth can run monthly and daily reports, and can run each module separately as necessary. BellSouth runs the reports against tables from SNAPRADS. In some cases, the program references these tables and in some cases the programs actually pull in a copy of a table to speed up processing. Throughout the programming run, BellSouth routinely executes counts and statistics and creates separate output files that the programming analysts or business analysts can use to check results or see what is happening at various stages of the programs.[231]

BellSouth personnel provided a walk through of large portions of the flow-through programming modules. The programming code is very complicated and difficult to follow, one reason being that BellSouth used hard code instead of lookup tables to implement certain logic. The flow-

[229] Response to Preliminary Finding 52. BellSouth's proposed changes to the SQM eliminates the standalone INP category for O-9.
[230] Response to Data Request #364.
[231] Interview #12, November 22-23, 2004.

through modules contain a series of logic steps designed to determine how the ordering systems processed each order. The logic follows a certain hierarchy: auto clarifications, EASY auto clarifications, manual handling fallout, EASY manual fallouts, dummy FOCs (on cancelled orders), flow-through, Z status orders, and related PONs. For orders that meet none of the criteria for these categories, BellSouth must perform additional analysis to determine if they did not flow through due to BellSouth or CLEC errors. If BellSouth cannot identify a reason for fallout, it designates the order as having a BellSouth error.[232]

During the walk through, Liberty learned some of the conventions that BellSouth has adopted. For example, BellSouth can send more than one response on a PON version, and the flow-through application uses the first response, which is the record with the earliest time stamp. If BellSouth sends an auto clarification in error, it classifies the order as an auto clarification for the purposes of flow-through. BellSouth also stated that there was no equivalent in DOM to a Z status order, and that it cannot tell if a PON version has been superceded in DOM. Therefore, if such an order drops out, the flow-through application will not be able to categorize it correctly as a Z status order, but instead will designate it a BellSouth error.[233] Liberty also substantiated that the application includes only CLEC orders in the flow-through results.

BellSouth also provided a walk through of the fatal reject module. The program contains logic steps that identify fatal rejects that occur during pre-validation (in the gateway), as well as further downstream in LEO, DOM, or the LNP Gateway.[234]

Liberty asked BellSouth's flow-through business analyst to demonstrate the logic of the flow-through program by working through concrete examples of orders. Liberty and BellSouth identified LEO, DOM, and LNP orders that were categorized differently in the final tables, and researched these orders in the relevant SNAPRADS data tables. In all cases, the analyst was able to substantiate that the flow-through application correctly categorized the order.

Liberty also selected mechanized orders from its O-9 SNAPRADS sample to examine for itself how the orders were treated for the purposes of O-3 and O-4. Liberty first identified how BellSouth marked the order in the final flow-through table (*e.g.*, flow-through, fallout for manual processing, BellSouth error). Liberty then researched the order in SNAPRADS to determine whether the application had correctly categorized each order. Similarly, Liberty selected fatal rejects from its SNAPRADS sample and examined how they were treated in the fatal reject final tables.

In one case, Liberty could not find the order it selected in the final flow-through tables. BellSouth investigated the order and told Liberty that the order was not included because it was a coin order, which BellSouth excludes from the flow-through measures. BellSouth does not, however, exclude coin orders from the warehouse and does not exclude them from O-9.[235] The SQM Plan does not list coin orders as an exclusion from either measure. BellSouth agreed that it did not treat coin orders consistently, and stated that it had made provisions, as part of RQ1944,

[232] Interview #25, January 31, 2004.
[233] Interview #12, November 22-23, 2004. BellSouth considers this checking part of the PMQAP process.
[234] Interview #12, November 22-23, 2004.
[235] Interview #25, February 16-17, 2005.

to begin reporting coin LSRs when it migrates the O-3 and O-4 measures into the PMAP Data Warehouse in the third quarter of 2005.[236]

Liberty was satisfied that BellSouth's process for generating flow-through results was reasonable, although there were problems during the audit period that affected reported results.

O-3 and O-4 Issues

After the audit period, BellSouth identified several problems with flow-through, primarily stemming from the implementation of the ELMS6 format in November 2003. When BellSouth implemented ELMS6, the ordering systems began using some new codes to identify planned manual LNP orders. The PMAP organization was not aware that these new codes had been added. BellSouth had not programmed the flow-through application to correctly identify these orders, and thus incorrectly categorized them as BellSouth fallout on the LNP flow-through report.[237] In April 2004, pursuant to RQ4960, BellSouth added coding to its flow-through application so that it could properly identify planned fallout LNP orders in ELMS6 format. BellSouth estimated the impact on LNP flow-through, stating that results would have increased by 1.02 percent for December 2003.

When BellSouth implemented ELMS6, the LEO system began using different types of text messages to identify clarifications. BellSouth indicated that it failed to identify all clarifications on ELMS6 orders through LEO, and likely mischaracterized the orders as BellSouth errors. In July 2004, pursuant to RQ5198, BellSouth added logic to its flow-through application to properly identify clarifications on LEO orders in ELMS6 format.[238] BellSouth estimated that it incorrectly categorized 80 LSRs for February 2004, and stated that results for UNE and aggregate flow-through would have increased by 0.01 percent.

BellSouth also found that the flow-through application was not correctly categorizing LNP orders in ELMS6 format that came in through EDI. When BellSouth implemented ELMS6, the ordering system began using different messages in its audit tables for TCIF9 and ELMS6 orders. The flow-through application identified these orders as manual fallout, which BellSouth excludes from the percentage flow-through calculation.[239] BellSouth's impact statement indicated that BellSouth incorrectly categorized approximately 1,250 EDI orders for the month of April 2004. In August 2004, pursuant to RQ5427, BellSouth corrected the error by modifying the coding in the flow-through application.

In addition to these errors that affected reported results during the audit period, BellSouth also worked on a number of other RQs affecting the O-3 and O-4 measures during the audit period. BellSouth stated that only three of these, RQ4420, RQ4510, and RQ4555, were important, and that the others related to SRS and other reporting conventions that did not affect measure calculations. RQ4555 was a blanket RQ covering BellSouth's changes needed to implement the release of Encore 14, which included ELMS6. BellSouth performed RQ4420, which related to

[236] Response to Preliminary Finding 58.
[237] Interview #25, January 31, 2005.
[238] Interview #25, January 31, 2005.
[239] Interview #25, January 31, 2005.

the related PON logic that BellSouth added to the flow-through application program, as part of the work required under RQ4555. Under RQ4510, BellSouth added logic to the flow-through application to identify and exclude LNP wireless orders from LNP flow-through results.[240]

BellSouth also made some small changes to the flow-through package during the audit period not covered by RQs. These reportedly had no effect on measure results. For example, BellSouth added additional logic for the December reporting month to identify more fatal rejects, which BellSouth reports for informational purposes only.[241]

c. SQM/SRS Report Replication

O-3 and O-4

The O-3 measure was not included in Liberty's list of measures selected for SQM/SRS report replication (see Appendix A for a complete list of these measures), but Liberty included it in its replication work nonetheless. Liberty recalculated the O-3 CLEC aggregate results for November and December 2003, using the PFT DM tables that BellSouth provided. Each data mart file contained approximately 2,000 records of company-specific information. First, Liberty sorted the PFT DM table by product group and calculated the total number of orders in each category: auto clarification, manual fallout, pending supplements, BellSouth and CLEC fallout, total mechanized orders, and total valid LSRs. Liberty next calculated the number of orders that flowed through as the number of valid LSRs minus system fallout (including both BellSouth and CLEC caused fallout). For percentage flow through, Liberty calculated the denominator as the difference between valid LSRs and CLEC-caused fallout. Liberty then calculated the percentage flow through as the number of LSRs that flowed through divided by this denominator. The following chart summarizes Liberty's calculations.

Aggregate Orders

Product Group	Auto Clar.	BST Fallout	CLEC Fallout	Manual Fall	Pending Supp.	Total Mech	Valid LSRs	Flowed Thru (calc)
November 2003								
Residential	10,779	3,844	1,519	9,053	298	94,553	74,423	69,060
Business	1,027	628	389	2,325	66	8,606	5,188	4,171
UNE-P	52,742	18,713	19,094	36,178	1,670	576,736	486,146	448,339
UNE-L	1,533	1,541	312	2,006	193	13,562	9,830	7,977
LNP	909	2,557	532	3,344	0	13,122	8,869	5,780
December 2003								
Residential	11,385	1,760	1,964	8,808	331	103,106	82,582	78,858
Business	1,018	686	458	1,933	87	9,450	6,412	5,268
UNE-P	51,483	15,177	22,425	38,382	2,108	607,009	515,036	477,434

[240] Interview #12, November 22-23, 2004.
[241] Response to Data Request #263.

UNE-L	2,626	1,541	497	2,226	182	17,977	12,943	10,905
LNP	1,307	826	750	5,040	0	19,608	13,261	11,685

For percentage achieved flow through, Liberty calculated the denominator as the number of mechanized LSRs minus auto clarifications, pending supplements, and CLEC-caused fallout. Liberty then calculated the percentage achieved flow through as the number of LSRs that flowed through divided by this denominator.

Each CLEC aggregate result that Liberty calculated matched that reported by BellSouth on the SRS report on its PMAP website. Liberty also verified that these CLEC aggregate results matched those in BellSouth's PFT Parity Aggregate and 12-month Aggregate reports.

All five of the O-4 sub-measures were included in Liberty's list of measures selected for SQM/SRS report replication. Liberty sought to replicate CLEC-specific results for one CLEC for November and December 2003. First, Liberty sorted the PFT DM table by [redacted] and calculated the total number of orders in each category for the CLEC: auto clarification, manual fallout, pending supplements, BellSouth and CLEC fallout, total mechanized orders, and total valid LSRs. Liberty next calculated the number of orders that flowed through as the number of valid LSRs minus system fallout (including both BellSouth and CLEC caused fallout).

BellSouth provided Liberty with the relevant O-3 and O-4 reports for the audit period because flow-through reports for the audit period were not available on the PMAP website.[242] Liberty calculated the number of flow-through orders, and the percentage flow-through and flow-through achieved as described above for O-3. Each CLEC company-specific result that Liberty calculated matched that reported by BellSouth. There was no company aggregate table or 12-month report against which Liberty could also check results.

Liberty successfully replicated BellSouth's CLEC aggregate and CLEC-specific SQM/SRS results for O-3 and O-4.

O-9

There are 25 O-9 sub-measures included in Liberty's list of measures selected for SQM/SRS report replication. Liberty recalculated the CLEC aggregate results for November and December 2003 for these sub-measures using the FOCT DM tables that BellSouth provided. As noted previously, there are multiple records in the FOCT DM table for each order, one record for each time interval into which the order falls (*e.g.*, 0-15 minutes, 0-3 hours). Also, the orders in the FOCT DM table are defined by product ID, rather than by reporting product group. For example, there are five product IDs that must be aggregated to derive the resale business product reporting group result.

To calculate the results for each sub-measures, Liberty selected CLEC records with the appropriate mechanization level and product IDs associated with the specified product reporting group ID. The total number of orders for the given product and mechanization level represents

[242] Response to Data Request #273.

the denominator, or the number of orders confirmed in the reporting month.[243] The numerator for mechanized orders is the number of orders that BellSouth confirmed within three hours. The numerator for partially mechanized and non-mechanized orders is the number of orders that BellSouth confirmed within ten hours and within 24 hours, respectively. Liberty calculated the percentage of timely order confirmations by dividing the numerator by the denominator, as defined. To calculate the average confirmation interval, Liberty summed the receipt-to-confirmation intervals (reported in minutes) of all orders in the denominator for the specific product reporting group, and divided by the denominator times 60 to derive the interval in terms of hours.

Each CLEC aggregate sub-measure result that Liberty calculated matched that reported by BellSouth on the SRS report on its PMAP website. Liberty also verified that these CLEC aggregate results matched those in BellSouth's FOCT Parity Aggregate report. Liberty was also satisfied that BellSouth was correctly applying its product rollup rules.

Liberty also sought to replicate CLEC-specific results for one CLEC for November and December 2003. Liberty generated a list of all the [redacted] that appeared in each of the 25 CLEC aggregate results, in order to determine which CLECs ordered a given product in order to select one for replication. Liberty randomly selected a CLEC for each product group.[244] In all, Liberty selected 22 different CLECs. Liberty recalculated the CLEC-specific results using the same logic as for the CLEC aggregate, but selected only those records with the appropriate [redacted].

Each CLEC-specific result that Liberty calculated matched that reported by BellSouth in the SRS reports on its PMAP website.[245] Liberty also verified that the CLEC-specific results matched those in BellSouth's FOCT Company Aggregate tables.

Liberty successfully replicated BellSouth's CLEC aggregate and CLEC-specific SQM/SRS results for O-9.

B. Provisioning Measures

1. Introduction

There are five in-scope provisioning measures for this audit: P-3, Percent Missed Initial Installation Appointments (PMIA); P-4, Average Completion Interval & Order Completion Interval Distribution (OCI); P-7, Coordinated Customer Conversions Interval (CCCI); P-7C, Hot

[243] Because orders appear in more than one time interval category, calculating the denominator is not straightforward. For example, for fully mechanized orders, one must add the number of orders in the 0-3 hour interval category to those in the 6-12 hour, 12-24 hour, 24-48 hour, and greater than 48 hour categories.

[244] During replication, Liberty identified a problem with trying to retrieve CLEC-specific reports for companies that had been acquired by another after the audit period. Liberty could not retrieve CLEC-specific reports for the selected CLEC for November and December 2003. Liberty therefore selected another CLEC for replication purposes.

[245] The PMAP reports list results by OCN/ACNA rather than [redacted]. Liberty found that many of the CLEC-specific PMAP reports contained product results under more than one OCN/ACNA for a given company. Liberty used the one associated with the selected [redacted] in order to match results.

Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order (PT); and P-9, Percent Provisioning Troubles within 30 Days of Service Order Completion (PPT). All five of these measures are Tier 1 and Tier 2 measures in the SEEM Administrative Plan.

BellSouth reports the five in-scope provisioning measures on a statewide and regional basis for individual CLECs and CLEC aggregate. For the P-3, P-4, and P-9 measures, BellSouth also reports its retail performance results on a statewide and a regional basis. The standard for the P-3, P-4, and P-9 measures is parity with BellSouth retail.[246] The P-7 and P-7C measures have benchmark standards.

P-3 - Percent Missed Initial Installation Appointments

The P-3 measure monitors the reliability of BellSouth's committed due dates. For this measure, BellSouth calculates the percentage of the total orders processed for which BellSouth did not complete the service orders on the committed due date. BellSouth reports these results separately for BellSouth-caused missed commitments and end-user-caused missed commitments.[247] The SQM Plan lists the following exclusions for the P-3 measure:

- Orders cancelled prior to the due date, including "zero due date" orders that are to be provisioned on the same day that they are placed.
- BellSouth or CLEC order activities associated with internal or administrative use of local services (*e.g.,* record orders, listing orders, test orders)
- Disconnect (D) orders and From (F) orders[248]
- End-user misses.

The SQM Plan provides the following formula for the calculation of the P-3 results:

Percent Missed Installation Appointments = (a/b) x 100
a = Number of orders with completion date in reporting period past the original committed due date
b = Number of orders completed in reporting period

BellSouth defines orders with a completion date in the reporting period as orders completed in the report month with an order suffix code of [redacted] which indicates that the order is in final completion status and ready for bill completion. Orders completed in the report month that do

[246] For the P-4 measure, the UNE xDSL, UNE Line Sharing with conditioning, and UNE Line Splitting with conditioning products have a benchmark standard in lieu of a retail analog.
[247] For the retail results, BellSouth defines end-user misses as orders that missed the due date because of a delay caused by BellSouth's retail customer. BellSouth considers an end-user miss for wholesale orders to be an order that missed the due date because of a delay caused by the CLEC.
[248] A Disconnect (D) order is an order that removes service from a customer's account. A From (F) order is an order that is associated with a move of service; specifically, it is the disconnect portion of the move removing the service from its old location.

not have the [redacted] suffix code (*e.g.,* some orders completed on the last day of the month) will be reported in the following month's SQM and SEEM results.[249]

PMIA measures the percent of orders with completion dates in the reporting period that are past the original committed due date. The SQM Plan states that BellSouth should exclude missed appointments caused by end-user reasons and report them separately.[250] BellSouth defines a missed appointment as the first missed commitment date on the service order regardless of whether BellSouth or the end-user caused the miss. BellSouth defines the due date for this measure as any time within the 24-hour period of the confirmed due date.

BellSouth disaggregates the P-3 measure into 29 unique CLEC product groups. The performance standard for each of these product groups is parity with an analog retail product. These analog retail products are not mutually exclusive and often serve as the performance analog for multiple CLEC products. As such, BellSouth will count a single retail service order toward multiple SQM and SEEM sub-measures based on BellSouth's current product mapping rules.[251] When reporting the P-3 results, BellSouth further disaggregates the CLEC product groups based on i) the number of lines associated with the order, ii) whether the order required a dispatch to be provisioned, and iii) whether the order required loop conditioning for products involving xDSL service.[252] Generally, the retail analog products follow the same dispatch convention as the CLEC product to which they are being compared (*i.e.,* resale business dispatch orders are compared to retail business dispatch orders and resale business non-dispatch orders are compared to retail business non-dispatch orders). However, the product disaggregation rules found in the SQM Plan indicate that for some of the CLEC products, the comparable retail analog is dispatch-only orders regardless of whether the CLEC order required a dispatch.

P-4 – Average Completion Interval and Order Completion Interval Distribution

P-4 measures the time it takes BellSouth to provide service to CLECs or its own customers. The order completion interval distribution provides the percentages of orders completed within certain time periods. This report measures how well BellSouth meets the interval offered to customers on service orders. The SQM Plan lists the following exclusions for the P-4 measure:

- Cancelled service orders
- BellSouth or CLEC order activities associated with internal or administrative use of local services (*e.g.,* record orders, listing orders, test orders, etc.)
- D orders, except D orders associated with standalone Local Number Portability (LNP)
- L appointment code orders (*i.e.*, orders for which the customer has requested an interval longer than the one offered)

[249] Interview #14, November 23, 2004 and response to Data Request #248.
[250] BellSouth does not, however, exclude end-user misses from the calculation of the P-3 measure. See the Findings and Recommendations section of this section of the report for more details.
[251] Response to Data Response #244.
[252] These products include UNE xDSL Loops, UNE Line Sharing and UNE Line Splitting.

- End-user caused misses.

The SQM Plan provides the following formula for the calculation of the P-4 results:

Completion interval = (a-b)
a = Completion date
b = FOC/SOCS date time stamp (the order's application date)

Average completion interval = (c/d)
c = Sum of all completion intervals
d = Count of orders completed in the reporting period

Order completion interval distribution (for each interval) = (e/f) x 100
e = Service orders completed in "X" days
f = Total service orders completed in reporting period

As with P-3, BellSouth defines orders in the reporting period for P-4 as those orders completed in the report month with an order suffix code of [redacted], which indicates that the order is in final completion status and ready for bill completion.[253]

For this measure, BellSouth determines the actual completion interval for each order processed during the reporting period. The completion interval starts when the Service Order Communication System (SOCS) assigns a valid order number (the application date) and stops when the technician or system completes the order in SOCS.[254] BellSouth accumulates the elapsed time for each reporting dimension on each order. BellSouth then divides the accumulated time for each reporting dimension by the associated total number of completed orders. BellSouth calculates zero due date orders with a .33 day interval (*i.e.,* eight hours).[255] When calculating service order durations, BellSouth excludes Sundays for all products. It also excludes Saturdays from the calculation of the service order duration for 2-Wire ADSL, 2-Wire HDSL and 4-Wire HDSL only.[256]

As with P-3, BellSouth disaggregates P-4 into 29 unique CLEC product groups. Each of these product groups, with the exception of UNE xDSL, UNE Line Sharing with conditioning, and UNE Line Splitting with conditioning, has a standard of parity with the associated analog retail product. These retail products are not mutually exclusive and often serve as the performance analog for multiple CLEC products. As was the case for the P-3 measure, a single retail service order can be counted toward numerous SQM and SEEM sub-measures based on BellSouth's product mapping rules.[257] The UNE xDSL product has a benchmark standard of less than or equal to five days for orders that do not require conditioning. UNE xDSL, Line Sharing, and Line Splitting orders that require conditioning have a benchmark standard of less than or equal to

[253] Response to Data Request # 251.
[254] Response to Data Request #250.
[255] Response to Data Request #252. BellSouth defines zero due date orders as orders that are issued and completed on the same day.
[256] Response to Data Request #254.
[257] Response to Data Request #244.

12 days. BellSouth further disaggregates the CLEC product groups by i) the number of lines associated with the order, ii) whether the order required a dispatch to be provisioned, and iii) whether the order required loop conditioning, for xDSL products. Generally, the retail analog products follow the same dispatch convention as the CLEC product to which they are being compared (*i.e.,* resale business dispatch orders are compared to retail business dispatch orders and resale business non-dispatch orders are compared to retail business non-dispatch orders). However, the SQM Plan product disaggregation rules state that for some CLEC products, the comparable retail analog is dispatch-only orders regardless of whether the CLEC order required a dispatch.

BellSouth reports resale residence and business order activity in day intervals of 0, 1, 2, 3, 4, 5, and 5+ days. It breaks the report structure for UNE and Design orders down into groupings of 0-4, 5-9, 10-14, 15-19, 20-24, 25-29 and 30+ days.

P-7 – Coordinated Customer Conversion Interval

P-7 measures the average time it takes BellSouth to disconnect an Unbundled Loop from the BellSouth switch and cross-connect it to the CLEC's collocated equipment. This measure applies to service orders with number portability for which the CLEC has requested that BellSouth provide a coordinated cutover. The SQM Plan lists the following exclusions for the P-7 measure:

- Orders cancelled by the CLEC
- CLEC-caused delays following disconnect of the Unbundled Loop
- Unbundled loops for which there is no existing subscriber and loops for which the CLEC did not request a coordinated cutover.

The SQM Plan provides the following formula for the calculation of the P-7 measurement results:

Coordinated Customer Conversion Interval = (a-b)
a = Completion date and time for cross connection of a coordinated unbundled loop
b = Disconnection date and time of a coordinated unbundled loop

Percent coordinated customer conversions (for each interval) = (c/d) x 100
c = Total number of coordinated customer conversions for each interval
d = Total number of unbundled loops with coordinated conversions (items) for the report period

BellSouth includes in its calculation of the P-7 measure all coordinated hot cut orders completed in the reporting month. For service orders with LNP, BellSouth defines the interval as the total time for the cutover including the translation time required to place the line back in service on the ported line. BellSouth calculates the average per-item interval for each service order by dividing the entire cutover time for the service order by the number of items (*i.e.,* customer lines) associated with the service order.

Under the report disaggregations for the P-7 measure, the SQM lists UNE-L with interim number portability (INP) and UNE-L with LNP. In Florida, however, BellSouth transitioned the last switch to handle the LNP process in March 2000. As such, CLECs could not order INP in Florida for the months that were the focus of this audit.[258] The benchmark for P-7 is 95 percent of the coordinated hot cuts completed within 15 minutes.[259]

In its P-7 results, BellSouth reports the total number of hot cut lines that fell into the 0-15 minute provisioning window and the number that exceeded 15 minutes. For reporting purposes, BellSouth further disaggregates the 0-15 minute provisioning window into coordinated hot cuts lines that were cutover between zero and 5 minutes and coordinated hot cuts lines that were cutover between six and 15 minutes. The report also provides the overall average cutover time for all coordinated hot cuts completed during the report period.

P-7C – Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order

P-7C measures the quality and accuracy of BellSouth's hot cut activities on coordinated and non-coordinated conversions. The SQM Plan documentation for P-7C indicates that this measure only applies to coordinated customer conversions (CCCs); however, P-7C measures both coordinated and non-coordinated hot cut orders.[260]

The SQM Plan lists the following exclusions for the P-7C measure:

- Any order cancelled by the CLEC
- Troubles closed out to Customer Provided Equipment (CPE) problems
- Test orders.

The SQM Plan provides the following formula for the calculation of the P-7C measurement results:

Percent provisioning troubles within 7 days of service order completion = (a/b) x 100.
a = the sum of all CCC circuits with a trouble within 7 days following service order(s) completion
b = the total number of CCC service order circuits completed in the previous report calendar month[261]

BellSouth includes all service orders completed in the previous calendar month, to allow for inclusion of orders that were provisioned in one month but had a trouble report within the seven-day window that occurred in the following month. As such, BellSouth reported service orders

[258] Response to Data Request #6.
[259] BellSouth measures this interval from the time it disconnects the customer's loop from the BellSouth switch to the time BellSouth reconnects the loop to the CLEC's collocated equipment.
[260] This discrepancy in the P-7C SQM documentation is identified in Finding 39.
[261] The reference to coordinated customer conversions "CCC" in the formula is part of the P-7C documentation issue. Liberty addressed this issue in more detail in the Findings and Recommendations section.

that completed in October 2003 in the November 2003 P-7C results and orders completed in November 2003 in the December 2003 P-7C results.[262]

BellSouth disaggregates its P-7C results into i) design (SL2) loops dispatch, ii) design (SL2) loops non-dispatch, iii) non-design (SL1) loops dispatch, and iv) non-design (SL1) loops non-dispatch. The benchmark for P-7C is a trouble report rate of less than or equal to 3 percent within seven days of the hot cut completion.

P-9 – Percent Provisioning Troubles within 30 Days of Service Order (SO) Completion

P-9 measures the quality and accuracy of BellSouth's service order activities. The SQM Plan lists the following exclusions for the P-9 measure:

- Cancelled service orders
- Order activities of BellSouth or the CLEC associated with internal or administrative use of local services (*e.g.*, record orders, listing orders, test orders, etc.)
- D and F orders
- Trouble reports closed out to CPE.

The SQM Plan provides the following formula for the calculation of the P-9 results:

Percent provisioning troubles within 30 days of SO activity = (a/b) x 100
a = Trouble reports on all completed orders within 30 days following SO completion
b = All service orders completed in the previous report calendar month

BellSouth includes all service orders completed in the previous reporting month in its P-9 calculations. This gives BellSouth time to identify orders provisioned in one month with a trouble report occurring within the 30-day window, but in the following month. As such, BellSouth reported service orders completed in October 2003 in the November 2003 P-9 results and orders completed in November 2003 in the December 2003 P-9 results.[263] As was the case with the P-3 and P-4 measures, BellSouth defines a completed order as an order that was completed in the prior month with a suffix code of [redacted] indicating that the order is in final completion status and ready for bill completion.

When calculating its P-9 results, BellSouth uses only the first trouble report received after a service order completion. Subsequent trouble reports are reported in the M&R-4 measure (Percent Repeat Troubles).

[262] Interview #14, November 23, 2004.
[263] Interview #14, November 23, 2004.

BellSouth disaggregates P-9 into 28 unique CLEC product groups, each with a parity standard of the associated analog retail product.[264] These retail products are not mutually exclusive and often serve as the performance analog for multiple CLEC products. As was the case for the P-3 and P-4 measures, a single retail service order can be counted toward numerous SQM and SEEM sub-measures based on BellSouth's product mapping rules.[265] BellSouth further disaggregates the CLEC product groups by i) the number of lines associated with the order and ii) whether the order required a dispatch to be provisioned. Generally, the retail analog products follow the same dispatch convention as the CLEC product to which they are compared (*i.e.,* resale business dispatch orders are compared to retail business dispatch orders and resale business non-dispatch orders are compared to retail business non-dispatch orders). However, the SQM Plan product disaggregation rules state that for some of the CLEC products, the comparable retail analog is dispatch-only orders regardless of whether the CLEC order required a dispatch.

* * *

As part of its audit of BellSouth's procedures for processing the in-scope provisioning performance measures, Liberty obtained an overview of the business processes and systems that generate the data used for the measures. Liberty sought to determine whether key data field definitions were consistent with the SQM Plan and to assess whether BellSouth correctly applied logic to derive values from the source data to be included in the measure. Liberty also examined whether BellSouth correctly applied any exclusions specified in the SQM Plan. Liberty examined the validity of the provisioning data as it moved through the PMAP system. To check the reliability of reported results, Liberty recalculated CLEC aggregate, CLEC-specific, and retail results for selected sub-measures.

Liberty found that BellSouth generally produced accurate results for the in-scope provisioning performance measures. However, Liberty did find a number of data integrity problems that had an effect on the accuracy of both BellSouth's reported SQM results and on BellSouth's SEEM calculation to determine remedy payments. Liberty describes these matters in the Findings and Recommendations section of this report. Liberty successfully replicated the results for all five measures for the November and December 2003 data months.

2. Analysis and Evaluation

a. Background

All of BellSouth's ordering systems ultimately feed into SOCS. SOCS collects, stores, and distributes service orders to all user departments, including service order driven mechanized systems.[266] All service orders processed by SOCS conform to the BellSouth order format, which

[264] BellSouth reports the UNE Universal Digital Channel/ISDN Digital Subscriber Line (UDC/IDSL) product with the UNE ISDN results for P-9; however, for the P-3 and P-4 measures, BellSouth reports these products as separate disaggregations.
[265] Response to Data Response #244.
[266] Documentation provided as part of Interview #8, November 11, 2004.

is designed to be compatible with Universal Service Order procedures.[267] The order format requires compatibility because of the various billing, directory, and facility related mechanized systems that use the service order. The service orders that provide the data to SOCS establish, disconnect, or change the customer's service, provide telephone directory information, and maintain billing records. Service orders are generally initiated by one of the following methods:

- A retail customer contacts BellSouth and places an order with a BellSouth service representative
- A carrier initiates an order on the customer's behalf
- BellSouth initiates an order on the customer's behalf
- A reseller initiates an order on the customer's behalf. [268]

The service order information contained in SOCS provides source data for all of the in-scope provisioning measures. For the P-3, P-4, and P-9 measures, BellSouth uses SOCS as the only source system for provisioning data. For the P-7 and P-7C measures, BellSouth obtains source provisioning data from its Coordinated Cuts Scheduling System (CCSS), as well as SOCS. BellSouth uses CCSS to schedule and track its hot cut activity. Additionally, for the calculation of the P-7C and P-9 measures, BellSouth obtains source trouble report data from its LMOS and WFA systems.[269] BellSouth uses RADS to pull data from each of these source systems and then BellSouth's downstream SQM and SEEM systems and processes use these data to calculate the monthly SQM results and SEEM penalty payments as described in Section I C of this report. Liberty used the data found in these downstream SQM and SEEM systems to perform the data integrity and replication portions of its audit as described in the following sections.

b. Data Validation

Liberty's objective for the data validation portion of this audit was to ensure the completeness and accuracy of the data BellSouth uses to generate the SQM/SRS and PARIS reports and to calculate remedy payments for the in-scope provisioning measures.

The following lists some of Liberty's specific goals in the provisioning data validation task area:

- Determine whether data field values are accurate and remain the same as they flow from RADS through to SQM and remedy payment calculations
- Determine whether data collection is sufficiently comprehensive, and whether the appropriate data are ultimately input to the performance measurement and remedy payment calculations
- Determine whether BellSouth performs data manipulations or calculations appropriately and accurately

[267] From BellSouth's SOCS User Guide, Section 8, page 1 provided in response to Data Request #151. Universal Service Order procedures are processes that conform to the use of industry standard Universal Service Order Codes for the ordering and provisioning of telecommunications services.
[268] Response to Data Request #151.
[269] Interview #14, November 23, 2004 and response to Data Request #74.

- Determine whether key characteristics of the provisioning transactions (such as product type, dispatch/non-dispatch, design/non-design, and line counts) are accurately captured or derived
- Determine whether BellSouth accurately applied exclusions, and whether data excluded from results are readily identifiable
- Determine whether BellSouth correctly calculated values that use lookup tables such as interval calculations
- Determine that BellSouth correctly assigns CLEC and BellSouth transactions to the appropriate cells for parity sub-measures.

Liberty's data validation efforts began with RADS. As described above in Section I C, because the RADS database is too dynamic to be used for measurement purposes, BellSouth takes a monthly "snapshot" of each RADS table to create a stable base of data for measurement calculations. BellSouth creates this snapshot using a combination of dates that will provide the data required to perform the results calculations for the current reporting period. BellSouth then moves the snapshot of RADS data into SNAPRADS. BellSouth uses data from the SNAPRADS tables to create the various fact tables in the Data Warehouse which it will, in turn, use to calculate the SQM and SEEM results.[270] For the in-scope provisioning measures, BellSouth does not apply any of the business rules or exclusions prior to taking the snapshots to create the SNAPRADS tables.[271]

Liberty reviewed the RADS snapshot criteria spreadsheet provided by BellSouth for the in-scope provisioning measures.[272] Using this spreadsheet, Liberty determined that the logic BellSouth uses for selecting RADS records for the monthly snapshot captures all the relevant data needed to calculate the provisioning measures for the current reporting month. To create the SNAPRADS SOCS table, which BellSouth uses to provide the data needed to calculate the results for all five of the in-scope provisioning measures, BellSouth takes the RADS snapshot on the third day of the month following the reporting month (*e.g.,* takes the November SOCS snapshot on December 3). BellSouth then selects records for the SOCS snapshot based on the following criteria: i) all orders with a completed status that have a time stamp greater than or equal to the first day of the reporting month and ii) all orders with a status other than completed (*e.g.,* pending, cancelled) that have a time stamp greater than or equal to the first day of the previous month. BellSouth pulls more than two months of data into the SNAPRADS SOCS table, from the first day of the month prior to the reporting month through to the second day of the subsequent month.

To create the SNAPRADS [redacted] table, which BellSouth uses with the SOCS table in the calculation of the P-7 and P-7C measures, BellSouth takes a snapshot of the entire [redacted] table in RADS. BellSouth takes this snapshot on the third day of the month following the report month. The SNAPRADS [redacted] table, a historical table, contains five years of hot cuts data. When selecting SNAPRADS records to bring into the fact tables in the Data Warehouse, BellSouth excludes records that were snapped but do not have a completion date in the reporting month.

[270] Interview #1, October 5, 2004.
[271] Response to Data Request #39.
[272] Response to Data Request #42.

For example, a service order completed on December 1, 2003, captured for the November 2003 data month during the December 3rd snapshot, was not included in the November results. BellSouth snapped this same service order record again on January 3' 2004, however, and counted it toward the December 2003 SQM and SEEM results.

SNAPRADS to Data Warehouse (P-3, P-4 and P-9 Measures)

In the first phase of its data integrity review, Liberty selected a random sample of 150 retail transactions and 150 wholesale transactions from the November and December 2003 SNAPRADS SOCS files. Liberty selected this sample from data files supplied by BellSouth that contained all of the service order numbers appearing on the SNAPRADS SOCS tables for these two data months.[273] BellSouth provided Liberty with four files of service order numbers from the SNAPRADS SOCS tables. Two of the files contained a complete list of all the service order numbers that appeared in the SOCS tables in November and December 2003, one file for each of the two months reviewed. The other two files contained only the subset of these service order numbers associated with a CLEC provisioning activity, one file with November data and the other with December data. Based on these files, Liberty created files with only retail orders for the same two months.

These SNAPRADS SOCS files contained service order data for all nine of the BellSouth states. To identify Florida orders for its data integrity sample, Liberty selected only those service orders that contained a [redacted] in the [redacted] of the service order number. BellSouth refers to the [redacted] of the service order as the [redacted] codes of [redacted] represent all of the possible [redacted] codes used to identify Florida service orders.[274] Additionally, to ensure that the sample would not contain orders that were globally excluded from the provisioning measures, Liberty only sampled orders that did not contain a [redacted] as the [redacted] of the service order. The first character of the service order number describes the order type [redacted].[275] Orders with a [redacted] or [redacted] in the [redacted] of the service order number represent Disconnect and From activity, which are valid exclusions from the calculation of the provisioning measures. In addition, since BellSouth has a global exclusion of all record change orders that contain an [redacted] in the [redacted] of the service order number, Liberty also excluded such orders from its sample.

Once Liberty manipulated the raw data files to identify only Florida orders and remove the global exclusions, Liberty combined the November and December 2003 service order files so that the population of orders used by the random selection process would include service orders from each of those two audit months. Liberty then pulled a random sample of 150 CLEC-specific service orders and 150 retail-specific service orders from these combined files. Liberty also took a second sample of 150 retail and 150 wholesale orders that were considered global exclusions [redacted] Liberty used this second sample to verify that these order types were not being included by BellSouth in the calculation of the SQM and SEEM results.

[273] Response to Data Request #333.
[274] Response to Data Request #325.
[275] Response to Data Request #325.

Liberty designed this sample process so that it would include orders in the sample population that contained a wider range of dates than the orders that should be included in the reporting month (*e.g.,* orders that were completed on January 2, 2004, and that were snapped on January 3, 2004, for the December 2003 report month). By doing so, Liberty could determine whether BellSouth properly excluded these orders from its results calculations. Liberty also designed this sample process to include orders that would be subjected to other, non-global exclusions defined in the SQM Plan (*e.g.,* cancelled service orders) so that Liberty could evaluate whether BellSouth applied these exclusions correctly.

Liberty tracked each the sampled service order from November and December 2003 SNAPRADS files into the Data Warehouse. Liberty first determined whether each of the orders could be found on the proper [redacted] in the Data Warehouse for the reporting month of the service order. Of the sample of 150 CLEC service orders examined, Liberty could not locate ten on the [redacted] Of the 150 retail orders in Liberty's sample, Liberty could not find 28 on the [redacted] for the reporting month.

Liberty investigated each of the ten CLEC and 28 retail service orders to determine why they did not appear on the [redacted] and why BellSouth excluded them from the measure calculations. Liberty found that BellSouth excluded all 38 of these orders because they either contained an error code or appeared in the RADS snapshot but not within the report month. Five of the 40 orders fell into the latter category, and thus BellSouth properly excluded these from the calculation of the results for the report month because their completion dates were in the following month (*e.g.,* BellSouth properly excluded orders completed on January 2, 2004, from the December [redacted]. BellSouth excluded the remaining 33 orders because the orders encountered various errors during the processing of the order for measurement calculation. BellSouth explained that it excludes any order that encounters an error of any type during the processing of the order for SQM and SEEM reporting from the measure calculations.[276] These orders are found on the provisioning [redacted] table. For each order containing an error code, Liberty verified that the order met the criteria specified by the error code description and had the correct error code per BellSouth's documentation.[277] The following table provides a breakdown of the error codes that Liberty found on these 33 orders.

Number of Service Orders With Error Code	Type of Service Order	Error Code	Error Code Description[278]
2	Retail	[redacted]	[redacted]
2	1 Retail 1 Wholesale	[redacted]	[redacted]
1	Retail	[redacted]	[redacted]
1	Retail	[redacted]	[redacted]
5	2 Retail 3 Wholesale	[redacted]	[redacted]

[276] Response to Data Request #54.
[277] Response to Data Request #139.
[278] Response to Data Request #139.

12	Retail	[redacted]	[redacted]
3	Wholesale	[redacted]	[redacted]
4	Retail	[redacted]	[redacted]
3	2 Retail 1 Wholesale	[redacted]	[redacted]

When creating the [redacted] Table from the SOCS SNAPRADS file, BellSouth populates three membership map fields on the table. BellSouth uses these membership maps to determine inclusion of service order transactions in the SQM and SEEM results calculations.[279] Each position in the [redacted] character membership maps has a specific identity which indicates the state and the measure for which that record is to be used.[280] Using the Measure Candidate Position lookup tables provided by BellSouth, Liberty determined the appropriate position on each of the three Data Warehouse membership mapping fields for the Florida SQM and SEEM calculations of the P-3, P-4, and P-9 measures.[281] For the P-3 and P-9 measures, which are both proportional measures, BellSouth uses positions [redacted] of the proportion membership map field respectively to identify transactions eligible for the Florida SQM results; BellSouth uses positions [redacted] to determine eligibility for the P-3 and P-9 SEEM results. Orders included in the denominator of the results calculation contain a [redacted] orders included in both the numerator and denominator contain a [redacted] and orders excluded from the measure calculation contain a [redacted] in these positions on the proportion membership map. For the P-4 measure, which has both a mean and a benchmark standard, BellSouth populates both the mean and the benchmark membership maps on the [redacted] Table.[282] According to the [redacted], a [redacted] in position [redacted] of the mean membership map field indicates inclusion in the Florida SQM calculations and a [redacted] in position 15 indicates inclusion in the SEEM calculation. BellSouth uses positions [redacted] of the benchmark membership map field for SQM and SEEM respectively.[283] As with the P-3 and P-9 measures, BellSouth uses a [redacted] in these positions on the membership maps to represent a transaction that it should exclude from the measure calculations.

Liberty examined the 262 sampled retail and wholesale service orders on the Data Warehouse [redacted] to determine whether BellSouth correctly membership mapped them for inclusion (or exclusion) in the SQM and SEEM calculations. To determine the accuracy of the membership mapping of these transactions for the P-3 measures, Liberty compared the service order completion date with the committed due date on each transaction. When BellSouth met the committed due date, Liberty verified that the transaction contained a [redacted] on the proportion membership map to indicate inclusion in the denominator of the measurement calculation. When the service order completion date exceeded the committed due date, Liberty

[279] [redacted] contains a membership map field for the benchmark measures, another for the mean measures, and a third for the proportion measures.
[280] Interview #1, October 5, 2004.
[281] Responses to Data Requests #66 and #78.
[282] UNE xDSL, UNE Line Splitting, and UNE Line Sharing have a benchmark standard for the P-4 measure. All other products have a standard of parity with retail.
[283] Even though it populates both the mean and benchmark membership maps for the P-4 measure, BellSouth only focuses on the benchmark membership map to determine how the service order transactions are to be treated. Interview # 21, January 4-7 and January 11 -13, 2005.

verified that BellSouth had populated the membership map with a [redacted] to indicate inclusion in both the numerator and denominator. For service orders excluded from the measurement calculation, Liberty examined the service order transaction to determine whether BellSouth applied the exclusion appropriately per the SQM Plan (*e.g.,* end-user miss, orders cancelled prior to the due date). Liberty identified the cause of a missed appointment (*i.e.,* end-user miss or BellSouth miss) by using BellSouth's missed appointment codes.[284] Liberty also validated that BellSouth was not excluding orders cancelled after the due date from the P-3 results calculation.

When validating the membership mapping for the P-4 measure calculation, Liberty examined each transaction on the [redacted] to ensure that BellSouth marked it with a [redacted] on the benchmark and mean membership maps to indicate that the transaction's completion interval would be included in the results calculation. In cases where Liberty found a [redacted] in the membership map position, Liberty validated that BellSouth properly excluded the order per the SQM Plan (*e.g.,* cancelled service orders, or orders containing an [redacted] appointment code indicating that the customer requested a date later than the offered interval).[285]

To validate the membership mapping for the P-9 measure, Liberty investigated each telephone number or circuit ID number associated with the sampled service order transactions to determine whether there was a trouble ticket issued on the line within 30 days of the service order completion date.[286] Liberty accomplished this by looking for a trouble ticket in the Data Warehouse [redacted] for the same month that the service order was completed or in the month that followed the service order completion date.[287] In other words, for a service order that was completed in December 2003, Liberty looked for a trouble report in both the December 2003 and January 2004 [redacted] Tables. In cases in which no trouble report was found, Liberty verified that the proportion membership map was marked with a [redacted] in the appropriate field position indicating that the order should be included in the denominator of the results calculation. When Liberty identified a trouble report on the line associated with the service order, it would examine the service order completion date and the trouble ticket origination date. If the date exceeded 30 days, Liberty verified that BellSouth membership mapped the transaction with a [redacted] for inclusion in the denominator only. When the service order completion date and the trouble report origination date were within 30 days, Liberty verified that the P-9 membership mapping for the transaction was a [redacted] indicating that the transaction had a trouble report within 30 days and should be included in both the numerator and denominator of the measurement calculation. When Liberty found a trouble report within 30 days of the service order completion date that BellSouth had excluded from the P-9 measure calculation, Liberty validated that the BellSouth cleared the trouble report with a disposition code indicating that the trouble was caused by the CPE based on the disposition code definitions supplied by BellSouth.[288]

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[284] Response to Data Request #239.

[285] Of the sampled service orders, Liberty found that BellSouth excluded 37 wholesale and nine retail orders from the P-4 metric calculation because the order contained an [redacted] appointment code.

[286] BellSouth identifies resale and UNE-P lines by the customer's telephone number and UNE-Loop lines by the circuit ID number.

[287] BellSouth uses the [redacted] for the calculation of the maintenance and repair domain measures. It also uses it in the calculation of the P-9 and P-7C measures to determine whether there was a trouble report on a line associated with a recent service order activity.

[288] Response to Data Request #96.

Liberty then verified that BellSouth correctly populated the key data fields used to calculate the SQM and SEEM results in the [redacted] based on the source data found in SNAPRADS. BellSouth takes some of these data directly from a comparable data field in SNAPRADS; however, it derives other fact table data fields from the data contained in SNAPRADS. In addition to the SNAPRADS data, BellSouth uses look-up tables found in the Data Warehouse to derive some of the data fields found on the fact table. The [redacted] Table data that Liberty validated include:

- Order application date
- Order completion date
- Committed due date
- Missed appointment codes
- Line counts derived by using the SOCS SWO or SPO fields[289]
- Product ID derived from BellSouth's Product Derivation Rules,[290] USOC Guide found on the BellSouth web site,[291] and its product look-up table[292]
- Service order status (*e.g.,* completed order, pending order, cancelled order, etc.)
- Company key derived using the SOCS "MAN", "IRESH", and "RESH" fields to obtain OCN/ACNA[293] information and the company look-up table supplied by BellSouth[294]
- Order design code (which designates whether the order involved a designed or non-designed service) derived from SOCS data in conjunction with BellSouth SOCS Derivation Rule NG-DERI-SOCS 0020[295]
- Dispatch type derived from SOCS data and BellSouth SOCS Derivation Rule NG-DERI-SOCS 0030[296]
- Wire center key derived from the SOCS Wire Center NPA-NXX and the Wire Center Look-up Table provided by BellSouth[297]
- Last cancelled date[298]
- First order final completion (CPX)[299] date[300]
- State code derived from the SOCS NPA-NXX fields and the NPA-NXX Look-up Table.[301]

[289] Response to Data Request #245.
[290] Response to Data Request #35.
[291] Liberty used BellSouth's intranet web site for USOC information (http://orbit.bst.bls.com/usoc/book.html) while on BellSouth's premises. When working remotely, Liberty accessed BellSouth's USOC Guide on its internet site http://interconnection.bellsouth.com under "Guide" and "Products and Services."
[292] Response to Data Request #139.
[293] Operating Company Number/Access Customer Name Abbreviation
[294] Responses to Data Requests #139 and #327.
[295] Response to Data Request #69.
[296] Response to Data Request #69.
[297] Response to Data Request #139.
[298] Liberty validated this data field using the SOCS History File.
[299] CPX designates a completed order with the X suffix.
[300] Liberty validated this data field using the SOCS History File.
[301] Response to Data Request #139.

Based on the SNAPRADS to Warehouse data validation efforts described above, Liberty discovered the following findings related to the P-3, P-4 and P-9 measures. The Findings and Recommendations section describes each in more detail.

- BellSouth misclassified certain orders with a "PR-17" (cancelled order) error code thereby incorrectly excluding these orders from the calculation of the P-3 results.
- BellSouth reported the results for the P-3 measure incorrectly because it included end-user misses in the denominator of the results calculation rather than exclude these orders per the SQM Plan.
- BellSouth did not include disconnect service orders associated with Standalone LNP activity in the measure calculation for P-4.
- BellSouth incorrectly included certain record change orders in the calculation of the P-3, P-4, and P-9 measure results.
- For the P-3 measure BellSouth included certain cancelled orders in both the numerator and denominator of the SQM results calculation, but included the same orders only in the denominator of the SEEM results.

Data Warehouse Sample (P-3, P-4 and P-9 Measures)

The next phase of Liberty's data validation review focused on the sub-measures identified in Appendix A of this report.[302] Liberty selected a sample of service orders for each of the sub-measures from the November and December Data Warehouse [redacted]. Liberty selected the sample from the Data Warehouse because all of the information that Liberty needed to select specific orders at a sub-measure level resides on the [redacted]. This information includes data such as dispatch type, design code, company code, and line counts. Liberty used the orders selected from the Data Warehouse to trace the data forward into the various DM Tables, where BellSouth calculates the SQM results, and into the PARIS [redacted] where BellSouth calculates the SEEM remedy payments. Liberty also used the Data Warehouse service orders to trace the orders backwards into the [redacted] in SNAPRADS to ensure that all of the critical data fields were carried over correctly from SNAPRADS into the Data Warehouse [redacted]

Liberty selected eight wholesale service orders for each Appendix A sub-measure, four each from the November and December 2003 [redacted] tables. Similarly, Liberty also selected eight retail service orders for each retail analog of the Appendix A sub-measures. These were also divided equally between the November and December 2003 [redacted] tables.[303] As with the SNAPRADS sample described above, Liberty specified Florida only orders by removing all orders from the sample population that did not contain an [redacted] in the [redacted] of the service order number. Additionally, to ensure that the sample population would include only orders that involved an inward provisioning activity, Liberty removed all orders from the population that did not contain a [redacted] for new, [redacted] for

[302] See "Work Plan for the Audit of BellSouth's Performance Assessment Plan for Florida," November 16, 2004.
[303] In some cases, Liberty was not able to meet these targets, because some products did not have sufficient volumes during November and December 2003.

change, or [redacted] for to in the first character (the action code) of the service order number.[304] Liberty selected the sub-measure specific service orders by screening the sample population based on the following key [redacted] data fields:

- [redacted] Identifies retail vs. wholesale orders
- [redacted] Identifies the specific product being ordered[305]
- [redacted] Identifies orders that provisioned less than ten lines and orders that provisioned ten or more lines
- [redacted] Identifies whether order required dispatch (*i.e.,* dispatch-out, non-dispatch, switch based, non-dispatch, dispatch-in order).

Liberty used this sample of service orders to validate the data transmitted from the Data Warehouse to each of the measure specific DM tables and into the PARIS [redacted][306] To conduct the data mart validations, Liberty checked the membership mapping of the transaction for each of the three measures. Based on the value found on the membership map, Liberty reviewed each of the DM tables supplied by BellSouth and verified that it treated appropriately the transaction for the measure calculation.[307] For example, if a transaction contained a [redacted] in position [redacted] of the proportion membership map field, Liberty verified that BellSouth included the transaction in both the numerator and denominator of the P-3 measure calculation on the PMIA DM table; however, if a transaction contained a [redacted] in this position, Liberty verified that BellSouth only included it in the denominator. To ensure that BellSouth applied exclusions appropriately per the SQM Plan, Liberty also reviewed all transactions marked with a [redacted] on the membership map for a specific measure, which indicates that the transaction should be excluded from the calculation of that measure's results. For each transaction reviewed, Liberty verified the integrity of the key data fields transferred from the Data Warehouse into the DM tables. The data fields reviewed for accuracy include:

- [redacted] – all [redacted] DM tables
- [redacted] - all [redacted] DM tables
- [redacted] - all [redacted] DM tables
- [redacted] - all [redacted] DM tables
- [redacted] - all [redacted] DM tables
- [redacted] - all [redacted] DM tables
- Service Order Completion Count - all [redacted] DM tables
- [redacted] – [redacted] DM table only[308]

[304] Response to Data Request #325. Because one of the primary objectives of this portion of the data integrity audit was to test the accuracy of the data flow into the data mart and PARIS, Liberty did not want to include orders in the sample population that it knew would be excluded from the metric calculation such as record changes.
[305] Liberty used the Data Warehouse [redacted] provided by BellSouth in response to Data Request #139 to identify the product ID for each product found on the Appendix A sub-measure list.
[306] Each of these three measures has its own table in the data mart, which BellSouth uses to calculate the SQM results for the measure.
[307] Response to Data Request #23.
[308] The [redacted] field located on the [redacted] is used for the calculation of the P-4 measure. It is a derived value in the data mart based on data found on the [redacted] Table and on look-up tables found in the Data Warehouse. To validate the accuracy of this value in the data mart, Liberty manually calculated the

- [redacted] – [redacted] DM table only
- [redacted] – [redacted] DM table only
- Service Order Complete [redacted] - [redacted] DM table only
- Service Order Complete [redacted] - [redacted] DM table only
- [redacted] – [redacted] DM table only.

During its PARIS data validations, Liberty tracked the same sample orders into the PARIS [redacted] Tables to verify the integrity of the data as it moved from the Data Warehouse into PARIS. Liberty also verified many of the same key data fields as shown above for the data mart. Additionally, because a single retail order can be the performance analog for numerous wholesale products, Liberty verified that each retail transaction aligned appropriately with all of the wholesale products based on the SEEM disaggregations reflected in the SQM Plan and the *P-3, P-4 and P-9 Product Comparison Spreadsheet* supplied by BellSouth.[309]

Liberty also used the sample of the orders taken from the Data Warehouse [redacted] Table to validate the data integrity going backwards to the SOCS table in SNAPRADS using the sample-specific SOCS data supplied by BellSouth.[310] To conduct this portion of the analysis, Liberty followed the same process previously described in the "SNAPRADS to Data Warehouse" section performing all of the same validations of the key data fields listed there.

As a result of its Data Warehouse sample data validation efforts, Liberty identified the following findings related to the P-3, P-4, and P-9 measures. The Findings and Recommendations section describes each in more detail.

- BellSouth incorrectly included deny and restore record change orders in the calculation of the P-3, P-4, and P-9 measure results.
- During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded transactions from the retail analog of the resale Integrated Services Digital Network (ISDN) product for the P-3, P-4, and P-9 measures.
- The logic used by BellSouth to determine dispatch type misclassified some UNE loop orders when calculating the P-3, P-4, and P-9 measures.
- BellSouth did not include certain wholesale products in its calculation of the SEEM remedy payments for the P-9 measures.
- The SQM and SEEM levels of disaggregation as documented in BellSouth's SQM Plan were inaccurate and misleading for the UNE Loop and Port product (UNE-P) for the P-3, P-4, and P-9 measures.
- BellSouth incorrectly classified UNE Line Splitting orders as UNE-P orders when calculating its results for the P-3, P-4, and P-9 measures.

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duration by subtracting the order application date from the order completion date. Liberty then determined the duration based on calendar days taking into account holidays and weekends, and validated that the manual result that it arrived at agreed with the service order duration reflected in the [redacted] table.

[309] Responses to Data Requests #240 and #287.

[310] Response to Data Request #353.

- BellSouth did not include all orders for Local Interconnection Trunks in its calculation of the SEEM remedy payments for the P-3, P-4, and P-9 measures.
- BellSouth did not calculate service order durations for the P-4 measure in conformance with the SQM Plan.

P-7 and P-7C Measures

As with the P-3, P-4, and P-9 measures, Liberty selected a random sample of 150 transactions from the SNAPRADS [redacted] table supplied by BellSouth for its P-7 and P-7C data validation.[311] Because these two measures have a benchmark standard, Liberty did not need an equivalent sample of retail service.[312] Liberty selected the 150 sampled service orders by only including service orders that had a [redacted] in the [redacted] of the [redacted] field in the sample population. The [redacted] field serves the same purpose as the service order number field in [redacted] and the [redacted] of this field is the [redacted] character.[313] [redacted] codes of [redacted] represent all of the possible sites codes used to identify Florida service orders.[314]

BellSouth's SNAPRADS [redacted] table, contains five years of service order data.[315] To include service orders for November and December 2003 only in the sample population, Liberty screened out from the sample population all orders that did not have a committed due date in one of those months. Finally, because the [redacted] table also contains service order data on new orders for unbundled xDSL loops and unbundled copper loops (UCL), Liberty included only those orders that had a work type ID of [redacted] in the sample population.[316] These work type IDs apply only to service orders that were associated with coordinated or non-coordinated hot cuts.[317]

After completing this filtering process, Liberty pulled a random sample of 150 service orders to use in the SNAPRADS to Data Warehouse data integrity portion of the audit for the P-7 and P-7C measures. Liberty discovered that BellSouth had excluded slightly more than half (77) of the 150 sample orders from the measure calculation as a result of an LU01 error code.[318] Given the large percentage of orders from the sample that fell into this category, Liberty drew another random sample of 150 orders that did not have an LU01 error code. The Findings and Recommendations section describes this issue in more detail.

Liberty tracked each of its sample orders from SNAPRADS into the Data Warehouse.[319] Liberty first determined whether each of the orders was in the [redacted] and the [redacted]

[311] Response to Data Request #333.
[312] A retail sample is not possible because all hot cut orders are initiated by a CLEC.
[313] Response to Data Request #326.
[314] Response to Data Request #325.
[315] Interview #21, January 4-7 and January 11-13, 2005.
[316] Interview #21, January 4-7 and January 11-13, 2005.
[317] Interview #14, November 23, 2004.
[318] An [redacted] error code indicates that a required table look-up failed. BellSouth provided the Error Look-Up Tables in response to Data Request #139.
[319] Interview #21, January 4-7 and January 11-13, 2005.

Tables in the Data Warehouse for the service order reporting month.[320] Using the [redacted] lookup tables, Liberty determined the appropriate position on each of the [redacted] Tables membership mapping field for the SQM and SEEM calculations of the Florida P-7 and P-7C measures.[321] For the P-7 measure, BellSouth uses positions [redacted] of the benchmark membership map field on the [redacted] Table to identify how the transaction should be treated for Florida SQM and SEEM calculations respectively. BellSouth uses the same two positions [redacted] of the proportion membership map field on the [redacted] Table for the P-7C calculations.

From the sample 150 service orders, Liberty determined that 112 were membership mapped on the [redacted] Tables. Of the missing 38 service orders, Liberty found 25 cancelled orders, five orders with an error code of PR04 (The Status Code Is Not In [redacted] error code, and another five orders missing from the Data Warehouse Fact Tables. Liberty examined the orders that were coded with a [redacted] or a [redacted] error code and verified that BellSouth was correctly applying the error code on these orders. The remaining five orders that were missing from the [redacted] Tables resulted in findings, which the Findings and Recommendations section details.

Liberty validated that the 112 orders that were found on the [redacted] and the [redacted] were properly membership mapped according to the SQM Plan. For the P-7 measure, Liberty validated that all orders involving a coordinated hot cut contained a [redacted] in positions [redacted] of the benchmark membership map field on the [redacted] to indicate that the transaction should be included in the calculation of the SQM and SEEM results. Liberty identified coordinated cutovers by a work type ID of [redacted].[322]

As with the process used for the P-9 measure, Liberty used the [redacted] Table from the Data Warehouse to determine whether there was a trouble report on the any of the lines associated with the hot cut order within seven days of the completion of the order for the P-7C calculations. For service orders completed prior to the last week of the month, Liberty used the same month's [redacted] to perform this validation. However, for service orders completed within seven days of the end of the month, Liberty used both the same and the next month's [redacted] to perform this validation. When a trouble report was issued within seven days of the completion of the hot cut service order on a circuit ID associated with that order, Liberty validated that the transaction contained a [redacted] in positions [redacted] of the proportion membership map field of the [redacted] Table for that circuit ID to indicate that it should be included in both the numerator and denominator of the results calculation.[323] When Liberty found no trouble reports

[320] Interview #21, January 4-7 and January 11-13, 2005. BellSouth uses the [redacted] Table for the calculation of the P-7 measure results and the [redacted] Table for the calculation of P-7C measure results.
[321] Responses to Data Requests #66 and #78.
[322] Interview #14, November 23, 2004.
[323] The [redacted] Table contains a membership map field for each circuit ID involved with a hot cut order. By way of example; if a specific hot cut service order involved a five line hot cut, each line associated with that service order will be listed on the [redacted] Table. Only the circuit that had the trouble report would be membership mapped for inclusion in both the numerator and denominator of the metric calculation. The other four circuits associated with the order would be membership mapped with a [redacted] indicating that they should be

or found trouble reports that were outside the seven-day window, Liberty validated that positions [redacted] of the proportion membership map contained a [redacted] to indicate that the transaction should be included in the denominator only for the P-7C results calculation.

After validating the P-7 and P-7C membership mapping for each of the 112 sample hot cut transactions, Liberty verified that BellSouth correctly populated the key [redacted] Table and [redacted] Table data fields used to calculate the SQM and SEEM results based on the source data from the [redacted] file found in SNAPRADS. BellSouth takes some of the Warehouse fact table data directly from a comparable data field in SNAPRADS, whereas it derives other fact table data fields based on the data contained in SNAPRADS. The [redacted] and [redacted] data fields that Liberty validated include:

[redacted]

Unlike the other in-scope provisioning measures, the P-7 and P-7C measures have very few sub-measures, because these two measures only involve hot cut loops. Therefore, Liberty used the same sample of orders taken from the [redacted] Table in SNAPRADS for its review of data integrity going from SNAPRADS downstream through the Data Warehouse and into the DM tables. BellSouth does not create a record on the [redacted] table in PARIS for the P-7 and P-7C SEEM calculations. Instead, BellSouth performs these calculations in PARIS from data taken directly from the Data Warehouse [redacted] and [redacted] Tables.[328]

included in the denominator of the calculation only. This differs from the P-9 measure in that P-9 results are calculated at a service order level whereas P-7C results are calculated at a circuit level.

[324] Liberty manually calculated the cutover duration based on the cutover completion date/time minus cutover start date/time. Liberty used this manual calculation to validate the duration value populated on the [redacted] Table.

[325] Response to Data Request #245.

[326] Response to Data Request #69.

[327] Liberty manually calculated the service order to ticket receipt duration based on the ticket receipt date minus the cutover completion date. Liberty used this calculation to validate the duration value populated on the [redacted] Table.

[328] Interview #24, January 20, 2005.

Using the sample transactions, Liberty validated the integrity of the data moving from the Warehouse to the DM tables. Liberty reviewed key data fields in each of the two DM tables used to calculate the P-7 and P-7C measures to verify that BellSouth accurately transferred the data from the warehouse to the data mart based on the criteria specified in each measure's respective membership map.[329] The data mart data fields validated by Liberty include:

- [redacted] – found on [redacted] DM tables
- [redacted] - found on [redacted] DM tables
- [redacted] - found on [redacted] DM tables
- [redacted] - found on [redacted] DM tables
- [redacted] - found on [redacted] DM tables
- [redacted] table only
- [redacted] table only
- [redacted] table only
- [redacted] table only.

During its SNAPRADS to Warehouse data validation, Liberty discovered the following findings related to the P-7 and P-7C measures. The Findings and Recommendations section describes each in more detail.

- BellSouth inappropriately excluded non-coordinated hot cuts from the calculation of the measure results for P-7C.
- BellSouth did not include the translation time necessary to place the line back in full service when calculating the measure results for P-7.
- BellSouth incorrectly excluded the majority of the hot cut orders from the calculation of the P-7 and P-7C measures.
- BellSouth incorrectly excluded orders from the calculation of the P-7 and P-7C measures that were properly included in the other in-scope provisioning measures.
- BellSouth included orders with invalid conversion durations in the calculation of the P-7 measure.
- BellSouth overstated the CLEC circuit counts for P-7C by doubling the SL1 (non-Design) loop volume.
- BellSouth neglected to calculate the total impact of multiple errors in determining whether it needed to repost the results for the P-7C measure.
- BellSouth's documentation in the SQM Plan for the P-7C measure is contradictory and misleading.

[329] The [redacted] Table is used in the calculation of the P-7C SQM results and the [redacted] Table is used in the calculation of the P-7 SQM results.

c. SQM/SRS Report Replication

P-3

Liberty's list of measures selected for SQM/SRS report replication included 20 P-3 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the PMIA DM tables provided by BellSouth.[330] To perform these replications Liberty identified all the transactions related to a specific sub-measure by filtering the PMIA DM Table based on key data fields as follows:

- [redacted]: to identify all of the Florida transactions
- [redacted]: to separate retail from CLEC transactions
- [redacted] to identify the specific product associated with each sub-measure [redacted]
- [redacted]: to determine line count associated with the order.

Once Liberty identified the transactions on the November and December 2003 PMIA DM Table that belonged to each of the 20 sub-measures selected to be replicated, Liberty was able to perform the recalculation of BellSouth's reported P-3 SQM CLEC aggregate results. To perform the retail replication for each sub-measure, Liberty counted the number of retail orders that had a BellSouth missed appointment date and the number of retail orders that had an end-user missed appointment date. Liberty then divided each of these two totals by the sum of the total retail transactions associated with that sub-measure to arrive at the percent missed appointments results by BellSouth misses and by end-user misses respectively. To replicate the wholesale results, Liberty followed the same process with each sub-measure specific CLEC orders, instead of the sub-measure specific retail orders.

Liberty also replicated CLEC-specific P-3 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected 19 different CLECs based on the CLEC's order volumes within each of the sub-measures.[331] Each CLEC-specific P-3 result that Liberty calculated for these 19 CLECs matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific P-3 SQM/SRS results for November and December 2003.

P-4

Liberty's list of measures selected for SQM/SRS report replication included 22 P-4 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003 using the OCI DM tables provided by BellSouth.[332] Liberty identified all the

[330] Response to Data Request #23

[331] In addition to order volumes, Liberty attempted to replicate the reported results of various different CLECs rather that continually use the data for the same two or three CLECs. In some cases the same CLECs were also used for the CLEC-specific replications of the other in-scope provisioning measurements.

[332] Response to Data Request #23.

transactions related to a specific sub-measure by filtering the OCI DM Table based on the same key data fields identified on the bullet list shown above for the P-3 measure.

To perform the retail replication for each P-4 sub-measure, Liberty determined the denominator by totaling the retail orders completed within each sub-measure category. To arrive at the numerator, Liberty added all of the service order durations within each sub-measure category. Liberty derived the P-4 average service order duration for each sub-measure by dividing the sum of the service order durations by the total number of service orders within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results using sub-measure specific wholesale orders.

Liberty also replicated the various P-4 time interval report dimensions specified by the SQM Plan by sorting the transactions within each sub-measure by the time interval ID field. BellSouth uses this field to identify the report dimension interval into which a transaction falls. Each possible interval that can be found on the P-4 SQM report has a unique time interval ID value.[333] For example, a resale order that was provisioned on the same day it was received (*i.e.*, a zero day interval) would have a time interval ID value of 12 populated in the time interval field. Another resale transaction that was provisioned in two days would have a value of 68 populated in the field. Liberty referenced the [redacted] Table provided by BellSouth to determine the appropriate time interval ID value for each of the P-4 interval reporting requirements.[334] By sorting on the [redacted] field Liberty was able to successfully replicate the interval specific retail and CLEC aggregate results reported by BellSouth for both November and December 2003.

Liberty also replicated CLEC-specific P-4 results for one CLEC per sub-measure for November and December 2003. To perform this replication, Liberty selected 17 different CLECs based on order volumes within each of the sub-measures. Liberty calculated both the average interval results and the interval specific results. Each CLEC specific P-4 result that Liberty calculated for these 17 CLECs matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific P-4 SQM/SRS results.

P-9

Liberty's list of measures selected for SQM/SRS report replication included 15 P-9 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003 using the PPT DM tables provided by BellSouth.[335] Liberty identified all the transactions related to a specific sub-measure by filtering the PPT DM Table based on the same key data fields identified on the bullet list shown above for the P-3 measure.

[333] Interview #14, November 23, 2004.
[334] Response to Data Request #139.
[335] Response to Data Request #23.

After identifying the transactions on the PPT Table, Liberty recalculated BellSouth's reported P-9 SQM CLEC aggregate results. For retail replication, Liberty obtained the denominator of each sub-measure by totaling the number of the retail orders completed by BellSouth. To obtain the numerator, Liberty totaled the number of service order transactions identified on the PPT DM Table as having a trouble ticket associated with them. Liberty used the same process to calculate the CLEC aggregate results, after replacing the sub-measure specific retail orders with the sub-measure specific wholesale orders.

Liberty also replicated November and December 2003 CLEC-specific P-9 results for one CLEC per sub-measure. Liberty selected 18 different CLECs based on order volumes within each of the sub-measures. Each P-9 CLEC-specific result that Liberty calculated for these 18 CLECs matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific P-9 SQM/SRS results.

P-7

The P-7 measure has only one product sub-measure associated with it, *i.e.*, coordinated conversion hot cut loops.[336] Liberty obtained the data used to replicate the CLEC aggregate results for this measure from the CCCI DM Table provided by BellSouth.[337] Liberty calculated the cutover item count to arrive at the denominator for the average overall interval. Liberty then determined the numerator by totaling the cutover durations for each transaction on the CCCI DM Table. Liberty calculated the average interval by dividing the total durations by the total item count.

In order to replicate each of the various P-7 time interval report dimensions specified by the SQM Plan, Liberty sorted the CCCI DM transactions by time interval ID values. Liberty was then able to successfully replicate each of the required interval reporting dimensions for the November and December 2003 CLEC aggregate results.

Liberty also replicated CLEC-specific P-7 results. Liberty selected five different CLECs based on their coordinated hot cut order volume.

Liberty successfully replicated BellSouth's CLEC aggregate and CLEC-specific P-7 SQM/SRS results.

P-7C

There are only four product sub-measure disaggregations associated with the P-7C measure, i) UNE Loop Design – Dispatch, ii) UNE Loop Design – Non-Dispatch, iii) UNE Loop Non-Design – Dispatch, and iv) UNE Loop Non-Design – Non-Dispatch.

[336] The SQM Plan lists "unbundled loops with INP" as a product sub-measure for the P-7 measure. However, since INP is no longer an available product in Florida (see response to Data Request #6), there were no volumes to replicate for this product.
[337] Response to Data Request #23.

Liberty recalculated the reported CLEC aggregate results for each of these four sub-measures using the PT DM Table.[338] Liberty sorted the transactions on the PT DM table by dispatch type (*i.e.,* dispatch or non-dispatch) and by [redacted]. Liberty used the [redacted] definitions supplied by BellSouth to sort the PT DM transactions by design and by non-design orders.[339] After identifying the transactions associated with each of the four sub-measures, Liberty first calculated the cutover circuit count for each sub-measure to arrive at the denominator. To obtain the numerator, Liberty determined the number of cutover circuits with trouble tickets for each sub-measure.

Liberty also replicated CLEC specific P-7C results. To perform this replication Liberty selected five different CLECs based on hot cut order volumes.

Liberty successfully replicated BellSouth's CLEC aggregate and CLEC specific P-7C SQM/SRS results.

C. Maintenance and Repair Measures

1. Introduction

There are five in-scope maintenance and repair (M&R) measures for this audit: M&R-1, Percent 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, and M&R-5, Out of Service >24 Hours. All five of these measures are Tier 1 and Tier 2 measures in the SEEM Plan.

BellSouth reports the five in-scope M&R measures on a statewide and regional basis for individual and aggregate CLECs, as well as for BellSouth retail. BellSouth reports these measures by dispatched troubles, by non-dispatched troubles, and by all troubles in total. BellSouth reports these measures separately for 20 different product groupings, each with its own retail analog.

The SQM Plan lists three exclusions for the M&R-1 through M&R-5 measures:

- Trouble tickets cancelled at the CLEC request
- BellSouth trouble reports associated with internal or administrative service
- Customer provided equipment (CPE) troubles or CLEC equipment troubles.

BellSouth only includes customer direct troubles in these measures.[340] BellSouth states that its maintenance centers are open 365 days a year to receive trouble reports.[341]

The five in-scope M&R measures are described below.

[338] Response to Data Request #286.
[339] Response to Data Request #287.
[340] Responses to Data Requests #171 and #172.
[341] Response to Data Request #58.

M&R-1 - Missed Repair Appointments

M&R-1 measures the percent of customer-reported troubles that are not cleared by the commitment date and time.

BellSouth's business rules state that the commitment date and time is set when the trouble report is received, and the cleared date and time occurs when BellSouth personnel clear the trouble and close it out.

BellSouth does not include "no access" reports in the measure results.

The SQM Plan provides the following formula for the M&R-1 measure:

Percentage of Missed Repair Appointments = (a/b) x 100
a = Count of Customer Troubles Not Cleared by the Quoted Commitment Date and Time
b = Total Customer Trouble reports closed in Reporting Period

M&R-2 - Customer Trouble Report Rate

M&R-2 measures the customer-reported trouble rate per 100 lines/circuits in service.

The SQM Plan provides the following formula for the M&R-2 measure:

Customer Trouble Report Rate = (a/b) x 100
a = Count of Initial and Repeated Customer Trouble Reports closed in the Current Period
b = Number of Service Access Lines in service at the End of the Report Period

M&R-3 - Maintenance Average Duration

M&R-3 measures the average duration of trouble reports from when BellSouth opens a trouble report to when it closes that report.

The SQM Plan states that the clock starts on the date and time of the receipt of the correct trouble report information, and the clock stops on the date and time that BellSouth restores the service and notifies the customer.

The SQM Plan provides the following formula for the M&R-3 measure:

Maintenance Duration = (a-b)
a = Date and Time of Service Restoration
b = Date and Time Customer Trouble Ticket was Opened

Average Maintenance Duration = (c/d)
c = Total of all maintenance durations in the reporting period
d = Total Closed Customer Troubles in the reporting period

BellSouth stated that the clock for measuring trouble duration stops when the service is restored and the BellSouth or CLEC customer is notified.[342] In some cases, however, service may have been restored, but the CLEC was not immediately notified. When that occurs with non-design services, BellSouth considers the clock to have stopped when the technician attempted to call the customer. In the case of design services, the CLEC and BellSouth must agree on a restoral time.[343]

BellSouth stated that circuits managed through WFA can have more than one trouble ticket open at the same time.[344] In those circumstances, both tickets will be included in M&R-3 if they each meet the appropriate criteria for inclusion.[345]

M&R-4 - Percent Repeat Troubles within 30 Days

M&R-4 measures the percent of troubles that are repeat troubles.

The business rules in the SQM Plan define a repeat trouble as one when there was a prior trouble on the same circuit/line that was cleared during the 30-day period counting back from the receipt date of the closed trouble.

The SQM Plan provides the following formula for the M&R-4 measure:

Percent Repeat Customer Troubles within 30 Days = (a/b) x 100
a = Count of Customer Troubles using the 'received date' where more than one trouble report was logged for the same service line/circuit within a continuous 30 days
b = Count of Total Customer Trouble Reports using the 'cleared date,' in Reporting Period

When searching for repeat troubles, BellSouth's process looks at troubles that closed in the current month and the immediately preceding month. For example, when identifying repeat troubles to be included in the November 2003 measure performance report, BellSouth reviews all troubles that were closed in October 2003 or November 2003.[346] For the month of November 2003, BellSouth performed an analysis to see how many additional repeat troubles it would identify if it searched back for an additional month. It determined that the additional troubles changed the reported M&R-4 measure from 16.32 percent to 16.33 percent.[347] This represents a

[342] Response to Data Request #15.
[343] Response to Data Request #130.
[344] Response to Data Request #72.
[345] Response to Data Request #169.
[346] Response to Data Request #221.
[347] Response to Data Request #221.

change in the measure results of 0.06 percent. BellSouth stated that, beginning with the February 2004 data month, it considers 70 days worth of trouble tickets when identifying repeat troubles.

M&R-5 - Out of Service (OOS) > 24 Hours

M&R-5 measures the percent of out of service troubles (closed during the reporting period) that BellSouth cleared in excess of 24 hours.

The business rules in the SQM Plan state that the clock begins when the customer trouble report is created. BellSouth counts the trouble in the numerator of the measure if the elapsed time on the trouble report exceeds 24 hours.

The SQM Plan provides the following formula for the M&R-5 measure:

Out of Service (OOS) > 24 hours = (a/b) x 100
a = Total Cleared Customer Troubles (OOS) > 24 hours
b = Total OOS Customer Troubles in Reporting Period

* * *

As part of its audit of BellSouth's procedures for processing the M&R-1 through M&R-5 performance measures, Liberty obtained an overview of the business processes and systems that generate the data used for the measure. Liberty sought to determine whether key data field definitions were consistent with the SQM Plan and to assess whether BellSouth correctly applied logic to derive values from the source data and select records to be included in the measure. Liberty also examined whether BellSouth correctly applied any exclusions specified in the SQM Plan. Liberty examined the validity of the M&R data as it moved through the PMAP system. To check the reliability of reported results, Liberty recalculated the CLEC aggregate, CLEC-specific, and BellSouth retail results for each product group.

Liberty found that BellSouth produced generally accurate results for the M&R-1 through M&R-5 measures during November and December 2003. Liberty successfully replicated results for these measures for the November and December 2003 data months. Liberty also found that BellSouth generally followed the SQM Plan by correctly applying exclusions and by properly defining the logic and data fields it used to calculate the denominators and numerators in the results calculations.

2. Analysis and Evaluation

a. Background

BellSouth obtains the data required to calculate the results for the M&R-1 through M&R-5 measures from various BellSouth legacy systems, which include Work Force Administration (WFA) and Loop Maintenance Operations System (LMOS). Although both systems are used to

create and track trouble reports, they administer different products[348] and are governed by different rules. For example, BellSouth considers any service for which it handles troubles using WFA, to be a design service.[349] BellSouth assumes that all troubles handled through the WFA system have a standard 24-hour commitment interval. All other troubles, handled through LMOS, have varying commitment intervals. Additionally, BellSouth considers all trouble tickets issued in WFA to be out of service troubles.[350]

Unlike the case of ordering and provisioning, where BellSouth calculates time durations within PMAP for measures such as O-9 and P-4, BellSouth derives all M&R durations directly and without modification from the source systems, WFA and LMOS.[351] Although it has operations in more than one time zone in Florida, BellSouth stated that it does not need to do any time zone conversions, because both WFA and LMOS have their own time zone algorithms to set the time zone.[352]

BellSouth uses RADS to pull data from its LMOS and WFA systems, and then BellSouth's downstream SQM and SEEM systems and processes use these data to calculate the monthly SQM results and SEEM penalty payments as described in Section I C of this report. Liberty used the data found in these downstream SQM and SEEM systems to perform the data integrity and replication portions of its audit as described in the following sections.

Liberty's data validation efforts began with RADS. Because the RADS database is too dynamic to be used for measurement purposes, BellSouth takes a monthly "snapshot" of each RADS table to create a stable base of data for measurement calculations. BellSouth creates this snapshot using a combination of dates that will provide the data required to perform the results calculations for the current reporting period. BellSouth then moves the snapshot of RADS data into SNAPRADS. BellSouth uses data from the SNAPRADS tables to create the various fact tables in the Data Warehouse which it will, in turn, use to calculate the SQM and SEEM results.[353] For the in-scope M&R measures, BellSouth does not apply any of the business rules or exclusions prior to taking the snapshots to create the SNAPRADS tables.[354] Liberty examined the rules BellSouth uses to create the snapshot files and found them to be reasonable.

The SNAPRADS files containing relevant M&R data are:

- [redacted], which contains CLEC and other troubles administered by the WFA system
- [redacted], which contains retail troubles administered by the WFA system
- [redacted], which contains CLEC, retail, and other lines/circuits for which troubles are administered by the WFA system

[348] Response to Data Request #124.
[349] Response to Data Request #218.
[350] Response to Data Request #131.
[351] This maintenance duration derived from these systems is placed into the "[redacted]" field in the Data [redacted] table.
[352] Response to Data Request #157.
[353] Interview #1, October 5, 2004.
[354] Response to Data Request #39.

- LMOS, which contains all CLEC and retail troubles administered by the Mechanized Trouble Analysis System (MTAS)/LMOS system
- [redacted], which contains CLEC and retail lines administered by LMOS
- [redacted], which contains most of the retail lines administered by LMOS
- [redacted], which contains retail and other lines
- [redacted], which contains CLEC lines
- [redacted], which contains CLEC lines
- [redacted], which contains CLEC and retail lines.

Each record in the files that contain troubles (*i.e.*, [redacted] and LMOS) represents one trouble report. Each record in the [redacted] file represents one circuit/trunk administered by WFA, and each record in the [redacted] file represents one line. However, each record in the other files could represent one or more lines. As such, each of these files contains a field that shows the quantity of lines represented by the record.

Each month, the BellSouth M&R measure calculation process applies business rules to the SNAPRADS files to produce [redacted] stored in the BellSouth Data Warehouse, [redacted] The [redacted] contains trouble ticket data and the [redacted] contains line/circuit information. The [redacted] contains trouble ticket information for troubles closed in the reporting month and the immediately preceding month. BellSouth uses the extra month's data to identify trouble reports which are repeats. The [redacted] table contains line/circuit information obtained at a point in time shortly after the close of the reporting month. During this processing, BellSouth uses look-up tables to obtain certain needed information [redacted]. Liberty reviewed the code BellSouth uses to process the M&R-1 through M&R-5 data in the Data Warehouse.[355] Liberty also reviewed the M&R Requirements Documents for WFA and MTAS (LMOS) for November 2003 and December 2003.[356] These documents describe each measure, the exclusions and exceptions that BellSouth makes, the data that are derived, measurement candidacy determination, and the use of look-up tables [redacted] for both troubles and lines. Liberty also conducted interviews to learn about BellSouth's M&R process.[357]

BellSouth places many, but not all, of the records that are not used in its performance measure calculations from the SNAPRADS tables in an [redacted] table.[358] Liberty requested and reviewed the M&R [redacted] table for November 2003.[359]

The [redacted] table contains data from the SNAPRADS table, as well as derived fields. One of these derived fields [redacted]) indicates whether BellSouth uses the record in its M&R results calculation. The [redacted] table also contains membership map fields, one each for mean,

[355] Response to Data Request #163.
[356] Response to Data Request #101.
[357] Interview #15, December 2-3, 2004 and Interview #20, January 5-7, 2005.
[358] Response to Data Request #97.
[359] Response to Data Request #73.

proportional, and benchmark measures. These membership map fields indicate how the record is to be treated (for both SQM and SEEM purposes) during each of the M&R measure calculations. BellSouth takes the M&R-2 denominator directly from the [redacted]; therefore, it has no membership map.

BellSouth uses data from the [redacted] tables to populate the DM tables which it uses to generate the SQM performance results. BellSouth uses these same data to populate the PARIS[redacted] tables which it uses to generate the SEEM results.

The *Definition* section of the SQM Plan for M&R-2 states that M&R-2 measures "[i]nitial and repeated customer direct or referred customer troubles (reported within a calendar month) per 100 lines/circuits in service." However, Liberty's investigation showed that M&R-2 actually measures the number of trouble reports closed in the current month, not the number of troubles reported in the month. Thus, despite the statement in the *Definition* section, BellSouth's actual practice is consistent with the formula in the *Calculation* section of the SQM Plan for M&R-2, which states that it measures troubles closed in the current period.

The formula for M&R-2 in the SQM Plan has the number of service access lines in the denominator. Access lines are normally considered to be the circuit that connects the end-user with the local switching center. However, as can be seen from the products listed in the Disaggregation section of the SQM Plan for M&R-2, BellSouth includes more than just access lines in this measure.

Liberty inquired as to whether BellSouth counted a trouble on a trunk as only one trouble for purposes of calculating the numerator of M&R-2, and whether BellSouth counted a trunk as one line/circuit for purposes of calculating the denominator of M&R-2. BellSouth stated that it counts a trunk as one item in both the numerator and denominator of M&R-2.[360]

b. Data Validation

SNAPRADS Data Validation

For the months of November 2003 and December 2003, BellSouth provided copies of all of the SNAPRADS files containing trouble ticket records and line/circuit count records.[361]

From each of the SNAPRADS files, Liberty then selected a random sample of records to analyze. Liberty sampled trouble records as follows:

SNAPRADS Table name	Trouble Sample Size	
	CLEC	Retail
[redacted]	23	0
[redacted]	2	15
[redacted]	50	60

[360] Response to Data Request #308 and #308 (clarification).
[361] Responses to Data Requests #331 and #344.

[redacted]	24	0
[redacted]	1	15
[redacted]	50	60
Total troubles sampled	150	150

Liberty analyzed each sampled trouble record to ensure that it was properly represented in the [redacted] table. Among other checks, Liberty determined that i) the [redacted] was correct for the record; ii) BellSouth set the membership map properly; iii) BellSouth properly carried over fields (*e.g.*, [redacted] which measures trouble duration in LMOS, [redacted]) from SNAPRADS to the Data Warehouse; iv) whenever a WFA record had a [redacted] greater than 24, then the [redacted]

In addition, Liberty selected some of the sampled SNAPRADS trouble records and performed additional checks, for example to see that BellSouth properly represented the record in the data mart and [redacted] tables, and that it had correctly determined the product ID for the record.

Liberty sampled line/circuit SNAPRADS records as follows:

SNAPRADS Table Name	Line Sample Size	
	CLEC	Retail
[redacted]	20	30
[redacted]	0	37
[redacted]	0	5
[redacted]	45	0
[redacted]	5	0
[redacted]	3	0
[redacted]	2	3
[redacted]	20	30
[redacted]	0	37
[redacted]	0	5
[redacted]	45	0
[redacted]	5	0
[redacted]	2	0
[redacted]	3	3
Total lines sampled	150	150

Liberty analyzed the sampled SNAPRADS line/circuit records to ensure that they were properly represented in the [redacted] table. Liberty ensured that the fields which show the number of lines/circuits represented by a record (e.g., [redacted]) in SNAPRADS were properly carried over to the corresponding field ([redacted]) in the [redacted] table. As noted earlier, some of the SNAPRADS line/circuit tables contain records that are not unique. In these cases, Liberty was only able to ensure that it could find a record in the Data Warehouse with the same identifiers as the record sampled from SNAPRADS.

In addition, Liberty selected some of the sampled SNAPRADS line/circuit records and performed additional checks. For example, Liberty reviewed the records and verified that they appeared in the [redacted] and [redacted] tables, and that the [redacted], which identifies the type of service being provided (*e.g.*, residence, business, PBX) was accurate in [redacted]

Warehouse Data Validation

Liberty performed a number of checks on all of the records in the warehouse [redacted] table. For example, Liberty checked the entire file to ensure that every WFA trouble was listed as being out of service, every record that satisfied an error condition was excluded from the relevant measure mapping processes, every WFA trouble whose duration was greater than 24 hours was considered to be out of service greater than 24 hours, and so forth.

Liberty chose some sub-measures, listed in Appendix A, for further analyses. Liberty had to perform some analyses manually on a record-by-record basis. To do these, Liberty selected a sample of records from the [redacted] table. For each of the sub-measures, Liberty selected two CLEC trouble tickets and two retail trouble tickets from the [redacted] table. Additionally, if possible, Liberty selected records with different product IDs for each of the sub-measures.

For each of the selected [redacted] records, Liberty confirmed that it was properly membership mapped. If the trouble record was assigned an error code in the Data Warehouse, Liberty ensured that BellSouth did so appropriately. Finally, Liberty determined whether each record could be found in the [redacted] and [redacted] tables. One of the sampled [redacted] warehouse trouble records could not be found in the [redacted] table, as noted in Finding 47.

Liberty performed similar validation analyses of line/circuit records in the [redacted] table. Of the in-scope M&R measures, lines/circuits are only relevant to M&R-2. For each M&R-2 sub-measure in Appendix A of this report, Liberty chose two CLEC and two retail line/circuit records from the [redacted] table for analysis. When possible, Liberty selected records with different product IDs for each of the sub-measures.

For some of the selected line/circuit records, Liberty confirmed that the line count of the record in the [redacted] table, the [redacted] table for M&R-2, and the [redacted] table were all the same. If the record was assigned an error code in the Data Warehouse, Liberty ensured that it did so appropriately. For the other line/circuit records in Liberty's warehouse sample, BellSouth's processes had combined the data from multiple [redacted] records into a single record in the [redacted] table. Using three sample records selected by Liberty from its warehouse line/circuit sample, BellSouth confirmed for Liberty that each of the records was represented properly in an aggregated [redacted] table record.[362] For selected records, Liberty also confirmed that the record and its data could be found in the appropriate SNAPRADS line/circuit table.

As the result of its data validation analysis, Liberty identified issues that the Findings and Recommendations section address.

[362] Response to Data Request #396.

c. SQM/SRS Report Replication

M&R-1

Liberty's list of measures selected for SQM/SRS report replication included 14 M&R-1 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the PMRA DM tables provided by BellSouth.[363] To perform these replications Liberty identified all the transactions related to a specific sub-measure by filtering the PMRA DM table based on key data fields as follows:

- [redacted]: to identify all of the Florida transactions
- [redacted]: to separate retail from CLEC transactions
- [redacted]: to identify the specific product associated with each sub-measure [redacted]
- [redacted]: to exclude switch-based feature troubles from some sub-measures.

To perform the retail replication for each M&R-1 sub-measure, Liberty determined the denominator by counting trouble tickets within each sub-measure category. To arrive at the numerator, Liberty counted tickets with a missed appointment indicator within each sub-measure category. Liberty derived the M&R-1 percent missed repair appointments for each sub-measure by dividing the count of missed appointments by the trouble ticket count within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results.

Liberty also replicated CLEC-specific M&R-1 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected eight different CLECs based on trouble volumes within each of the sub-measures.[364] Each CLEC-specific M&R-1 result that Liberty calculated matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific M&R-1 SQM/SRS results for November and December 2003.

M&R-2

Liberty's list of measures selected for SQM/SRS report replication included 13 M&R-2 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the [redacted] and [redacted] tables provided by BellSouth.[365] Liberty identified all the transactions related to a specific sub-measure by filtering

[363] Response to Data Request #23.

[364] In addition to trouble volumes, Liberty attempted to replicate the reported results of various different CLECs rather that continually use the data for the same two or three CLECs for this effort. In some cases the same CLECs were also used for the CLEC-specific replications of the other in-scope M&R measures.

[365] Response to Data Request #23.

the [redacted] and [redacted] tables based on the same key data fields identified on the bullet list shown above for M&R-1.

To perform the retail replication for each M&R-2 sub-measure, Liberty determined the denominator by totaling the line count within each sub-measure category. To arrive at the numerator, Liberty counted all of the trouble tickets within each sub-measure category. Liberty derived the M&R-2 customer trouble report rate for each sub-measure by dividing the count of trouble tickets by the line count within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results.

Liberty also replicated CLEC-specific M&R-2 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected eight different CLECs based on trouble volumes within each of the sub-measures.[366] Each CLEC-specific M&R-2 result that Liberty calculated matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific M&R-2 SQM/SRS results.

M&R-3

Liberty's list of measures selected for SQM/SRS report replication included 22 M&R-3 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the MAD DM tables provided by BellSouth.[367] Liberty identified all the transactions related to a specific sub-measure by filtering the MAD DM table based on the same key data fields identified on the bullet list shown above for M&R-1.

To perform the retail replication for each M&R-3 sub-measure, Liberty determined the denominator by counting trouble tickets within each sub-measure category. To arrive at the numerator, Liberty totaled the maintenance duration minutes within each sub-measure category. Liberty derived the M&R-3 maintenance average duration for each sub-measure by dividing the total duration minutes by the trouble ticket count within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results.

Liberty also replicated CLEC-specific M&R-3 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected nine different CLECs based on trouble volumes within each of the sub-measures.[368] Each CLEC-specific M&R-3 result that Liberty calculated matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific M&R-3 SQM/SRS results.

[366] Note that a few sub-measures had zero volume.
[367] Response to Data Request #23.
[368] Note that a few sub-measures had zero volume.

M&R-4

Liberty's list of measures selected for SQM/SRS report replication included nine M&R-4 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the PRT DM tables provided by BellSouth.[369] Liberty identified all the transactions related to a specific sub-measure by filtering the PRT DM table based on the same key data fields identified on the bullet list shown above for M&R-1.

To perform the retail replication for each M&R-4 sub-measure, Liberty determined the denominator by counting trouble tickets within each sub-measure category. To arrive at the numerator, Liberty counted trouble tickets with a repeat indicator within each sub-measure category. Liberty derived the M&R-4 percent repeat trouble rate for each sub-measure by dividing the repeat trouble ticket count by the total trouble ticket count within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results.

Liberty also replicated CLEC-specific M&R-4 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected six different CLECs based on trouble volumes within each of the sub-measures. Each CLEC-specific M&R-4 result that Liberty calculated matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific M&R-4 SQM/SRS results.

M&R-5

Liberty's list of measures selected for SQM/SRS report replication included 12 M&R-5 sub-measures. Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the OOS DM tables provided by BellSouth.[370] Liberty identified all the transactions related to a specific sub-measure by filtering the OOS DM table based on the same key data fields identified on the bullet list shown above for M&R-1.

To perform the retail replication for each M&R-5 sub-measure, Liberty determined the denominator by counting trouble tickets within each sub-measure category. To arrive at the numerator, Liberty counted all of the trouble tickets with an indicator showing out of service greater than 24 hours within each sub-measure category. Liberty derived the M&R-5 percentage out of service greater than 24 hours for each sub-measure by dividing the out of service greater than 24 hours trouble ticket count by the total trouble ticket count within each sub-measure. Liberty followed the same process to calculate the CLEC aggregate results.

Liberty also replicated CLEC-specific M&R-5 results for one CLEC per sub-measure for each month's reported CLEC specific results. To perform this replication, Liberty selected seven different CLECs based on trouble volumes within each of the sub-measures.[371] Each CLEC-

[369] Response to Data Request #23.
[370] Response to Data Request #23.
[371] Note that a few sub-measures had zero volume.

specific M&R-5 result that Liberty calculated matched the results reported by BellSouth in the SRS report on its PMAP website.

Liberty successfully replicated BellSouth's retail, CLEC aggregate, and CLEC-specific M&R-5 SQM/SRS results.

D. Billing Measure

1. Introduction

There is one in-scope billing measure, B-1 (Invoice Accuracy). The B-1 measure reports BellSouth's performance in providing accurate invoices to CLECs for resale, UNE, and interconnection services.

The SQM Plan states that BellSouth should exclude from the measure test accounts and adjustments not related to billing errors, such as credits for service outage, special promotion credits, and adjustments to satisfy the customer.

The SQM Plan provides the following formula for the B-1 Invoice Accuracy measure:

Invoice Accuracy = [(a-b)/a] X 100, where
a = Absolute Value of Total Billed Revenues during current month
b = Absolute Value of Total Billing Related Adjustments during current month

BellSouth also reports results on a measure-of-adjustments basis for diagnostic purposes:

Measure of Adjustments = [(c-d)/c] X 100, where
c = Number of Bills in current month
d = Number of Billing-related Adjustments in current month

B-1 is a Tier 1 and Tier 2 measure in the SEEM Administrative Plan. BellSouth reports the B-1 measure on a statewide and regional basis for individual and aggregate CLECs, as well as for BellSouth retail. The standard for B-1 is parity with BellSouth retail.

* * *

As part of its audit of BellSouth's procedures for processing the B-1 performance measure, Liberty obtained an overview of the business processes and systems that generate the data used for the measure. Liberty sought to determine whether key data field definitions were consistent with the SQM Plan and to assess whether BellSouth correctly applied logic to derive values from the source data and select records to be included in the measure. Liberty also examined whether BellSouth correctly applied any exclusions specified in the SQM Plan. Liberty examined the validity of the billing data as it moved through the PMAP system. To check the reliability of reported results, Liberty recalculated the CLEC aggregate, CLEC-specific, and BellSouth retail results for each product group.

Liberty found that BellSouth produced generally accurate results for the B-1 invoice accuracy performance measure during November and December 2003. Liberty successfully replicated results for the measure for the November and December 2003 data months. Liberty also found that BellSouth generally followed the SQM Plan by correctly applying exclusions and by properly defining the logic and data fields it used to calculate the denominators and numerators in the B-1 measure calculations.

2. Analysis and Evaluation

a. Background

To calculate the B-1 measure, BellSouth compares the size of its billing errors, regardless of whether those errors were positive or negative (*i.e.*, the sum of the absolute values of adjustments on individual bills), to the size of its opportunity to make an error (*i.e.*, the absolute value of current revenues). Current revenues include recurring charges, non-recurring charges, recurring other charges and credits (OC&C), and non-recurring OC&C.[372]

The B-1 measure differs from most of the other in-scope SQM measures in that BellSouth prepares the data necessary to calculate the invoice accuracy measure outside of PMAP, and does not load data from billing source systems directly into RADS. Instead, each month BellSouth's Billing Group creates spreadsheets that contain prepared data, and the RADS group loads the pre-processed data from the spreadsheets into RADS.

There are three sources of billing information: the Carrier Access Billing System (CABS), the Customer Records Information System (CRIS), and the Integrated Billing System (IBS). IBS (also referred to as Tapestry) is similar to CRIS. UNE revenue and adjustment data and BellSouth retail revenue data come from IBS, and resale revenue and adjustment data come from CRIS. CLEC interconnection revenue and adjustment data, as well as some BellSouth adjustment data, come from CABS.[373]

BellSouth uses a combination of mechanized and manual procedures to prepare the billing data that it uses to calculate the B-1 measure. BellSouth first runs two mechanized job procedures that retrieve the revenue and adjustment information, based upon the bill date. BellSouth uses a mechanized procedure to extract, directly from CABS, CLEC local billing revenue and adjustment data, as well as BellSouth CABS adjustment data. Because BellSouth extracts data directly from CABS, it captures the adjustments reflected on bills BellSouth issued during the month. BellSouth does not retrieve IBS and CRIS data directly from the source systems, but instead uses a separate mechanized procedure to extract CRIS and IBS data from the Financial Database (FDB), which is the system BellSouth uses to keep its accounting records.[374] Because

[372] Interview #16, December 10, 2004.
[373] Interview #7, November 16, 2004. In response to Data Request #201, BellSouth clarified that it includes CABS facilities access, switched access, ancillary, and miscellaneous accounts that have local billing dollars or local usage.
[374] Interview #7, November 16, 2004.

BellSouth extracts CRIS/IBS data from the FDB, it captures all adjustments that BellSouth issued during the reporting month, not only those included on current month's bills.[375]

BellSouth uses two different methods for retrieving billing data depending on whether the bill comes from CABS or CRIS/IBS (*i.e.*, extracting data from the source billing system versus extracting data from the financial accounting system). The SQM Plan refers to "billing related adjustments during current month." Either of BellSouth's methods could be considered consistent with the SQM language, but not both. BellSouth offered, subject to Commission approval, to add clarifying language to the SQM Plan.[376] Specifically, BellSouth proposed an update to state that CRIS/IBS adjustments are based on all adjustments posted to an account during the reporting month, and that CABS adjustments are based on only those adjustments issued on the customer's monthly bill. This clarification should resolve the matter.

BellSouth loads the output of the mechanized procedures for all nine BellSouth states into Microsoft Excel spreadsheets that the Billing Group uses to conduct its manual review. The mechanized procedures aggregate all BellSouth retail data by state, so there is only one record in the Excel spreadsheet per state. For CLECs, the spreadsheet contains a separate record for each combination of state, CLEC (based on ACNA or OCN), account number, and product. Each retail and CLEC record includes fields containing the absolute dollar values of revenues and of adjustments, as well as the total number of bills and total number of adjustments. The total adjustment value in each record may be made up of many individual adjustments, some of which may not relate to billing errors.

The SQM Plan states that BellSouth should exclude test accounts and adjustments not related to billing errors from the measure. BellSouth cannot accomplish all of these exclusions in the mechanized procedures because some of the exclusions cannot be performed using computer logic. For example, in some cases, the reason for an adjustment is located in a text field that the mechanized process cannot find. In those cases, the Billing Group analyst must manually research the bills to identify adjustments for exclusion.

The monthly "working" spreadsheets contain approximately 13,000 CLEC records covering all nine BellSouth states. The Billing Group analyst does not review every CLEC record in the spreadsheets. Instead, the analyst researches each bill for which the absolute value of the total adjustment is $1,000 or more.[377] BellSouth stated that it recognizes that by adopting the $1,000 cut-off point, it may be including adjustments in CLEC results that are not related to billing errors, which would make its performance look worse than it actually was. BellSouth indicated that it did not have the resources to spend the time to check each record.[378]

[375] Responses to Data Requests #316, #317, and #346. BellSouth may issue adjustments on a CRIS or IBS account after the bill date for the month; such adjustments are reflected in the monthly FDB data but appear on the next month's bill.
[376] Response to Preliminary Finding 23.
[377] During the investigation of these bills, the analyst in some cases also identifies excludable adjustments associated with bills that have total adjustments of less than $1,000. The analyst would reflect these exclusions in the appropriate records in the spreadsheet.
[378] Interview #7, November 16, 2004 and Interview #16, December 10, 2004.

If the analyst finds that some or all of the adjustments for a given CLEC record are not related to billing errors (such as an adjustment related to a special promotion), the analyst enters the associated dollar amount and count of the non-billing-errors in separate "adjustment to the adjustment" or exceptions columns in the spreadsheet, and calculates a new net adjustment amount and net number of adjustments. For example, a CLEC bill may include ten adjustments totaling $1,000, but only one, for $300, may be related to a billing error. In this case, the analyst would insert $700 in the dollar exceptions column in the spreadsheet and 9 in the adjustment count exceptions column. The analyst would also record the reason he or she removed that amount. Sometimes none of the adjustments on a bill pertain to billing errors. In that case, BellSouth subtracts the entire adjustment amount but retains the record in the spreadsheet because it must still count the CLEC revenues in results.[379]

Examples of the types of billing adjustments that BellSouth excludes are:

- Late payment charges
- Volume and term discounts
- Sales promotions
- CREX (a toll block product that has now been phased out) true-ups
- Transfers of bills from one account to another
- Commission-mandated rate changes.

Other examples include adjustments given to the customer for settlement in which neither party bears fault, and adjustments given in error that BellSouth will reverse the following month. BellSouth also indicated that it excludes adjustments associated with uncollectible accounts, which it considers adjustments to satisfy the customer.[380]

In some cases, the Billing Group analyst finds a record for a test ID that the mechanized process did not remove. In this case, the analyst would cut the record from the spreadsheet and paste it into a separate exceptions worksheet, which BellSouth retains for audit purposes. The revenues and adjustments associated with the deleted records are not included in the spreadsheets BellSouth sends to RADS and are therefore not included in reported results.[381]

After the Billing Group analyst has completed the manual review, he or she prepares "final" Billing Group spreadsheets reflecting only those records to be included in results. The Billing Group analyst expends much more effort reviewing CRIS/IBS data than CABS data. BellSouth cited one reason for this as the indistinct coding method its representatives use in the IBS system. BellSouth indicated that the process for preparing the final Billing Group spreadsheet has not really changed since the audit period, except that some manual checks have since been mechanized.[382]

[379] In this example, the record would be treated like a bill that had no adjustments at all.
[380] Interview #7, November 16, 2004.
[381] Interview #7, November 16, 2004. BellSouth noted that some of the test IDs were left over from the BearingPoint testing, and some are associated with its own process testing.
[382] Interview #7, November 16, 2004.

BellSouth stated that there was generally no routine review that it could perform for the state-level retail aggregate figures, because it would be impossible for it to trace adjustments back to all the retail accounts. However, each month the Billing Group analyst compares the revenues and adjustments for the current month to that of prior months, and investigates possible reasons for large changes. For example, if the analyst notices that adjustments are much higher than in prior months, the analyst may question other billing and financial personnel to find out if there was something unusual that occurred during the month. For example, in the December 2003 worksheet for BellSouth retail revenue and adjustments, the analyst removed adjustments associated with a settlement with MCI, which totaled roughly $37 million. Therefore, the degree to which the BellSouth retail adjustment figure is accurate depends on the expertise of the analyst and his or her success in investigating anomalies.

Liberty asked BellSouth if there were other ways in which it excludes non-billing-error adjustments from its retail adjustment amounts. BellSouth noted that most retail adjustments are coded to specific account codes, which it can exclude mechanically. Other bill adjustments, such as those for retail promotional credits, are not processed as adjustments.[383]

The scope of Liberty's audit begins with the data in RADS. However, because BellSouth applies all exclusions to the B-1 data before they reach RADS, Liberty spent some time reviewing the process BellSouth uses to prepare the data for the measure. The Billing Group analyst provided a detailed walk-through of the mechanized and manual procedures, which included an overview of the types of revenues and adjustments that BellSouth includes and excludes from the measure. BellSouth also provided Liberty with the spreadsheets that contain the output of the mechanized procedures as well as the analyst's revisions and exclusions to this data for the December 2003 reporting month.[384]

Liberty reviewed these working spreadsheets and was able to identify why the analyst excluded certain records. Liberty was also able to track which total adjustments had been revised. With the exception of the total number of adjustments, Liberty was able to reconcile these working spreadsheets with the data in the final Billing Group spreadsheet that goes into RADS. Liberty found that the number of total adjustments in the working spreadsheets was two greater than the number of total adjustments in the final spreadsheets.[385]

BellSouth indicated that it had introduced an error in the number of adjustments for one billing account (although the dollar amount was correct) when preparing the final spreadsheets. BellSouth confirmed that the number of adjustments on the final spreadsheets was incorrect, and that invoice accuracy measured in number of adjustments (which BellSouth reports for diagnostic purposes) should decrease from 67.91 percent, as reported, to 67.11 percent.[386] The result for invoice accuracy in terms of dollars was not affected.

Under BellSouth's process for transferring billing data into the final spreadsheets that it loads into RADS, BellSouth can introduce errors in either the number of bills and adjustments or the

[383] Response to Data Request #194.
[384] Response to Data Request #186.
[385] There were 403 CRIS adjustments in the "final" spreadsheets and 405 in the "working" spreadsheets.
[386] Response to Data Request #339.

dollar value of revenues and adjustments. BellSouth informed Liberty that it recently revised the work flow for the manual review process to include additional review and control procedures. Additionally, BellSouth indicated that it updated the job aids used by the Billing Group analyst to reflect these changes.[387] BellSouth noted that its recently revised work flow should minimize inaccuracies and improve quality control, and that it continues to review the process with an objective of reducing as many manual steps as possible.[388]

The lack of full review of all the billing adjustments means that the final adjustments values and counts of adjustments that BellSouth uses to calculate the B-1 measure for both CLECs and BellSouth retail are likely to contain some inaccuracies. For practical reasons, BellSouth can never manually review all adjustments for both wholesale and retail bills. As long as a significant portion of the exclusions of non-billing error adjustments can only be identified manually, BellSouth's B-1 results will be inaccurate to some degree. By implementing more precise methods for coding adjustments and mechanizing more of the adjustment review, BellSouth could improve result accuracy. BellSouth noted that it implemented mechanical enhancements after the audit period, in the second quarter of 2004, to reduce a significant portion of the manual handling of adjustments.[389] BellSouth reiterated that it continues to review its methods to reduce as many manual steps as possible.

The SQM Plan does not specify how BellSouth should define revenues, or whether certain types of bills should be included or excluded from the measure. BellSouth has adopted certain conventions, of which the Commission or CLECs may be unaware, for defining which revenues and bills it includes in the B-1 measure. For example, BellSouth excludes collocation revenues and adjustments associated with construction, space, and electricity (known as "C01 accounts"). BellSouth stated that, because it bills CLECs based on estimates and later issues adjustments to correct the shortfall or overage, such data are not reflective of true invoice accuracy performance. BellSouth does, however, include other types of collocation account revenues and adjustments in the measure.[390] BellSouth also defines revenues slightly differently for CABS bills than it does for CRIS and IBS bills. BellSouth includes federal, state, and local taxes in its revenue data from CABS, but includes only federal and state taxes in its FDB (CRIS and IBS) revenue data.[391]

Not only are many of the conventions not explicit, but they have changed since the audit period. During the audit period, BellSouth excluded BellSouth Long Distance account revenues and adjustments during the manual review process. As a result of discussions between the Florida Commission and BellSouth, BellSouth began, as of June 2004, to include BellSouth Long Distance account data in retail data but continued to exclude it from CLEC aggregate data.[392] During the audit period, BellSouth included CLEC revenues and adjustments in its total BellSouth retail revenues and adjustments. At that time, BellSouth considered the CLEC to be a customer. After June 2004, BellSouth began excluding CLEC revenues and adjustments from

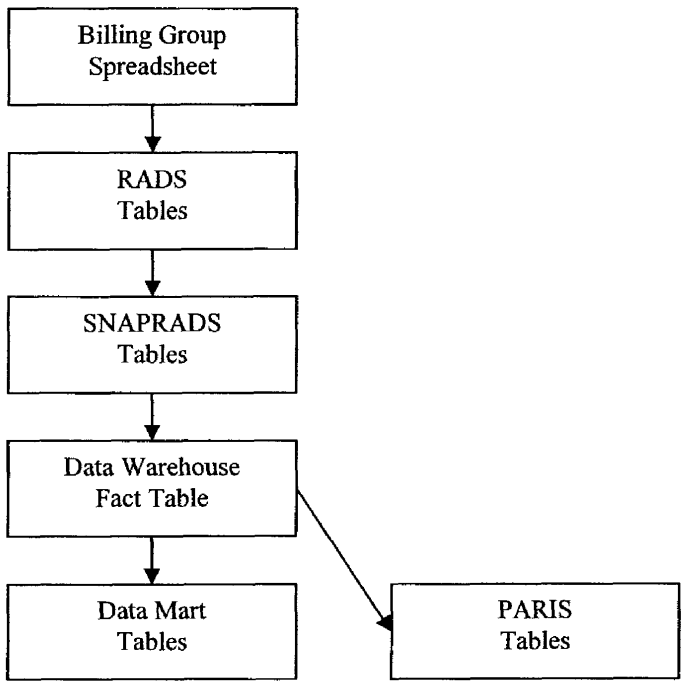
[387] Response to Data Request #339.
[388] Response to Preliminary Finding 14.
[389] Response to Preliminary Finding 15.
[390] Interview #7, November 16, 2004 and response to Data Request #191.
[391] Response to Data Request #315.
[392] Response to Data Request #192.

retail totals.[393] BellSouth explained that its interpretation of the SQM Plan had not changed, but that it agreed to remove the CLEC data after discussions with CLECs at various workshops.[394]

BellSouth stated that it continues to have discussions with CLECs and Commissions regarding the methods of defining this measure.[395] BellSouth also added some descriptive language to its job aids regarding the types of charges included and excluded from the measure.

The B-1 measure is a benchmark measure with a standard of parity with BellSouth retail, which BellSouth considers a "floating benchmark." BellSouth uses the term floating benchmark to differentiate an analog benchmark, which varies each month depending upon BellSouth retail performance, from a standard benchmark.[396]

The data flow for the B-1 measure is as follows:



The RADS group loads the data from the final Billing Group spreadsheets into RADS each month. BellSouth copies the RADS tables in their entirety into the SNAPRADS tables. BellSouth creates the [redacted] table in the warehouse using the data from SNAPRADS, and assigns error codes to records as necessary. The [redacted] table in the warehouse contains a separate record for each CLEC by state, account number, and product. For example, if a CLEC has three billing accounts for resale and two for UNE in Florida, the table will contain five records for that company. The B-1 measure is not membership

[393] Response to Data Request #197.
[394] Response to Data Request #342.
[395] Response to Preliminary Finding 24.
[396] Response to Data Request #62.

mapped.[397] To create the Billing Invoice Accuracy (BIA) DM table, BellSouth copies selected data from each record in the Invoice Accuracy Fact table that does not have an error code associated with it. During November and December 2003, none of the Florida records had error codes.[398]

BellSouth creates state aggregate, company aggregate, and parity aggregate tables in the data mart using the data in the BIA DM table. BellSouth also creates a SDUM DM table for use by CLECs in conjunction with the PMAP website. The state aggregate table includes three records, one for each product group, containing totals for each state. The company aggregate table includes a record containing totals for each company code/state/product combination.

The parity aggregate table includes, for each state, a record containing totals for each product using the dollar and count methods of reporting. For Florida, there are six records, three for invoice accuracy in terms of dollars, and three for invoice accuracy in terms of counts. Each record in the parity aggregate table contains the CLEC and BellSouth numerators and denominators, as well as calculated percentage results. Each record also contains an equity result, (*i.e.,* yes or no), which is based on the comparison between the CLEC and BellSouth result for that product, as well as the chart direction illustrating improved performance (up), standard error, and Z-score.

To perform the SEEM calculations for B-1, PARIS accesses data in the Invoice Accuracy Fact table in the warehouse and creates a [redacted] table.[399] This PARIS table contains a record for each CLEC by state and product, aggregated to the parent company level. Each record contains the parent company code, state, sub-measure identifier (each product for B-1 is a separate sub-measure), year/month identifier, numerator, and denominator. PARIS uses the company lookup table to identify the appropriate parent company key for each [redacted] reflected in the warehouse records.[400]

PARIS joins the aggregate table to a [redacted] table, which PARIS uses to verify that BellSouth pays penalties to only those CLECs certified in a given state.[401] PARIS runs another procedure that compares every sub-measure result for each parent company to the benchmark value (*i.e.,* BellSouth retail). PARIS creates the [redacted] table, which contains as primary data fields the company code; state; sub-measure code; the numerator, denominator and percentage accuracy result for the CLEC; the BellSouth percentage as the benchmark; and a pass/fail indicator (0 for pass, 1 for fail). PARIS uses a separate Trigger procedure to calculate the pass/fail indicator value and populate the field in the [redacted] table.[402]

[397] Response to Data Request #37.
[398] By way of comparison, there were five records with error codes for all nine states in November and six in December.
[399] The [redacted] table also contains results for other billing measures.
[400] BellSouth noted that it has always reported B-1 at the parent company level in Florida.
[401] BellSouth noted that this check was not really necessary for billing measures because if the CLEC has a bill, it is already certified.
[402] There are no PARIS [redacted] tables for B-1.

b. Data Validation

As discussed above, BellSouth applies the exclusions for the B-1 measure prior to sending the billing data to RADS. BellSouth does not transform the billing data as they move from the Billing Group spreadsheets to the [redacted] table. The only logic steps that BellSouth applies as the data flow through PMAP are the removal of records that contain errors, and the use of the company lookup table to assign the appropriate [redacted] to the OCN/ACNA. Therefore, Liberty's data validation review for the B-1 measure was relatively straightforward.

As a first step, Liberty verified that the November and December 2003 product-specific CLEC aggregate and BellSouth retail amounts for total revenues, total adjustments, total number of bills, and total number of adjustments shown in the Billing Group spreadsheets matched those in the SNAPRADS tables, [redacted] tables, and [redacted] tables. Liberty also verified that the number of Florida records remained consistent as the data flowed from the Billing Group spreadsheets to the [redacted] table. The following table summarizes the record counts:

Source	Table Name	Total Records	Florida Records	Total Records	Florida Records
		November 2003		*December 2003*	
Billing Group	BI_INV_REV tab	2,365	772	2,377	771
Spreadsheet	BI_INV_ACNA_REV tab	10,356	2,281	10,336	2,284
	Subtotal	12,721	3,053	12,713	3,055
SNAPRADS	BI_INV_REV	2,365	772	2,377	771
	BI_INV_ACNA_REV	10,356	2,281	10,336	2,284
	Subtotal	12,721	3,053	12,713	3,055
Warehouse	INVOICE_ACCURACY_FACT[403]	Not provided	3,053	Not provided	3,055
	Records in Error Event Fact table	5	0	6	0
Data Mart	BIA_DM	12,716	3,053	12,707	3,055

The only records that did not flow to the data mart table and were therefore excluded from the measure were those with error codes. The number of records with error codes was very small, and none of the records related to Florida.

Liberty next sought to verify that the November and December 2003 data in the Billing Group spreadsheets remained consistent with the data in the SNAPRADS tables, the Invoice Accuracy Fact warehouse tables, and the BIA DM tables.[404] The Billing Group spreadsheet contains a record for each separate bill the CLEC receives, which is uniquely identifiable by OCN/ACNA, account number, and invoice charge type (*i.e.*, resale, UNE, and interconnection). Of the

[403] Unlike the other tables, BellSouth did not provide warehouse records for all states, only those related to Florida.
[404] BellSouth provided the November and December 2003 Billing Group spreadsheets in response to Data Request #178. BellSouth provided the SNAPRADS tables in response to Data Request #177 and the [redacted] and [redacted] tables in response to Data Request #78.

approximately 13,000 CLEC billing records per month, approximately 3,000 relate to Florida. While roughly 75 percent are interconnection bills (in [redacted]), the majority of revenue dollars relate to UNE bills (in [redacted], which also includes resale bills). Liberty decided to use a weighted sampling technique based on revenue dollars to select 150 Florida bills for its data validation review from the November and December 2003 Billing Group spreadsheets.

The records in the Billing Group spreadsheets and SNAPRADS tables have the following fields in common:

[redacted]

The Invoice Accuracy Fact warehouse table contains the same fields as the SNAPRADS tables except for the [redacted] field. Instead, the warehouse table records contain the Company Key, which PMAP assigns based on the OCN/ACNA by using the company lookup table.[405] The [redacted] table drops the source system, OCN/ACNA, and account number fields, and adds a new field, [redacted]

Liberty compared the common data fields in the 150 selected bill records from the Billing Group spreadsheets to those in the SNAPRADS tables, the Invoice Accuracy Fact warehouse tables, and the BIA DM tables.[406] The values in the fields in each sample CLEC bill record remained the same throughout. Liberty also analyzed whether BellSouth accurately assigned the [redacted] based on the OCN/ACNA using the information in the company lookup table, and confirmed that BellSouth assigned the correct [redacted] for each sample record. Liberty also verified that the data in each BellSouth retail aggregate record remained constant throughout. Liberty was therefore satisfied that the PMAP data flow for the B-1 measure was accurate.

In many cases, Liberty found that the Company Name assigned to a given OCN or ACNA in the Billing Group spreadsheets and SNAPRADS tables was not the same as the Company Name that was shown in the company lookup table. BellSouth stated that the Billing Group spreadsheet and the PMAP system use two different tables to determine Company Name, and that there is a

[405] The warehouse table also contains an [redacted] field, which was blank for all Florida records in the audit period.
[406] Liberty validated the [redacted] and [redacted] tables as part of replication. Liberty also validated that the information for the selected CLEC was properly included in the [redacted] table. Liberty therefore did not include these derived [redacted] tables in the data validation analysis.

chance that the name is input differently in each table. Also, when companies purchase other companies, the [redacted] often does not get updated at the same time on both tables. BellSouth indicated that it ignores the [redacted] assigned by the Billing Group when it moves the data to the [redacted] warehouse table, and the field is not used in the PMAP system or in measure calculations.[407] Liberty concluded that the incomplete linkage between the Billing Group and PMAP company tables was not a problem. Because both groups identified a CLEC using the same OCN or ACNA, the [redacted] and parent company key used for reporting purposes are consistent.

Because the PARIS [redacted] table contains data aggregated to the parent company level, Liberty could not track the 150 company-specific sample bills to it directly. Instead, Liberty conducted a separate focused review of the [redacted] table to determine if the parent company-level data are consistent with the company-level data in the Invoice Accuracy Fact warehouse table. [redacted] selected three parent company codes [redacted] that have multiple [redacted] associated with them from the [redacted] table.[408] For each parent company code, Liberty identified all records for related [redacted] in the [redacted] warehouse table. Liberty aggregated the company-specific bill data by product and compared the results to the [redacted] results in the [redacted] table. Liberty found that the results matched, and was satisfied that BellSouth was correctly aggregating result data in the [redacted] table.

BellSouth informed Liberty that the PMQAP data validation process does not include changes to the mechanized procedures that it uses to extract the CRIS, CABS, and IBS data for the B-1 measure. BellSouth also stated that the data extraction programs were EDS and Accenture programs, and that these companies have their own change control process. BellSouth added that PMQAP validation process does not include the manual review procedures that the Billing Group analyst performs.[409]

The Billing Group does not have a formal quality control process other than the job aids that the analyst uses when preparing the spreadsheets.[410] These job aids describe the process BellSouth uses to retrieve the output from the CABS and FDB mechanized process, as well as the steps the analyst uses for reformatting and storing the data in working spreadsheets. The job aids also list some of the steps that BellSouth uses to check for adjustments that should be excluded from the measure. The analyst uses a series of paper worksheets to keep track of state-level results, and performs trend analysis by comparing revenues to previous months' revenues.[411]

[407] Response to Data Request #335.
[408] BellSouth provided the [redacted] table in response to Data Request #382. Liberty verified the [redacted] table entries for [redacted] for November 2003 and for [redacted] for December 2003.
[409] Interview #7, November 16, 2004.
[410] Response to Data Request #202.
[411] Interview #16, December 10, 2004.

c. SQM/SRS Report Replication

All three of the B-1 sub-measures were included in Liberty's list of measures selected for SQM/SRS report replication (see Appendix A for a complete list of these measures). Liberty recalculated the CLEC aggregate and BellSouth retail results for November and December 2003, using the BIA DM tables that BellSouth provided. First, Liberty summed the revenue amount, adjustment amount, number of bills, and number of adjustments values for all CLEC bills in the BIA DM table, with separate totals for each B-1 sub-measure (*i.e.*, interconnection, resale, and UNE). The total revenue amount for each product represents the denominator for the B-1 sub-measure. Liberty calculated the numerator as the difference between the total revenue amount and total adjustment amount for each product. Liberty then calculated the percentage invoice accuracy result, based on dollars, for each product and for BellSouth retail. Liberty calculated the measure based on the number of bills and adjustments in a similar fashion.

Each CLEC aggregate result that Liberty calculated matched that reported by BellSouth in the SRS report on its PMAP website, as did the BellSouth retail percentage. Liberty also verified that these CLEC aggregate results comported with those in BellSouth's [redacted] and [redacted] tables.

Liberty also sought to replicate CLEC-specific results for one CLEC for November and December 2003. Liberty chose a CLEC active in Florida that has numerous OCN and ACNA codes and [redacted]. Each CLEC-specific result that Liberty calculated matched that reported by BellSouth in the SRS report on its PMAP website. Liberty also verified that the CLEC-specific results matched those in BellSouth's [redacted] tables.

Liberty successfully replicated BellSouth's CLEC aggregate and CLEC-specific SQM/SRS results.

E. Compliance with PMQAP Data Validation Processes

1. Introduction

The BellSouth PMQAP data validation process has two main sub-components, PMAP data validation and PARIS data validation. The PMQAP document *PMAP Production Validation Process, Version 2.0* describes the process BellSouth uses to validate the data in PMAP. As noted above, BellSouth uses the PMAP data both for the calculation of the results reported in the SQM/SRS reports and for the calculation of the remedy payments pursuant to the Florida SEEM Administrative Plan. The PMQAP document *Self-Effectuating Enforcement Mechanism (SEEM) Validation Plan, Version 2.1* addresses the validation of the PARIS data and of the remedy payment calculations.

The PMQAP documentation describes these two processes at a high level and describes certain validation steps BellSouth follows. However, it does not contain standards or actual enforcement mechanisms to be followed when problems are found. Liberty finds this lack of rigor an inherent weakness in the PMQAP processes for data validation.

Liberty found that BellSouth generally followed the steps described in PMQAP for both production validation processes during the audit period. Liberty obtained detailed documentation in effect during the audit period regarding both data validation processes and also held walk-through sessions with BellSouth personnel actually involved in the analysis.

2. Analysis and Evaluation

a. PMAP Data Validation Processes

Liberty met with BellSouth to obtain a complete review of the PMAP Data Validation Processes.[412] BellSouth created a PMAP Validation Team for this process, and the duties within this relatively small group are separated mainly along domain lines (*i.e.,* ordering, provisioning, maintenance and repair, etc.). BellSouth's PMAP Validation Team is not only responsible for validation of the data used in the measure production cycle but also is involved with functional and regression testing of PMAP system changes performed during the change control process described above in Section II C. The data validation is effectively a by-product of the system functional and regression testing.

The BellSouth PMAP Validation Team gets involved in the production lifecycle at the detail design phase of an RQ as deemed necessary based upon impact statements. The PMAP Validation Team develops test cases based on these impact statements. There is a seven- to ten-day window for each release to develop test cases prior to the code release, which normally occurs in the second week of each month. The monthly PMAP release schedule allows a period of 21 to 22 days to complete all functional testing activities relevant to a specific code release. Some test cases are deferred to regression testing.

Production validation starts at the SNAPRADS process and occurs after functional and regression testing. Production validation uses many of the same documents and methods as regression testing. The production validation process relies heavily on statistical methods. Specifically, BellSouth uses standard deviation analysis and trend analysis based upon historical validation data point values. BellSouth described a validation data point as "a specific unit of business data that is the focus of validation attention."[413] According to BellSouth's process, "each [validation data point] is measured and analyzed individually to refine the focus of the validation process, and to enable like comparison to be made between data sets, and across time."[414] One tool that BellSouth uses in its monthly production validation process is the vTREND document, which PMQAP describes as a "PMAP validation document used to compare current results with history to determine the validity of the current data."[415] The vTREND document contains various trending statistics and validation data point values for the past twelve months.[416] The reliability of such trending methods is dependent on an historical set

[412] Interview #19, January 6, 2005.
[413] Response to Data Request #17.
[414] Response to Data Request #17.
[415] Response to Data Request #17.
[416] Interview #19, January 6-7, 2005.

of data generated in a consistent manner (*i.e.,* by stable systems). BellSouth does not update historical data used for trending analysis to reflect the impact of system changes. This can affect the reliability of the analysis, as Liberty notes in the findings section below.

Liberty also finds the strong scheduling ties between production validation and functional/regression testing somewhat troubling. The multiple responsibilities of the PMAP Validation Team and other circumstances may require decisions where priority dictates that some validation activities are not completed. Liberty observed, however, that BellSouth appears to have completed all described validation steps during the audit period.[417]

b. PARIS Data Validation Processes

Liberty evaluated the PARIS data validation process by conducting a complete process review with BellSouth[418] and by reviewing all PARIS data validation process documentation in effect for the audit period.[419] BellSouth continues to mechanize its PARIS data validation processes, but it still manually validates some remedy payments, including those associated with measures that are themselves manually calculated. In addition, Liberty learned that during the audit period BellSouth validated 100 percent of the Florida remedy payments manually using spreadsheets, although these spreadsheets themselves are populated through a mechanized process.[420] Because of this, Liberty focused on a process review of BellSouth's manual spreadsheet-based approach.

BellSouth has a team of analysts who are dedicated to the validation of the remedy payments each month. Each analyst specializes in the validation of one or more of the SEEM measure results. In the PARIS validation process, BellSouth pulls all the relevant data from the PMAP Data Warehouse to validate the PARIS payment calculations and places the data in a separate validation interface. During the audit period, the analysts pulled data from this interface into the spreadsheets they used for validation.

BellSouth indicated that it created a separate mechanized interface containing Data Warehouse data in order to avoid resource contention with other users of the Data Warehouse.[421] This process also allows the analysts to make notations and comments and to document the validation process. BellSouth uses reports from the validation interface to check the validation cycle and to ensure that all data have been validated. BellSouth also uses this same information to update the accounts payable interface, to make a final determination of remedies to be paid as part of the payment approval process, and as a final check of the validation process.

The PARIS Validation Team checks a number of different items in the remedy payment calculation process. They manually recalculate key values used in PARIS to determine the remedy payments, such as aggregate numerator and denominator counts for both CLEC and

[417] Response to Data Request #30.
[418] Interview #2 and #3, October 28-29, 2004.
[419] Response to Data Request #160.
[420] Response to Data Request #33.
[421] Interview #2 and #3, October 28-29, 2004.

retail results, cell-level Z-scores, and fail month increments.[422] They also check that all the cells in the SEEM calculation are properly populated.

As they proceed through the process, the validation analysts run through a list of checkpoints, which differ somewhat depending on whether the measure they examine is a retail analog or a benchmark measure. In addition, during the audit period, there was some variation among the analysts reviewing the retail analog measures as to which specific process they used. For the retail analog measures that were in-scope for the Liberty audit, the analysts for P-3, M&R-1, and M&R-5 used one technique and those for P-4, M&R-2, M&R-3, and M&R-4 used another newer method[423] that has more checkpoints and combines the data for all CLECs and sub-measures on a single spreadsheet. BellSouth has incorporated this new method in its mechanization of the data validation process since the audit period. The method used for P-9 shifted between the two techniques during the audit period.[424]

BellSouth indicated that the PARIS validation analysts reviewed all non-zero remedy payment calculations for the state of Florida from January 2003 through January 2004.[425] The analysts concentrated first on larger payment amounts, defined as the higher dollar amounts at the aggregate level. Any problem resolution within validation involves multiple groups. The analysts update the validation interface with pass/fail designation and include any comments. They can also attach documentation (such as spreadsheets or emails) within the interface.

During its review, Liberty determined that BellSouth does not have any validation in place to verify the accuracy of zero dollar remedy payments. Furthermore, BellSouth indicated that it did not validate zero dollar payments during the audit period, even if one or more statistical tests failed. BellSouth indicated that it believed that any issues regarding zero payment validation were resolved during the testing and initial implementation of PARIS.[426] BellSouth has since indicated that it did, in fact, validate zero payments during the audit period using the newer of the two analysis methods employed during the audit period.[427]

If the data analysts find errors in the remedy payments during the monthly process, the payments are typically corrected. BellSouth maintains a [redacted] Table to show all activity for a payment and to serve as an audit trail during the validation and payment authorization process. When PARIS successfully calculates a payment, it is marked as [redacted] After that the normal sequence of statuses is as follows [redacted] When a payment reaches the [redacted] status, BellSouth sends it to STAR[428] for payment. If a payment falls out of this normal sequence, BellSouth labels its status as [redacted] This generally occurs when the validation analysts determine that there was an error and the payment needs to be corrected. However, BellSouth can also place the payment into [redacted] status if problems occur later in the payment process even after a payment has been authorized.

[422] The fail month increment is used in the Tier 2 remedy payment calculations to count the number of consecutive months for which a measure failed to meet the standard,
[423] BellSouth calls this process "Darkology."
[424] Response to Data Request #126.
[425] Interview #2 and #3, October 28-29, 2004.
[426] Interview #2 and #3, October 28-29, 2004.
[427] Response to Preliminary Finding 54.
[428] Supplier Transaction and Remittance, BellSouth's Accounts Payable System.

Liberty reviewed the duties of those involved in the certification and authorization process, and found that there was an appropriate segregation of duties. No single individual can autonomously process a payment. The BellSouth personnel involved in this process examine and validate every payment line before they are selected for authorization.

The PMQAP documentation does not contain any specific standards regarding validation analysis. BellSouth supplied additional validation procedures that contained detailed validation instructions, but that provided little guidance for actual problem resolution.[429] Liberty believes that BellSouth generally complies with PMQAP data validation processes. Liberty finds that BellSouth's documentation of the PMQAP data validation processes provides general information and a data validation method. However, it does not provide standards and/or guidelines with respect to evaluating the analysis results or subsequent actions to be taken as a result of an analysis failure.

F. Findings and Recommendations

Finding 16: BellSouth excluded transactions from the calculation for a measure because it lacked required information about these transactions that were necessary only for another measure. Classification: 2

In its processing of the data used for SQM reporting and remedy payment calculations in PMAP, BellSouth assigns error codes when certain data elements are missing or aspects of the transaction do not conform to certain measure requirements. BellSouth then uses these error codes as part of its process for excluding transactions from the measures. During its data integrity analysis, Liberty observed that the error codes used in PMAP are not measure specific. In other words, a transaction receiving an error message because it does not meet the requirements of one measure will be excluded from all measures involving this type of transaction, even if the error was irrelevant to those other measures.

For example, M&R-2 (Customer Trouble Report Rate) can be calculated without knowing the received date of the trouble,[430] but M&R-4 (Percent Repeat Troubles) requires the received date of the record. Nevertheless, all trouble tickets without a valid received date are given an error code and are excluded from all of the measure calculations involving trouble tickets, including M&R-2. When Liberty asked BellSouth about this issue, BellSouth confirmed that this was the case.[431] As another example, P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) is calculated without the field containing the original committed due date of the order. However, if this field is missing, that service order is automatically excluded from the calculation of the P-9 measure regardless of the fact that due date information is irrelevant to the calculation of this measure.

[429] Data Request #32 – Validation Procedures Guide Version 2.1 dated 7/18/03.
[430] Response to Data Request #310.
[431] Response to Data Request #213.

BellSouth explained the extent to which this situation applies to the measures within the scope of this audit:[432]

- Ordering: Errors found in records relating to O-3 and O-4 apply only to those measures. All records marked with any error codes in the Data Warehouse fact table used for the ordering measures [redacted]) are excluded from O-9.
- Provisioning: All records marked with any error codes in the Data Warehouse fact table used for most provisioning measures ([redacted]) are excluded from all in-scope provisioning measures (P-3, P-4, P-7, P-7C and P-9). Records marked with errors in the Data Warehouse [redacted] tables specific to the P-7 and P-7C measures ([redacted]) apply only to those specific measures.
- Billing: Errors found in records relating to B-1 apply only to that measure.
- Maintenance & Repair: All records marked with any error codes in the Data Warehouse fact table used for the M&R measures ([redacted]) are excluded from all in-scope M&R measures.[433]

BellSouth explained that it excluded these records because, "when certain fundamental pieces of data are missing or invalid this calls into question the integrity of the record."[434] However, Liberty finds this rationale unconvincing. If BellSouth had only one M&R measure (*e.g.,* M&R-2, which does not depend on a calculation of trouble duration), it would not exclude records that lack received dates. It is making this exclusion because the received date is needed for some of the other measures, and BellSouth has a common warehouse and a common process for all of the M&R measures. In other words, the pieces of data that BellSouth considers as "fundamental" to the integrity of the records are exactly the same as the data that BellSouth needs for calculation of reported results for some measures.

Because of its procedure, BellSouth excluded relevant transactions from its SQM report and remedy payment calculations that should have been included, creating inaccuracies in its reported results and remedy payment calculations for those measures. This may lead to misleading reports and incorrect remedy payments provided to the CLECs and the Commission.

BellSouth replied that it did not agree with Liberty's characterization of the error exclusion problem.[435]

> *However, it is true that the PMAP Warehouses do not include CLEC or BellSouth Retail records with an error code in the measurements.*
>
> *BellSouth takes exception to this finding on the basis of following grounds:*
>
> - *The process of excluding records for missing information does not create a parity issue between CLECs and BellSouth because both*

[432] Response to Data Request #290.
[433] Liberty notes that BellSouth would also exclude these records from any measures in other domains that use trouble ticket data, such as the provisioning measures P-9 and P-7C.
[434] Response to Data Request #290.
[435] Response to Preliminary Finding 43.

the CLEC records and BellSouth Retail records are treated equally in this regard.

- *Attempting to write the code to anticipate every possible error multiplies the complexity of the code exponentially and could significantly increase the production time.*

BellSouth also claimed that "Liberty has mischaracterized the impact of this issue," and pointed out that the examples Liberty provided would have no impact on the results.

Liberty notes, however, that the issue is one of missing information. It is impossible to know *a priori* whether this missing information would create a parity issue. The fact remains that data that could be reported are not. Furthermore, given BellSouth's elaborate system for assigning error codes to transactions, it seems to be quite feasible to use such coding or a modification of it to selectively identify transactions for use in different measure calculations. BellSouth should consider introducing such modifications into its PMAP system.

In reply, BellSouth stated that it "strongly feels that the process for excluding records due to missing or invalid fields contained on a record is valid." BellSouth's position is that the same process is applied to both BellSouth and CLEC records, thereby ensuring equal treatment. BellSouth also stated that "while it may be technically feasible to make certain coding revisions Liberty suggests in its recommendation, they would be very complex and more importantly, there is no indication that these changes would materially change the measurement results. The number of records excluded is very small compared to the over 100 million records that are processed each month."[436]

Liberty notes that, while the number of excluded records could be considered "very small" when compared to the total records processed, the number of records excluded with an error code during the three months reviewed by Liberty were not insignificant. For example, for the provisioning measures during the three months subject to this audit, BellSouth excluded over one million service orders from the performance results of the provisioning measures each month.[437] Liberty cannot determine how many of these service orders BellSouth excluded because of missing data fields that would have been unnecessary for some measures. Recognizing BellSouth's concern that the necessary coding revisions may be very complex and yet have limited impact, Liberty recommends that BellSouth conduct a study using the data from one or two months to determine the number of the transactions that it excluded from the SQM and SEEM calculations but for which there was sufficient information to be included in the calculation for some of the measures. The results of this study would allow an informed decision as to whether the problem identified in this finding is significant enough to warrant a change in BellSouth's processing logic.

[436] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

[437] In November 2003 there were 1,259,277 service orders on the provisioning [redacted] table and thereby excluded from the November SQM and SEEM results calculations. In December 2003 and January 2004 Liberty found 1,523,751 and 1,763,911 service orders on the provisioning [redacted] tables respectively.

Finding 17: The retail performance analog for the Local Interconnection Trunk product as documented in BellSouth's SQM Plan for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), P-9 (Percent 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 Trouble Reports within 30 Days) and M&R-5 (Out of Service >24 hours) measures is unclear and misleading. Classification: 4

In its SQM Plan for wholesale products, where there is a standard of "parity with retail," BellSouth typically defines the retail products that are included as the parity standard for each specific wholesale product (*e.g.,* the retail parity standard for resale business is retail business). However, for the Local Interconnection Trunk product, BellSouth's SQM Plan simply defines the retail performance analog for the eight above mentioned in-scope provisioning and M&R measures as "Parity with Retail."

Liberty issued three Data Requests to BellSouth asking that BellSouth specifically identify all the retail products that were being included in the calculation of the Local Interconnection Trunk results for these measures. Liberty found BellSouth's responses to these Data Requests to be contradictory, resulting in further uncertainty as to exactly what retail products are used as the analog for wholesale Local Interconnection Trunk service orders (provisioning measures) and trouble reports (M&R measures).

In its response to the data request asking for the retail product definitions as they relate to the in-scope provisioning measures BellSouth stated:

> *IXC message trunks (PROD_ID ='1') connecting BellSouth and IXC switches is the **only** product that is included in the Analog product for Local Interconnection Trunks.*[438] (Emphasis added)

However, in its responses to the data requests asking for the same retail product definitions as they related to the in-scope M&R measures BellSouth replied:

> *Per the BellSouth product derivation rules, there is only one product for "Local Interconnection Trunks". It is product number 1. Product One identifies circuits which are trunks. These trunks, which make up the BellSouth analog, are owned by customers other than CLEC's. The major groups of BellSouth customers are IXC Carriers and Wireless carriers. These customer trunks originate on their switch and terminate on a BellSouth switch. These two groups make up over 99 percent of the BellSouth analog trunks. The remainder of the trunks represents miscellaneous BST customers. BellSouth confirms that all circuits in the analog "Local Interconnection Trunks" are trunks and are broken down in the customer groupings shown above.*[439]

[438] Responses to Data Request #391.
[439] Response to Data Request #389.

Only product ID '1's' are included in the analog. Product ID 1's are all Trunks as defined in the Product derivation rules provided to Liberty in a previous response.[440]

Based on these Data Request responses it is still not clear to Liberty what products are being included as the retail analog for Local Interconnection Trunks. Additionally, as opposed to BellSouth's assertion that "Product ID 1's are all Trunks as defined in the Product derivation rules provided to Liberty in a previous response," the only definition given in the Product Derivation Rules for Product ID 1 is "Local Interconnection Trunks" which obviously does not help clarify this issue.[441]

As it is currently written the SQM Plan can be interpreted to mean that other interconnection trunk groups (*i.e.,* the trunk groups that connect the various local switches in the BellSouth network that are used for the transport of BellSouth's local retail traffic) are also included as an analog product for Local Interconnection Trunks.

The language in the SQM Plan is important to the proper interpretation and implementation of the Florida performance measures. Inaccurate or misleading documentation creates unnecessary confusion as to what is actually being reported with this measure.

BellSouth has indicated that "if the FPSC agrees with Liberty's assessment that the language in the SQM Plan is 'unclear or misleading', BellSouth is willing, at the request of the FPSC, to make the necessary changes."[442] Liberty recommends that BellSouth consult with the Commission to determine what further steps are necessary.

Finding 18: BellSouth incorrectly reported certain LNP orders as INP Standalone orders in the O-9 (Firm Order Confirmation Timeliness), and P-9 (Percent Provisioning Troubles within 30 Days) results. Classification: 2

BellSouth stated that the transition to LNP was completed in the state of Florida in March 2000 and as a result CLECs could not order INP during the audit period.[443] However Liberty found that BellSouth reported results for the Standalone INP product for O-9 in November and December 2003 and for P-9 in November 2003.

BellSouth explained that it misclassified LNP records as INP because the CC/PON/Version recorded for non-mechanized orders in LON did not match that in the LNP Gateway.[444] BellSouth service representatives enter this information manually in both systems. BellSouth

[440] Response to Data Request #390.
[441] Response to Data Request #35.
[442] Response to Preliminary Finding 62.
[443] Response to Data Request #6.
[444] Interview #13, December 1, 2004. BellSouth explained that its service representatives use LON for tracking faxed orders and that they use the LNP Gateway for accepting LNP orders. BellSouth processes all LNP orders through the LNP Gateway, but if a CLEC submits an LNP order via fax, the BellSouth service representatives manually enter the information about the order into both LON and the LNP Gateway.

noted that it was investigating an alternative method to identify these records that would allow it to process them accurately.[445]

In November 2003, BellSouth reported 272 non-mechanized Standalone LNP orders for this O-9 sub-measure and incorrectly reported another 16 orders as Standalone INP. In December, BellSouth reported 330 non-mechanized Standalone LNP orders for this O-9 sub-measure, and incorrectly reported another 27 orders as Standalone INP. For the P-9 sub-measure results, BellSouth reported 686 non-dispatch, switch-based Standalone LNP orders, and incorrectly reported another five orders as non-dispatch, switch-based Standalone INP. In all cases BellSouth should have reported INP volumes of zero, and the orders that BellSouth erroneously classified as INP should have been included with the LNP sub-measure volumes.

BellSouth concurred with this finding and has proposed changes in the Florida Proposed SQM (version 3.01) concerning product disaggregations to address this issue.[446] The proposed SQM Plan revisions, to eliminate all product disaggregations involving INP, should correct this problem as long as BellSouth also corrects the logic it uses to identify standalone LNP orders. Otherwise, simply eliminating the Standalone INP product category will mean that the orders previously misidentified as INP will never get reported.

Finding 19: BellSouth has adopted a convention for treating related PONs in O-9 (Firm Order Confirmation Timeliness) that is not contained in the SQM Plan. Classification: 4

BellSouth mechanized its process for handling related PONs when it implemented Encore 14 and the ELMS6 industry format in November 2003. According to BellSouth, related PONs flow as a group, and if one LSR falls out for planned manual handling, all LSRs in the group fall out also. BellSouth adopted the convention of using the inbound time stamp of the last LSR it receives in a related PON group as the inbound time stamp for all LSRs in that group.[447]

BellSouth's convention for inbound time stamps on individual LSRs in a related PON group is not contained in the SQM Plan. As such, CLECs and the Commission may not be aware of how these related PONs are treated for the purposes of performance measurement. BellSouth should seek a clarification to the SQM Plan to make its convention explicit.

BellSouth responded to this issue by noting that it "submitted a Notification on October 1, 2003 … which clearly outlined the proposed treatment of related PONs for the O-9 measure."[448] Liberty agrees that this provides notification to the CLECs and Commission of the new related PON treatment. BellSouth also noted:[449]

> *[Related]PONs were not addressed in the SQM for this measure because they could not be submitted electronically for this measure when the SQM was*

[445] Response to Data Request #19.
[446] Response to Preliminary Finding 52.
[447] Response to Data Request #279.
[448] Response to Preliminary Finding 53.
[449] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

introduced. Like any other new development that must be addressed in the interim before an SQM can be revised under the processes specified by this commission, this matter was addressed in the next periodic SQM review.

Although it would be helpful to incorporate language in the SQM Plan to specify the related PON business rule, Liberty recommends that BellSouth discuss the issue with the Commission in the context of the periodic SQM reviews to determine the necessity of this change.

Finding 20: BellSouth omits coin orders from O-3 and O-4 (Percent Flow-Through Service Requests, Summary and Detail) reported results. Classification: 2

BellSouth processes SNAPRADS table data directly using an Interim Solutions flow-through application in order to calculate flow-through results, as well as results for fatal rejects and errors. BellSouth limits the data for O-3 and O-4 to that of mechanized orders that came through EDI, TAG, XML, or LENS.

The flow-through application contains a series of logic steps designed to determine how BellSouth's ordering systems processed each mechanized LSR: auto clarification, manual handling fallout, flow-through, or Z status.[450] The application further analyzes orders that meet none of the criteria for these categories to determine if they fell out due to BellSouth or CLEC errors. BellSouth applies all business rules within the flow-through program application. The output of the program consists of a set of "final" tables for LSR flow-through, LSR fatals, LNP flow-through, and LNP fatals.

As part of its data validation review for O-3 and O-4, Liberty selected sample mechanized orders from SNAPRADS to examine how the orders were treated for reporting purposes. Liberty first identified how BellSouth marked the order in the final flow-through table (*e.g.*, flow-through, fallout for manual processing, BellSouth error). Liberty then researched the order in SNAPRADS to determine if the application had correctly categorized each order.

In one case, Liberty could not find the order it selected in the final flow-through tables. BellSouth investigated the order and told Liberty that the order was not included because it was a coin order, which BellSouth excludes from the flow-through measures. BellSouth does not, however, exclude coin orders from measures that it calculates using the Data Warehouse tables, such as O-9.[451] This exclusion is not listed in the SQM Plan for O-3 and O-4.

BellSouth agreed that it did not treat coin orders consistently and stated that it had made provisions, as part of RQ1944, to begin reporting coin LSRs when it migrates the O-3 and O-4 measures into the PMAP Data Warehouse in the third quarter of 2005. However, there is insufficient information in the documentation of RQ1944 for Liberty to determine whether it will address the issue identified in this finding.

[450] Z status orders are LSRs that have been supplemented before BellSouth processed the original LSR.
[451] Interview #25 (part 2), February 16-17, 2005.

Finding 21: For the time period of this audit BellSouth was inappropriately excluding non-coordinated hot cuts from the calculation of the measure results for P-7C (Hot Cut Conversions – Percent Provisioning Troubles received within 7 Days of a Completed Service Order). Classification: 1

According to the Business Rules, as documented in the BellSouth SQM Plan, the P-7C measure "measures the quality and accuracy of completed service orders associated with Coordinated and Non-coordinated Customer Conversions." However, during the course of Interview #14 (November 23, 2004) Liberty learned that for the period of November and December 2003 and January 2004, BellSouth only included coordinated hot cut conversions in the calculation of this measure. Any hot cut that was non-coordinated (*e.g.,* frame due time hot cuts) was excluded from the measure results calculation. This was confirmed by BellSouth.[452]

Subsequent to the audit timeframe, BellSouth became aware of this problem and instituted a system change to correct it. BellSouth issued RQ4128 and an associated "MINI Requirements Definition Document (RDD)" that describes the system change as follows:

> *Right now [redacted] data is being excluded from SQM for P-7C – Hot Cut Conversions - % Provisioning Troubles Received Within 7 days of a completed Service Order. They are being excluded in SQM because of a null cutover completion date. SQM will remove date restrictions so that [redacted] will be included in SQM data for P-7C measure. Currently, RADS DTTM stamp is used in warehouse to determine reporting period. With this change, warehouse will use [redacted] to determine reporting period.*

According to the RDD and to BellSouth, this RQ was implemented on April 4, 2004.[453] Liberty has not verified that all hot cut activity is now being included in the calculation of the P-7C measure because that verification would involve examining BellSouth data mart records that are in a time period that is outside the scope of this audit.

To estimate the impact of excluding the non-coordinated hot cut orders from the P-7C calculation, Liberty used the DM tables for the P-3 (Percent Missed Installation Appointment) measure as a data source.[454] Using these tables Liberty sorted on all completed orders from November and December 2003 that i) involved a CLEC ([redacted]), ii) took place in Florida ([redacted]), and iii) involved a hot cut ([redacted]) to determine the total number of hot cut orders and the number of lines associated with these orders for each month. Using these tables and this sort criteria Liberty was able to determine that there were 2,828 hot cut service orders completed in November 2003 accounting for 4,153 lines and 3,955 hot cut service orders completed in December 2003 accounting for 5,144 lines.

[452] Response to Data Request #258.
[453] Response to Data Request #259.
[454] The table name for the tables used is [redacted].

Liberty then reviewed the DM tables used to calculate the P-7C results for November and December 2003.[455] Liberty found that the November results included 994 coordinated hot cut service orders accounting for 2,416 lines and the December results included 761 coordinated hot cut service orders accounting for 3,456 lines. The discrepancy between the total hot orders completed in November (2,828) and the orders actually used in the P-7C measure calculation (994) is 1,834 or 64.9 percent of the total hot cut orders. The discrepancy in the line counts between the total hot cut lines (4,153) and the line counts actually used in the calculation of the November P-7C results (2,416) is 1,737 lines or 41.8 percent of the total lines. For December, the discrepancy between the total hot cut service orders (3,955) and the service orders actually used in the calculation of the P-7C measure (761) is 3,194 or 80.8 percent of the total hot cut service orders. The discrepancy in the line count between the total hot cut lines (5,144) and the line count actually used in the calculation of the measure (3,456) is 1,688 or 32.8 percent of the total hot cut lines.

Liberty did not assess the exact impact on the reported P-7C results of the omission of the total hot cut line counts from the calculation of the P-7C measure during the audit period. Evaluation of the impact requires determination of which, if any, of the missing hot cut lines experienced a trouble report within seven days of the hot cut activity and would require considerable data analysis. Depending on the trouble report rates for these lines, the inclusion of them in the measure calculation could have had either a negative or a positive impact on the reported results. However, given the large percentage of hot cut service orders not included in the reported results, Liberty believes the effect was likely to be significant.

BellSouth concurred with this finding and issued RQ4128 in April 2004 to correct the problem.[456] Based on a review of this RQ, Liberty believes that the changes should correct the problem identified in this finding.

Finding 22: BellSouth did not include the translation time necessary to place the line back in full service when calculating the measure results for P-7 (Coordinated Customer Conversions Interval). Classification: 2

The Business Rules description of the P-7 measure, as defined in BellSouth's Florida SQM Plan, states that "where the service order includes LNP, the interval includes the total time for the cutover *including the translation time to place the line back in service on the ported line.*" (Emphasis added.) However, Liberty learned that BellSouth is not including this translation time in the calculation of the P-7 measure.[457] BellSouth confirmed this.[458]

BellSouth notifies the CLEC once BellSouth has completed the physical cutover of the customer's line to the CLEC's collocated equipment. It is then the CLEC's responsibility to complete the software translations necessary to port the customer's telephone number from the BellSouth switch to the CLEC's switch. Liberty recognizes that BellSouth has no control over,

[455] The table name for these tables is PT_DM.
[456] Response to Preliminary Finding 4.
[457] Interview #14, November 23, 2004.
[458] Response to Data Request #256.

and potentially has no means to monitor accurately or to record, the translation time. Thus, because the SQM measures are designed to measure the performance BellSouth provides to its wholesale customers, Liberty understands why BellSouth would not think it appropriate to include the translation time. However, the exclusion of the translation time is clearly in violation of the currently published SQM Business Rules. Although Liberty cannot determine the impact in P-7 results of including the translation time interval, it believes it would be significant.

BellSouth concurred with this finding, and stated that the language concerning the inclusion of the CLEC translation time in the calculation of the P-7 measure has been removed from the proposed new Florida SQM.[459]

Finding 23: BellSouth was misclassifying certain orders with a "PR-17" (cancelled order) error code thereby incorrectly excluding these orders from the calculation of the P-3 (Percent Missed Initial Installation Appointments) results. Classification: 2

The rules for the P-3 measure, as defined in BellSouth's SQM Plan, indicate that the only valid exclusion to this measure related to cancelled orders are "orders cancelled prior to the due date including orders that are to be provisioned on the same day they are placed ('Zero Due Date Orders')." While conducting the data integrity phase of its audit, however, Liberty found that BellSouth was also coding orders cancelled on the same date as the due date that were **not** "Zero Due Date Orders" (*i.e.,* the application date of the order was prior to the due date of the order) with a PR-17 error code resulting in the exclusion of these orders from the calculation of the reported results for the P-3 measure. Liberty discussed this issue with BellSouth and BellSouth agreed with Liberty's interpretation and indicated that it planned to issue RQ 6034 to correct this coding error.[460]

Liberty determined that, due to the misclassification with a PR-17 error code, there were a total of 9,029 Florida service orders that were incorrectly excluded from the P-3 measure calculations in November 2003 and a total of 8,426 Florida service orders incorrectly excluded in December 2003. The total number of service orders reported on each month's SQM results was 928,999 in November 2003 and 988,907 in December 2003. Of the excluded orders, 35 of the 9,029 November orders and 29 of the 8,426 December orders involved a missed appointment as a result of a BellSouth missed appointment code. Because of the various P-3 SQM and SEEM reporting disaggregations, it is difficult for Liberty to determine the exact impact these misclassified service orders had on the reported results at a sub-measure or CLEC level.

BellSouth concurred with this finding and issued RQ6033 to correct the problem.[461] Based on a review of this RQ, Liberty believes that the changes should correct the problem identified in this finding.

[459] Response to Preliminary Finding 9.
[460] Interview #21, January 4-7, 2005 and January 10-13, 2005.
[461] Response to Preliminary Finding 12.

Finding 24: BellSouth reported the results for P-3 (Percent Missed Initial Installation Appointments) incorrectly because it included end-user-caused misses in the denominator. Classification: 2

The exclusion rules for the P-3 measure, as defined in BellSouth's SQM Plan, indicates that "end-user misses" are excluded from the calculation of the SQM and SEEM measure results. However, BellSouth included service orders with an end-user miss in the denominator when calculating the reported results for BellSouth's on-time performance for retail and CLEC orders. By including these service orders, BellSouth did not follow the SQM business rules and thereby increased the base of orders used to calculate the measurement results, potentially improving the reported performance results.

BellSouth explained that end-user missed orders are included in the results because, in accordance with the P-3 SQM business rule definition and reporting dimensions, BellSouth is required to report end-user (retail) and CLEC (wholesale) misses.[462] However, the current SQM business rules explicitly state "Missed Appointments caused by end-user reasons **will be excluded** and reported separately." (Emphasis added.) The SQM requirement that BellSouth report the end-user missed order results separately does not allow for the inclusion of these orders in the base when calculating the results for BellSouth's on-time performance according to the business rules definition. Based on the current business rules definition, only those orders that were completed on time and orders that were BellSouth-caused misses should be included in the denominator of the results calculation. Orders that involved an end-user miss should be excluded entirely from BellSouth's on-time performance calculation. End-user missed orders should only be included in the calculation of the end-user results for this measure.

BellSouth also explained that these orders are included in its base when calculating the results because BellSouth should not be penalized when the end-user or CLEC could not meet the original commitment date and BellSouth was ready to work the order on that date. While Liberty understands this logic, it is not consistent with the plain reading of the business rules and list of exclusions for P-3 in the SQM Plan.

Liberty determined that there were 9,302 end-user misses incorrectly included in the BellSouth P-3 results for November 2003 and 9,761 end-user misses incorrectly included in the BellSouth P-3 results for December 2003. The total number of service orders reported for the P-3 SQM results in each of the two months was 928,999 for November 2003 and 988,907 for December 2003. Liberty did not determine the breakdown of these misses between the retail results and the CLEC results. Additionally, because of the various levels of sub-measure disaggregation, Liberty did not determine what impact this error would have on BellSouth's SQM results and/or SEEM payments at a sub-measure or CLEC-specific level.

[462] Interview #21, January 4-7, 2005 and January 10-13, 2005. The P-3 report structure is broken down into four reporting dimensions, which are i) BellSouth retail orders with a BellSouth caused miss, ii) BellSouth retail orders with an end-user caused miss, iii) CLEC wholesale orders with a BellSouth caused miss, and iv) CLEC wholesale orders with an end-user caused miss. Any CLEC-initiated delay of a CLEC wholesale order will be categorized as an "end-user" caused miss for the CLEC results on the P-3 report.

BellSouth has indicated that Louisiana was the first state to exclude end-user missed appointments from the BellSouth missed appointment results and to report them separately. BellSouth noted, "The intent of the LA PSC was to exclude end-user Missed Appointments in the BellSouth Missed Appointment results, and to report them separately." BellSouth also stated that when this was done, "it was also determined that the orders for the end-user Missed Appointment results would be included in the volume of completed orders, since BellSouth also has the opportunity to miss these appointments, and it is included in the calculation (denominator)."[463]

BellSouth should exclude end-user miss orders from BellSouth's result and report them separately as stated in the current SQM Plan. Alternatively, BellSouth should clarify the language in the SQM Plan to state clearly that BellSouth does not exclude end-user misses from the calculation of the reported results and that it does, in fact, count end-user misses as completed on time. BellSouth has elected to follow the latter approach[464] and indicated that "this issue was addressed in the pending review of the SQM as initiated by the Florida Public Service Commission."[465]

Finding 25: BellSouth incorrectly excluded the majority of the hot cut orders from the calculation of the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received Within 7 Days of a Completed Service Order) measures and excluded a smaller subset of orders from the P-7 (Coordinated Customer Conversions Interval) measure. Classification: 1

Liberty found that BellSouth did not include the majority of the loop hot cut orders in the calculation of the P-7C measure results. Liberty also found that this problem affected the P-7 measure, albeit to a much lesser extent than the P-7C measure. According to Liberty's analysis, BellSouth was excluding these orders with an error code of LU01, "Look-up Error." Liberty noticed that all of the orders that were coded in this manner had a null value in the company key field used to identify the CLEC associated with the hot cut order, on both the Warehouse [redacted] Table (used in the calculation of the P-7 results) and the Warehouse [redacted] Table (used in the calculation of the P-7C results). However, on the [redacted] which is used in the results calculation of the other in-scope provisioning measures, these same orders did not contain an error code and the company key field was populated. Liberty found that most of the orders affected by this problem were non-coordinated hot cut orders, which are not counted in the calculation of the P-7 measure, but do count toward the P-7C measure.

BellSouth explained that this problem was caused by the different processing paths that it used for the coordinated conversion measures (*i.e.,* P-7 and P-7C) as compared to the other provisioning measures.[466] BellSouth also noted that it identified this problem and issued RQ4989 to resolve the issue in March 2004. This change control revised the process so that the [redacted]

[463] Response to Preliminary Finding 13.
[464] Response to Preliminary Finding 13.
[465] BellSouth's April 5, 2005 response to the Liberty's Florida Draft Audit Report, issued March 11, 2005.
[466] Interview #21, January 4-7, 2005 and January 10-13, 2005.

[redacted] obtain the company key from the [redacted] Table instead of the CCSS. BellSouth provided all CLEC notifications and impact statements from March 2003 through January 2005 and Liberty reviewed this information in order to determine whether BellSouth issued a data notification or impact statement related to this problem, but could not locate any reference to RQ4989.[467]

Based on information provided by BellSouth, Liberty agrees that this problem had a limited effect on the P-7 reported results.[468] BellSouth stated that it excluded 27 of 4,879 Florida orders (less than one percent) found on the [redacted] in November 2003 from the measure calculation because those orders contained an error code of LU01. However, for the P-7C measure, Liberty determined that BellSouth excluded 4,174, or 54 percent, of the 7,773 Florida lines on the November 2003 [redacted] Table with the [redacted] error code. For December 2003, Liberty determined that 3,564, or 80 percent, of the 4,458 Florida orders on the [redacted], and 7,728, 72 percent, of the 10,697 Florida lines on the [redacted] Table were excluded with an error code of LU01. Liberty did not determine the precise effect of this defect on the reported P-7 and P-7C measures during the audit period. However, given the large number of records that were affected, it is likely to have had a significant impact on the reported P-7C results.[469]

BellSouth issued RQ4989 to correct this problem in March 2004.[470] This RQ, which requires that BellSouth determine the company key from the [redacted] table instead of CCSS, should resolve the issue identified in this finding.

Finding 26: BellSouth did not include disconnect service orders associated with Standalone LNP activity in the measure calculation for P-4 (Average Completion Interval & Order Completion Interval Distribution). Classification: 2

The business rules for the P-4 measure, as defined in BellSouth's SQM Plan, indicate that disconnect (D and F) order activities are valid exclusions to the calculation of the P-4 measure with the exception of disconnect [redacted] orders associated with Standalone LNP order activity. However, BellSouth informed Liberty that it was not including Standalone LNP disconnect service orders in its calculation of this measure.[471] BellSouth explained that it was not including this order type in the calculation of the P-4 measure because it measures this order activity in the P-13D measure (LNP-Average Disconnect Timeliness Interval). Liberty agrees that BellSouth appears to include Standalone LNP disconnect service orders in P-13D, based on the definition of this measure in the SQM Plan. However, by not including the Standalone LNP disconnect service orders in the P-4 measure calculations, BellSouth is not following the exclusion rules for P-4 as stated in the SQM Plan.

[467] Responses to Data Requests #121, #122, #297, and #298.
[468] Response to Preliminary Finding 17.
[469] BellSouth also noted in its response to this finding that many of the transactions that it dropped from the calculation of the P-7C measure as a result of this problem have been addressed in Finding 21 regarding BellSouth inappropriately excluding non-coordinated hot cuts from the calculation of the P-7C results.
[470] Response to Preliminary Finding 17.
[471] Interview #14, November 23, 2004. BellSouth confirmed this in its response to Data Request #14.

As of October 2004, service orders involving a standalone LNP disconnect activity can be found on the [redacted] table in the Warehouse. However, during the audit months, the data necessary to generate the standalone LNP reports were not transferred to the Warehouse from the source systems. Prior to October 2004, the P-13 reports that required these data were generated manually by BellSouth; therefore, the data needed to assess the impact of omitting the Standalone LNP disconnect orders from the calculation of the P-4 measure were not readily available to Liberty.[472] Liberty cannot make an impact assessment without these data.

BellSouth has indicated that "when the new P13-D was coded in PMAP, BellSouth found it no longer needed the Disconnect order to identify the LNP standalone product in OCI. The SQM documentation has been filed and could not be updated to remove the indication in the Exclusion section regarding D orders associated with LNP standalone. In future SQMs, BellSouth will clarify the exclusion to read Disconnect Orders."[473]

Because BellSouth is reporting disconnect service orders associated with LNP in the P-13D (LNP – Average Disconnect Timeliness Interval) measure, BellSouth should update the SQM Plan to remove the requirement to count these orders in the calculation of the P-4 measure and has agreed to do so.[474]

Finding 27: BellSouth incorrectly included certain record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measurement results. Classification: 2

The rules for P-3, P-4, and P-9, as defined in BellSouth's SQM Plan, indicate that BellSouth or CLEC order activities associated with internal or administrative use of local services, such as record orders and listing orders, should be excluded from the calculation of the measurements. While conducting the data integrity phase of its audit, however, Liberty found that BellSouth did not always exclude order activity involving only a record change from the calculation of these measures. Typically record change orders are identified by the characters [redacted] preceding the order's Universal Service Ordering Codes (USOCs) in the USOC data field of the service order. However, BellSouth uses certain USOCs involving only a record change, such as a listing order, that is preceded by the characters [redacted] on the service order. Orders with the [redacted] code in the USOC field should only be included in the measure when there are other USOCs in the same data field that are preceded with a code of [redacted] indicating that the order involves an inward activity. Liberty's investigation revealed that when BellSouth's SQM and SEEM processing system encountered any order with an [redacted] in the USOC field, it incorrectly membership mapped the order in the Data Warehouse to be included in the calculation of the reported performance results. Liberty discussed this issue with BellSouth and BellSouth agreed with Liberty's

[472] Interview #21, January 4-7, 2005 and January 10-13, 2005.
[473] Response to Preliminary Finding 18.
[474] Response to Preliminary Finding 18.

observation.[475] BellSouth indicated that it planned to issue RQ6039 to correct the coding problem that causes these orders to be included in the measurement calculations.

By sorting on the [redacted] and the [redacted] fields in the Data Warehouse Liberty determined that in November 2003 there were a total of 11,446 Florida service orders in which the USOCs contained the [redacted] code but did not contain an associated USOC with an [redacted] code to indicate that the order involved some form of actual provisioning activity other than the record change. In December of 2003, Liberty determined that there were a total of 9,831 Florida orders that met these criteria. The total service orders for these two months, as reported by BellSouth P-3 SQM results, were 928,999 in November 2003 and 988,907 in December 2003. Because of the various SQM and SEEM reporting disaggregations for the measures affected by this problem it is difficult for Liberty to determine the exact impact that the inclusion of these record orders had on the reported results at a sub-measure or CLEC-specific level. However, because these orders do not require any actual provisioning activity, their inclusion in the measurement calculations may artificially improve reported results.

BellSouth concurred with this finding and issued RQ6039 to correct the problem.[476] Based on a review of this RQ, Liberty believes that the changes should correct the problem identified in this finding.

Finding 28: BellSouth incorrectly excluded orders from the calculation of the P-7 (Coordinated Customer Conversions Interval) and the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measures that were properly included in the other in-scope provisioning measures. Classification: 2

While conducting the data integrity phase of its audit Liberty found that BellSouth excluded orders from the calculation of the P-7 and P-7C, but properly included the same orders in the other in-scope provisioning measures (*i.e.,* P-3, P-4 and P-9). Upon investigation Liberty determined that the reason these orders were not membership mapped on the [redacted] table (used in the calculation of the P-7 measure) and the [redacted] table (used in the calculation of the P-7C measure) was that the completion dates for the orders did not agree in the SOCS and CUTS tables found in the RADS source system. BellSouth uses the SOCS table as the source system in the calculation of the P-3, P-4 and P-9 measures. The CUTS table, along with the SOCS table, is used in the calculation of the P-7 and P-7C measures. According to BellSouth, it dropped the orders from inclusion in the Data Warehouse for the P-7 measures because of the date discrepancy between the two source systems.[477] BellSouth could not explain why the two source systems would reflect different order completion dates for the same service order activity. BellSouth indicated that it planned to issue a change request to correct this coding error.

[475] Interview #21, January 4-7, 2005 and January 10-13, 2005
[476] Response to Preliminary Finding 19.
[477] Interview #21, January 4-7, 2005 and January 10-13, 2005

Liberty did not determine exactly how many orders were dropped from the calculation of P-7 and P-7C measures as a result of a discrepancy in the completion dates between the source data systems. In addition, the inconsistency between the completion dates of the same orders in SOCS and in CUTS may indicate errors in those measures like P-3, P-4, and P-9 that depend on the SOCS data. However, Liberty did not assess to what extent this might be true, since investigation of the source data systems is outside the scope of this audit.

BellSouth concurred with this finding and issued RQ6059 to correct the problem.[478] There was insufficient information on the RQ6059 documentation provided by BellSouth for Liberty to assess whether this RQ will resolve the issue identified in this finding.[479]

Finding 29: BellSouth included orders with invalid conversion durations in the calculation of the P-7 (Coordinated Customer Conversions Interval) measure. Classification: 2

While conducting the data integrity phase of its audit Liberty identified service orders included in the calculation of the P-7 performance results that had a conversion duration of zero minutes. Liberty determined that the reason the Data Warehouse calculated and recorded a cutover duration of zero minutes for these orders was that the cutover start date and time and the cutover complete date and time were identical on the source record coming from the [redacted] table in SNAPRADS. Because a coordinated hot cut conversion requires manual work on BellSouth's central office distribution frame, it is impossible for BellSouth to accomplish the coordinated conversion in zero minutes. BellSouth was unable to provide a concrete explanation of this problem, although it did indicate that the problem was likely the result of input errors when the record was created.[480] There is no explicit exclusion of service orders with a cut-over duration of zero minutes in the rules for the P-7 measure in the BellSouth's SQM Plan; however, by including these orders in reported results, BellSouth could be reporting better average conversion intervals than it is actually achieving.

Liberty determined that in November 2003 there were 37 service orders with a zero minute duration on the [redacted] table used for the P-7 results calculation. In December 2003 there were a total of 14 orders with a zero minute duration. The total number of service orders reported by BellSouth during these two months for the P-7 results posted on the BellSouth SQM web site was 1,808 in November and 1,476 in December.

On February 1, 2005, BellSouth responded that it concurred with this finding and indicated that it would issue RQ6081, which would default conversion times that have the same start and stop time to one minute, to correct the problem.[481] However, on March 4, 2005, Liberty received an amended response from BellSouth on this finding. In its amended response BellSouth stated:

[478] Response to Preliminary Finding 20.
[479] Amended response to Preliminary Finding 20.
[480] Interview #21, January 4-7, 2005 and January 10-13, 2005
[481] Response to Preliminary Finding 21.

> *After further consideration of the finding, BellSouth feels issuing an SQM Clearinghouse request to clarify the situation is the more appropriate solution. The Clearinghouse request will propose that the SQM be modified to report any cut that is started and completed in less than one minute will result in a zero duration. Therefore, RQ 6081 which was referred to in the BellSouth original response has been cancelled.*

All hot cuts require physical work performed by BellSouth's technicians on the BellSouth central office distribution frame to accomplish the coordinated conversion. This physical work can never be performed in zero minutes. Indeed, it is possible that some of the zero-minute hot cut durations may be the result of data input errors by the central office technician.[482] Liberty agrees with BellSouth that, because this is a benchmark measure, there is no impact on the P-7 equity determination of including zero-minute durations.[483] Nevertheless, using a zero-minute duration for all hot cuts completed in less than a minute does artificially improve BellSouth's P-7 average interval results.

Liberty recommends that BellSouth seek concurrence with the Commission as to whether its current process of including cutovers with a zero-minute duration in the calculation of the P-7 results is an acceptable practice, given that it only affects the reporting of the average interval results.

Finding 30: For P-3 (Percent Missed Initial Installation Appointments), BellSouth included certain cancelled orders in both the numerator and denominator of the SQM results calculation, but included the same orders only in the denominator of the SEEM results. Classification: 2

Within the PMAP Data Warehouse, BellSouth designates which transactions will be included in a measurement calculation and how these transactions will be included in the calculation by using "membership maps" in the Data Warehouse fact tables. For proportion measures, like P-3 (Percent Missed Initial Installation Appointments), BellSouth uses the character [redacted] in the proportion membership map field of the [redacted] to identify service orders to be included in both the numerator and denominator of the measure calculation. The character [redacted] in this position identifies service orders to be included in the denominator only.

While conducting the data integrity phase of its audit, Liberty found that BellSouth was incorrectly membership mapping orders that were cancelled after the due date and also contained a null value in the missed appointment code. Specifically, for these orders, BellSouth populated the P-3 SQM position of the proportion membership map with the character [redacted] but populated the P-3 SEEM position with the character [redacted] When Liberty discussed this issue with BellSouth, BellSouth indicated that it was aware of the error and corrected it with RQ5037.[484] The implementation of this change control, which was scheduled for June 2004, was intended to

[482] This would occur if the technician mistakenly input the same time for the hot cut stop time as for the hot cut start time.
[483] Amended response to Preliminary Finding 21.
[484] Interview #21, January 4-7, 2005 and January 10-13, 2005

change the membership mapping such that these orders would receive a [redacted] in the membership map for both SQM and SEEM results.[485]

Liberty reviewed all data notifications and impact statements dated from March 2003 through January 2005 to determine whether BellSouth issued a data notification or impact statement related to this problem for the CLECs and commissions.[486] However, Liberty could not locate any reference to RQ5037 In addition, Liberty observed that the correction implemented by RQ5037 does not conform to the P-3 rules as defined in BellSouth's SQM Plan. Although the rules for P-3 in the SQM Plan specify the exclusion of orders cancelled prior to the original due date, orders cancelled after the original due date are eligible to be considered missed appointments.[487] The exception to this rule would occur when the missed appointment was caused by the CLEC or end-user, since the Business Rules section of the SQM Plan specifies that missed appointments caused by the end-user will be *excluded*[488] and reported separately.[489] When the cancelled date is after the original due date but the missed appointment field is null, BellSouth has no way of determining which party was the cause of the missed date. The orders observed by Liberty were of this type. The correction introduced by RQ5037, which populates the P-3 SQM and SEEM positions with a [redacted] in the membership map, now designates such orders to be included only in the denominator of both the P-3 SQM and SEEM calculations. However, Liberty can find nothing in the SQM Plan P-3 rules to justify this. With the convention introduced by RQ5037, orders cancelled after the due date with no cause code appear in the calculations as if they were orders for which BellSouth was able to meet the original due date.

Working with BellSouth, Liberty determined that in November 2003 there were a total of 2,033 Florida service orders that were cancelled after the due date and had a null value in the missed appointment code which would have been membership mapped in this manner. In December 2003, the total number of Florida service orders that met this criterion was 2,080. The total number of Florida service orders, as reported in the BellSouth P-3 SQM results, was 928,999 in November 2003 and 988,907 in December 2003.

BellSouth concurred with this finding and, as noted above, issued RQ5037 in June 2004 to correct the problem.[490] Based on a review of this RQ, Liberty believes that the changes should rectify the specific problem identified in this finding. However, as identified above, this RQ introduces another problem. Specifically, it treats orders cancelled after the due date which have a null value in the missed appointment field as met appointments, even though the orders may have been cancelled as a result of the appointments that BellSouth actually missed. Liberty

[485] Response to Preliminary Finding 22.
[486] Responses to Data Requests #121, #122, #297, and #298
[487] Thus, when an order is cancelled after the original due date, it should usually be membership mapped with a [redacted] in the Data Warehouse, designating it for inclusion in both the numerator and denominator of P-3.
[488] Liberty submitted Preliminary Finding 13 noting that BellSouth reported the results for P-3 incorrectly because it included end-user-caused misses in the denominator of the metrics calculation rather than exclude these misses as required by the SQM Plan.
[489] Thus, when the missed appointment field is populated with a code indicating a BellSouth miss, the orders should be membership mapped with a [redacted] in the P-3 SQM and SEEM positions, indicating that BellSouth was the cause of the missed due date and designating that service order for inclusion in both the numerator and denominator of the P-3 results calculation.
[490] Response to Preliminary Finding 22.

recommends that BellSouth exclude from the P-3 calculations orders cancelled after the due date that contain a null value in the missed appointment code field, because there is no way to determine the cause of the missed appointment in such cases.

Finding 31: BellSouth incorrectly included deny and restore record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure results. Classification: 1

The rules for P-3, P-4, and P-9, as defined in BellSouth's SQM Plan, state that BellSouth or CLEC order activities associated with internal or administrative use of local services (*e.g.,* record orders and listing orders) should be excluded from the calculation of the measures. The SQM Plan does not define any exceptions to this rule.

While conducting the data integrity phase of its audit, however, Liberty found that BellSouth included record change orders that involved a deny or a restore of service in the calculation of the P-3, P-4, and P-9 measure results. BellSouth identifies these orders with the characters "R:" preceding the order's USOCs in the USOC data field of the service order and a value of either "D" (deny) or "R" (restore) in the special order field of the service order. The "R:" action code preceding the USOC indicates that this order involves a record change action. BellSouth uses deny and restore orders to turn off a customer's service for reasons such as non-payment of the bill and seasonal suspension or restoral of service. BellSouth indicated that it included these orders in the measure calculation because it does not consider deny and restore orders to be record orders as they involve provisioning activity.[491] However, BellSouth typically implements these orders electronically by a software change in the local switch, which requires no human intervention. Additionally, a deny order essentially accomplishes the same thing as a disconnect order by removing the customer's service. BellSouth considers disconnect orders valid exclusions from all three measures; thus, it is illogical to include deny orders in the measure calculations if disconnect orders are excluded. This is especially true in the case of the P-9 measure because a trouble ticket can not be issued on a service that has been denied.

Liberty used the following filters on the Data Warehouse [redacted] table to determine the total number of deny and restore Florida service orders that were completed and included in the measure calculations for November and December 2003:

- [redacted] – identifies Florida service orders
- [redacted] D or R – identifies deny and restore service order types
- [redacted] null – identifies service orders that did not fall out for a processing error
- [redacted] – identifies service orders that have been completed
- [redacted] X – identifies service orders that are in the final complete status and are to be reported in the SQM and SEEM results

[491] Interview #21, January 4-7, 2005 and January 10-13, 2005.

Liberty determined that in November 2003, BellSouth completed 164,236 deny orders and 140,823 restore orders. In December 2003, BellSouth completed 202,255 deny orders and 161,756 restore orders. BellSouth reported a total of 928,999 service orders in the P-3 SQM results for November 2003 and 988,907 for December 2003. Although Liberty did not determine the precise impact of this defect on the reported P-3, P-4, and P-9 results during the audit period, given the large volume of deny and restore orders, it was likely significant.

BellSouth disagrees with the issue presented in this finding, stating that:[492]

> *BellSouth does not consider the denial or restoral orders as records that should be included in the category of records or listings and therefore should be included in the specified measures. Denial and Restoral service orders are not internal or administrative work activity. Physical or mechanical work is performed when the denial or restoral service order is processed. When the denial is worked, service (such as dial tone) is removed from the line and if the denial is on a working telephone number, a recorded message (intercept) is applied that advises callers the service is not available. When an order is issued to restore the service, the process is reversed and service is restored to the line and the intercept message is removed. In both cases, physical or mechanical work is performed on the service. Unlike disconnect orders, as mentioned in the finding documentation, there are service expectations associated with the denial and restore process from the customer and therefore should be included in the measures.*

Liberty maintains that a deny order is the same as a disconnect order from a customer expectation standpoint (*i.e.,* it turns off the customer's service) and therefore should be excluded from the calculation of the in-scope provisioning measures. BellSouth's practice of excluding disconnect, but not deny, orders from the calculation of the P-3, P-4, and P-9 measures is inconsistent and unsupported by the SQM Plan. This is particularly evident with the P-9 measure as it is impossible to receive a trouble ticket on a service that has been denied. As such, BellSouth's current practice results in artificially improved reported results for this measure. With respect to restore orders, however, Liberty can understand BellSouth's rationale for including these orders in the measure calculation.

BellSouth should seek input from the Commission and the other stakeholders of the SQM and SEEM Administrative Plans as to whether it should include deny and restore orders in the calculation of the P-3, P-4, and P-9 measure results. Based on such input, BellSouth should either change its current practice or modify the SQM Plan to reflect that practice.

[492] Response to Preliminary Finding 29.

Finding 32: BellSouth overstated the CLEC circuit counts for P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) by doubling the SL1 (Non-Design) Loop volume. Classification: 2

While conducting the data integrity phase of its audit, Liberty found that BellSouth was counting each Non-Design, 2-Wire Unbundled Analog Loop twice in the [redacted] table in the Data Warehouse. This fact table is used by the PT_DM table in the data mart to calculate the P-7C SQM results. It is also used by PARIS to calculate the SEEM results. As a result of this error, the CLEC hot cut volumes for Non-Design Unbundled Loops (the denominator for the measure calculations) were overstated by a factor of two.

When Liberty identified this issue, BellSouth indicated that it was aware of the error and corrected it with RQ4988, which it implemented in April 2004.[493] As a result of this change control, BellSouth revised its process for determining the P-7C service order line count. Rather than count the rows of data on the [redacted] table for each service order,[494] which was BellSouth's method of making the line count determination prior to RQ4988, the data mart now determines the line count from the [redacted] field from the Data Warehouse [redacted] table. Liberty verified that this field accurately reflects the line counts for each service order.

By using the Data Warehouse [redacted] table for November 2003, Liberty determined that BellSouth overstated the number of Non-Design (SL1) hot cuts in Florida by 1,648 loops when reporting the December 2003 P-7C results.[495] However, the SQM Plan and the SEEM Administrative Plan business rules require the P-7C measure to be reported not at an aggregate level but to be broken into four sub-measures: SL1-Dispatch, SL1-Non-Dispatch, SL2-Dispatch, and SL2-Non-Dispatch. The double counting problem only involved the SL1 Loops and there was no impact to the reported SL2 results for December 2003.

Liberty recalculated the December 2003 and January 2004 results for SL1 loops by using the November and December 2003 [redacted] table to determine the correct number of SL1 loops that should have been used in the denominator of the P-7C calculation.[496] The results of this recalculation are shown on the following table:

Report Month	Product Type	Measure Numerator	Reported Hot Cut Volume	Adjusted Hot Cut Volume	Reported Result	Adjusted Result	Benchmark
Dec 2003	SL1 Dispatch	5	654	327	0.76%	1.53%	<=3%
Dec 2003	SL1 Non-Dispatch	10	2,642	1,321	0.38%	0.76%	<=3%

[493] This information was provided to supplement Interview #21, January 4-6, 2005 and January 10-13, 2005.
[494] Each 2-Wire Non-Design Unbundled Analog Loop appears on two rows of the fact table because of the manner in which BellSouth assigns a circuit ID to these loops.
[495] The SQM Plan rules require the use of the service orders completed in the previous calendar month to calculate the current month's P-7C results.
[496] Liberty could not recalculate the November 2003 results because it does not have access to the October 2003 [redacted] table

Jan 2004	SL1 Dispatch	3	326	163	0.92%	1.84%	<=3%
Jan 2004	SL1 Non-Dispatch	5	2,362	1,181	0.21%	0.42%	<=3%

As demonstrated by this table, at the CLEC aggregate level, BellSouth is still within the benchmark standard when the P-7C results are recalculated and the change in the calculated percentage is less than 2 percentage points.[497] However, Liberty did not make an assessment of the impact of this error at the CLEC-specific level, and it is possible that the effect on specific CLECs is larger.

BellSouth concurred with this finding and issued RQ4988 in April 2004 to correct the problem.[498] The changes implemented as a result of this RQ should correct the problem identified in this finding.

Finding 33: During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded transactions from the retail analog of the resale ISDN product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2

The SEEM disaggregation rules for P-3, P-4, and P-9, as defined in BellSouth's SQM Plan, list retail ISDN as the SEEM retail analog product for resale ISDN. One of the main products classified within the retail ISDN product group is retail ISDN-Basic Rate Interface (ISDN-BRI). However, while conducting the data integrity phase of its audit, Liberty found that BellSouth was not including the completed service orders for ISDN-BRI within the retail analog when calculating remedy payments for resale ISDN.

Using the [redacted] table in the Data Warehouse and sorting by retail orders that were completed during the month and had a product identification code designating those orders as ones used for the provisioning of an ISDN-BRI service, Liberty determined that BellSouth excluded 349 retail ISDN-BRI service orders from the PARIS calculation of the retail analog for the resale ISDN product in November 2003. In December BellSouth incorrectly excluded 316 retail ISDN-BRI service orders from the PARIS analog calculation. In its P-3 SQM reports, BellSouth reported a total of 944 retail ISDN service orders in November and 852 retail ISDN service orders in December. Liberty did not determine what, if any, impact these excluded orders had on Tier 1 or Tier 2 remedy payments. However, the number of orders incorrectly excluded is a significant percentage of the total orders reported.

[497] Although Liberty's calculations do not indicate that there should be a reposting of the results, Liberty notes that BellSouth obscured the significance of this error in its Proposed May 2004 Data Notifications, which notified the CLECs and Commissions about RQ4988. In this document BellSouth indicated only that it was "overstating the circuit counts" when in fact it was doubling them for SL1 loops. Additionally, BellSouth reported the impact of the change aggregated across all four of the P-7C sub-measures rather than at the sub-measure level.
[498] Response to Preliminary Finding 30.

BellSouth concurred with this finding and issued RQ6111 to correct the problem identified by Liberty.[499] There was insufficient information in the RQ6111 documentation provided by BellSouth for Liberty to assess whether this RQ will fix the problem identified by this finding.[500]

Finding 34: The logic used by BellSouth to determine dispatch type misclassified some UNE loop orders when calculating the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 3

During the data integrity phase of its audit, Liberty found cases in which orders for new UNE-L and orders for UNE-L hot cuts were categorized as non-dispatch, switch-based. Because a UNE-L order does not use the BellSouth switch when it is provisioned, it should not be classified as a non-dispatch, switch-based order. The appropriate classification for these orders would be non-dispatch, dispatch-in. Liberty found that BellSouth used the following logic step to determine dispatch type: in the event that the "OCB" field[501] on the service order is blank and the order completion date minus the order application date equals zero (*i.e.,* the order was completed on the same day it was issued), BellSouth classified the order as non-dispatch, switch-based.[502] All of the misclassified orders examined by Liberty met these criteria. Liberty notes that same day provisioning is not a standard interval for UNE-L and none of the orders Liberty examined were expedited.

Using the [redacted] table in the Data Warehouse and sorting by orders that provisioned UNE loops and had a dispatch type of non-dispatch, switch-based, Liberty determined that four orders was were misclassified as non-dispatch, switch-based in November 2003. In December 2003, there were three such orders and in January 2004 there were 29. This problem may also affect other UNE products that do not require the use of the BellSouth switch to be provisioned. However, given the low volume of orders affected by this problem, Liberty did not conduct additional investigations.

BellSouth, in its response to this finding, stated, "[a]s clarification, all UNE loop orders are reported as Non-Dispatch. Though some orders may be reflected in the data as Dispatch-In, those orders are rolled-up and properly reported as Non-Dispatch, as per the current FLA SQM."[503]

Liberty agrees that the Dispatch-In and Switch Based (which was not addressed in BellSouth's response) classifications are additional disaggregations of the Non-Dispatch category for UNE-Loops, as well as for other products. Liberty also agrees that UNE-Loops are properly reported as Non-Dispatch. However, because Switch-Based is not a valid Non-Dispatch disaggregation

[499] Response to Preliminary Finding 33.
[500] Amended response to Preliminary Finding 33.
[501] The OCB field is used to identify the technician that completed the order. Switch based orders are typically provisioned electronically thereby resulting in a null value in the OCB field. The field can also be left blank if the technician who worked the order failed to populate the field.
[502] Response to Data Request #69.
[503] Response to Preliminary Finding 34.

for a Non-Dispatched UNE-Loop order, BellSouth should consider fixing the coding problem which results in the classification of some of its Non-Dispatch UNE-Loop orders in the Switch Based reporting category. However, given the low volume of orders affected by this problem, Liberty agrees with BellSouth that the issue lacks the severity to warrant coding changes if these changes are complex to implement.[504]

Finding 35: BellSouth did not include certain wholesale products in its calculation of the SEEM remedy payments for the P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure. Classification: 2

Liberty observed that BellSouth was not including 2-Wire ISDN Designed Loops without number portability and 2-Wire UDC Capable Loops in its calculation of the SEEM remedy payments for the P-9 measure. During discussions with Liberty, BellSouth confirmed that these two products were being dropped from the SEEM remedy payment calculations for the P-9 results.[505] BellSouth indicated that it will introduce change control RQ6132 to correct this problem.

In November 2003, BellSouth reported 243 ISDN CLEC Loop orders in its P-9 Florida CLEC aggregate SQM results. In December, BellSouth's reported SQM volume for ISDN Loops was 170 for the CLEC aggregate P-9 results in Florida.[506] BellSouth reported a total of 153,589 CLEC orders for its November P-9 SQM Florida results, and a total of 150,619 in its December P-9 SQM Florida report. Liberty did not determine what, if any, impact these excluded orders had on Tier 1 or Tier 2 remedy payments.

BellSouth concurred with this finding. In its response BellSouth indicated that RQ6132 has been cancelled. In lieu of this RQ, BellSouth stated that it will correct the problem identified in this finding with RQ6111.[507] There was insufficient information in the RQ6111 documentation provided by BellSouth for Liberty to assess whether this RQ will resolve the issue identified in this finding.[508]

[504] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.
[505] Interview #27, February 10, 2005.
[506] For the P-9 measure both of these products are reported in the aggregate as the ISDN loop product in accordance with the SQM Plan.
[507] Response to Preliminary Finding 40.
[508] Amended response to Preliminary Finding 40.

Finding 36: The SQM and SEEM levels of disaggregation as documented in BellSouth's SQM Plan were inaccurate and misleading for the UNE-P product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 4

The SQM and SEEM disaggregation rules for the P-3, P-4, and P-9 measures, as defined in BellSouth's SQM Plan, are identical for the UNE-P product. Therefore, based on the SQM Plan it appears that this product has the same product disaggregation requirements in both reporting systems. Liberty observed that BellSouth reports P-3, P-4, and P-9 results for UNE-P dispatch with a performance analog of retail residential and business dispatch for the SQM calculations. However, Liberty found that the UNE-P dispatch orders are dropped from the PARIS calculations of SEEM remedy payments. Indeed, Tables B-1 and B-2 of the SEEM indicate that the only disaggregation requirement for UNE-P orders in SEEM are non-dispatch/dispatch-in and non-dispatch/switch based orders.

Inconsistency between the SQM and the SEEM documentation may result in a misinterpretation of the reporting requirements for each of the reporting systems.

In its response to this issue, BellSouth stated:[509]

> *Using the July 1, 2003, version 3.0 of the Florida SQM as a guide, BellSouth created the SEEM sub-metrics that are used to perform penalty calculations for the State of Florida. For the Percent Missed Installation Appointments –UNE Loop and Port Combos (PMIA-UNEPC) sub-metric, the disaggregations and corresponding retail analogs are as follows:*
>
> *UNE Loop + Port Combinations.....Retail Residence and Business*
> *- Dispatch In.....- Dispatched In*
> *- Switch Based.....- Switch Based*
>
> *Since there are specific sub-disaggregations listed, BellSouth interpreted the SEEM disaggregations to be Dispatch In and Switch Based, both of which represent non-dispatch situations from an operational standpoint. For other disaggregations listed there is in fact a strict one-to-one relationship between wholesale and retail disaggregations; i.e. UNE Digital Loop < DS1 and Retail Digital Loop < DS1, UNE Digital Loop >= DS1 and Retail Digital Loop >=DS1, etc. However, in instances where there are separate sub-disaggregations listed, it is these separately specified disaggregations that are used as the required level of calculation. For example, the Percent Missed Installation Appointments –UNE XDSL (PMIA-UXDSL) sub-metric is listed in Version 3.0 of the SQM as:*
>
> *UNE xDSL (HDSL, ADSL and UCL).....ADSL Provided to Retail*
> *- Without Conditioning .....- Without Conditioning*

[509] Response to Preliminary Finding 45.

- With Conditioning ..... - With Conditioning

In this case, there are not 3 separate levels of disaggregation, only two: XDSL With Conditioning and XDSL Without conditioning. Using this logic, BellSouth created tables B-1 and B-2 in the SEEM Administrative Plan in order to show the measures and sub-metrics for which BellSouth would be calculating penalties in Florida. Since the Plan was filed with and approved by the Florida Public Service Commission, BellSouth believes it has been in full compliance with the Commission-ordered remedy calculation procedures.

Liberty maintains that BellSouth's SQM documentation of the level of disaggregation required for the SQM and SEEM results for the UNE-P product is misleading and believes that BellSouth should to clarify this documentation to reflect that for SQM results UNE-P has three levels of disaggregation (Dispatch, Non-Dispatch, as well as Dispatch-in and Non-Dispatch-Switch Based) whereas for SEEM reporting BellSouth only reports two levels of disaggregation, with UNE-P Dispatch orders not included in the SEEM Administrative Plan. Liberty recommends that BellSouth consult with the Commission to determine what further steps are necessary.

Finding 37: BellSouth incorrectly classified UNE Line Splitting orders as UNE-P orders when calculating its results for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2

Liberty added UNE Line Splitting to it audit work plan so that Liberty could investigate the large discrepancy between the ordering volumes reported for this product for the November 2003 O-9 (Firm Order Confirmation Timeliness) result and the volumes reported for the P-3 and P-4 results.[510] During its investigation of this problem, Liberty discovered that orders that were classified as Line Splitting orders in the Data Warehouse [redacted] table, used to calculate the O-9 SQM results, were classified as UNE-P orders in the Data Warehouse [redacted] table, which is used to calculate the P-3, P-4 and P-9 SQM results.

When Liberty notified BellSouth of this issue, BellSouth stated that these orders were incorrectly coded as UNE-P orders for the calculation of the provisioning measure results and that they should have been classified with a product ID of 5061, which would have counted them toward the Line Splitting results.[511] BellSouth indicated that it was aware of this problem and had issued RQ4871 to correct it in April 2004. Liberty found that BellSouth notified the Commissions and the CLECs of this change control in the Proposed April 2004 Data Notifications report, which stated:

[510] In the November 2003 SQM reports for Florida, BellSouth reported 182 CLEC Line Splitting orders for O-9 and 14 provisioning Line Splitting orders for the P-3 reported results. There was a similar discrepancy in the Line Splitting volumes in December 2003.
[511] Follow up to Interview #21.

Impact of Change: For November 2003, in Georgia, the PMI volume for UNE Line Splitting would increase from 6 to 110 with no change in equity. The volume for UNE-P would decrease from 86,135 to 86,025 with no change in equity.

BellSouth did not provide a separate impact statement for Florida or for any month other than November.

In November 2003, BellSouth reported 182 Line Splitting orders on its O-9 results and 14 Line Splitting orders on the P-3 results for Florida. In December 2003, the reported Florida O-9 Line Splitting volumes were 286 and the reported P-3 volumes were 26. However, all of the service requests counted toward the O-9 measure results would not be included in the provisioning results as a result of valid exclusions, such as disconnect orders, or because the service orders that did not complete during the report period. Liberty did not quantify the actual number of Florida Line Splitting orders that were misclassified as UNE-P in the provisioning measure results calculations. Nor did Liberty quantify what impact these misclassified orders would have had on the reported P-3, P-4, or P-9 results for November and December 2003 in Florida.

BellSouth concurred with this finding and issued RQ4871 in April 2004 to correct this problem.[512] The RQ4871 documentation provided by BellSouth contained insufficient information for Liberty to assess whether this RQ will resolve the issue identified in this finding.[513]

Finding 38: BellSouth neglected to calculate the total impact of multiple errors in determining whether it needed to repost the results for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measure. Classification: 2

Liberty identified three issues that affected the quality of the reported P-7C measure results and issued Preliminary Findings related to them. These issues are i) inappropriate exclusion of non-coordinated hot cuts,[514] ii) exclusion of orders because of incomplete identification of the CLEC company code for the orders,[515] and iii) overstatement of circuit counts.[516] In its response to each of Liberty's Preliminary Findings, BellSouth indicated that it was aware of the problems identified by Liberty and that it had implemented RQ4128, RQ4989 and RQ4988, respectively, to correct the problems. However, when Liberty inquired about how BellSouth determined that a reposting of the P-7C results was not necessary, BellSouth responded:[517]

In all three of these cases mentioned in this finding, BellSouth conducted an impact analysis study and it was deemed that a reposting was not required due to

[512] Response to Preliminary Finding 46.
[513] Amended response to Preliminary Finding 46.
[514] Finding 21.
[515] Finding 25.
[516] Finding 32.
[517] Response to Data Request #372.

the minimal impact of the changes when compared to the reposting guidelines. Please see the attached impact statements for all three RQs.

Liberty identified several deficiencies in BellSouth's determination that reposting of its P-7C results was not necessary.

First, the Impact Statements for each of the three change controls shows that each problem identified was treated individually and the impact of each to the reported results was assessed as a stand-alone calculation. Unless BellSouth calculates the combined effect of the three problems identified in its change controls, it cannot accurately state that a reposting is not necessary under the reposting guidelines.

Second, regarding the exclusion of non-coordinated hot cut [redacted]) orders,[518] BellSouth acknowledged that "at the time the impact analysis was done for RQ 4128, the volume of [redacted] records were low. As background, from October 2003 – March 2004, there was an unusually high volume of [redacted] records submitted in Florida."[519] BellSouth's Impact Statement associated with RQ4128 included in the January 2004 Data Notification is "[f]or May 2003, there were 17 non-coordinated conversions that were not reported, none of which had troubles." This statement refers to a time period outside the three-month window for reposting and is unspecific as to jurisdiction. Thus, BellSouth apparently made the decision not to repost its results or recalculate remedy payments ignoring the actual volumes of orders in Florida for periods potentially subject to reposting.

Finally, of the three change controls related to these problems, BellSouth did not issue a Data Notification or Impact Statement to the CLECs and Commissions for RQ4989. BellSouth indicated that "the impact statement and notification for RQ 4128 was used for both of these RQs."[520] However, the statement of the problem for RQ4128 in the January 2004 Data Notification does not include any mention of the problem associated with RQ4989. Liberty recognizes that the majority of the orders dropped because of the inability to determine company code (RQ4989) correspond to non-coordinated hot cuts that were inappropriately dropped through the error identified in RQ4128. However, the impact of the RQ4128 error by no means accounts for the full impact of the RQ4989 error.[521] Without a complete evaluation of the effect of the problem identified in RQ4989, BellSouth could not determine whether reposting of results was necessary.

If BellSouth does not accurately and completely calculate and document the impact of reporting and remedy calculation errors, it cannot make the appropriate determination regarding the need to repost its results. Additionally, CLECs and the Commission cannot be aware of the impact of a problem unless the impact statement of each RQ is calculated and documented in a proper manner according to the Data Notification Process. A recalculation that takes into consideration the combined effect of errors encountered and of the state, product, and measure-specific

[518] Liberty notes that [redacted] is used to identify non-coordinated hot cuts.
[519] Response to Preliminary Finding 17.
[520] Response to Preliminary Finding 17. The second RQ being referenced in this response is RQ4989.
[521] In addition, the problem identified in RQ4128 was unique to the P-7C measure; however, the problem identified in RQ4989 impacted all of the P-7 measures, not just P-7C.

transaction volumes (such as the increased order volumes experienced in Florida for the periods potential subject to reposting for P-7-C) is necessary to determine the true impact of errors and the need for reposting.

In its response to this finding, BellSouth stated:[522]

> *BellSouth attempts to identify an impact for each change to the metric calculations at the time that the issues are identified and submitted for preliminary proposal for the PMAP change notification document. BellSouth treats each item independently as there is no assurance as to when or if proposed notice items will be accepted. BellSouth believes that this is a reasonable methodology for determining impacts to its measures.*
>
> *BellSouth's assessment of the impact is developed at the time of the identification of the issue. At the time the impact statement is developed, a determination is made as to whether a reposting will be required.*
>
> *As Liberty stated in this finding report, RQ4989 was not included in the January 2004 data notification. This was an oversight on BellSouth's part and, as Liberty points out, the analysis performed would yield the same results. BellSouth should have listed both changes on its proposed notification.*

In its April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005., BellSouth stated:[523]

> *BellSouth firmly believes that it has consistently followed the Change Notification Policy correctly. In order to be in compliance with the existing policy, BellSouth must develop an impact statement for each change to be proposed. It should be noted that each of these changes are merely "proposed" at this point. They are subject to review by both the CLECs and the PSC before they are approved for implementation. Any attempt to group changes as Liberty has proposed would be arbitrary. Would we group them for two months, six months or one year? What would we do if a change was planned for one month but did not get implemented in that month, does that change how it is handled for reporting? Short of arbitrary rules, there is no logical way to answer questions such as these. This would only create confusion for all parties and would necessitate yet another impact analysis to be created. This could further delay necessary changes from being implemented in a timely manner. As Liberty stated in Preliminary Finding 47, BellSouth developed the required impact statements and performed analysis of all the issues presented in the finding. Therefore, BellSouth contends that no change is required.*

Liberty recommends that BellSouth, the Commission, and the other stakeholders review the current reposting policy to determine whether it appropriately identifies situations that require reposting. This review, at a minimum, should address the questions raised by BellSouth in its April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005, to ensure

[522] Response to Preliminary Finding 47.
[523] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

that the situations requiring reposting are clearly and completely identified and are not subject to arbitrary rules.

Finding 39: BellSouth's documentation in the SQM Plan for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) is contradictory and misleading. Classification: 4

P-7C measures BellSouth's performance on all hot cut order activity.[524] However, the documentation for the P-7C measure in BellSouth's SQM Plan, is unclear about whether this measure includes all hot cut order activity (coordinated or non-coordinated) or only hot cut order activity that involved a coordinated hot cut. The Business Rules section of the SQM Plan states that P-7C "measures the quality and accuracy of completed service orders associated with **Coordinated and Non-coordinated** Customer Conversions." (Emphasis added.) On the other hand, the Definition section of the P-7C measure in the SQM Plan includes the statement that it "measures the quality and accuracy of **Coordinated Customer Conversion** Activities." (Emphasis added.) The Calculation section of the SQM Plan also suggests that the P-7C measure is limited to coordinated customer conversions. The formula for the numerator states "[t]he sum of all **CCC Circuits** with a trouble within 7 days following the service order(s) completion."[525] (Emphasis added.) The formula for the denominator states "[t]he total number of **CCC service order circuits** completed in the previous report calendar month." (Emphasis added.)

The language in the SQM Plan is vital to the proper interpretation and implementation of the Florida performance measures. Inaccurate or misleading documentation creates unnecessary confusion as to what is actually being reported with this measure.

BellSouth concurred with this finding indicating that the new Florida SQM Plan, Version 3.1, that BellSouth has proposed to the Florida PSC addresses this issue by reflecting the inclusion of all hot cut circuits, both non-coordinated and coordinated.[526]

Finding 40: BellSouth was not including all orders for Local Interconnection Trunks in its calculation of the SEEM remedy payments for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures. Classification: 2

Liberty found that BellSouth was not including all orders for Local Interconnect Trunks on the PARIS [redacted] tables for inclusion in the calculation of the SEEM remedy payments for the P-3, P-4, and P-9 measures. Liberty examined three retail Local Interconnection Trunk orders for the

[524] Interview #14, November 23, 2003. See also BellSouth's reply to Preliminary Finding 4 and BellSouth's change control RQ4128 implemented on April 4, 2004 to include non-coordinated cuts in the P-7C measure.
[525] CCC is used to abbreviate Coordinated Customer Conversions
[526] Response to

November 2003 data month, only one of which Liberty was able to find in the PARIS [redacted] table. The order included in the SEEM calculation did not require a dispatch to be provisioned, whereas the other two orders were classified as orders that required a dispatch.

Liberty brought this issue to BellSouth's attention for its investigation. BellSouth responded that it found some missing data in the PARIS reference tables that causes some orders for trunks to be not included in the SEEM calculations.[527] BellSouth indicated that it has now created change control RQ6146 to correct this problem.

In November 2003 BellSouth's reported P-3 volumes for Local Interconnection Trunk orders in Florida were 92 retail orders and 78 wholesale orders. In December, the reported P-3 Florida volumes were 149 retail orders and 43 wholesale orders. In accordance with BellSouth's SQM Plan these orders are not disaggregated by dispatch type on the P-3 SQM report. Liberty did not determine how many of these orders were not included in the SEEM remedy payment calculation.

BellSouth concurred with this finding indicating that it issued RQ6146 to correct this problem. There was insufficient information in the RQ6146 documentation provided by BellSouth for Liberty to assess whether this RQ will resolve the issue identified in this finding.[528]

Finding 41: BellSouth was not in conformance with the SQM Plan when calculating service order durations for the P-4 (Average Completion Interval & Order Completion Interval Distribution) measure. Classification: 2

When BellSouth calculated the service order completion intervals for the P-4 measure, it excluded Sundays from the time intervals for all products. In addition, for the 2-wire ADSL, 2-wire HDSL and 4-wire HDLS products, BellSouth excluded both Saturdays and Sundays from the calculation of the completion intervals.[529] BellSouth's SQM Plan does not identify Saturdays and Sundays as valid exclusions for the calculation of the service order completion intervals nor do the business rules specify exclusion of these days for any products.

By not including Sundays (and Saturday for the xDSL products) in the service order duration BellSouth understated its wholesale and retail order completion intervals when reporting the results for the P-4 measure in Florida. Liberty did not quantify the impact of this understatement on the reported results.

In response, BellSouth stated,[530]

> *[T]o meet updated Interval Guide requirements, the new FL SQM has been updated to not include this as an exclusion, but rather in the Business Rules state the following: "Only valid business days will be included in the calculation of this*

[527] Interview #21, January 4 – 7 and January 10 -13, 2005.
[528] Amended response to Preliminary Finding 49.
[529] Response to Data Request #254.
[530] Response to Preliminary Finding 50.

interval. Valid business days may be found at the following website: (http://www.interconnection.bellsouth.com/#localorderinghandbook/intervalguide)".

At the time of the original request, the PMAP code was updated, with CLEC/PSC agreement (via conference call meetings), that the weekends and holidays would be excluded only from the benchmark products, since those were not offered dates in the Interval Guide. It was expected the SQM would be corrected with the next update, however, other requests were fulfilled and this was placed on hold for the next update.

BellSouth should update its SQM documentation to clearly state how weekends are treated in the calculation of the in-scope provisioning measure results. BellSouth indicated that it "believes that the current SQM is clear and will initiate Florida SQM changes as directed by the Florida Public Service Commission in the future."[531] Liberty recommends that BellSouth consult with the Commission to determine what further steps are necessary.

Finding 42: BellSouth did not properly align the product IDs for troubles and the lines on which they occurred for M&R-2 (Customer Trouble Report Rate), causing mismatches and resulting in assignment of either the troubles or the lines to the wrong sub-measure in SQM reports and SEEM remedy payment calculations. Classification: 2

As part of its SQM report and remedy payment replication for M&R-2, Liberty noted a number of examples in which there were troubles in the numerator of this measure but no corresponding lines in the denominator. BellSouth informed Liberty that some M&R-2 results could have troubles in the numerator without any corresponding lines in the denominator.[532] BellSouth explained that this could occur for several reasons, including situations in which a trouble was reported during the month but the line was disconnected before the line count was taken early in the following month, or the line changed ownership after the trouble was reported but before the line count was taken.

To investigate this issue, Liberty provided BellSouth with four sets of troubles that appeared in the numerator without any corresponding lines in the denominator for the November 2003 data month, and asked BellSouth to provide either the disconnect order or the order showing that the lines had changed ownership. In its response, BellSouth provided three different explanations for the discrepancies.[533]

For some of these troubles, BellSouth provided data showing that the ownership of the lines had changed hands. For other troubles, BellSouth noted that the ownership of the lines had been

[531] BellSouth's April 5, 2005, response to Liberty's Florida Draft Audit Report, issued March 11, 2005.
[532] Interview #15, December 2-3, 2004.
[533] Response to Data Request #348.

misidentified by BellSouth's process. BellSouth issued RQ5673 to address the misidentification of lines in November 2004, after the time period within the scope of Liberty's audit.[534]

In its third explanation, provided for other troubles, BellSouth noted that it had indeed found the relevant lines in the CRIS file. When Liberty requested further clarification, BellSouth explained that the trouble tickets related to those lines had the wrong product IDs associated with them. Upon further examination, BellSouth determined that this occurred because the LMOS legacy system included incorrect class of service USOCs on those trouble tickets, causing the measure results calculation process to associate the wrong product IDs with the trouble tickets.[535] As a result, BellSouth used different product IDs for the troubles than it used for the lines on which the troubles occurred.

Liberty notes that, in addition to creating a mismatch between trouble reports and the lines those troubles are on, these errors in determining product IDs cause the misidentified troubles to be included in the wrong sub-measure result calculations. The mismatch between troubles and lines causes inaccurate SQM reports and SEEM remedy payments. Liberty did not determine the size of these inaccuracies. However, Liberty determined in its remedy payment replication that it was not able to match troubles with lines for about two percent of the wire center/CLEC/product group combinations for the months of November 2003 through January 2004.

BellSouth replied to this finding by indicating that it "agrees with Liberty's assessment with respect to the trouble tickets being assigned the incorrect product ID" and that "it corrected this problem with RQ5673, implemented in the November 2004 data month."[536] BellSouth has also "opened RQ6147 to address the issue with the trouble reports." Neither RQ5673 nor RQ6147 contain enough detail about BellSouth's process changes to enable Liberty to assess whether they will fix the problem identified in this finding.

Finding 43: BellSouth included special access services in some of its retail analog calculations during the audit period and, after correcting the calculations, failed to perform a complete analysis to determine whether reposting was necessary. Classification: 2

BellSouth issued RQ4550 to exclude special access records from the retail analogs[537] in the SQM.[538] When Liberty asked why this exclusion had been made, BellSouth responded that special access services are not local exchange services and therefore should be excluded from the SQM.[539] BellSouth also noted that Florida PSC Order PSC-03-0529-PAA-TP required that it develop diagnostic special access measures. This Order did not, however, address the appropriateness of including special access records in the SQM.

[534] Liberty notes that RQ5637 described the change impact in terms of percent changes, even though M&R-2 has a retail analog, and the reposting requirements specify that Z-scores at the sub-measure level must be assessed in such cases.
[535] Response to Data Request #388.
[536] Response to Preliminary Finding 36.
[537] Liberty noted that the CLEC data for these months did not contain any special access records.
[538] Response to Data Request #70.
[539] Response to Data Request #132.

BellSouth began removing special access records from its SQM and remedy payment calculations beginning in the January 2004 data month and noted in its Proposed January 2004 Data Notification, filed December 1, 2003:

> *BellSouth has discovered that Special Access services are erroneously being included in certain BellSouth Retail Analog data.*

The impact statement in the Data Notification only noted that the impact was "less than 1% volume impact in July 2003 data." This statement by itself does not demonstrate that the impact of the removal of the special access records would not have required reposting of the data. Therefore, Liberty requested all analyses performed by BellSouth to determine if reposting was required as a result of the change. BellSouth ultimately responded that:

> *The greatest change to any sub-metric in this case was less than 1% and there was no parity shift, therefore, re-posting was not required.*[540]

However, the in-scope M&R measures are all measured against retail analogs. Accordingly, the reposting policy requires an evaluation as to whether the change resulted in a shift in parity and whether there was a change in the Z-score of at least 0.5 at the sub-measure level.

Liberty requested all of BellSouth's working papers to confirm that re-posting was not required. BellSouth responded by providing two spreadsheets, neither of which included Z-scores or addressed parity shifts.[541] One of the spreadsheets showed, for Florida for November 2003, the difference in the number of retail lines when special access records are removed. Depending on the product ID, that difference was as much as 25 percent. However, this information was not helpful in determining parity shifts or Z-score changes. The other spreadsheet showed the M&R-2 and M&R-3 Florida results by product ID with and without including special access lines for February 2003. For example, the M&R-3 result for product ID 1 was 2.24405 when special access lines are included, but 2.96528 when those lines are excluded. While the data BellSouth provided did not include Z-scores, the changes in results at the sub-measure level were significant and certainly appeared to warrant such analyses.

BellSouth states that it excluded special access records from the Florida measure calculations starting with the January 2004 data month; however, it is not clear that the impact of this change was ever fully assessed. Based on the information BellSouth provided to Liberty some changes at the sub-measure level were significant, but Liberty does not have enough information to determine whether reposting was required.

BellSouth states that special access circuits were removed from numerous metrics and at such a high level that Z-score analysis was not required due to the technical feasibility standard in the Florida Reposting Policy.[542] However, BellSouth provided no evidence that reposting was technically infeasible in this case. BellSouth also states that it conducted an impact study, but

[540] Response to Data Request #341.
[541] Response to Data Request #360.
[542] Response to Preliminary Finding 38.

that the study did not include the required Z-score analysis and BellSouth did not retain the study results. BellSouth also noted:[543]

> *The removal of the special access records was an extremely rare and unique situation. BellSouth maintains that it has properly followed the specific guidelines set forth in the Reposting Policy as well as the Change Notification Policy. When the discrepancy was determined: 1) BellSouth notified the CLECs and the Florida Public Service Commission per the Change Notification Policy, 2) BellSouth did conduct an impact analysis on the change of record counts.*

Liberty discussed its recommendations regarding reposting under Finding 8.

Finding 44: BellSouth included orders with invalid maintenance durations in the calculation of the M&R-3 (Maintenance Average Duration) measure. Classification: 2

The M&R-3 measure reports the average duration from the time BellSouth opens a trouble ticket to the time that BellSouth closes that ticket, after fixing the trouble and restoring service. To calculate the M&R-3 results, BellSouth extracts the time interval between the opening and closing (maintenance duration) of each trouble ticket directly from the source maintenance and repair systems, LMOS and WFA.

While examining BellSouth trouble ticket data for November and December 2003, Liberty noted a number of cases in which the trouble tickets had maintenance durations of zero minutes. For November 2003, there were 1,840 out of 142,352 tickets from LMOS that did not error out and that had zero maintenance durations. Furthermore, of these 1,840 trouble tickets, 122 were marked as dispatched. The characteristics of none of these troubles were such that they would be excluded according to the M&R-3 exclusion rules in the BellSouth's SQM Plan.

A legitimate interval between the opening and closing of trouble tickets should not be zero. This is particularly clear in the case of those troubles requiring a dispatch. When questioned about these zero maintenance duration intervals, BellSouth responded with two possible reasons as to why these trouble tickets had zero maintenance durations: i) the times were coded incorrectly in the legacy system by the technician and ii) the troubles were reported by the CLECs through the Trouble Analysis Facilitation Interface (TAFI) system, in which it is possible for there to be an apparent resolution of the problem before the ticket was opened, although the actual time interval is non-zero.[544] Both of these explanations point to erroneous data in the source systems themselves. Although BellSouth's PMAP system generally accepts data derived from the source systems without modification, it has an elaborate system of error checks that eliminates transactions with erroneous data fields from the measure calculations. Furthermore, in the case of some other time interval measures,[545] BellSouth substitutes default values for derived time intervals that would otherwise equal zero. For example, for P-4, BellSouth substitutes a 0.33 day

[543] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.
[544] Response to Data Request #394.
[545] For example, O-9 (Firm Order Confirmation Timeliness) and P-4 (Average Completion Interval).

interval (8 hours) for any cases where PMAP calculates a zero duration on orders issued and worked on the same day (Zero Due Date Orders).

The Commission and the CLECs rely on the accuracy of BellSouth's measure calculations to assure accurate reporting and remedy payments. BellSouth's use of zero durations when the actual maintenance duration is non-zero biases both the calculated wholesale and retail maintenance average durations to be smaller than their actual values.

In response, BellSouth noted:[546]

> *BellSouth' mechanized systems can, and do verify or analyze data, and perform updates to databases in milliseconds and seconds. Prior to mechanization, this process would have taken several minutes and sometimes even hours to perform. BellSouth believes that it is perfectly legitimate to have durations of zero when the open and close times of a ticket are the same, or virtually the same. As information, the LMOS and WFA systems provide the durations to PMAP in hours and minutes.*
>
> *Liberty's comparison to the P-4 measure as a reason for BellSouth to set the duration to something other than zero is flawed. Please note that the P-4 measure specifies in the SQM that the interval is set at .33 when the duration is for a zero-day interval. The SQM has no such language for MR-3. In both these measures, the data for CLECs and BellSouth Retail is treated equally.*
>
> *BellSouth's analysis of the actual data for MR-3 shows there is* ***no*** *"bias" to the duration for either the CLEC or BellSouth retail durations for the MR-3 measure as Liberty asserts in its Impact statement.*

Liberty notes that it cannot verify BellSouth's assertions regarding its back-end maintenance systems and processes and any data generated by those systems because analysis of these systems was not within the scope of this audit. However, Liberty believes that the analogy with the P-4 measure regarding the treatment of zero durations is sound. Therefore, Liberty recommends that BellSouth seek input from the Commission and the other stakeholders of the SQM and SEEM Administrative Plans regarding its treatment of zero trouble durations. Liberty believes that such discussions should address the advisability and feasibility of either replacing the zero durations with non-zero default durations (as with P-4) or excluding trouble tickets showing zero duration from the M&R-3 measure altogether. The discussions should also consider the feasibility and advisability of calculating trouble durations within PMAP, as BellSouth does for the provisioning measures, rather than using durations derived directly from the source systems, as this might provide BellSouth with a better opportunity to identify potential errors in the source data.

Finding 45: During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded ISDN-Basic Rate Interface (ISDN-BRI)

[546] Response to Preliminary Finding 59.

Business Design troubles for the 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), and M&R-5 (Out of Service > 24 Hours) measures. Classification: 2

As part of its data validation investigation for the M&R measures, Liberty tracked a sample of trouble tickets from the Data Warehouse into the [redacted] table that BellSouth uses as the source for its M&R measure PARIS calculations. Liberty found that a wholesale trouble from this sample, specifically a trouble on an ISDN-BRI Business Design circuit, was missing from the [redacted] table. BellSouth includes such troubles in the Resale ISDN sub-measures M&R1, M&R-2, M&R-3, M&R-4, and M&R-5. As a result, BellSouth did not include this transaction in these sub-measures when calculating remedy payments.

BellSouth has acknowledged this issue, and indicated that it believes its cause is the same as that for the issues Liberty noted in Findings 33 and 35 for provisioning measures. BellSouth also indicated that it initiated a correction to this problem through RQ6111. Specifically, BellSouth designed this correction to include some wholesale products in the PARIS calculations transactions, including ISDN-BRI Business Design, which had been neglected previously.[547]

BellSouth's explanation of the cause of the missing trouble implies that all wholesale ISDN-BRI Business Design troubles were excluded from the remedy payment calculations. Liberty did not determine what, if any, impact these excluded troubles had on Tier 1 or Tier 2 remedy payments. However, in its reply to this finding, BellSouth has indicated,[548]

> *There were occurrences of the ISDN products (id's 17, 18, 19, and 20) on the wholesale side in Florida, however, the volumes were very low. Specifically, during the Audit period, there were not any occurrences of a CLEC with at least 5 service orders or trouble tickets. Consequently, reruns are a moot point.*

As noted, BellSouth is addressing the issue through RQ6111. However, Liberty does not have sufficient information to determine whether this change will fully correct the problem.

Finding 46: For the B-1 (Invoice Accuracy) measure, BellSouth did not define the adjustments it includes in a report month consistently for all bills. Classification: 2

BellSouth uses a combination of mechanized and manual procedures to prepare the billing data that it uses to calculate the B-1 measure. BellSouth first runs two mechanized job procedures that retrieve revenue and adjustment information, based upon the bill date. BellSouth uses two different methods for retrieving billing data depending upon whether the bill comes from CABS or CRIS/IBS (*i.e.*, extracting data from the source billing system versus extracting data from the financial accounting system).

[547] Response to Data Request #395 and e-mail from J. Chambers (March 24, 2005).
[548] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

One mechanized procedure extracts, directly from CABS, the CLEC local billing revenue and adjustment data and the BellSouth CABS adjustment data. Because BellSouth extracts data directly from CABS, it captures the adjustments reflected on bills BellSouth issued during the month. For the other mechanized procedure, BellSouth does not retrieve IBS and CRIS data directly from the source systems, but instead extracts CRIS and IBS data from the FDB, which is the system BellSouth uses to keep its accounting records.[549] Because BellSouth extracts CRIS/IBS data from the FDB, it captures adjustments that BellSouth issued during the reporting month, not only those included on current month bills.[550]

BellSouth uses two different definitions for adjustments, depending upon whether the bill comes from CABS or CRIS/IBS. The SQM Plan refers to "billing related adjustments during current month." Either BellSouth approach can be considered consistent with the SQM language, but not both.

BellSouth offered, subject to Commission approval, to add clarifying language to the SQM Plan.[551] Specifically, BellSouth proposed to state that CRIS/IBS adjustments are based on all adjustments posted to an account during the reporting month, and that CABS adjustments are based on only those adjustments issued on the customer's monthly bill. This clarification would resolve the matter.

Finding 47: BellSouth's manual process for preparing billing data for the B-1 (Invoice Accuracy) measure did not contain adequate quality control procedures. Classification: 3

During its review of the process BellSouth uses to prepare data for the B-1 measure, Liberty examined working spreadsheets provided by BellSouth that contain the output of the mechanized procedures as well as the Billing Group analyst's revisions and exclusions to these data for the December 2003 reporting month. With the exception of the total number of adjustments, Liberty was able to reconcile these working spreadsheets with the data in the final Billing Group spreadsheet that goes into RADS. Liberty found that the number of total adjustments in the working spreadsheets was two greater than the number of total adjustments in the final spreadsheets.

BellSouth indicated that it had introduced an error in the number of adjustments for one billing account (although the dollar amount was correct) when preparing the final spreadsheets and confirmed that the number of adjustments on the final spreadsheets was incorrect and that invoice accuracy measured in number of adjustments, reported as a diagnostic, should decrease from 67.91 percent, as reported, to 67.11 percent. The result for invoice accuracy in terms of dollars is not affected.

[549] Interview #7, November 16, 2004.
[550] Responses to Data Requests #316, #317, and #346. BellSouth may issue adjustments on a CRIS or IBS account after the bill date for the month; such adjustments are reflected in the monthly FDB data but appear on the next month's bill.
[551] Response to Preliminary Finding 23.

BellSouth should expand its process for preparing the billing data that it sends to RADS to include quality control for its manual processing steps. BellSouth informed Liberty that it recently revised the work flow for the manual review process to include additional review and controls procedures, and that it updated the job aids used by the Billing Group analyst to reflect these changes. BellSouth noted that its recently revised work flow should minimize inaccuracies and improve quality control, and that it continues to review the process with an objective of reducing as many manual steps as possible.[552]

Finding 48: BellSouth's process for determining the final adjustment values and the count of adjustments in the calculation of the B-1 (Invoice Accuracy) measure for both CLECs and BellSouth retail is incomplete and thus does not assure accurate reporting of this measure. Classification: 3

Because some of the B-1 exclusions specified in the SQM Plan cannot be performed using the logic in its current computerized process, BellSouth cannot accomplish all of them using the mechanized procedures it developed to prepare B-1 data. For those exclusions that cannot be accomplished through the mechanized procedures, the Billing Group analyst must manually research bills to identify which adjustments should be excluded.

The analyst does not review every CLEC bill, but instead researches each bill for which the absolute value of the total adjustments is $1,000 or more. BellSouth noted that by adopting the $1,000 cut-off point, it may be including adjustments in CLEC results that are not related to billing errors, which would make its performance look worse than it actually was. BellSouth also indicated that it did not have the resources to spend the time to check each record. BellSouth cited the imprecise coding methods representatives use in the billing systems as one reason for the significant review burden.

BellSouth stated that there was not a routine review that it could perform for the total retail adjustment figures, because it would be impossible for it to trace adjustments back to all the retail accounts. However, the Billing Group analyst investigates possible reasons for large changes in revenues and adjustments from one month to the next by questioning other billing and financial personnel to find out if something unusual occurred during the month. If the analyst identifies retail non-billing error adjustments, such as for a large settlement, he or she will revise the retail adjustment figures accordingly.

The lack of a full review of all the billing adjustments means that the final adjustments values and counts of adjustments that BellSouth uses to calculate the B-1 measure for both CLECs and BellSouth retail are likely to contain some inaccuracies. For practical reasons, BellSouth can never review all adjustments for both wholesale and retail bills. As long as a significant portion of the exclusions of non-billing error adjustments can only be identified manually, BellSouth's B-1 results will be inaccurate to some degree. By implementing more precise methods for coding adjustments and mechanizing more of the adjustment review, BellSouth could further improve result accuracy. BellSouth noted that it implemented mechanical enhancements after the audit period, in the second quarter of 2004, to reduce a significant portion of the manual handling of

[552] Response to Preliminary Finding 14.

adjustments.[553] BellSouth reiterated that it continues to review its methods to reduce as many manual steps as possible.

Finding 49: BellSouth's methods for defining revenues and determine which bills are included in the B-1 (Invoice Accuracy) measure are not addressed by the SQM Plan. Classification: 4

The SQM Plan does not specify how BellSouth should define revenues, or whether certain types of bills should be included or excluded from the measure. BellSouth has adopted certain conventions, of which the Commission or CLECs may be unaware, for defining which revenues and bills it includes in the B-1 measure. For example, BellSouth excludes collocation revenues and adjustments associated with construction, space, and electricity (known as "CO1 accounts") bills. BellSouth stated that, because it bills CLECs based on estimates and later issues adjustments to correct the shortfall or overage, such data are not reflective of true invoice accuracy performance and should be excluded. BellSouth does, however, include other types of collocation account revenues and adjustments in the measure.[554] BellSouth also defines revenues slightly differently for CABS bills than it does for CRIS and IBS bills. BellSouth includes federal, state, and local taxes in its revenue data from CABS, but includes only federal and state taxes in its FDB (CRIS and IBS) revenue data.[555]

Not only are many of the conventions not explicit, but they have changed since the audit period. During the audit period, BellSouth excluded BellSouth Long Distance account revenues and adjustments during the manual review process. As a result of discussions between the Florida Commission and BellSouth, in June 2004 BellSouth began to include BellSouth Long Distance account data in retail data but continued to exclude it from CLEC aggregate data.[556] During the audit period, BellSouth included revenues and adjustments from all CLEC bills in its total BellSouth retail revenues and adjustments. At that time, BellSouth considered the CLEC to be a customer. After June 2004, BellSouth began excluding CLEC revenues and adjustments from retail totals.[557] BellSouth explained that its interpretation of the SQM Plan had not changed; however, it agreed to remove the CLEC data after discussions with CLECs at various workshops.[558]

The lack of documentation for BellSouth's conventions for defining revenues and bills could lead to confusion by the Commission and CLECs about what is and is not included in the measure. Additional language for the SQM Plan that makes these conventions explicit could reduce the potential for such confusion. BellSouth stated that it continues to have discussions with CLECs and Commissions regarding the methods of defining this measure. BellSouth also added some additional descriptions language to its job aids regarding the types of charges included and excluded from the measure.[559]

[553] Response to Preliminary Finding 15.
[554] Interview #7, November 16, 2004 and response to Data Request #191.
[555] Response to Data Request #315.
[556] Response to Data Request #192.
[557] Response to Data Request #197.
[558] Response to Data Request #342.
[559] Response to Preliminary Finding 24.

In response to this finding, BellSouth noted:[560]

> *While the descriptions of the inclusions and the exclusions are not specifically documented in the Florida SQM, BellSouth believes its internal documentation accurately reflects this information. BellSouth will continually update this documentation as necessary. If clarity in the SQM is needed, this can only be addressed during a periodic review of the SQM as initiated by the Commission.*

Although it would be helpful to incorporate language in the SQM Plan to define the revenues and bills that are included in the B-1 measure, Liberty recommends that BellSouth discuss the issue with the Commission in the context of the periodic SQM reviews to determine the necessity of this change.

Finding 50: The BellSouth PMAP production validation process did not update the historical data used in trending analysis to reflect the effect of PMAP system changes. Classification: 3

BellSouth relies heavily on statistical methods in its PMAP production validation process. Specifically, BellSouth uses standard deviation analysis and trend analysis based upon historical validation data point values. The reliability of such trending methods is dependent on an historical set of data generated in a consistent manner (*i.e.,* by stable systems).

BellSouth also makes monthly changes to its PMAP system. Hence, when PMAP system changes result in updates to the historical measure values, BellSouth needs to update the historical baseline to reflect these updates. However, BellSouth indicated that it did not have a formal process to re-establish the validation baseline after PMAP system changes.[561] Liberty believes that proactive restatement of historical results would improve statistical reliability and the efficiency of the ongoing PMAP production validation process.

The accuracy of PMAP is critical to the PARIS reporting process as well as the remedy payment process. The failure of BellSouth to update baseline trending data as a result of system changes results in ad hoc re-evaluation of PMAP system changes during the production validation process to justify out-of-tolerance statistical results, which can affect BellSouth's ability to effectively identify data problems.

BellSouth responded to this finding as follows:[562]

> *For small data processing systems, updating baseline trend information by restating historical results to account for system changes may provide better trend information. However, BellSouth believes that (a) the overall validation process accommodates changes in results due to system changes, and (b) it is not*

[560] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.
[561] Interview #19, January 6-7, 2005.
[562] Response to Preliminary Finding 41.

feasible to implement this approach for PMAP due to at least three major concerns.

First, setup and execution of system changes on multiple months of historical data cannot be accomplished in a timely manner relative to validation activities.

Second, the suggested approach requires maintaining multiple system environments (one environment for each month to be restated) at a production level quality relative to the current month's environment, while simultaneously varying from its historic counterpart production environment.

Third, there would be increased risks to managing the validation tools successfully since data would have to be retrieved from a combination of production and restated non-production environments – most likely on a measure-by-measure basis.

Consequently, BellSouth believes that its overall validation process accommodates assessing the impact of changes to the PMAP system. We believe our existing process provides the necessary information to make informed decisions as to the results of data processing.

Liberty understands BellSouth's concerns; however, BellSouth should consider enhancements to its process to take into account baseline changes.

Finding 51: BellSouth performed no validation to detect invalid zero dollar remedy payments during the audit period. Classification: 4

During interviews, BellSouth described to Liberty its process for reviewing remedy payments.[563] BellSouth indicated that, as part of this process, it reviewed all non-zero remedy payment calculations for the state of Florida from January 2003 through January 2004 (which includes the audit period). However, BellSouth also stated that did it not validate any zero payments during the same period, even if one or more statistical tests failed. BellSouth stated at that time that zero payment amounts had been checked prior to the audit period, but were not checked during the audit period due to increasing data volumes and staffing constraints.

BellSouth indicated that zero payment amounts may be validated in certain instances based upon trend analysis, implementation of new measures, or changes to existing measures.[564] BellSouth stated, "[h]owever, manual validation of every measurement that has no payment either for a particular CLEC or for the measurement is not within our validation process. If the measurement is questioned internally or externally, BellSouth reviews the measurement to determine if the systems are processing the records correctly or if there is an error in the process which may require reruns, system changes and/or adjustments."

[563] Interview #2, October 28, 2004 and Interview #3, October 29, 2004.
[564] Response to Data Request #65.

The imbalance between the extensive review of non-zero remedy payment calculations and the lack of review of zero remedy payment calculations biases the SEEM remedy payment validation process in BellSouth's favor. The lack of a comprehensive zero dollar payment validation process may result in underpayments to either CLECs or the Florida PSC.

BellSouth responded to this finding as follows:[565]

> *During the audit period, BellSouth used two different methodologies to validate SEEM payments for retail analog, and they ran parallel. One was Darkology, and the other one was non-Darkology - old methodology. With the non-Darkology, zero payments were not validated. However, with Darkology, zero payments were validated.*
>
> *BellSouth runs high level checks, meaning only the statistical rules are checked (Z-score, BCV etc), but not the impacted volume – regardless of whether or not it matched with the PMAP count. In other words, first we checked whether or not a company failed, (pass_fail_num = 0), and if so, we determine whether or not the aggregate statistical test (Aggr Z score) was less than zero. If it didn't fail (pass_fail_num =0) and the aggregate statistical test was negative, then we determine if the Aggregate Z score was less that the balancing critical value. All of the requirements were placed in a query that was run monthly by each Analyst, and any records returned were considered anomalies. As such, further investigation was required to determine the cause of the anomalies.*

Liberty notes that this response contradicts the information BellSouth provided during interviews. However, if BellSouth has implemented a process that consistently includes the examination of zero-dollar remedy payments across all of the SEEM measures, the issue raised in this finding would be resolved.

[565] Response to Preliminary Finding 54.

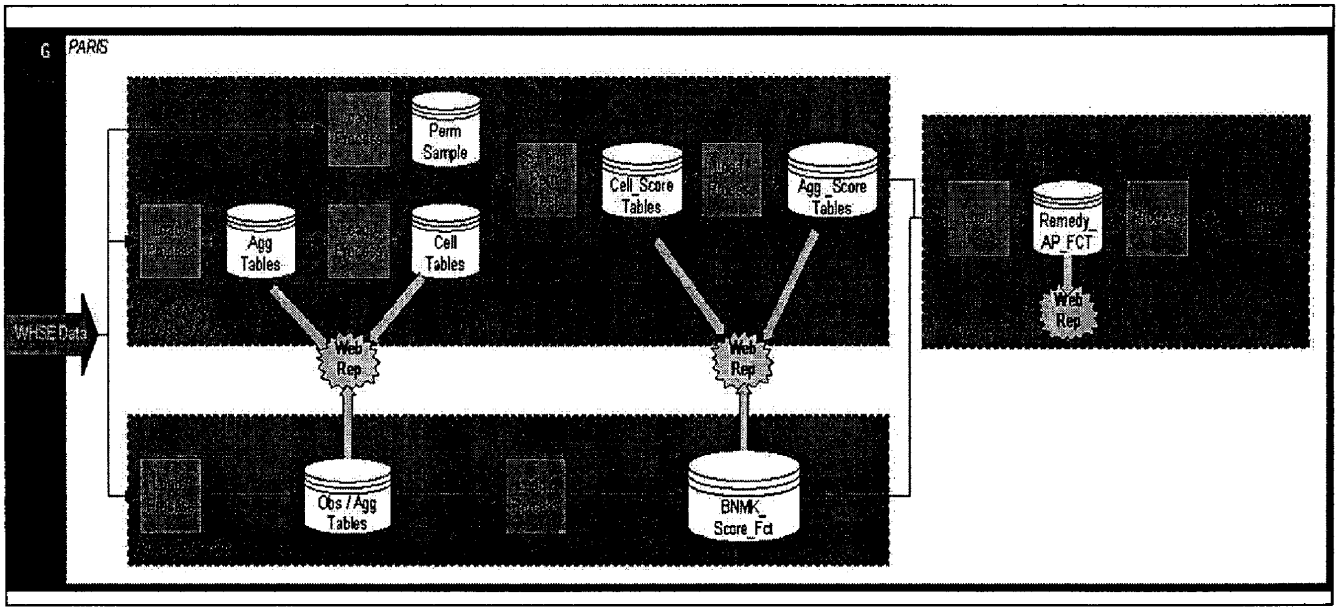
IV. Remedy Payments

A. Remedy Payment Replication

1. Introduction

BellSouth calculates most of the remedy payments set forth in the SEEM Administrative Plan using PARIS, a system that draws data from the Data Warehouse and DM tables in the SQM Mart. Using pre-calculated inclusion indicators, PARIS groups the data by measure and determines, for each sub-measure, whether BellSouth has passed or failed. BellSouth performs these determinations for both Tier 1 (individual CLEC) and Tier 2 (aggregate CLEC) Enforcement Mechanisms. After PARIS determines whether BellSouth passed or failed a sub-measure, it determines the remedy payment amount, if any, to be paid. BellSouth then enters this amount into the Supplier Transaction and Remittance (STAR) system for payment.

A high-level flowchart of PARIS is shown below:[566]



During the audit period, BellSouth did not calculate all measures using PARIS. Instead BellSouth calculated some measures through ad hoc processes, called "Interim Solutions." The Interim Solutions methods typically involved taking data directly from the Data Warehouse or from the data mart, and using them to make the calculations and a pass/fail determination. BellSouth only placed the results of this determination in a table in PARIS. Of the measures Liberty evaluated, B-1, O-3/4, O-9, P-7, and P-7C were calculated using Interim Solutions method.

[566] Response to Data Request #12.

BellSouth defines a benchmark measure as a measure with an absolute pass/fail standard, rather than one based on parity with retail. For benchmark measures, PARIS pulls certain data fields from the relevant portion of the Data Warehouse. PARIS then aggregates the data, performs certain calculations, and compares the results (for each state, CLEC, and product) to the benchmark for that sub-measure listed in a lookup table. PARIS inserts the results into the [redacted] and sets a trigger to indicate pass or fail. PARIS then sends information, such as volumes, related to all failures to the [redacted] The measure B-1 is an exception to the typical benchmark process in that, for B-1, BellSouth does not compare the CLEC results to a fixed benchmark each month. Instead, BellSouth uses the monthly retail results as a "floating" benchmark. It first pulls the aggregate CLEC and BellSouth retail data into PARIS and stores the intermediate results for each. PARIS then compares the CLEC and BellSouth results for the month, and stores them on the [redacted] with the appropriate pass/fail trigger.

BellSouth defines a parity measure as a measure for which BellSouth compares the CLEC data to equivalent BellSouth retail data for the same period. Parity measures can be calculated as means, rates, or proportions. BellSouth makes comparisons for these types of measures at the "cell" level. The attributes that make up a cell vary, but always include wire center, sub-measure, and CLEC. The attributes may also include number of circuits and dispatch type for the order, and the half of the month in which the order or trouble occurred.

For parity measures, BellSouth calls the result for each CLEC by cell an "observation," which, when combined with retail data, constitutes a complete cell. The BellSouth observations paired with the CLEC observations for the same attributes constitute all of the relevant cells that BellSouth needs to administer the SEEM Administrative Plan. For each cell, BellSouth calculates a statistical score called a Z-score. The method of calculation for this score varies based on the number of items under consideration and the type of measure. A positive Z-score indicates that BellSouth provided better service to the CLEC, while a negative Z-score indicates BellSouth provided better service to itself. BellSouth aggregates the cell Z-scores to the CLEC and sub-measure level based on a formula that roughly weights each cell by the number of transactions in the cell. BellSouth then compares this aggregate Z-score to a Balancing Critical Value (BCV), which is the Z-score where Type I and Type II error probabilities are equal (for a particular level of disparity).[567] If the CLEC Z-score is less than the BCV, BellSouth fails the sub-measure. PARIS stores results in a proportion Cell Score table, and information on failures in the Remedy AP Fact table.

To obtain the data needed to create the cells for parity measures, BellSouth uses PARIS [redacted] tables). PARIS creates these [redacted] tables by pulling transaction-level data from the Data Warehouse based on measurement maps, product groups, service order and trouble ticket attributes, date parameters, and other table join criteria. PARIS retrieves only those records and fields that it needs to create the cells.

[567] BellSouth defines the Type I error probability as the probability of BellSouth failure, given that BellSouth is operating at parity. BellSouth defines the Type II error probability as the probability of BellSouth passing, given a particular disparity.

In some cases, either the CLEC or BellSouth may have no observations in a given period (*e.g.,* half month) for the same attributes (*e.g.,* wire center and product group). Because PARIS has only one observation, it cannot create a cell. If PARIS cannot create a cell, the data for the company that did have observations for that particular time period and set of attributes are excluded from the pass/fail determination and the remedy calculation for the relevant sub-measure.

For Tier 1 parity measures (*i.e.,* proportions, rates, and means), BellSouth must make a remedy payment to the CLEC if the statistical tests described above result in a failure, subject to the limitation that the number of transactions must be at least five. BellSouth determines payments based on a lookup table that contains the payments due to each CLEC as a result of a failure in the reporting month. For benchmark measures, BellSouth owes a remedy payment to the CLEC if the CLEC performance is below the standard. The level of payment for benchmark measures is also based on a lookup table.

For Tier 2 measures, BellSouth determines payments based on the results over a three-month period with the amount of payments drawn from a lookup table. PARIS contains a [redacted] table, which BellSouth uses to track whether the remedy was authorized and transmitted to the appropriate CLEC or Commission.

BellSouth reports its remedy payments in a monthly PARIS report maintained on the PMAP website. Unlike the SQM/SRS reports, BellSouth only retains the PARIS reports on the website for the current month.

2. Analysis and Evaluation

Liberty planned to verify pass/fail calculations for all in-scope measures through replication of selected code and review of appropriate databases and code. Liberty also wanted to perform a complete replication of failures, beginning with a [redacted] table in PARIS and ending with the [redacted] table, which shows failures, in PARIS.[568]

In certain cases, Liberty was unable to perform the replication in this manner because BellSouth used Interim Solutions methods for some measures. For these measures, which did not go through the normal PARIS process, Liberty began with the relevant transaction-level data from the Data Warehouse or from the Data Mart, as appropriate.

Liberty performed the calculations using its own code, which, for purpose of the replication of the mean parity measures, necessarily results in slight differences, due to the randomization in the statistical tests. Where appropriate, Liberty examined cell level results for these measures to ensure that differences found were the result of statistical testing differences, rather than errors in code.

[568] The actual determination of payment amounts and disbursement of those amounts is covered in Section IV B.

The incomplete and inconsistent documentation accompanying the SEEM Administrative Plan severely hampered Liberty's replication efforts. Although BellSouth's subject matter experts were able to resolve issues in interviews, the SEEM implementation apparently has no documentation between the very high-level SEEM document and the low-level programming code.

The following sections describe Liberty's replication of remedy payments.

a. Benchmark Measures

The following table displays the in-scope measures subject to benchmark standards:

Measure	Description	Type
B-1	Invoice Accuracy	Benchmark percent[569]
O-3	Percent Flow-Through Service Requests (Summary)	Benchmark percent
O-4	Percent Flow-Through Service Requests (Detail)	Benchmark percent
O-9	Firm Order Confirmation Timeliness	Benchmark percent
P-7	Coordinated Customer Conversions Interval	Benchmark percent
P-7C	Hot Cut Conversions - % Provisioning Troubles Received within 7 Days of a Completed Service Order	Benchmark percent

To determine the results for benchmark measures, BellSouth compares a CLEC percentage and a benchmark percentage. BellSouth defines benchmark measures as those for which it does not perform a statistical comparison. For these types of measures, BellSouth compares the CLEC result to a pre-determined standard set forth in the SQM Plan. For example, the SQM Plan lists a benchmark standard for O-3 (Percent Flow-Through Service Requests (Summary)) of 95 percent for the Residence sub-measure. Thus, if fewer than 95 percent of O-3 residence orders flow through, then BellSouth fails this measure and no statistical test is necessary.

BellSouth treats the B-1 measure as a benchmark for the purpose of remedy calculation, but BellSouth determines its standard based on the retail result. Thus, for B-1, BellSouth first calculates the appropriate percentage for the standard "Parity with BellSouth Retail Aggregate."[570] BellSouth then compares the retail percentage to the CLEC percentage to determine pass/fail, and performs no statistical test.[571]

According to Liberty's understanding, BellSouth's typical process for calculating benchmark remedy payments is as follows:

- Pull transactions from the Data Warehouse or SQM Mart and put them into relational tables found in PARIS
- Aggregate these transactions by CLEC and sub-measure

[569] BellSouth lists this as a parity measure; however, it calculates B-1 as if it were a benchmark measure, as explained below.
[570] SQM Plan, p. 117.
[571] Interview #1, October 4-6, 2004.

- Compare the CLEC performance to the benchmark[572]
- Insert result (pass if CLEC performance exceeds the benchmark and fail if CLEC performance is below the benchmark) in the [redacted] table
- Update the Pass/Fail table in the [redacted] table
- Perform table lookups to determine remedy payment amounts and load the [redacted] table with information on the failures and payment amounts.

For this part of the analysis, Liberty began with the relational tables in PARIS, and attempted to replicate for each sub-measure listed in Appendix A the pass/fail and remedy payment amounts. Liberty attempted to replicate Tier 1 and Tier 2 calculations for the data months November 2003 through January 2004. In addition to the end-to-end replication, Liberty examined the interim steps and tables, as appropriate, to ensure that BellSouth was aggregating the data and performing the calculations properly.

Liberty considered the benchmark portion of the replication successful if, based on an examination of the PARIS calculations for the data months under investigation, Liberty:[573]

- Reproduced, with the available documentation and using reasonable interpretations of that documentation, the same aggregate results and remedy payments as those calculated by BellSouth in PARIS.
- Determined that BellSouth used the correct benchmark for each benchmark sub-measure listed in Appendix A.
- Determined that BellSouth correctly assessed compliance for each benchmark sub-measure listed in Appendix A.
- Determined that BellSouth applied the correct remedy calculations to all the benchmark sub-measures listed in Appendix A.

B-1 Invoice Accuracy

BellSouth did not calculate the B-1 measure results through the PARIS process, instead, it used the Interim Solutions methods. Therefore, in order to replicate the penalty calculations, Liberty began with the "[redacted]" table, which contains information on all CLEC and sub-measure combinations for B-1, and calculated Billing accuracy according to the SEEM Administrative Plan. Liberty found 21 failures for November 2003, 18 for December 2003, and 20 for January 2004. Liberty matched all of these failures to the figures on BellSouth's [redacted], which shows all the SEEM failures.

O-3/4 - Percent Flow Through Service Requests

For the purposes of PARIS and SEEM calculation in Florida, BellSouth uses O-3 for individual CLEC calculations and penalties (Tier 1) and O-4 for aggregate CLEC calculations and penalties

[572] For the B-1 "floating benchmarks," BellSouth uses ILEC data to determine the benchmark each month.

[573] Liberty could not compare its replications of the remedy payments calculations directly with the PARIS reports because BellSouth maintains these reports only for the current month. Instead, Liberty compared the replications to calculated results maintained on a table in the PARIS system that is used by BellSouth to produce the reports.

(Tier 2). Because the calculations are essentially the same, Liberty considers them together in this report. The measures O-3 and O-4 did not go through the PARIS process.[574] Instead BellSouth used a series of spreadsheets to determine the PARIS results with respect to these measures. BellSouth compiles these spreadsheets using a table in the Data Mart, along with a lookup for a "flow-through coefficient" in the Data Mart. BellSouth sets this flow-through coefficient to 1 if the company does business in Florida.[575] Liberty used the results of this query to calculate CLEC-specific and CLEC-aggregate flow-through timeliness for each sub-measure. Liberty then compared these results to the transmission of penalty amounts.[576]

Liberty found 42 instances in which BellSouth did not make a remedy payment, even though Liberty's calculations indicated a failure. Liberty also found 29 instances in which BellSouth transmitted a remedy payment on measures for which Liberty did not calculate a failure.

O-9 Firm Order Confirmation Timeliness

BellSouth does not calculate the O-9 measure through the normal PARIS process.[577] Instead, BellSouth uses the [redacted] table and the [redacted] table to create summary information concerning firm order confirmation (FOC) timeliness.[578]

Liberty calculated the results for three months, November 2003 through January 2004. Liberty aggregated by parent company and then compared these results against the [redacted] in PARIS. Liberty and BellSouth match on numerator, denominator, and the pass/fail determination for every item that was found in both Liberty's table and the benchmark table. These matches totaled over 900 company/sub-measure combinations per month. However, in each of the three months, there were company/sub-measure combinations that appeared in Liberty's data but not in the benchmark table, or in the benchmark table but not in Liberty's recalculation. Liberty addressed this issue in more detail in the Findings and Recommendations section.

P-7 Coordinated Customer Conversions

BellSouth did not calculate the benchmark measure P-7 using the PARIS system. Instead, BellSouth explained that it calculated the results from tables in the Data Mart and Data Warehouse to update the [redacted] report in PARIS directly.[579]

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[574] Interview #23, January 5 and 18, 2005.

[575] Liberty requested the results of this coefficient lookup, along with an explanation of how to use it, in Data Requests #354 and #355. In its responses, however, BellSouth did not provide an explanation of how to use the coefficient query.

[576] Ordinarily, Liberty compared pass/fail results in PARIS to the [redacted] table, but no entries appeared on this table for O-3/4 for November 2003, and thus Liberty used the payment transmission tables. BellSouth provided these tables in response to Data Request #14. Liberty sought to use the actual PARIS reports, which are posted to the website and available to the CLECs. However, BellSouth does not retain these reports, thus BellSouth provided the transmission tables instead.

[577] Interview #23, January 5 and 18, 2005.

[578] Interview #23, January 5 and 18, 2005. BellSouth compiles this summary information and places it into the [redacted] report in PARIS. BellSouth explained that Liberty needed to use the information from the warehouse and [redacted] tables in order to determine performance.

[579] Interview #24, January 20, 2005.

For the months under review, Liberty verified the numerator, denominator, and pass/fail decision calculated by BellSouth. Liberty's replication results agreed with the BellSouth results for every case, as calculated from the circuit fact table that resides in the Data Warehouse.

P-7C Coordinated Customer Conversions - Percent

BellSouth did not calculate the benchmark measure P-7C using the [redacted] tables during the audit period. Instead, BellSouth used the [redacted] and the [redacted] table to determine conversion timeliness.[580] BellSouth updated the [redacted] table in PARIS directly from the results in that table.[581]

For the months under review, Liberty verified the pass/fail decision calculated by BellSouth. In its data integrity review, Liberty identified several issues, including some that caused errors in the results of BellSouth's remedy payment calculations.[582] Liberty addressed this issue in more detail in Section III F. However, when Liberty calculated the results taking these errors into consideration, Liberty matched each of BellSouth's calculated failures for the months of December 2003 and January 2004.[583]

b. Parity Measures

The following table shows the in-scope parity measures involving proportions, means, and rates:

Measure	Description	Type
M&R-1	Missed Repair Appointments	Parity proportion
M&R-2	Customer Trouble Report Rate	Parity rate
M&R-3	Maintenance Average Duration	Parity mean
M&R-4	Percent Repeat Troubles within 30 Days	Parity proportion
M&R-5	Out of Service (OOS) > 24 Hours	Parity proportion
P-3	Percent Missed Initial Installation Appointments	Parity proportion
P-4	Average Completion Interval (OCI) & Order Completion Interval Distribution	Parity mean
P-9	% Provisioning Troubles within 30 Days of Service Order Completion	Parity proportion

For parity measures, each sub-measure has a retail analog. BellSouth compares the CLEC result to the retail analog result for a given sub-measure to determine whether it passed that sub-measure. For example, for the M&R-1 sub-measure "UNE Loop + Port Combinations," the analog is "Retail Residence & Business." In order for BellSouth to pass this sub-measure, the percentage of CLEC missed repair appointments must be no greater than the percentage of retail residence and business missed repair appointments.

[580] Interview #24, January 20, 2005.
[581] The [redacted] table shows failures for all SEEM measures.
[582] The data integrity issues that Liberty identified occur prior to the remedy calculations, so they affect the remedy calculations.
[583] Because BellSouth used October 2003 tables for its November 2003 reports and these are outside the audit period, Liberty did not verify them.

BellSouth does not initially aggregate to the CLEC level for each sub-measure when it calculates parity measure results. Instead, as discussed above, BellSouth tallies the results for each sub-measure by initial groupings called cells, which are typically based on wire-center, half month period (first or second half), handling type (*e.g.*, Dispatch), and product group.[584] BellSouth performs initial statistical testing for parity measures at the cell level. BellSouth determines the type of statistical test applied based on the sample size and whether the measure is a rate, proportion, or mean.

Each of the statistical tests produces a cell Z-score. When this score is negative, it indicates that BellSouth is providing substandard service. Negative scores close to zero might be the result of random variation, while large negative scores (*i.e.,* those far from zero) are likely the result of actual disparities. BellSouth aggregates the cell Z-scores to the CLEC and sub-measure level based on a formula that roughly weights each cell by the number of transactions in the cell. BellSouth then compares this aggregate Z-score to the BCV. The Commission established a tolerance parameter, δ, in its adoption of the SEEM Administrative Plan, and BellSouth then calculates the BCV as the point at which, for this tolerance level, the chance of a false positive (false pass) equals the chance of a false negative (false fail).

Below, in Finding 50, Liberty notes an error made by BellSouth in its calculation of the parameter δ. This error affects the outcome of several of the measures below, as noted.

BellSouth applies the following technical steps in this process:

- Pull transactions from the Data Warehouse or SQM Mart and put them into relational tables found in PARIS
- Aggregate these transactions by ILEC or CLEC, sub-measure, and cell
- Statistically compare cells using S-Plus and store cell result in the [redacted] table
- Aggregate by sub-measure and CLEC to determine aggregate Z-score and BCV
- Store result in an [redacted] table
- Perform table lookups to determine remedy payment amounts and load the [redacted] table with information on the failures and payment amounts.

For this portion of the analysis, Liberty began with the relational tables in PARIS, and attempted to replicate the pass/fail determinations. Liberty replicated Tier 1 (for a sample of CLECs) and Tier 2 calculations for the November 2003 through January 2004 data months. In addition to the end-to-end replication, Liberty examined the interim steps and tables, as appropriate, to ensure that BellSouth aggregated the data and performed the calculations properly. For example, Liberty calculated the BCVs, aggregated Z-scores, and cell Z-scores for each measure, and, where appropriate, compared these to BellSouth's Z-scores, as well as its [redacted] and [redacted] tables.

[584] These groupings are determined by the combination of three fields in the [redacted] tables: [redacted]

Liberty considered the parity portion of the replication successful if, based on an examination of the PARIS calculations for the data months under investigation,[585] Liberty:

- Reproduced, with the available documentation and using reasonable interpretations of that documentation, the same BCVs, truncated Z-scores, δ values, cell scores and remedy payments calculated by BellSouth in PARIS
- Determined that BellSouth used the correct retail analog for each parity sub-measure listed in Appendix A
- Determined that BellSouth correctly assessed compliance for each parity sub-measure listed in Appendix A
- Determined that the correct remedy calculations have been applied to all the parity sub-measures listed in Appendix A.

M&R-1 Missed Repair Appointments

For M&R-1, Liberty began with the data tables residing in the PARIS systems that contain information about repair appointments, and attempted to replicate each aggregate Z-score and BCV. The aggregate Z-score is the statistical measure of performance for a particular CLEC and sub-measure combination while the BCV is the cutoff point for the Aggregate Z-score. BellSouth fails each CLEC/sub-measure combination in which the aggregate Z-score is lower than the BCV.

An intermediate step in calculating the aggregate Z-score is the calculation of a "truncated" Z-score. During Liberty's efforts to replicate the truncated Z-scores for percentage measures involving parity comparisons, Liberty found major discrepancies in results. BellSouth acknowledged two errors related to the calculation of aggregate Z results.[586] Both of these issues revolved around the data handling of sub-measure and company combinations that contained only one cell with positive weight.

M&R-2 Customer Trouble Report Rate

Liberty examined M&R-2, the only "rate" measure under consideration. This measure required a different statistical process from that of the other parity measures. Liberty determined the numerator for this measure using the [redacted] table and found that the aggregation matched exactly as in M&R-1. Liberty input the denominator using a second table, [redacted]

Liberty identified discrepancies in the service line counts in the table in the PARIS systems that house the data concerning total lines in service. Specifically, Liberty found a number of troubles for which, according to the [redacted] table, no lines existed. This problem occurred for approximately two percent of the CLEC/sub-measure combinations under consideration for each month, and totaled about 100 such combinations per month.

[585] Liberty could not compare its replication of the remedy payments calculations directly with the PARIS reports because BellSouth maintains these reports only for the current month. Instead, Liberty compared the replications to a table in the PARIS system that BellSouth uses to create the reports.
[586] Response to Data Request #289.

For the three audit months, November 2003 through January 2004, Liberty found 308 errors in the pass/fail determination made by BellSouth even after accounting for the global errors regarding the parameter δ discussed in Finding 52.

M&R-3 Maintenance Average Duration

For the measure M&R-3, Liberty used the table [redacted], and calculated results in a manner similar to M&R-1, except that the statistical tests applied were different, because BellSouth calculates the M&R-3 measure as an average and the M&R-1 measure as a percentage. In calculating these results, Liberty found an error in BellSouth's calculation of the parameter δ, discussed in Finding 52. After correcting for this error, Liberty found no errors in BellSouth's calculations. However, because of the simulation method that BellSouth used to produce some of the Aggregate Z-scores, some differences occurred. Below is a chart showing the actual and expected p-value differences of greater than 0.03. The p-value is a statistic calculated in the course of the M&R-3 measure that shows the probability of a result lower than the aggregate Z, if BellSouth performance and CLEC performance are in parity.

Month	Total Count	Balancing Critical Value Difference (>.1)	P-value Difference (>.03)	Expected P Value Differences (approximate)
November 2003	451	0	27	23
December 2003	467	0	16	23
January 2003	465	0	11	23

As shown, the number of differences overall were no more than the number of expected differences, given the method of calculation.[587]

M&R-4 % Repeat Troubles w/in 30 Days

BellSouth calculates this measure in the same way that it calculates M&R-1. Liberty identified the same types of discrepancies in results and errors in calculations that it found in the M&R-1 calculations.

M&R-5 Out of Service > 24 hours - Resale Residence Non-Dispatch

BellSouth calculates this measure in the same way that it calculates M&R-1. Liberty identified the same types of discrepancies in results and errors in calculations that it found in the M&R-1 calculations.

[587] The higher November figure is within the range of natural statistical variation.

P-3 Percent Missed Installation Appointments

BellSouth calculates this measure in the same way that it calculates M&R-1. Liberty identified the same types of discrepancies in results and errors in calculations that it found in the M&R-1 calculations.

P-4 Order Completion Interval

BellSouth calculates P-4, a mean measure, in the same manner as M&R-3. The table below shows the differences after correcting for the issues with the calculation of δ, discussed in Finding 52. The results below show the BCV differences. Liberty did not determine why these remaining BCV differences exist, but does not believe they are large enough to warrant an additional finding. As with the calculation of M&R-3, Liberty found the p-value differences within expectations, given the nature of the statistical test.

Month	Total Count	Balancing Critical Value Difference (>.1)	P-value Difference (>.03)	Expected P Value Differences (approximate)
November 2003	512	4	16	26
December 2003	513	3	8	26
January 2004	509	3	13	25

P-9 Percent Provisioning Troubles within 30 Days

BellSouth calculates this measure in the same way that it calculates M&R-1. Liberty identified the same types of discrepancies in results and errors in calculations that it found in the M&R-1 calculations.

Liberty has seven findings related to the remedy calculations. The following table summarizes these findings by Measure.

Measure	Type	Finding Number(s)	Category
B-1	Benchmark	None	
O-3/4	Benchmark	53	1
O-9	Benchmark	57	1
P-7	Benchmark	None	
P-7C	Benchmark	None	
M&R-1	Parity	54	1
M&R-2	Parity	54 and 55	1
M&R-3	Parity	52	1
M&R-4	Parity	54	1
M&R-5	Parity	54	1
P-3	Parity	54	1

P-4	Parity	52	1
P-9	Parity	54	1
Documentation	N/A	56	3

B. Remedy Payment and Adjustments Process

1. Introduction

BellSouth calculates and remits remedy payments to CLECs and to the Commission for failure to meet standards set forth in the SEEM Plan. BellSouth determines remedy payments in PARIS, and loads remedy accounts payable information into the PARIS AP interface. After BellSouth management approves the remedy payments, BellSouth transfers authorized payments from PARIS to its accounts payable system, Supplier Transaction and Remittance (STAR).

BellSouth makes adjustments to remedy payments as a result of changes (announced through Change Notifications) to a measure and corrections to previously calculated performance results. BellSouth can make these adjustments to remedy payments up to three data months prior to the date of a metric change notification. Additionally, BellSouth may implement the metric change and post the adjustments several months after the CLEC notification.

2. Analysis and Evaluation

Liberty reviewed BellSouth's remedy payment and adjustment process in effect during the audit period for Florida. Liberty's review focused on the relevant components of PARIS and BellSouth's accounts payable systems for the in-scope measures. Liberty reviewed process documentation and worked with BellSouth's subject matter experts to develop an understanding of the remedy adjustment process. Liberty specifically requested process documentation such as methods and procedures, business rules, systems flow diagrams, and management reports.[588] Liberty also conducted interviews with the BellSouth personnel having knowledge and responsibility for business analysis and system support functions related to processing adjustments to previously-administered Tier 1 and Tier 2 remedy payments.[589] In addition, Liberty reviewed directly related processes such as CLEC administration, error correction and dispute resolution.[590]

One important part of the payment cycle is the process by which the BellSouth CLEC Administration group establishes an account within PARIS. BellSouth has explained that there are actually two processes associated with account establishment in PARIS: (i) updates to PARIS involving the additions of OCN(s) to an existing company in PARIS and (ii) the establishment of

[588] Response to Data Request #28.
[589] Interview #2 and #3, October 28-29, 2004.
[590] Responses to Data Requests #133, #135, #235, and #128.

a CLEC account in PARIS for the first time.[591] BellSouth described the process for adding OCNs as follows:[592]

> *The Interconnection Sales group is responsible for submitting the necessary paper work to the Billing Department for the establishment of the billing account associated with the company's interconnection, resell, or other type of contract. This paper work includes:*
>
> - *a copy of the NECA letter attesting to the OCN(s) assignment to the company*
> - *a copy of the certification information for the particular state(s) involved*
>
> *(This process is necessary regardless of the type of contract arrangement the company may have. Billing accounts must be established prior to the processing of any service orders for any product types utilizing an OCN.)*
>
> *The Billing group notifies the CLEC Administration Group (CLEC Interface Group CIG) with the establishment of any new billing account associated with an OCN. Each OCN is added to the [redacted] table via a tool which allows the addition of the OCN to multiple processing tables utilized in the Service Order Tracking System (SOTS), PMAP and PARIS.*
>
> *Each month, upon completion of the PARIS processing which produces the [redacted] transactions (payments) in the [redacted] table of [redacted], the CIG queries the tables in [redacted] produce a report [redacted] This report lists any transactions in the [redacted] table in a [redacted] which does not have a corresponding record in the [redacted] table in [redacted] for that particular OCN in a particular state. This report is reviewed and action is taken on each OCN as described in the attached work instruction for the [redacted]*
>
> *BellSouth utilizes the [redacted] List to identify any OCN that has not been added to a company for a particular state. This identification process is concurrent with validation process of each PARIS transaction and updates are made to the [redacted] table prior to [redacted] when payments are "fed" to STAR for payment issuance.*

BellSouth described the process for the initial establishment of an account as follows:[593]

> *If during the review of the [redacted]" an OCN is identified for a new company (the company has never been assigned a [redacted] for STAR*

[591] Response to Preliminary Finding 7.
[592] Response to Preliminary Finding 7.
[593] Response to Preliminary Finding 7.

> *processing), then **the CIG must contact the company to complete the Remedy Payment Information Form.** Attached work instructions for the processing of the Remedy Payment Information Form. **The company must complete this document Remedy Payment Information Form prior to the establishment of a STAR Supplier ID number** [redacted] **table).** The company cannot be established in the [redacted] table without a STAR Supplier ID number associated with the company; this allows the company to be paid utilizing the STAR system.*
>
> ***If the company does not respond** to the request to complete the Remedy Payment Information Form prior to the* [redacted] *process when the payments are "fed" to STAR for payment issuance, then the validated PARIS transactions associated with the company are placed in a* [redacted] *) status. All transactions that are in* [redacted] *status are reviewed, researched and action taken...*

Liberty found that there were aspects of this process noted below that led to some significantly delayed payments to CLECs.

BellSouth has rigorous processes to ensure that individual PARIS processing cycles are balanced to STAR to ensure that BellSouth processes the calculated remedy payments through accounts payable.[594] Liberty found that BellSouth balances the remedy payments in PARIS and STAR for each reporting month. However, a given remedy payment processing cycle does not consist of a single reporting month. Monthly payments rendered to CLECs contain i) current month remedy payments, ii) prior month's remedy payments, and iii) adjustments to prior payments. BellSouth does not have a process in place to balance PARIS and STAR that includes all these different contributions to the monthly payments.

Liberty sought input from the CLECs and the Commission on their experience with the remedy payment and adjustments processes. Liberty requested from BellSouth, cooperating CLECs (for Tier 1 payments), and the State of Florida (for Tier 2 payments) verification of remedy payments and adjustments made and received that were associated with the in-scope measures for the November 2003 through January 2004 data months. Liberty received detail payment data from BellSouth and one CLEC as part of this exercise.[595] The Commission Staff stated to Liberty that all Tier 2 payments during the audit period were accurate. Therefore, Liberty did not further investigate the payments received by the Commission. Liberty compared the payments received by the cooperating CLEC with those calculated by PARIS and transmitted to STAR for the audit months and determined that the CLEC received the correct payments. Liberty also did a comprehensive comparison of the remedy payment calculations in PARIS and the records of transmitted payments in STAR for the in-scope measures for both Tier 1 and Tier 2 payments and verified that they matched for the audit months.[596]

[594] Interview #2, October 28, 2004 and Interview #3, October 29, 2004.
[595] Responses to Data Requests #128 and #136.
[596] Liberty addressed the issue of whether the PARIS calculations of the remedy payments are correct in Section IV.A., where it is noted that Liberty was not able to replicate all of the remedy payment calculations.

Liberty attempted to reconcile PARIS calculations of remedy payments and adjustments with STAR reports of rendered payments across the audit period. When unable at first to do so, Liberty asked BellSouth to review the balancing spreadsheets and explain the differences. After several iterations and detailed research, BellSouth was able to account for the differences.[597] As noted below, Liberty believes that the level of effort required to accomplish this reconciliation demonstrates the lack of a process to ensure that BellSouth actually makes all remedy payments for an entire reporting month.

Liberty's analysis of the remedy payment data revealed 44 instances in which payments processed to a [redacted] status, 42 of which were due to missing entries in the PARIS "[redacted]" table, apparently at the time transmission to STAR was attempted. Some of these payments remained in the [redacted]" status for several months prior to resolution to a final status of either [redacted] (*i.e.,* sent to STAR for payment) or [redacted]" While the dollar amount of these transactions, in excess of $70,000, represented approximately one percent of the total payment dollar amount during the audit period, seven CLECs experienced delayed payment resolution during the audit period. Liberty also observed that approximately one month transpired between a payment entering the [redacted] status and that same payment being placed in [redacted] status for transmission to STAR.

CLECs received delayed payments when BellSouth failed to update the [redacted] table at the beginning of the remedy payment process. Because this table is not validated until the payment is ready to be transmitted to STAR, which is approximately one month after the time that the payment is initiated, seven CLECs experienced delays to payment resolution during the audit period, with two CLECs experiencing payment delays multiple times during the audit period.

Liberty also reviewed information on remedy payment adjustments made and received for the in-scope measures during the audit period.[598] BellSouth informed Liberty that there was only one adjustment made during this period, and this was associated with an error in the P-4 Order Completion Interval (Dispatch <10) – EELs remedy payments.[599] Liberty verified that this was the only affected measure during the audit period and that the adjustment amounts were correct.

[597] Information received from BellSouth via emails dated January 13, 2005 and February 9, 2005, as well as conference calls on December 28, 2003 and February 8, 2005.
[598] Response to Data Request #29.
[599] Response to Data Request #127.

C. Findings and Recommendations

Finding 52: BellSouth was not calculating the parity measures involving Tier 1 averages according to the SEEM Administrative Plan. Classification: 1

In the course of replicating the balancing critical values for the M&R-3 and P-4 measures, Liberty uncovered an issue with the calculation of the value BellSouth calls δ. The following excerpt from the SEEM Administrative Plan provides guidelines for the calculation of δ:[600]

Parameter Choices for δ_j – set of parameters δ_j are important because they directly index differences in service. The Florida commission staff has not chosen to use one value across all cells for a submeasure test ($\delta_j = \delta$). The value of δ will be based on the effective number of ALEC transactions used in the test. The following formulae will be used to determine δ.

1) $$\Omega_j = \begin{cases} \dfrac{W_j}{\sqrt{\dfrac{n_{1j} n_{2j}}{n_j}}} & \text{mean or proportion measure} \\ \dfrac{W_j}{\sqrt{\dfrac{b_{1j} b_{2j}}{b_j}}} & \text{rate measure} \end{cases}$$

2) $$n_e = \frac{\left(\sum_j \Omega_j n_{2j}\right)^2}{\sum_j \Omega_j^2 n_{2j}}$$

Note, that given the definition of W_j for mean measures, Ωj is either 0 or 1. Thus, n_e for mean measures is the total number of ALEC transactions across cells with positive weight. Also, when there is only one occupied cell with positive weight, then $n_e = n_{2j}$, the ALEC sample size in the single cell.

3) $$\delta = \left(\frac{4}{n_e^2}\right)^{0.155}$$

Liberty believes the language and formulas above imply that for each CLEC (*i.e.*, ALEC), for each sub-measure, a different value of δ applies. Moreover, this value depends on the number of that CLEC's transactions relevant to the test. When calculating the balancing critical value in this manner, Liberty could not match 412 of the 421 Tier 1 balancing critical values reported by BellSouth for November 2003, for the measure MR-3. Similarly, 451 out of the 475 Tier 1 balancing critical values for the P-4 measure did not match. When Liberty instead calculated δ using the same value across all cells in the sub-measure (even for different CLECs), Liberty's values differed from BellSouth's on only two of the 896 values for the balancing critical values for Tier 1 for the measures MR-3 and P-4 in November 2003.

To estimate the impact of this issue, Liberty used the November 2003 data for the measures M&R-3 and P-4. 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

[600] SEEM Self-Effectuating Enforcement Mechanism Administrative Plan Florida Plan, Version 2.7, p. D-12.

have been 63. Thus, BellSouth failed in an additional 32 instances due to this error. Liberty expects that a similar impact would have been seen in other months.

BellSouth stated that it acknowledged that "the current delta value calculation is based on a different interpretation of the documentation. The delta value is currently computed on a per sub-measure basis."[601] BellSouth also stated that it issued RQ6040. This RQ is designed to change the calculation of δ so that δ is calculated on a sub-measure and CLEC basis, and should address the issues raised in this finding.

Finding 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. Classification: 1

According to the SEEM Administrative Plan, BellSouth must make remedy payments to individual CLECs for each sub-measure that it fails. In the course of replicating the payments for the Percent Flow-Through measures, Liberty found that BellSouth made remedy payments when it should not have done so, or failed to make remedy payments when it should have done so, according to the following chart:

Month	BellSouth payments and Liberty calculations agree	Liberty calculated a failure but BellSouth did not transmit a remedy payment to the CLEC for the sub-measure in question	BellSouth transmitted a remedy payment but Liberty did not find a failure for the corresponding sub-measure and CLEC
November 2003	60	12	6
December 2003	37	13	5
January 2004	22	17	18

To determine whether BellSouth issued a payment, Liberty used the payment transmission tables provided by BellSouth.[602] Because this measure did not follow the normal PARIS process for the months under review, Liberty could not make additional comparisons to determine whether the failure was in the transmission or determination of the remedy payment.[603]

Some CLECs may have forgone remedy payments due to this failure, and others may have received payments erroneously. In the months reviewed, Liberty found that BellSouth failed to

[601] Response to Preliminary Finding 8.
[602] Response to Data Request #14.
[603] During the audit period, BellSouth did not calculate O-3 and O-4 remedy payments in PARIS. Then, as now, BellSouth calculated O-3 and O-4 SQM results in a separate Interim Solutions flow-through application, rather than in PMAP. During the audit period BellSouth used the output of that application as the raw data for the remedy payment calculations performed within Interim Solutions, and sent the calculated remedies to an interface that loaded the data into PARIS.

transmit a total of 42 payments, totaling approximately $60,000, which it should have made.[604] Additionally, BellSouth transmitted a total of 29 payments, totaling $42,400, to CLECs that should not have been made.

BellSouth responded that the issues that caused the discrepancies were associated with company rollup issues and line splitting problems, which were corrected with RQ5631, RQ4932, and RQ5087.[605] Liberty concurs that these issues appear to be the result of improperly excluding line splitting and improperly rolling up company codes. If the changes BellSouth referenced are properly implemented, they should correct the discrepancies noted in this finding.

Finding 54: BellSouth did not calculate the remedy payments for percentage parity measures (*i.e.*, M&R-1, M&R-4, M&R-5, P-3, and P-9) according to the SEEM Administrative Plan. Classification: 1

During Liberty's efforts to replicate the truncated Z-scores for percentage measures involving parity comparisons, Liberty found major discrepancies in results.[606] When asked about these discrepancies, BellSouth acknowledged two issues related to the calculation of aggregate Z results.[607] Both of these issues revolved around CLEC/sub-measure combinations that contained only one cell with positive weight.[608] In its SEEM Administrative Plan, BellSouth defines a parameter L to be equal to one when only one cell has positive weight.[609]

The table below summarizes the differences in calculations for the proportion parity measures for the three-month period from November 2003 through January 2004. The "Count" column lists the total number of CLEC sub-measure combinations with troubles for the given month. The column "Z-score Difference" shows all CLEC/sub-measure combinations for which there is a difference in the calculated Z-score between Liberty's and BellSouth's calculations. For all but one of the differences in this column, Liberty determined that L is equal to 1. The following column, "Z-score Differences Corrected for BellSouth Response to Data Request #289," shows the number of differences, after correcting for the issues BellSouth acknowledged in its response to Data Request #289. The final column shows the differences after Liberty applied the large-sample statistical test on smaller samples (instead of the small-sample test specified by the SEEM Administrative Plan). Because this change resulted in fewer differences, Liberty believes that BellSouth may have incorrectly applied the large-sample test in some circumstances.

[604] Because Tier 1 payments are scaled up over six months and the review only covered three months, the exact amount is impossible to calculate. Similarly, the Tier 2 payments do not apply until the third month, and thus differences in failures in November and December may or may not have resulted in payments.
[605] Response to Preliminary Finding 51.
[606] Liberty also found differences in calculations in rate and mean measures. These differences may or may not have been impacted by this issue, but were not due solely to this issue.
[607] Response to Data Request #289. In this response, BellSouth acknowledged an error in the aggregation of Z-scores when the number of items to aggregate equals 1. BellSouth acknowledged a second error that miscalculated the Z-score when there were no CLEC troubles.
[608] For parity measures, a cell is defined as the smallest grouping for comparison of CLEC values to ILEC values. For example, a cell is specific to the wire center and to the product grouping, even when the sub-measure is not. Thus, for each CLEC and sub-measure, these cells are aggregated to determine whether BellSouth passed or failed the sub-measure for the CLEC.
[609] SEEM Administrative Plan, p. D-1.

Measure	Count	Z-score Difference	Pass/Fail Differences	Z-score Differences Corrected for BellSouth Response to Data Request #289	Z-score Differences, Correcting for BellSouth Response to Data Request #289 and using only large-sample Statistical Test
M&R-1[610]	1,383	296	2	20	5
M&R-4[611]	1,383	337	4	53	15
M&R-5[612]	1,178	296	1	36	7
P-3[613]	1,772	335	6	34	25
P-9[614]	1,735	293	5	46	19
TOTAL	**7,451**	**1,557**	**18**	**189**	**71**

Correcting for the issues identified in Data Request #289 resulted in the number of differences between BellSouth and Liberty to decrease from 1,557 to 189. When Liberty applied the large-sample Statistical Test, that number of differences dropped to 71.

BellSouth incorrectly calculated Z-scores for approximately 20 percent of parity proportion measures. This resulted in 18 pass/fail differences during the months under review. Most, but not all, of these differences were apparently due to errors acknowledged by BellSouth in response to Data Request #289.

BellSouth responded that it agreed with Liberty's finding and it had issued the following change controls in Florida: RQ6148, RQ6149, RQ6150, RQ6151, RQ6152, RQ6003, RQ6040.[615] Liberty believes that if these changes are properly implemented, the issues will be resolved.

[610] Percent Missed Repair Appointment.
[611] Percent Repeat Trouble within 30 Days Dispatch.
[612] Out of Service > 24 hours - Resale Residence Non-Dispatch.
[613] Percent Missed Installation Appointment.
[614] Percent Provisioning Troubles within 30 Days of Service Order Completion.
[615] Response to Preliminary Finding 35.

Finding 55: BellSouth did not calculate remedy payments for M&R-2 (Customer Trouble Report Rate) according to the SEEM Administrative Plan. Classification: 1

Liberty attempted to recalculate the results of the M&R-2 measure according to the documentation in Appendix D of the SEEM Administrative Plan as well as the information provided during discussions with BellSouth.[616] For the three audit months, November 2003 through January 2004, Liberty found that BellSouth incorrectly calculated almost half of the 1,900 BCVs, and that this resulted in 308 errors in the pass/fail determination made by BellSouth. These results hold after accounting for the global errors regarding the parameter δ that was noted in Liberty's Finding 52[617] and the errors acknowledged by BellSouth in its response to Data Request #289 and noted in Finding 54.[618]

The following table summarizes, for the months under review, the differences between the Liberty and BellSouth calculations for the BCV, Aggregate Z, and pass/fails for the M&R-2 measure. The table separately lists items for which the parameter L equals 1, and the differences were adjusted for the issues surrounding the parameter L that BellSouth addressed in its response to Data Request #289.

Month	Value of L	Balancing Critical Value Difference greater than .1	Aggregate Z difference greater than .1	Pass Fail Difference	Total
November 2003	1	3	3	1	122
December 2003	1	3	3	3	131
January 2004	1	4	6	4	139
November 2003	>1	267	3	92	508
December 2003	>1	272	1	106	499
January 2004	>1	273	2	102	501
Total		**822**	**18**	**308**	**1,900**

[616] Interview #26, February 2, 2005.

[617] In Finding 52, Liberty determined that BellSouth was not allowing the parameter δ, which is used in defining the alternative hypothesis, to vary across cells of a sub-measure, as required by the Florida SEEM Administrative Plan. To account for this error and isolate the impact of the additional errors associated with the calculation of the M&R-2 measure, Liberty used a constant value of δ across the cells of each sub-measure. Using varying values of δ, as required by the SEEM Administrative Plan results in more substantial differences.

[618] As noted in Finding 54, BellSouth acknowledged in response to Data Request #289 i) failure to properly aggregate the Z-score when L=1 and ii) failure to show the correct Z-score for items on which there were no CLEC troubles. Liberty compensated for these errors in determining that there are additional sources of error in the calculation of the M&R-2 remedy payments.

When L is greater than 1, almost all the Z-scores match although there are still many pass/fail differences.[619] The pass/fail decision is based on a simple comparison of the BCV to the aggregated Z. Therefore, for those cases in which L is greater than 1, the differences in pass/fail are probably due to differences in the BCV, because most of the Z-scores match. On the other hand, for those cases when L equals 1, and the aggregate Z-scores and the BCVs differ, there are few pass/fail differences.

Liberty observed that for all 308 of the pass/fail differences, BellSouth classified the items as failures, when they actually passed.

BellSouth incorrectly determined the BCV on about half of M&R-2 sub-measure results and thus incorrectly determined failures for about 15 percent of M&R-2 sub-measure results. The payments for each CLEC/sub-measure failure averaged $5,800. Thus, during the three month period, BellSouth overpaid approximately $1,800,000 due to this error.

BellSouth concurred with the above finding and responded by entering the following RQ's to correct the issue:[620]

> *RQ6148- changing statistical variable Se_i for FL & TN*
> *RQ6149- changing statistical variable L for FL & TN*
> *RQ6150- changing statistical variable M_i for FL & TN. The _report and _archive layers must be modified accordingly.*
> *RQ6151- changing aggregate Z score for FL & TN*
> *RQ6152- All of the TN S-Plus scripts should be modified to call the FL functions rather than maintain separate S-Plus functions for each state. This change applies to all measure types (proportions, rate and means).*
> *RQ6003- Cells with zero numerator receiving negative z score (S-Plus). Also, in certain circumstances, aggregate z score for single cell aggregates are incorrect (SQL).*
> *RQ6040- change in the delta value calculation. S-Plus code will be modified to compute one delta value per sub-metric and ALEC instead of one delta value per sub-metric.*

The information contained in the description of the RQ's was insufficient for Liberty to determine whether they would resolve the issues noted in this finding.

Finding 56: BellSouth did not have adequate and consistent documentation for its SEEM remedy payment calculation process, which may have contributed to erroneous calculations. Classification: 2

For complex systems and processes such as those used for calculating the Florida SEEM Administrative Plan remedy payments, the quality of the documentation can often have a significant effect on the quality of the results as well as the ease and reliability of updates and

[619] L is the number of occupied cells with non-zero weight for each company/sub-measure combination.
[620] Response to Preliminary Finding 37.

changes to the systems and process. The SEEM Administrative Plan provides a high level overview of the calculations that determine whether BellSouth passed or failed a particular sub-measure for a particular CLEC and the consequent remedy payment calculations. However, many of the definitions and notations in the SEEM Administrative Plan are vague, and some lead to calculation errors. Furthermore, without documentation that describes the relational databases and tables to which the SEEM calculations are applied, a user would find it difficult to accurately update or replicate the calculation algorithms in the SEEM Administrative Plan.

Liberty found that BellSouth had no technical documentation, beyond the actual programming code used in its PARIS system, of the databases and tables that need to be accessed in order to perform the SEEM calculations. When Liberty requested information concerning the calculation of remedy payments and cell-level comparisons, BellSouth was unable to provide any written technical documentation on cell-level calculations for parity measures.[621] While BellSouth effectively communicated the necessary information in an interview with Liberty, BellSouth was unable to provide any written documentation beyond the programming code itself.[622]

The grouping of data into cells is one of the keys to performing the remedy calculations for parity measures. BellSouth acknowledged that "there is no public documentation that lists all the criteria that are used to create a like-to-like comparison cell."[623] In response to Liberty's request for the specific attributes defining a cell for each parity measure, BellSouth replied with a spreadsheet that showed what appeared to be field names.[624] This spreadsheet was, in fact, incorrect,[625] and Liberty discovered in subsequent interviews and discussions how to define a cell for each measure.

In its SEEM Administrative Plan, BellSouth defines a cell as follows:[626]

> *Cell – grouping of transactions at which like-to-like comparisons are made. For example, all BellSouth retail ISDN services, for residential customers, requiring a dispatch in a particular wire center, at a particular point in time will be compared directly to ALEC resold ISDN services for residential customers, requiring a dispatch, in the same wire center, at a similar point in time...*

While this definition is appropriate for a high-level document, it is completely inadequate for the purposes of trying to make changes to program code or perform replication. Yet this definition is the only guideline that BellSouth was able to provide Liberty for the definition of a cell. The statistical formulas in Appendix D of the SEEM Administrative Plan follow from this definition because they involve notation that includes cell-level calculations. Without a clear definition of a cell, a user can not correctly perform these calculations.

[621] Responses to Data Requests #12, #15, and #63.
[622] Interview #11, November 17, 2004.
[623] Response to Data Request #64.
[624] Response to Data Request #64.
[625] For example, the response listed dispatch type as a cell designation, but this is not the case for some M&R measures, and it is not the case for the denominator of the M&R-2 measure.
[626] Self-Effectuating Enforcement Mechanism (SEEM) Administrative Plan, Version 2.7 (updated June 16, 2003), p.2.

The SEEM Administrative Plan also contains several mathematical formulas and notations that are inconsistent or that can produce undefined or infinite values. However, the SEEM Administrative Plan has no instructions on how to treat these values. For example, the formulas for δ on page D-12 can and do produce values in which the denominator is zero and thus δ is undefined, according to the definition. In addition, in the formula for proportion and rate measures on page D-8, the Z-score can be infinite when L is equal to 1. Also, on page D-1, L is defined as "the total number of occupied cells" whereas on D-9 the following implies a narrower definition, "recall that L is the total number of occupied cells with positive weight for the test."

With better documentation of the SEEM process and PARIS, it is possible that BellSouth might have avoided the errors raised in some of Liberty's other findings. In addition, because BellSouth changes and updates the PMAP and PARIS systems monthly, better documentation would improve the reliability of the implementation of these changes.

BellSouth responded that it would clarify the language of the plan. However, BellSouth did not state that it agreed with the finding and further stated that:[627]

> *As previously stated in BellSouth's response to Preliminary Finding 42, BellSouth can provide a template that shows, per measure, the exact characteristics necessary to construct a cell. In addition, definitions can also be included to explain both the cell itself as well as the characteristics.*[628]

Furthermore, BellSouth has noted:[629]

> *These job aids could be inserted in the SEEM Replication Manual, which was created as a supplement to the SEEM Administrative Plan in an attempt to provide interested third parties with the documentation necessary to successfully replicate SEEM results. BellSouth will provide this information at the direction of the Florida Public Service Commission.*

Despite these statements, and as discussed above, BellSouth's response to Liberty's data requests provided incorrect information concerning cell construction. Furthermore, although improvements to the SEEM Replication Manual would be helpful, Liberty notes that there was no SEEM Replication Manual for Florida during the audit period. Furthermore, Liberty notes that the documentation of the BellSouth's PARIS code is also inadequate. Liberty recommends that BellSouth consider improving its documentation, including, but not restricted to, the creation of a Florida SEEM Replication Manual incorporating some of the improvements BellSouth has noted in its reply to this finding.

[627] Response to Preliminary Finding 42.
[628] Response to Draft Finding 54.
[629] BellSouth's April 5, 2005 response to Liberty's Florida Draft Audit Report, issued March 11, 2005.

Finding 57: BellSouth improperly excluded some data items and improperly included others in the calculation of SEEM remedy payments for the O-9 (Firm Order Confirmation Timeliness) measure. Classification: 1

Liberty used the documentation in Appendix D of the SEEM Administrative Plan in order to calculate SEEM remedy payments for the O-9 measure. Because the datasets to calculate this measure do not reside in PARIS, Liberty also questioned BellSouth to determine the appropriate data to use in its calculations.[630]

Based on this information, Liberty calculated the remedy payments for the three months November and December 2003, and January 2004, using data from the DM Tables. Liberty aggregated data from the Data Mart and then compared these results against the [redacted] in PARIS, which contains the measure results and equity (pass/fail) determinations. The Liberty and BellSouth calculations match on numerator, denominator, and the equity determination for every item that was found in both the DM Table and the [redacted] table. The number of company/sub-measure combination matches was over 2,800. However, Liberty identified several company/sub-measure combinations in the Data Mart but not in the [redacted] table, or in the [redacted] table but not in the Data Mart. Liberty provided BellSouth with a list of 64 discrepancies.[631] By excluding company codes that were no longer in use, Liberty was able to reduce the number of discrepancies to 51, and the following table summarizes these differences.

Month	BellSouth and Liberty Agree – Pass	BellSouth and Liberty Agree – Fail	Liberty only Pass	Liberty Only Fail	BellSouth only Pass	BellSouth only Fail
November 2003	876	93	6	0	1	0
December 2003	776	162	5	2	0	0
January 2004	857	80	18	3	14	2
Total	**2,509**	**335**	**29**	**5**	**15**	**2**

BellSouth concurred with 46 of these discrepancies, explaining that they were the result of either i) improperly excluding Line Splitting items, or ii) improperly including, excluding, or rolling up companies.[632] BellSouth indicated that it has corrected these problems through RQs.[633] For the remaining five discrepancies, BellSouth replied that it did not find these measures mapped for inclusion.

In total, Liberty found 34 company/sub-measure combinations that should have been included, and five of which were failing. Each of these failures should have resulted in a remedy payment of between $450 and $1,400. On the other hand, BellSouth erroneously included 17 company/sub-measure combinations, two of which were designated failures. BellSouth

[630] Interview #23, January 5 and 18, 2005.
[631] Response to Data Request #379.
[632] Response to Data Request #379.
[633] In its response to Data Request #379, BellSouth stated that RQ5631 corrected the line splitting issue, and that multiple RQs were issued for the other issues (BellSouth did not list the RQ numbers for these).

erroneously paid $1,100 in total on these two failures. BellSouth has acknowledged the problem and issued change orders for all but five of the discrepancies.

BellSouth stated that of the 51 discrepancies found, it concurred with Liberty's finding on 50 of them. BellSouth further explained that these 50 discrepancies were "the result of either i) improperly excluding Line Splitting items (corrected with RQ5631), or ii) improperly including, excluding, or rolling up companies (corrected with RQ4932 and RQ5087 in PARIS along with other warehouse side RQs). As for the remaining discrepancy, BellSouth has tracked the single transaction involved and determined that it would come through using the current code. There was a change to the entry in the company lookup table for this company in March of 2004 (a parent company was added)."[634]

Liberty believes BellSouth's changes should correct the problems, but has not checked any actual code for the changes.

Finding 58: The BellSouth CLEC Administration table update process caused delayed penalty payments to CLECs. Classification: 3

Liberty's analysis of the remedy payment data for the audit period revealed 44 instances in which payments were processed to a "[redacted]" status, 42 of which were due to missing entries in the [redacted]" table, apparently at the time transmission to STAR was attempted. Some of these payments remained in the [redacted]" status for several months prior to resolution to a final status of either [redacted] (*i.e.,* sent to STAR for payment) or [redacted]." While the dollar amount of these transactions, in excess of $70,000, represented approximately one percent of the total payment dollar amount during the audit period, it should be noted that seven CLECs experienced delayed payment resolution during the audit period. Liberty also observed that approximately one month transpired between a payment entering the [redacted] status and that same payment being placed in [redacted] status for transmission to STAR.

CLECs received delayed payments when BellSouth failed to update the [redacted] table at the beginning of the remedy payment process. Because this table is not validated until the payment is ready to be transmitted to STAR, which is approximately one month after the time that the payment is initiated, seven CLECs experienced delays to payment resolution during the audit period, with two CLECs experiencing payment delays multiple times during the audit period.

BellSouth responded to this finding with a detailed explanation of the process for establishing CLEC account information in PARIS.[635] However, BellSouth did not explicitly provide the reason for the large number of payment delays that Liberty observed. BellSouth should reexamine its process to determine whether there are ways to assure timely rendering of remedy payments.

[634] Response to Preliminary Finding 51.
[635] Response to Preliminary Finding 7.

Finding 59: BellSouth does not have a process in place to ensure that all remedies for a given reporting month are eventually paid. Classification: 3

Liberty found that BellSouth balances the remedy payments in PARIS and STAR for each reporting month. However, a given remedy payment processing cycle does not consist of a single reporting month. Monthly payments rendered to CLECs contain i) current month remedy payments, ii) prior month's remedy payments, and iii) adjustments to prior payments. BellSouth does not have a process in place to balance PARIS and STAR that includes all these different contributions to the monthly payments.

Liberty attempted to reconcile PARIS calculations of remedy payments and adjustments with STAR reports of rendered payments across the audit period. When unable at first to do so, Liberty asked BellSouth to review the balancing spreadsheets and explain the differences. After several iterations and detailed research, BellSouth was able to account for the differences.[636]

However, the level of effort required clearly demonstrates the lack of a process to ensure that BellSouth actually makes all remedy payments for an entire reporting month. Liberty found, based on BellSouth's comments, that payments for a given reporting month often occur over a large time span and that, in some cases, BellSouth must employ manual processes in order to ensure correct payments.[637]

BellSouth should develop a payment status tracking and reporting process which allows updates from STAR back to PARIS at the item level. Additionally, reports within PARIS should identify those items for a given reporting month that have not been paid.

BellSouth responded to this finding as follows:[638]

> *BellSouth disagrees with Liberty's assessment that "BellSouth lacked a process to ensure that it made all remedy payments for a specific reporting month." When BellSouth calculates the monthly remedies during the SEEM Monthly cycle, BellSouth is calculating all the remedies that are due and payable for the given reporting month. Monthly payments to CLECs may contain adjustments and prior month's remedies;* ***only*** *when an adjustment or payment for a previous month's remedy is required due to a finding in the original calculation that requires correction. Corrections are indeed necessary to ensure that the proper remedy is paid to the CLEC in order to comply with the administration of the SEEM plan....*
>
> *The SEEM Monthly Cycle flow identifies the actual process flow for the overall SEEM cycle, with each major task responsibility assigned to the group responsible for the completion of the particular task. The PARIS AP Work Flow identifies the transition of* ***each*** *PARIS transaction through each status code from the moment the transaction is "PROPOSED" to "TRANSMITTED" (paid). Task*

[636] Information received from BellSouth via emails dated January 13, 2005 and February 9, 2005, as well as conference calls on December 28, 2003 and February 8, 2005.
[637] Final annotated balancing worksheet received from BellSouth via email dated February 9, 2005.
[638] Response to Preliminary Finding 57.

responsibility is also assigned per the flow chart to show group responsibility for the movement of each transaction throughout the life cycle of the PARIS transaction.

Process improvements have been implemented since the timeframe of this Audit to facilitate the actual balance procedures between the PARIS and STAR systems. However, prior even to these process improvements, the actual monthly payments were balanced which is evidenced by the Liberty statement: "BellSouth was able to account for the differences." Monthly payment amounts are reported to the CLECs and Commissions through access to the PARIS reporting system via the PMAP website.

Liberty notes that BellSouth's ability to account for the differences during the audit period does not necessarily substantiate the existence of a balancing process. Nevertheless, Liberty acknowledges BellSouth's statement that they have introduced process improvements since the time of the audit, and that these may address the issue in this finding. However, Liberty has insufficient information to assess whether that is the case.

1 # Appendix A – Sub-Measure List

2

O-4

Percent Flow Through Service Requests - Business

Percent Flow Through Service Requests - Residence

Percent Flow Through Service Requests - UNE-L

Percent Flow Through Service Requests - UNE-P

Percent flow-through Service Requests (Detail) LNP

O-9

Firm Order Confirmation Timeliness - Mechanized - LNP (Standalone) 95% <= 3 Hours

Firm Order Confirmation Timeliness - Mechanized - Resale Business 95% <= 3 Hours

Firm Order Confirmation Timeliness - Mechanized - Resale Residence 95% <= 3 Hours

Firm Order Confirmation Timeliness - Mechanized - UNE Loop + Port Combinations 95% <=3 Hours

Firm Order Confirmation Timeliness - Mechanized - UNE Other Non-Design 95% <= 3 Hours

Firm Order Confirmation Timeliness - Mechanized - UNE xDSL (HDSL, ADSL, and UCL) 95% <= 3 hours

Firm Order Confirmation Timeliness - Non-Mechanized - INP (Standalone) 95% <= 24 Hours

Firm Order Confirmation Timeliness - Non-Mechanized - LNP (Standalone) 95% <= 24 Hours

Firm Order Confirmation Timeliness - Non-Mechanized - Resale Centrex 95% <= 24 Hours

Firm Order Confirmation Timeliness - Non-Mechanized - UNE Digital Loop < DS1 95% <=24 Hours

Firm Order Confirmation Timeliness - Non-Mechanized - UNE Loop + Port Combinations 95% <= 24 Hours

Firm Order Confirmation Timeliness - Non-Mechanized - UNE Other Non-Design 95% <= 24 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - 2W Analog Loop Design 95% <= 10 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - 2W Analog Loop Non-Design 95% <= 10 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - 2W Analog Loop w/LNP - Non-Design 95% <= 10 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - EELs 95% <= 10 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - LNP (Standalone) 95% <= 10 Hours

Firm Order Confirmation Timeliness - Partial Mechanized - Resale Business 95% <= Hours

Firm Order Confirmation Timeliness - Partial Mechanized - Resale Residence 95% < = 10 hours

Firm Order Confirmation Timeliness - Mechanized - UNE ISDN Loop

Firm Order Confirmation Timeliness - Non-Mechanized - UNE ISDN Loop

Firm Order Confirmation Timeliness - Partial Mechanized - UNE ISDN Loop

Firm Order Confirmation Timeliness - Mechanized - UNE Other Non-Design

Firm Order Confirmation Timeliness - Non-Mechanized - UNE Other Non-Design

Firm Order Confirmation Timeliness - Partial Mechanized - UNE Other Non-Design

Firm Order Confirmation Timeliness - Non-Mechanized - UNE Switch Ports

Firm Order Confirmation Timeliness - Non-Mechanized - Line Splitting

P-3

Percent Missed Installation Appointments - 2W Analog Loop Non-Design Dispatch < 10 Circuits

Percent Missed Installation Appointments - 2W Analog Loop w/LNP - Design Non-Dispatch < 10 Circuits

Percent Missed Installation Appointments - 2W Analog Loop w/LNP - Non-Design Dispatch < 10 Circuits

Percent Missed Installation Appointments - 2W Analog Loop w/LNP - Non-Design Non-Dispatch < 10 Circuits

Percent Missed Installation Appointments - EELs Dispatch < 10 Circuits
Percent Missed Installation Appointments - INP (Standalone) Dispatch >= 10 Circuits
Percent Missed Installation Appointments - LNP (Standalone) Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - Resale Business Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - Resale Residence Dispatch < 10 Circuits
Percent Missed Installation Appointments - Resale Residence Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Digital Loop < DS1 Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Digital Loop < DS1 Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Digital Loop >= DS1 Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Line Sharing w/o Loop Conditioning Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Line Sharing w/o Loop Conditioning Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Loop + Port Combinations Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Loop + Port Combinations Non-Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE UDC/IDSL Dispatch < 10 Circuits
Percent Missed Installation Appointments - UNE Switch Ports <10 dispatch
Percent Missed Installation Appointments - UNE Switch Ports <10 non-dispatch
P-4
Order Completion Interval - 2W Analog Loop Design Non-Dispatch < 10 Circuits
Order Completion Interval - 2W Analog Loop Non-Design Dispatch < 10 Circuits
Order Completion Interval - 2W Analog Loop Non-Design Non-Dispatch < 10 Circuits
Order Completion Interval - 2W Analog Loop w/LNP - Design Non-Dispatch < 10 Circuits
Order Completion Interval - 2W Analog Loop w/LNP - Non-Design Non-Dispatch < 10 Circuits
Order Completion Interval - EELs Dispatch < 10 Circuits
Order Completion Interval - LNP (Standalone) Non-Dispatch < 10 Circuits
Order Completion Interval - Local Interconnection Trunks
Order Completion Interval - Resale Business Dispatch < 10 Circuits
Order Completion Interval - Resale Business Non-Dispatch < 10 Circuits
Order Completion Interval - Resale Residence Dispatch < 10 Circuits
Order Completion Interval - Resale Residence Non-Dispatch < 10 Circuits
Order Completion Interval - Standalone INP Non-Dispatch
Order Completion Interval - UNE Digital Loop < DS1 Dispatch < 10 Circuits
Order Completion Interval - UNE Line Sharing w/o Loop Conditioning Non-Dispatch < 10 circuits
Order Completion Interval - UNE Combos Other - Disp
Order Completion Interval - UNE Loop + Port Combinations Non-Dispatch < 10 Circuits
Order Completion Interval - UNE ISDN Loop - Dispatch
Order Completion Interval - UNE ISDN Loop - Non-Dispatch
Order Completion Interval - UNE Other Non-Design - Dispatch
Order Completion Interval - UNE Other Non-Design - Non- Dispatch
Order Completion Interval - Line Splitting - Non- Dispatch
P-7
Coordinated Customer Conversions Internal Unbundled Loops with INP
Coordinated Customer Conversions Internal Unbundled Loops with LNP
P-7C

P-7C CCCs - Percent Provisioning Troubles Rec w/in 7 days of a completed Service Order - UNE Loop Non-Design - Non-Dispatch PBX ISDN

P-7C CCCs - Percent Provisioning Troubles Rec w/in 7 days of a completed Service Order - UNE Loop Design - Non-Dispatch

P-7C CCCs - Percent Provisioning Troubles Rec w/in 7 days of a completed Service Order - UNE Loop Design - Dispatch

P-7C CCCs - Percent Provisioning Troubles Rec w/in 7 days of a completed Service Order - UNE Loop Non-Design - Dispatch

P-9

% Provisioning Troubles within 30 Days - 2W Analog Loop Design < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - 2W Analog Loop Non-Design < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - 2W Analog Loop w/LNP - Non-Design < 10 Circuits Non-Dispatch

% Provisioning Troubles within 30 Days - EELs < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - INP (Standalone) < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - Resale Business < 10 Circuits Non-Dispatch

% Provisioning Troubles within 30 Days - Resale Residence < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - Resale Residence < 10 Circuits Non-Dispatch

% Provisioning Troubles within 30 Days - UNE Loop + Port Combinations < 10 Circuits Non-Dispatch Disp In

% Provisioning Troubles within 30 Days - UNE Loop + Port Combinations < 10 Circuits Non-Dispatch Switch Based

% Provisioning Troubles within 30 Days - Resale Residential < 10 Circuits Non-Dispatch Switch Based

% Provisioning Troubles within 30 Days - 2W analog loop non-design < 10 Circuits Non-Dispatch Switch Based

% Provisioning Troubles within 30 Days - LNP Standalone < 10 Circuits Non-Dispatch

% Provisioning Troubles within 30 Days - Local Transport < 10 Circuits Dispatch

% Provisioning Troubles within 30 Days - UNE - xDSL (HDSL, ADSL, UCL) Dispatch

M&R-1

Missed Repair Appointments - 2W Analog Loop Non-Design Dispatch

Missed Repair Appointments - 2W Analog Loop Non-Design Non-Dispatch

Missed Repair Appointments - Resale Business Dispatch

Missed Repair Appointments - Resale Business Non-Dispatch

Missed Repair Appointments - Resale Residence Non-Dispatch

Missed Repair Appointments - UNE Digital Loop < DS1 Dispatch

Missed Repair Appointments - UNE Digital Loop < DS1 Non-Dispatch

Missed Repair Appointments - UNE Digital Loop >= DS1 Dispatch

Missed Repair Appointments - UNE ISDN Dispatch

Missed Repair Appointments - UNE Line Sharing Non-Dispatch

Missed Repair Appointments - UNE Loop + Port Combinations Dispatch

Missed Repair Appointments - UNE Loop + Port Combinations Non-Dispatch

Missed Repair Appointments - UNE xDSL (HDSL, ADSL, and UCL) Dispatch

Missed Repair Appointments - UNE xDSL (HDSL, ADSL, and UCL) Non-Dispatch

M&R-2

Customer Trouble Report Rate - 2W Analog Loop Design

Customer Trouble Report Rate - 2W Analog Loop Non-Design

Customer Trouble Report Rate - Resale Business

Customer Trouble Report Rate - Resale Design
Customer Trouble Report Rate - Resale Residence
Customer Trouble Report Rate - UNE Combos - Other
Customer Trouble Report Rate - UNE Digital Loop >= DS1
Customer Trouble Report Rate - UNE ISDN
Customer Trouble Report Rate - UNE Loop + Port Combinations
Customer Trouble Report Rate - UNE xDSL (HDSL, ADSL, and UCL)
Customer Trouble Report Rate - Local Interconnection Trunks
Customer Trouble Report Rate - Local Transport
Customer Trouble Report Rate - UNE Other - Non-Design
M&R-3
Maintenance Average Duration - 2W Analog Loop Design Dispatch
Maintenance Average Duration - 2W Analog Loop Design Non-Dispatch
Maintenance Average Duration - 2W Analog Loop Non-Design Dispatch
Maintenance Average Duration - 2W Analog Loop Non-Design Non-Dispatch
Maintenance Average Duration - Resale Business Dispatch
Maintenance Average Duration - Resale Business Non-Dispatch
Maintenance Average Duration - Resale Design Dispatch
Maintenance Average Duration - Resale ISDN Non-Dispatch
Maintenance Average Duration - Resale Residence Dispatch
Maintenance Average Duration - Resale Residence Non-Dispatch
Maintenance Average Duration - UNE Combos - Other Dispatch
Maintenance Average Duration - UNE Combos - Other Non-Dispatch
Maintenance Average Duration - UNE Digital Loop < DS1 Dispatch
Maintenance Average Duration - UNE Digital Loop < DS1 Non-Dispatch
Maintenance Average Duration - UNE Digital Loop >= DS1 Dispatch
Maintenance Average Duration - UNE ISDN Dispatch
Maintenance Average Duration - UNE ISDN Non-Dispatch
Maintenance Average Duration - UNE Line Sharing Non-Dispatch
Maintenance Average Duration - UNE Loop + Port Combinations Dispatch
Maintenance Average Duration - UNE Loop + Port Combinations Non-Dispatch
Maintenance Average Duration - UNE xDSL (HDSL, ADSL, and UCL) Dispatch
Maintenance Average Duration - Resale PBX Dispatch
M&R-4
% Repeat Troubles w/in 30 Days - 2W Analog Loop Design Dispatch
% Repeat Troubles w/in 30 Days - 2W Analog Loop Non-Design Dispatch
% Repeat Troubles w/in 30 Days - UNE Combos - Other Dispatch
% Repeat Troubles w/in 30 Days - UNE Combos - Other Non-Dispatch
% Repeat Troubles w/in 30 Days - UNE Digital Loop >= DS1 Dispatch
% Repeat Troubles w/in 30 Days - UNE Digital Loop >= DS1 Non-Dispatch
% Repeat Troubles w/in 30 Days - UNE ISDN Dispatch
% Repeat Troubles w/in 30 Days - UNE Loop + Port Combinations Dispatch
% Repeat Troubles w/in 30 Days - UNE Loop + Port Combinations Non-Dispatch

M&R-5

Out of Service > 24 hours - 2W Analog Loop Design Non-Dispatch

Out of Service > 24 hours - 2W Analog Loop Non-Design Dispatch

Out of Service > 24 hours - Resale Residence Dispatch

Out of Service > 24 hours - Resale Residence Non-Dispatch

Out of Service > 24 hours - UNE Combos - Other Dispatch

Out of Service > 24 hours - UNE Combos - Other Non-Dispatch

Out of Service > 24 hours - UNE Digital Loop >= DS1 Dispatch

Out of Service > 24 hours - UNE ISDN Dispatch

Out of Service > 24 hours - UNE Line Sharing Non-Dispatch

Out of Service > 24 hours - UNE Loop + Port Combinations Dispatch

Out of Service > 24 hours - UNE Loop + Port Combinations Non-Dispatch

Out of Service > 24 hours - UNE xDSL (HDSL, ADSL, and UCL) Dispatch

B-1

Invoice Accuracy (Measured in Dollars) - Interconnection

Invoice Accuracy (Measured in Dollars) - Resale

Invoice Accuracy (Measured in Dollars) - UNE

1 Appendix B – Findings by Severity

Final Report Finding No.	Description	Classification
21	For the time period of this audit BellSouth was inappropriately excluding non-coordinated hot cuts from the calculation of the measure results for P-7C (Hot Cut Conversions – Percent Provisioning Troubles received within 7 Days of a Completed Service Order).	1
25	BellSouth incorrectly excluded the majority of the hot cut orders from the calculation of the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received Within 7 Days of a Completed Service Order) measures and excluded a smaller subset of orders from the P-7 (Coordinated Customer Conversions Interval) measure.	1
31	BellSouth incorrectly included deny and restore record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure results.	1
52	BellSouth was not calculating the parity measures involving Tier 1 averages according to the SEEM Administrative Plan.	1
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.	1
54	BellSouth did not calculate the remedy payments for percentage parity measures (i.e., M&R-1, M&R-4, M&R-5, P-3, and P-9) according to the SEEM Administrative Plan.	1
55	BellSouth did not calculate remedy payments for M&R-2 (Customer Trouble Report Rate) according to the SEEM Administrative Plan.	1
57	BellSouth improperly excluded some data items and improperly included others in the calculation of SEEM remedy payments for the O-9 (Firm Order Confirmation Timeliness) measure.	1
16	BellSouth excluded transactions from the calculation for a measure because it lacked required information about these transactions that were necessary only for another measure.	2
18	BellSouth incorrectly reported certain LNP orders as INP Standalone orders in the O-9 (Firm Order Confirmation) and P-9 (Percent Provisioning Troubles within 30 Days) results.	2
20	BellSouth omits coin orders from O-3 and O-4 (Percent Flow-Through Service Requests, Summary and Detail) reported results.	2
22	BellSouth did not include the translation time necessary to place the line back in full service when calculating the measure results for P-7 (Coordinated Customer Conversions Interval).	2
23	BellSouth was misclassifying certain orders with a "PR-17" (cancelled order) error code thereby incorrectly excluding these orders from the calculation of the P-3 (Percent Missed Initial Installation Appointments) results.	2
24	BellSouth reported the results for P-3 (Percent Missed Initial Installation Appointments) incorrectly because it included end-user-caused misses in the denominator.	2

26	BellSouth did not include disconnect service orders associated with Standalone LNP activity in the measure calculation for P-4 (Average Completion Interval & Order Completion Interval Distribution).	2
27	BellSouth incorrectly included certain record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measurement results.	2
28	BellSouth incorrectly excluded orders from the calculation of the P-7 (Coordinated Customer Conversions Interval) and the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measures that were properly included in the other in-scope provisioning measures.	2
29	BellSouth included orders with invalid conversion durations in the calculation of the P-7 (Coordinated Customer Conversions Interval) measure.	2
30	For P-3 (Percent Missed Initial Installation Appointments), BellSouth included certain cancelled orders in both the numerator and denominator of the SQM results calculation, but included the same orders only in the denominator of the SEEM results.	2
32	BellSouth overstated the CLEC circuit counts for P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) by doubling the SL1 (Non-Design) Loop volume.	2
33	During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded transactions from the retail analog of the resale ISDN product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	2
35	BellSouth did not include certain wholesale products in its calculation of the SEEM remedy payments for the P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	2
37	BellSouth incorrectly classified UNE Line Splitting orders as UNE-P orders when calculating its results for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	2
38	BellSouth neglected to calculate the total impact of multiple errors in determining whether it needed to repost the results for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measure.	2
40	BellSouth was not including all orders for Local Interconnection Trunks in its calculation of the SEEM remedy payments for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	2
41	BellSouth was not in conformance with the SQM Plan when calculating service order durations for the P-4 (Average	2

	Completion Interval & Order Completion Interval Distribution) measure.	
42	BellSouth did not properly align the product IDs for troubles and the lines on which they occurred for M&R-2 (Customer Trouble Report Rate), causing mismatches and resulting in assignment of either the troubles or the lines to the wrong sub-measure in SQM reports and SEEM remedy payment calculations.	2
43	BellSouth included special access services in some of its retail analog calculations during the audit period and, after correcting the calculations, failed to perform a complete analysis to determine whether reposting was necessary.	2
44	BellSouth included orders with invalid maintenance durations in the calculation of the M&R-3 (Maintenance Average Duration) measure.	2
45	During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded ISDN-Basic Rate Interface (ISDN-BRI) Business Design troubles for the 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), and M&R-5 (Out of Service > 24 Hours) measures.	2
46	For the B-1 (Invoice Accuracy) measure, BellSouth did not define the adjustments it includes in a report month consistently for all bills.	2
56	BellSouth did not have adequate and consistent documentation for its SEEM remedy payment calculation process, which may have contributed to erroneous calculations.	2
2	BellSouth was not reporting C-1 (Collocation Average Response Time) results according to the SQM Plan reporting requirements.	3
3	For measure CM-8 (Percent Change Requests Rejected), BellSouth was not reporting according to the SQM Plan reporting requirements.	3
8	BellSouth has provided no evidence that it complied with the Florida Reposting Policy in determining whether errors or changes required reposting.	3
9	The SDUM instructions for replicating the SQM/SRS reports were not easy to understand and use.	3
11	BellSouth did not provide adequate documentation for replication of the results reported in PARIS.	3
12	The Impact Statements provided by BellSouth as part of the Notification Process were unclear and did not accurately state the effect of a proposed change on its associated performance measure.	3
13	The overall interval to process BellSouth's Change Requests was excessive.	3
14	BellSouth's tracking and monitoring of the metric change control process did not accurately track progress or permit BellSouth management to accurately monitor workflows to determine which process areas are in need of improvement.	3
34	The logic used by BellSouth to determine dispatch type misclassified some UNE loop orders when calculating the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	3

47	BellSouth's manual process for preparing billing data for the B-1 (Invoice Accuracy) measure did not contain adequate quality control procedures.	3
48	BellSouth's process for determining the final adjustment values and the count of adjustments in the calculation of the B-1 (Invoice Accuracy) measure for both CLECs and BellSouth retail is incomplete and thus does not assure accurate reporting of this measure.	3
50	The BellSouth PMAP production validation process did not update the historical data used in trending analysis to reflect the effect of PMAP system changes.	3
58	The BellSouth CLEC Administration table update process caused delayed penalty payments to CLECs.	3
59	BellSouth does not have a process in place to ensure that all remedies for a given reporting month are eventually paid.	3
1	BellSouth was not reporting B-10 (Percent Billing Errors Corrected in "X" Business Days) according to the SQM Plan Reporting Requirements.	4
4	BellSouth did not report the Z-scores according to the SQM Plan reporting requirements in the 12-month PMAP reports for measures P-2B(Percentage of Orders Given Jeopardy Notices), M&R-3 (Maintenance Average Duration), B-7 (Recurring Charge Completeness), and B-8 (Non-Recurring Charge Completeness).	4
5	The Florida SQM Plan and SEEM Administrative Plan contain several discrepancies regarding provisions found in Florida Order PSC-02-1736-PAA-TP.	4
6	For measure OSS-2 (OSS Availability – Pre-Ordering/Ordering), the availability report at BellSouth's Interconnection website is missing entries for many of the OSS listed in Appendix D of the SQM Plan.	4
7	BellSouth posts only the most recent month of PARIS reports for viewing by the CLECs on the PMAP website. Historical PARIS reports are not available. This is in contrast to BellSouth's practice of having previous months' reports available for a full year for the majority of SQM Plan reports.	4
10	The SQL scripts contained in the SDUM document for M&R-2 (Customer Trouble Report Rate) did not replicate CLEC results properly.	4
15	BellSouth has not documented well its Performance Measurements Quality Assurance Plan.	4
17	The retail performance analog for the Local Interconnection Trunk product as documented in BellSouth's SQM Plan for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), P-9 (Percent 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 Trouble Reports within 30 Days) and M&R-5 (Out of Service >24 hours) measures is unclear and misleading.	4
19	BellSouth has adopted a convention for treating RPONs in O-9 (Firm Order Confirmation Timeliness) that is not contained in the SQM Plan.	4
36	The SQM and SEEM levels of disaggregation as documented in BellSouth's SQM Plan were inaccurate and misleading for the	4

	UNE-P for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.	
39	BellSouth's documentation in the SQM Plan for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) is contradictory and misleading.	4
49	BellSouth's methods for defining revenues and determine which bills are included in the B-1 (Invoice Accuracy) measure are not addressed by the SQM Plan.	4
51	BellSouth performed no validation to detect invalid zero dollar remedy payments during the audit period.	4

1 Appendix C – Findings Cross Reference

Final Report Finding No.	Draft Report Finding No.	Preliminary Finding No.	Description
1	1	26	BellSouth was not reporting B-10 (Percent Billing Errors Corrected in "X" Business Days) according to the SQM Plan Reporting Requirements.
2	2	28	BellSouth was not reporting C-1 (Collocation Average Response Time) results according to the SQM Plan reporting requirements.
3	3	27	For measure CM-8 (Percent Change Requests Rejected), BellSouth was not reporting according to the SQM Plan reporting requirements.
4	4	39	BellSouth did not report the Z-scores according to the SQM Plan reporting requirements in the 12-month PMAP reports for measures P-2B(Percentage of Orders Given Jeopardy Notices), M&R-3 (Maintenance Average Duration), B-7 (Recurring Charge Completeness), and B-8 (Non-Recurring Charge Completeness).
5	5	44	The Florida SQM Plan and SEEM Administrative Plan contain several discrepancies regarding provisions found in Florida Order PSC-02-1736-PAA-TP.
6	6	9	For measure OSS-2 (OSS Availability – Pre-Ordering/Ordering), the availability report at BellSouth's Interconnection website is missing entries for many of the OSS listed in Appendix D of the SQM Plan.
7	7	3	BellSouth posts only the most recent month of PARIS reports for viewing by the CLECs on the PMAP website. Historical PARIS reports are not available. This is in contrast to BellSouth's practice of having previous months' reports available for a full year for the majority of SQM Plan reports.
8	8	56	BellSouth has provided no evidence that it complied with the Florida Reposting Policy in determining whether errors or changes required reposting.
9	9	25	The SDUM instructions for replicating the SQM/SRS reports were not easy to understand and use.
10	10	16	The SQL scripts contained in the SDUM document for M&R-2 (Customer Trouble Report Rate) did not replicate CLEC results properly.
11	11	1	BellSouth did not provide adequate documentation for replication of the results reported in PARIS.
12	12	31	The Impact Statements provided by BellSouth as part of the Notification Process were unclear and did not accurately state the effect of a proposed change on its associated performance measure.
13	13	60	The overall interval to process BellSouth's Change Requests was excessive.
14	14	61	BellSouth's tracking and monitoring of the metric change control process did not accurately track progress or permit BellSouth management to accurately monitor

			workflows to determine which process areas are in need of improvement.
15	N/A	64	BellSouth has not documented well its Performance Measurements Quality Assurance Plan.
16	15	43	BellSouth excluded transactions from the calculation for a measure because it lacked required information about these transactions that were necessary only for another measure.
17	16	62	The retail performance analog for the Local Interconnection Trunk product as documented in BellSouth's SQM Plan for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), P-9 (Percent 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 Trouble Reports within 30 Days) and M&R-5 (Out of Service >24 hours) measures is unclear and misleading.
18	17	52	BellSouth incorrectly reported certain LNP orders as INP Standalone orders in the O-9 (Firm Order Confirmation) and P-9 (Percent Provisioning Troubles within 30 Days) results.
19	18	53	BellSouth has adopted a convention for treating RPONs in O-9 (Firm Order Confirmation Timeliness) that is not contained in the SQM Plan.
20	19	58	BellSouth omits coin orders from O-3 and O-4 (Percent Flow-Through Service Requests, Summary and Detail) reported results.
21	20	4	For the time period of this audit BellSouth was inappropriately excluding non-coordinated hot cuts from the calculation of the measure results for P-7C (Hot Cut Conversions – Percent Provisioning Troubles received within 7 Days of a Completed Service Order).
22	21	5	BellSouth did not include the translation time necessary to place the line back in full service when calculating the measure results for P-7 (Coordinated Customer Conversions Interval).
23	22	12	BellSouth was misclassifying certain orders with a "PR-17" (cancelled order) error code thereby incorrectly excluding these orders from the calculation of the P-3 (Percent Missed Initial Installation Appointments) results.
24	23	13	BellSouth reported the results for P-3 (Percent Missed Initial Installation Appointments) incorrectly because it included end-user-caused misses in the denominator.
25	24	17	BellSouth incorrectly excluded the majority of the hot cut orders from the calculation of the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received Within 7 Days of a Completed Service Order) measures and excluded a smaller subset of orders from the P-7 (Coordinated Customer Conversions Interval) measure.
26	25	18	BellSouth did not include disconnect service orders associated with Standalone LNP activity in the measure

			calculation for P-4 (Average Completion Interval & Order Completion Interval Distribution).
27	26	19	BellSouth incorrectly included certain record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measurement results.
28	27	20	BellSouth incorrectly excluded orders from the calculation of the P-7 (Coordinated Customer Conversions Interval) and the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measures that were properly included in the other in-scope provisioning measures.
29	28	21	BellSouth included orders with invalid conversion durations in the calculation of the P-7 (Coordinated Customer Conversions Interval) measure.
30	29	22	For P-3 (Percent Missed Initial Installation Appointments), BellSouth included certain cancelled orders in both the numerator and denominator of the SQM results calculation, but included the same orders only in the denominator of the SEEM results.
31	30	29	BellSouth incorrectly included deny and restore record change orders in the calculation of P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measure results.
32	31	30	BellSouth overstated the CLEC circuit counts for P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) by doubling the SL1 (Non-Design) Loop volume.
33	32	33	During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded transactions from the retail analog of the resale ISDN product for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
34	33	34	The logic used by BellSouth to determine dispatch type misclassified some UNE loop orders when calculating the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
35	34	40	BellSouth did not include certain wholesale products in its calculation of the SEEM remedy payments for the P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
36	35	45	The SQM and SEEM levels of disaggregation as documented in BellSouth's SQM Plan were inaccurate

			and misleading for the UNE-P for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
37	36	46	BellSouth incorrectly classified UNE Line Splitting orders as UNE-P orders when calculating its results for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution), and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
38	37	47	BellSouth neglected to calculate the total impact of multiple errors in determining whether it needed to repost the results for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) measure.
39	38	48	BellSouth's documentation in the SQM Plan for the P-7C (Hot Cut Conversions – Percent Provisioning Troubles Received within 7 Days of a Completed Service Order) is contradictory and misleading.
40	39	49	BellSouth was not including all orders for Local Interconnection Trunks in its calculation of the SEEM remedy payments for the P-3 (Percent Missed Initial Installation Appointments), P-4 (Average Completion Interval & Order Completion Interval Distribution) and P-9 (Percent Provisioning Troubles within 30 Days of Service Order Completion) measures.
41	40	50	BellSouth was not in conformance with the SQM Plan when calculating service order durations for the P-4 (Average Completion Interval & Order Completion Interval Distribution) measure.
42	41	36	BellSouth did not properly align the product IDs for troubles and the lines on which they occurred for M&R-2 (Customer Trouble Report Rate), causing mismatches and resulting in assignment of either the troubles or the lines to the wrong sub-measure in SQM reports and SEEM remedy payment calculations.
43	42	38	BellSouth included special access services in some of its retail analog calculations during the audit period and, after correcting the calculations, failed to perform a complete analysis to determine whether reposting was necessary.
44	43	59	BellSouth included orders with invalid maintenance durations in the calculation of the M&R-3 (Maintenance Average Duration) measure.
45	N/A	63	During its calculation of the monthly SEEM results in PARIS, BellSouth incorrectly excluded ISDN-Basic Rate Interface (ISDN-BRI) Business Design troubles for the 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), and M&R-5 (Out of Service > 24 Hours) measures.
46	44	23	For the B-1 (Invoice Accuracy) measure, BellSouth did

			not define the adjustments it includes in a report month consistently for all bills.
47	45	14	BellSouth's manual process for preparing billing data for the B-1 (Invoice Accuracy) measure did not contain adequate quality control procedures.
48	46	15	BellSouth's process for determining the final adjustment values and the count of adjustments in the calculation of the B-1 (Invoice Accuracy) measure for both CLECs and BellSouth retail is incomplete and thus does not assure accurate reporting of this measure.
49	47	24	BellSouth's methods for defining revenues and determine which bills are included in the B-1 (Invoice Accuracy) measure are not addressed by the SQM Plan.
50	48	41	The BellSouth PMAP production validation process did not update the historical data used in trending analysis to reflect the effect of PMAP system changes.
51	49	54	BellSouth performed no validation to detect invalid zero dollar remedy payments during the audit period.
52	50	8	BellSouth was not calculating the parity measures involving Tier 1 averages according to the SEEM Administrative Plan.
53	51	32	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.
54	52	35	BellSouth did not calculate the remedy payments for percentage parity measures (i.e., M&R-1, M&R-4, M&R-5, P-3, and P-9) according to the SEEM Administrative Plan.
55	53	37	BellSouth did not calculate remedy payments for M&R-2 (Customer Trouble Report Rate) according to the SEEM Administrative Plan.
56	54	42	BellSouth did not have adequate and consistent documentation for its SEEM remedy payment calculation process, which may have contributed to erroneous calculations.
57	55	51	BellSouth improperly excluded some data items and improperly included others in the calculation of SEEM remedy payments for the O-9 (Firm Order Confirmation Timeliness) measure.
58	57	7	The BellSouth CLEC Administration table update process caused delayed penalty payments to CLECs.
59	58	57	BellSouth does not have a process in place to ensure that all remedies for a given reporting month are eventually paid.