BellSouth Telecommunications, Inc. OSS Evaluation – Georgia

Master Test Plan

Final Report

VERSION 1.0

Submitted by:

KPMG Consulting

March 20, 2001

I.   Document Control

A.   *Distribution*

Table I-1.1: Distribution List For Document

Person	Organization
William Stacy	BellSouth Telecommunications, Inc.
Milton McElroy	BellSouth Telecommunications, Inc.
Kathy Wilson-Chu	BellSouth Telecommunications, Inc.
Bennett Ross	BellSouth Telecommunications, Inc.
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Elizabeth Fuccillo	KPMG Consulting, Inc.
Steve Strickland	KPMG Consulting, Inc.
Gregory Pulaski	KPMG Consulting, Inc.

Table I-2.2: Version Control

Version	Date	Reason
1.0	March 20, 2001	Initial release

B.   Statement of Limiting Conditions

The following conditions, limitations, and assumptions relate to this draft report:

This report is provided pursuant to the terms and conditions of the consulting services contract between KPMG Consulting, Inc. ("KCI") and Bell South – Georgia.

The information and conclusions presented in this report are based on the information provided to KCI or obtained by KCI in the course of the evaluation. All results and conclusions contained herein are subject to change based on additional work or additional information that is provided to KCI.[1]

The original *Master Test Plan* (*MTP*) governing much of the testing work at BellSouth – Georgia was not authored or developed by KCI. On September 9, 1999, KCI inherited a *MTP* and certain associated work-in-progress that had been performed by two third parties. Therefore, KCI makes no representations or warranties as to the contents of this *MTP* or the testing work that had been done prior to September 9, 1999. Furthermore, KCI has not independently verified the accuracy or completeness of the information and work product provided by these third parties; accordingly KCI expresses no opinion on nor bear any responsibility for this information and work product.

The results contained within this report are made up of a significant number of tests and evaluation criteria and are presented without weighting considerations; as such, none of the individual test results can be considered independently. To draw conclusions based on individual test measures or a limited number of test measures would be inappropriate.

This report assumes that the reader possesses a general understanding of the telecommunication industry and related systems, documentation, and processes, consequently KCI assumes no responsibility for the misuse, misunderstanding, or misinterpretation of the content of the report.

This report has been prepared solely for the purpose stated and should not be used for any other purpose. Except as specifically stated in the report, neither KCI's report nor its contents is to be referred to or quoted, in whole or in part, in any registration statement, prospectus, public filing, loan agreement, or other agreement or document without KCI's prior written approval.

Certain information and assumptions (oral and written) have been provided to KCI by the management of BellSouth and other third parties. KCI has relied on this information in our analysis and in the preparation of the report, and has not independently verified to the accuracy or completeness of the information provided; accordingly KCI expresses no opinion on such data.

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[1] Note that in the metrics domain, test execution activities are still in progress.

KCI has not conducted an audit or review of the historical data provided to us in accordance with generally accepted auditing procedures and/or standards promulgated by the American Institute of Certified Public Accountants ("AICPA").

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II.   Evaluation Overview

1.0   Objective

The objectives of this Evaluation Overview are to provide:

- Background on the Georgia Public Service Commission's (GPSC's) consideration of BellSouth's compliance with the requirements of Section 271 of *The Telecommunications Act of 1996;*

- A summary of the business processes and supporting functions and interfaces identified for testing by the GPSC and outlined in the *Master Test Plan* (*MTP*) as well as a summary of the test developments preceding KCI's assumption of the role of test manager;

- A summary of the additional testing ordered by the GPSC and described in the *Supplemental Test Plan* (*STP*); and

A high-level description of the processes KCI followed in evaluating BellSouth's interfaces, systems, policies, procedures, and documentation.

2.0   Audience

KCI anticipates that the audience for this document will fall into two main categories:

- Readers who will utilize this document during an evaluation process (i.e., the GPSC; the FCC and Department of Justice); and

- Other interested parties who have some stake in the result of BellSouth's OSS evaluation and wish to have insight into the test results (e.g., BellSouth, CLECs, and other ILECs).

While many of the above parties have stated an interest in the test and its results, only BellSouth and the GPSC have rights to this document. Third-party reliance on this report is not intended and is explicitly prohibited. It is expected that the GPSC will review this report in forming its own assessment of BellSouth's compliance with the requirements of the Act.

3.0   Background

The Georgia Public Service Commission (GPSC) is considering the matter of BellSouth – Georgia's (BellSouth) compliance with the requirements of Section 271 of The Telecommunications Act of 1996 (the Act) in the context of Docket No. 8354-U. The Act, together with Federal Communications Commission (FCC) interpretations, requires an Incumbent Local Exchange Carrier (ILEC) to:

•   Provide non-discriminatory access to its Operational Support Systems (OSS) on appropriate terms and conditions;

•   Provide the documentation and support necessary for Competitive Local Exchange Carriers (CLECs) to access and use these systems; and

•   Demonstrate that the ILEC's systems are operationally ready and provide an appropriate level of performance.

Compliance with these requirements should allow competitors to obtain pre-ordering information, execute service orders for resold services and unbundled network elements (UNE), manage trouble, and obtain billing information at a level deemed to be non-discriminatory when compared with the ILEC's (in this case, BellSouth's) retail operations.

4.0   Master Test Plan Scope

In its *Order on Petition for Third Party Testing* (*Order*), dated May 20, 1999, the GPSC ordered BellSouth to conduct an independent, third-party test of the readiness of specific aspects of BellSouth's OSS, and related interfaces, documentation, and processes supporting local market entry by the CLECs.

In its *Order*, the GPSC specified that the third-party testing should focus on the following service delivery methods:

•   Unbundled Network Element (UNE) analog loops with and without number portability (Interim Number Portability [INP] and Local Number Portability [LNP])

•   UNE switch ports

•   UNE loop/port combinations

Furthermore, the *Order* specifically identified five OSS functions to be evaluated:

- Pre-ordering;

- Ordering;

- Provisioning;

- Maintenance and Repair; and

- Billing[2].

The *Order* also called for normal- and peak-volume testing of the OSS interfaces supporting pre-ordering, ordering, and maintenance and repair functions for both resale and UNE services. In addition, the *Order* called for a review of BellSouth's *Percent Flow-Through Service Request Report[3]*.

Prior to KCI's assumption of the role of test manager on September 9, 1999, a Master Test Plan (*MTP*), outlining the scope of testing called for in the GPSC's *Order,* was filed by BellSouth and approved by the GPSC on May 29, 1999. On June 6, 1999, Hewlett Packard (HP) was named test manager by the GPSC, with KCI named as an auditor of the process. A revised *MTP* was developed by HP and filed with the GPSC on August 16, 1999.

On September 9, 1999, HP, BellSouth, the GPSC, and KCI agreed that KCI would be appointed test manager, assuming responsibility for directing those test activities already in progress and for planning and executing any activities not yet initiated. KCI agreed to assume responsibility for execution of the tests stipulated in the *MTP,* but not for the design of the *MTP* itself. Nevertheless, to improve the clarity of test definitions, KCI filed revisions to the *MTP* with the GPSC on October 15, 1999, December 15, 1999, and March 31, 2000.

5.0   Supplemental Test Plan Scope

On January 12, 2000, the GPSC issued a second *Order* specifying a requirement for BellSouth to develop a *Supplemental Test Plan* (*STP*) to describe additional third-party testing of aspects of BellSouth's OSS supporting local market entry by the CLECs. The *STP*, submitted to the GPSC on January 24, 2000, with revisions filed on March 2, 2000 and again on March 17, 2000, following receipt of CLEC comments, describes the plan for evaluating:

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[2] In the initial *Master Test Plan* filed by BellSouth with the GPSC on May 29, 1999, BellSouth introduced a Change Management function for evaluation.

[3] The results of this review are presented in KCI's *BellSouth – Georgia Flow-Through Evaluation,* March 12, 2001.

1. The Electronic Interface Change Control Process as applied to the implementation of OSS '99;

2. Pre-ordering, ordering, and provisioning of xDSL-capable loops;

3. Pre-ordering, ordering and provisioning, maintenance and repair, and billing of Resale services; and

4. Processes and procedures supporting the collection and calculation of performance data.

The results presented in this report pertain only to the areas identified for testing under the *MTP*. Results of the tests described in the *STP* are reported in a separate document, *BellSouth – Georgia OSS Evaluation, Supplemental Test Plan, Final Report.*

6.0   *Approach*

6.1   *Domains*

The *MTP* was divided into five domains[4] to facilitate testing of BellSouth's wholesale operations (i.e., those operations selling local services and support to other local service providers, or CLECs) by logical business function. This test organization facilitates parity comparisons, where appropriate, to BellSouth's retail operations (i.e., those operations selling local services and support to end-user customers).

The five test domains were:

• Pre-Ordering (PRE)

• Ordering and Provisioning (O&P)

• Billing (BLG)

• Maintenance and Repair (M&R)

• Change Management (CM)

Performance Measures (Metrics) and Capacity Management evaluations are included in each of the Pre-Ordering, Ordering and Provisioning, Billing, and Maintenance and Repair domains.

Within each domain, specific methods and procedures were applied to evaluate BellSouth's performance *vis-a-vis* specific test targets. Details on the evaluation methods, analysis methods, and results of each evaluation are provided in the

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[4] While the *MTP* reflects five domains, KCI's testing efforts have combined the functions of pre-ordering and ordering, to more accurately simulate the activities of a real CLEC. However, test results are presented in this report in line with the organization of the *MTP*.

individual test sections. A summary of the evaluations and results is provided in Section III, Test Summaries.

6.2   Test Types

In developing the prior test of Bell Atlantic (now Verizon) – New York's OSS, KCI identified two fundamental types of tests useful in an evaluation of an ILEC's provision of wholesale services to CLECS: transaction-based and operational. These test types have since been used in OSS evaluations in multiple jurisdictions.

6.2.1 Transaction-based Tests

One of the goals of transaction-based testing was to live the CLEC experience. The fundamental idea was to establish a pseudo-CLEC, and to submit pre-order, order, and repair transactions using BellSouth's electronic interfaces[5] -- much like a real CLEC would do. Transaction-driven system testing was utilized extensively in the PRE, O&P, M&R, and BLG domains. These tests are "non-invasive" in that they depend on arms-length interaction (e.g., order submissions, receipt of bills) using publicly available interfaces and documentation.

KCI and Hewlett Packard (HP) combined efforts to accomplish the transaction-driven tests. KCI's role was that of a CLEC operations group, including understanding business rules, creating and tracking orders, monitoring BellSouth performance, entering trouble tickets, and evaluating carrier-to-carrier bills. HP's role was that of a CLEC Information Technology group -- establishing electronic bonding with BellSouth, translating back and forth between business and electronic interface rule formats, and resolving problems with missing orders and responses.

The PRE and O&P transaction-driven tests utilized the Telecommunications Access Gateway (TAG) and Electronic Data Interchange (EDI) interfaces constructed by HP[6]. Bills were processed for the BLG evaluations through the Customer Records Information System (CRIS) and Carrier Access Billing System (CABS) invoicing systems, while usage was processed in the Optional Daily Usage File (ODUF) and Access Daily Usage File (ADUF) systems[7]. M&R trouble tickets were submitted through the Trouble Analysis Facilitation Interface (TAFI) and the Electronic Communications Trouble Administration (ECTA) Gateway[8].

CLEC live test cases provided an alternative test method for transactions that were not practical to provide in our test environment. Moreover, CLEC live test cases provided a different perspective on actual production.

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[5] Interface development was not part of the scope of the test called for in the GPSC's *Order.*

[6] See Section V, "O&P Overview" for a more detailed description of the BellSouth TAG and EDI interfaces.

[7] See Section VI, "Billing Overview" for a more detailed description of the BellSouth billing systems.

[8] See Section VII "M&R Overview" for a more detailed description of the BellSouth TAFI and ECTA interfaces.

6.2.2 Operational Tests

Operational tests focused on the form, structure, and content of the business process under study.   This test method was used to evaluate BellSouth's day-to-day operations and operational management practices, including procedural development and procedural change management. These tests are "invasive," in that KCI receives access to documentation, personnel, and procedural descriptions that are not necessarily publicly available.

Operational analysis also evaluated the results of a process to determine if the process appeared to function correctly, in accordance with documentation and expectations. In some cases, KCI reviewed management practices and operating procedures, comparing the results against legal or statutory requirements or against "best practices" identified by KCI.

6.3   Military-style Test Philosophy

In conducting the evaluation, KCI employed a "military-style" test philosophy. In a military-style test, a mindset of "test until you pass" was generally adopted so that a baseline set of working components would be available to the CLECs by the end of the test period. This was believed to be in the best interest of all parties seeking an open, competitive market for local services in Georgia.

The military-style test process works as follows:

*   KCI tests a component;

*   KCI informs BellSouth of any problems encountered by creating a written exception[9] describing the failed component and the potential impact on a CLEC;

*   BellSouth prepares a written response to the exception describing any intended fix;

*   After BellSouth fixes are complete, KCI retests the component as required; and

*   If the exception is cleared, then the process is considered complete, and KCI prepares a written closure statement for consideration by the GPSC. Otherwise, KCI continues to iterate through the cycle until exception closure is reached.

6.4   Test Bed

In order to accomplish the testing, BellSouth was required to provision a test bed of initial accounts that would represent a market share of BellSouth or other CLEC accounts that would be lost to our pseudo-CLEC. The notion of a test bed is a logical concept in that the test accounts were created in BellSouth's production systems, not in a separate test system.

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[9] Note that KCI first issues a "Draft Exception" to BellSouth to substantiate the accuracy of the test data and preliminary analysis.

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KCI and BellSouth cooperated to define the test bed. Using the UNE test scenario descriptions in the *MTP*, KCI developed test cases for each scenario. Based on the test cases, KCI delivered a set of line and account requirements to BellSouth, which it provisioned. These requirements covered a range of customer starting states (e.g., BellSouth retail, CLEC UNE); line counts (single and multi-line); service types (business, residential); and features (e.g., call waiting, call forwarding). The test bed accounts were established across seven central offices (COs), covering different rate centers and switch types. The test bed specifications submitted to BellSouth provided no indication of the subsequent order activity planned by KCI. In addition to the test bed accounts, BellSouth provided KCI with facility and customer information (cable-pair assignments, telephone numbers, and addresses) required when populating specific service requests.

Prior to KCI's assumption of the test manager role, three separate test beds had been established for ordering and provisioning, maintenance and repair, and billing. In some cases, KCI submitted additional requirements to supplement the existing test beds. Prior to the initiation of testing, KCI validated the provisioning of the test bed by BellSouth to ensure the proper start state for the test accounts.

Additional details on the individual test beds are provided in the test domain introductions.

6.5   Blindness

As previously stated, one of the objectives of the test was to live the CLEC experience. Yet, it was virtually impossible for the KCI/HP test to be truly blind to BellSouth. For example, transactions arrive on dedicated telephone circuits, the owners of which are known by BellSouth. Each CLEC has a unique set of IDs assigned by BellSouth that must be included in every transaction.

To partially offset this lack of blindness, KCI instituted certain procedures to help ensure that KCI and HP would not receive treatment from BellSouth that was obviously different from that received by a real CLEC. For example, KCI required that all documents given to us be generally available to all CLECs, and that any training courses attended by KCI personnel for test purposes be available to all CLECs. KCI reported problems using the same help desk mechanisms used by the CLECs.

6.6   Limitations

Although the *MTP* was limited to UNEs for feature/function testing in the pre-ordering, ordering and provisioning, maintenance and repair, and billing domains, it exercised a set of activities that is much broader than that likely to be undertaken by any single CLEC in the near future. However, the test was not intended to be exhaustive because it is neither feasible nor desirable to test all possible

permutations and combinations of all features and functions across all offered UNE products.

In some cases it was not practical to simulate certain order types, troubles, and processes in a test situation. Examples include orders with very long interval periods and provisioning of large volumes of test transactions that would exceed the manual capacity of BellSouth's work centers. In some cases, KCI lacked access to facilities or registrations needed to perform certain order types, such as the submission of Local Number Portability (LNP). In this case, KCI, in collaboration with the GPSC, solicited the participation of actual CLECs currently doing business with BellSouth – Georgia to execute LNP service requests.

7.0   Results

As of the date of this report, some test execution activities are ongoing, primarily in the metrics domain. Test results for all domains are based on the information available to KCI at the time of writing. A final report will be prepared by KCI for submission to BellSouth and the GPSC upon completion of all test execution activities and the closure (for evaluation purposes) of all exceptions.

7.1   Evaluation Criteria and Results

Test targets and their corresponding evaluation criteria provided the basis for conducting tests. Evaluation criteria were the norms, benchmarks, standards, and guidelines used to evaluate items identified for testing. Evaluation criteria also provided a framework for identification of the scope of tests, the types of measures that must be made during testing, and the approach necessary to analyze results.

The GPSC voted on June 6, 2000 to approve a set of Service Quality Measurement- (SQM-) related measures and standards to be used for purposes of KCI's evaluation. On January 16, 2001, the GPSC issued an order requiring BellSouth to report a set of measures that differs in some cases from the requirement of the June 6th test standards. In cases where a test evaluation criterion mapped to a BellSouth SQM, the test results were compared against the proposed standards. In cases where a standard does not exist, results were evaluated using explicit evaluation criteria established by KCI, based on its professional judgment. For quantitative evaluation criteria where the test result did not meet or exceed the established standard or KCI benchmark, KCI conducted a review to determine whether the differential was statistically significant.

Each evaluation criterion was analyzed individually and has its own associated result and comment. The results fell into the following categories:

• Satisfied — KCI's analysis demonstrated that the evaluation criterion was satisfied through existing business operations components (e.g., procedure,

system, or document). A criterion was satisfied by meeting a quantitative, qualitative, parity, or existence parameter established for purposes of the test.

• Not Satisfied — KCI's analysis demonstrated that the evaluation criterion was not satisfied through existing business operations components (e.g., procedure, system, or document). A criterion was not satisfied by failing to meet a quantitative, qualitative, parity, or existence parameter established for purposes of the test.

• No Result Determination Made – test results are presented as diagnostic information only.

• Not Complete - test execution is in progress and/or exceptions remain open.

In cases where failure to satisfy the criterion might, in KCI's judgment, present a significant business impact to CLECs, KCI issued an exception. Exceptions were a means of identifying to BellSouth defects in its OSS components. Where applicable to an evaluation criterion, the significant details of an exception are documented in the "Comments" column of *Section 3.0 Results Summary* for each test. Other items worthy of mention that might not present a significant business impact to CLECs are also described in the "Comments" column.

For information on all exceptions, please access the GPSC Web site at:

http://www.psc.state.ga.us/telecom/Third%20Party.htm

KCI must point out that the criteria are not all of equal importance. Some are less important as stand-alone measures, but are important when considered in a group. Other criteria are significant in their own right. A simple numerical counting or averaging of results by result category is misleading and should be avoided.