# ORIGINAL

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Subject:	000121A-TP BellSouth's Response to Workshop Action Item Nos. 9 and 13
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Attachments: 000121A-TP Responses to Item Nos. 9 and 13.pdf

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B. Docket No. 000121A-TP: In Re: Investigation into the Establishment of Operations Support Systems Permanent Incumbent Local Exchange Telecommunications Companies.

C.	BellSouth Telecommunications, Inc. on behalf of Robert A. Culpepper	CMP
		COM
D.	28 pages total (includes Bayó letter, certificate of service, attachments)	CTR
E.	BellSouth's Telecommunications, Inc.'s Response to Workshop Action Item Nos. 9 and 13.	ECR
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December 1, 2006

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

#### Re: Docket No. 000121A-TP

In Re: Investigation into the establishment of operations support systems permanent incumbent local exchange Telecommunications companies

Dear Ms. Bayó:

Enclosed is BellSouth Telecommunications, Inc.'s Responses to Workshop Action Items Nos. 9 and 13. A copy of the same is being provided to all parties of record.

Sincerely

Robert A. Culpépper

Enclosures

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

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### CERTIFICATE OF SERVICE Docket No. 000121A-TP

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

Electronic Mail and U.S. Mail this 1<sup>st</sup> day of December, 2006 to the following:

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**REQUEST:** BellSouth may provide data supporting the variability around the reported results for the retail analog measures that do not use the truncated z methodology to determine nondiscrimination.

**RESPONSE:** Two important facts need to be established before a solution for how to incorporate variability for dispensation can be addressed.

First, just as there is variability in retail processes for measures that use the truncated z test, there is also variability in retail processes for measures that cannot use the truncated z statistical test. Second, the reason that the truncated z statistical test is not used on the measures listed in section C.2 of the SEEM plan is because a method of assigning transactions to cells (which is essential to a truncated z test) has never been developed and not because either party desires to refrain from using the truncated z test on these measures. Also, the fact that the truncated z test is not used does not mean that variability does not exist in the processes. Rather, it is because a definitive testing methodology has not been developed, nor is it clear that one could be developed.

Where the truncated z test is used there is some attempt (e.g. through use of delta) to prevent the normal variability that occurs in any process from resulting in SEEM payments. Inexplicably, such recognition does not exist for retail analog measures that cannot use the truncated z test (or for benchmarks, but that is not the subject of this exercise) even though such recognition is just as necessary. This fact is obvious in the charts that follow. BellSouth will use OSS-1 M&R data for the LMOSUPD system to demonstrate that the problem exists, but all of the measures in section C.2 exhibit the same need.

- 1. There is a basic process variability **among individual observations**. BellSouth obtained 5 months of raw data for OSS-1 M&R. The volumes of individual observations were so overwhelming that a meaningful graph, using all the data, could not be constructed. However, BellSouth developed daily summaries that listed each day's average time, minimum observation, maximum observation and standard deviation and displayed those values on chart 9.1.
- 2. Chart 9.1 also shows that there is **variability** in how the process performs **from day to day**. It is also intuitive that there is a random variation within and between BellSouth and the CLECs' performance from day to day. Chart 9.2 shows the day to day variability better.

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C	hart	9.1 Data	Values: Da	v-to-Day V	ariability	for OSS-1	M&R.	LMOSUPD
	10 100101_0	Contraction of the second s	A search of the second of the			a second s		dente della statut della suesta vigne, suesta suesta su

TRANS_DATE	BST MIN DUR	BST MAX DUR	BST DEVIATION	BST MEAN	BST COUNT	CLEC MIN_DUR	CLEC MAX_DUR	CLEC DEVIATION	CLEC MEAN	CLEC COUNT
070906	0.14	5.35	0.21	0.28	7,924.00	0.15	3.84	0.26	0.27	384.00
071006	0.13	133.61	0.94	0.32	34,180.00	0.14	12.22	0.35	0.30	3,342.00
071106	0.13	499.05	3.11	0.35	31,440.00	0.14	58.42	1.36	0.33	2,959.00
071206	0,12	252.63	1.81	0.33	30,185.00	0.14	198.66	3.91	0.39	2,788.00
071306	0.11	304.56	2.66	0.34	29,701.00	0.14	3.57	0.23	0.29	2,743.00
071406	0,12	312.33	2.18	0.33	29,164.00	0.14	14.70	0.43	0.30	2,627.00
071506	0.14	110.66	1.23	0.36	18,609.00	0.16	11.08	0.36	0.31	976.00
071606	0.14	49.61	0.62	0.28	10,670.00	0.14	3.79	0.27	0.28	448.00
071706	0.10	166.14	1.45	0.32	36,739.00	0.14	18.50	0.42	0.29	3,538.00
071806	0.09	94.24	1.12	0.32	32,183.00	0.14	211.19	3,89	0.39	3,165.00
071906	0.13	90.98	1.21	0.33	31,559.00	0.14	9.16	0.31	0.30	2,922.00
072006	0.13	141.78	0.97	0.31	31,947.00	0.14	58.19	1.38	0.32	2,826.00
072106	0.11	421.28	2.67	0.33	30,104.00	0.08	66.34	1.57	0.33	2,641.00
072206	0.11	179.33	1.46	0.33	21,738.00	0.14	101.91	4.13	0.48	1,062.00
072306	0.14	26.94	0.35	0.27	14,070.00	0.14	3.41	0.22	0.28	556.00
072406	0.08	1,340.68	6.77	0.39	41,914.00	0.12	46.70	1.05	0.34	3,825.00
072506	0.12	2,468.31	13.06	0.40	35,837.00	0.14	56.76	1.07	0.31	3,168.00
072606	0.13	1,942.05	10.76	0.41	32,955.00	0.14	94.06	2.48	0.40	2,989.00
072706	0.09	182.08	1.52	0.34	31,104.00	0.12	173.67	3.27	0.37	2,902.00
072806	0.11	65.98	0.87	0.34	30,086.00	0.14	77,19	1.57	0.34	2,639.00
072906	0.13	101.55	1.00	0.35	18,292.00	0.15	3,68	0.22	0.32	1,076.00
073006	0.14	250.34	2.40	0.30	10,927.00	0.18	22.66	1.01	0.31	503.00
073106	0.13	148.19	1.44	0.36	38,755.00	0.14	178.22	3.36	0.41	3,248.00

The above results are some of the data plotted on a graph in Chart 9.2 below. This graph clearly shows the day to day variability and shows that the results cluster around one value. In any process it is reasonable to expect some minor variability from the norm just as this graph shows. There is no reason to attribute this normal variability to differences in the processes as is currently done in the SEEM plan.

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There is also variability **from month-to-month** as well as the variability within each month's average performance. Chart 9.3 superimposes these monthly values over the daily averages data shown in Chart 9.2.

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Chart 9.3 Scatter Plot: Month-to-Month Variability for OSS-1 M&R, LMOSUPD



It is easy to see, from the previous charts, that there is variability in the process.

Another way to solidify this idea is to look at the exact same data in different time segments and see if the results would be the same. The data is displayed in a manner to facilitate this analysis in Chart 9.4 below.

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If the processes did not have variability then the results should be exactly the same no matter how the time units were divided. Thus, in addition to looking at the monthly averages, Chart 9.4 also looks at the averages of the data from the  $16^{th}$  of the month until the  $15^{th}$  of the next month. Note that the values are not the same as the standard monthly values, and yet each set of averages uses all of the data collected. The reason the averages do not match up is because the underlying process has variability in it.

**Problem:** Clearly, there can be no further doubt that substantial variability exists. Consequently, the problem has been narrowed down to the single issue of how to best account for this normal variability in the processes such that it is much less likely to result in SEEM payments.

There are many different ways to address the issue of variability in these processes. However, the method BellSouth chose was to establish a variability factor based on business judgment, which is the same basis used to define materiality parameters where the truncated z test is used. The degree of permissible variability was defined to allow an

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efficient CLEC to have a meaningful opportunity to compete and supported by historical data.

Another method that was considered was to recalculate a variability factor over time. However, an exact application of that method would cause problems with data retention as well as using an excess of computing time and resources. Thus, a constant factor was determined. Further, a more simplistic proposal based on that approach was rejected by Staff and the CLECs in the last SQM/SEEM review.

Note that in OSS-1 for Preordering measures, a 'plus' factor of 2 seconds is already factored into the SQM. If M&R is made into a mean measure then at a minimum the same 'plus' factor of 2 seconds would naturally extend to the new calculations. While some systems have very short response times like LMOSUPD, SOCS and CRIS others like PREDICTOR, OSPCM, MARCH, and DLR have longer response times on the order of several seconds to a couple of minutes(Charts 9.5).



Chart 9.5 Response Time Comparisons – Various Systems

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Regardless of the manner in which the data is observed, BellSouth's variability, CLEC variability or the variability in the differences, once all different systems' performances are taken into account, a variability factor of 2 seconds seems reasonable.

BellSouth would be willing to discuss the possibility of using a different factor for each system's results, but believes that updating that factor outside of an annual review would be cumbersome.

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#### Speed of Answer

In the chart below (Chart 9.6a) the variability in the process from month to month is obvious. However, since the data trended downward over time the best method to get an estimate of the process measure's variability over time is to observe the difference in BellSouth and CLEC performance over time. Chart 9.6b shows these differences. Both of these charts' data are exhibited in seconds.

#### Chart 9.6a



Speed of Answer Performance

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This process does not appear to be favoring BellSouth or the CLECs and yet, BellSouth is paying remedies for what is simply normal variability in the process. BellSouth has proposed a variability factor of 5 seconds (waiting for about two additional rings before the phone is answered) to help prevent such unwarranted payments.

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#### **Billing Invoice Accuracy**

BIA is another example of a process having variability but not being able to use the truncated z methodology.

BIA must have a variability factor in these calculations. The exact same BellSouth performance data is compared with 3 different subsets of CLEC performance data (Charts 9.7, 9.8, 9.9). They cannot all be identical processes to BellSouth's overall process. Yet BellSouth does not have an exact duplicative process for each of the CLEC's processes. This alone will introduce variation into the calculations.

The chart below (Chart 9.7a) shows the BIA resale comparisons. Chart 9.7b has the same data displayed with lines added to show the 2 standard deviation control limits on the process. The average moving range was used to estimate BellSouth's process variance. The control limits are then calculated from BellSouth's overall process mean.

The idea is to use BellSouth's standard deviation and test whether the CLEC's performance measure (average or proportion) is within a certain number of standard deviations from BellSouth's performance. This has support considering that the standard deviation in the SQM and SEEM plans are based on the "modified Z" statistic (Appendix E of SQM and section D.1 of SEEM plans), which uses BellSouth's process variability as the basis for calculating the variation in the differences of the BellSouth and CLEC performance measures.

Note that none of the CLEC's average performance is outside of 2 sigma limits of BellSouth's process for itself. Yet BellSouth has paid for two failed months based on the stare-and-compare approach used in the current SEEM plan. BellSouth Telecommunications, Inc. FPSC Dkt. No. 00121A-TP Responses to November 8, 2006 Workshop Action Items Filing Date: December 1, 2006 Item No. 9 Page 13 of 15

Chart 9.7a





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Another viable approach is to find the variation in the differences of the BellSouth and CLEC performance measures. Chart 9.7c depicts the standard deviation of the differences and measured two (2) standard deviations in either direction from the expected difference of zero. Note that once again, using the stare-and-compare methodology in place under the current plan, BellSouth pays for two instances that should not be considered unusual in the process.



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REQUEST: Determine what issues about the SEEM plan's statistical tests, in relation to its appropriateness in assessing remedies in Force Majeure events, BellSouth and the CLECs can agree on and what issues have disagreement.

RESPONSE: BellSouth has provided below the areas of agreement and disagreement between BellSouth and the CLECs, with respect to the impact of force majeure events on the operation the SEEM plan.

#### Agreement:

- 1. The parties agree that the 2 sample statistical test used in SEEM attempts to separate assignable cause variations from random process variability in the populations by using the difference between the samples.
- 2. The parties agree that in a Force Majeure event the normal random variation in a process probably increases.
- 3. During a force majeure event the truncated z-score process difference variation will very likely be larger than the truncated z-score process difference variation under normal operating conditions.
- 4. The parties agree that, outside of Force Majeure, there are events that occasionally occur which falsely indicate a systemic event and BellSouth will be assessed remedies (Type I error). Furthermore, there are events that occasionally occur which falsely indicate random variation (Type II error). BellSouth will not be assessed remedies. The BCV methodology in SEEM is constructed to equate the probabilities of these two classes of errors.
- 5. The parties agree that when the statistical test in the SEEM plan indicates failure under normal operating conditions, that the plan will automatically assign remedies as if the assignable variation is an indication of a systemic problem in the process. Furthermore, the parties agree that when the statistical test in the SEEM plan indicates anything other than failure under normal operating conditions, that the test will automatically assign no remedies as if the assignable variation is an indication of random variation in the process.
- 6. The statistical test used in SEEM assumes that there is no difference between wholesale and retail performance distribution parameters (null hypothesis) and tests this assumption based on collected data. The statistical test is designed to declare failure only if the difference between wholesale and retail performance distribution parameters is significant, as defined by a measure of materiality which is based on business judgment (e.g., delta) (alternative hypothesis).

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#### **Disagreement (BellSouth):**

## 1. That factors in a Force Majeure event can affect BellSouth and CLEC customers differently.

Under normal operating conditions BellSouth is in control of the process and, as a result, the underlying distributions of the process can be compared to see whether discrimination exists.

Force Majeure removes that control and as a result the comparison of the underlying distributions through the truncated z statistical test is no longer a valid indicator of whether discrimination exists.

If two boats are in the same water at the same time then as the tide rises and falls the two boats should still ride comfortably and comparably calm. However, if a storm comes and the waves become excessive, a larger boat is not going to experience as much turbulence as a smaller speed boat. The same factor can affect two different entities in very different ways and it is not the fault of either boat owner. BellSouth can typically control its process (the water) under normal operating conditions but under Force Majeure events (the stormy waves) BellSouth has no control over how the outside influence will affect its processes.

In this workshop, Mr. Varner has detailed several instances that will cause harm to either a CLEC and/or BellSouth during a Force Majeure event without BellSouth being able to control the event or the outcome.

Recall that the truncated z test statistic is based on a modified z score, which uses BellSouth's variability to estimate the variability of the differences in BellSouth and CLEC process measures (mean, proportion, rate). As in the boat example above, due to size of company, business plans, how the storm hit, emergency response issues, etc., BellSouth's variability may or may not be indicative of the CLEC variability. BellSouth is not willing to make that generalization.

# 2. The fluctuating random variabilities in the process will appear (and most likely are) systemic due to the Force Majeure event and not due to a process problem attributable to BellSouth.

BellSouth agrees with the often stated point that if the variability remained random and simply increased in magnitude that this will actually be accounted for in the truncated z statistical test. Since the statistical test estimates the standard deviation of the process with sample data from the process, any increase in variance in the data

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will be reflected with an increased estimate of the process's standard deviation. BellSouth tested this by running production data for the mean measure MAD through PARIS with 10 times the normal process standard deviation. That's the same data with each value multiplied by a factor of 10. Not surprisingly, the results were identical with the exception of a few tests where the permutation calculation came out with slightly different results. This shows that any consistent increase in variability in the data will be reflected in the standard deviation calculations used for SEEM.

However, this is not the situation that occurs in a Force Majeure event. In that case, the increases in variability are not constant over time. In normal operating circumstances, any change in variation over time is considered to be part of the typical BellSouth process. However, variation changes in the process due to Force Majeure events are beyond BellSouth control. The null test hypothesis (found in D.2.5 of SEEM plan) has its basis in the assumption that the variances of BellSouth and the CLECs are identical for the entire time period,  $\sigma_{1j}^2 = \sigma_{2j}^2$ . Force Majeure will cause this assumption to be false in many cases, as Mr. Varner has alluded to in the workshop.

The testing assumption is that the process does not change over time, especially within a month which is the "snapshot" of data used for the SEEM test. That is, the process means for BellSouth and the CLECs, as well as the variances for BellSouth and the CLECs, are constant for the entire month. If these assumptions are not true in normal operating conditions then both parties have agreed (by adoption of the SEEM plan) that BellSouth will pay remedies as if they had complete control of the process. However, in Force Majeure events, BellSouth knowingly is not in control of its processes and depends heavily on outside parties and events to schedule and perform work activities.

Obviously, within a month containing a Force Majeure event, the process variation will change from before the event to after the event. This was Agreement 2. Chart 1b below gives an example of how this would look for data from a typical process while Chart 1a shows expected variation in a typical process month.

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Chart 1a – Process under normal conditions

Chart 1b - Chart with an increase in variance due to Force Majeure event



The point of this chart is to show the influence of unstable variability shifts, which indicates how a statistical test, such as the truncated z test, will potentially misjudge the data. Notice that none of the initial 25 days of data will even come close to being

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out-of-control because the process variation has increased in the last few days of the time period.

Also, notice that several of the last data points are determined to be out-of-control when compared to the tighter control limits that the earlier month's data impose. What should actually happen here is that each time period should be analyzed separately as in Chart 1c.



If there was just one variation change in the entire process then the test might be able to account for this problem in the Force Majeure data. However, there is not just one variation shift in Force Majeure events. As daily activities are directed by emergency procedures the variances in the processes will continue to fluctuate over time and across cells (wire centers, etc.). Accounting for this variability difference is impossible to accomplish. In fact, the overall process could look like Chart 1d or worse in a Force Majeure event.

Chart 1c

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Small volumes make it very likely that these variation fluctuations will cause major problems with the truncated z statistical test's ability to properly determine if discrimination is occurring.

Another concern of BellSouth is that an increase in variability may not be consistent across a "wire center, time of month, dispatched residential, new orders" (SEEM plan section C.1.1 Like-to-Like Comparisons). Several areas within a wire center will potentially be affected differently by the same event. Some could cause an increase in a performance measure while others could decrease a performance measure. One day all of BellSouth's technicians could be focused on one area and perform many tasks in an unusually short length of time. The next day, due to emergency restoration procedures, the technicians may be asked to scatter across many locations and the length of time per task could greatly increase. This is just one example of the many that BellSouth sees during restoration efforts.

BellSouth is also concerned that performance among the cells might be compromised due to a Force Majeure event. While the truncated z test attempts to standardize all of the cell level data so that they can be combined into the overall truncated z test

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statistic, during a Force Majeure event, different cells will have much greater variabilities than other cells. That will make their truncated z scores have greater variability than other z scores.

Some wire centers will be giving up personnel to travel to affected areas. This will introduce a new variability into these areas. As some wire centers work back into normal operations their scores will stabilize back to a solid variation while other cells will still be unduly influenced by the extra variabilities in the process.

Volumes will also fluctuate dramatically across cells, within cells, over time, and among CLECs. This alone would likely create an unstable statistical testing environment.

A major problem is that we do not have any idea how the Force Majeure event is affecting the underlying process variances across the aforementioned factors (over time, across wire centers, throughout the state, etc.)

BellSouth wanted to test a particular event to see how PARIS would handle an increase in variability that was intentionally introduced into the process. To accomplish this task BellSouth used August data, since it was readily available, for the measure MAD in Florida. The scenario used here, which is clearly reasonable to expect during a Force Majeure event, is one where there is a lot more volume and where some of the tasks would still be completed as they would during normal operations but where others would have an increase in variability. To design the simulation we took the typical month's data and added onto that data the exact same data multiplied by 10. The simulation is consistent with the scenario design in that the data reflects that much activity is performed the same as it would under normal operating conditions, but other activities result in data that have a much increased variance. Note that only the true, actual data and a multiple of the true, actual data were used in the simulation. No new random data was generated. The bottom line results are provided in Attachment 1. Notice there is little rhyme or reason as to which submeasures fail and how much is to be paid out. Also, note that BellSouth did not make the variance fluctuate over time, which is very like to occur during a Force Majeure event. These added variability changes would have provided an even bigger difference in normal operating results and results seen under Force Majeure conditions.

The cell z-scores, the skewness factor, the mean and variance of the hypotheses, and the roll-up of truncated z-scores are all affected by the increase in variability.

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Recall what happened last year when BellSouth calculated what remedies would have been, had SEEM been enforced during Force Majeure. Penalties went up and down. In the few cases where the cause of the penalty was ascertained, the cause had nothing to do with discrimination. It all points to the fact that the SEEM plan is not dependable during a Force Majeure event.

The authors of the plan obviously agreed that the SEEM plan was not an appropriate mechanism to use during Force Majeure or they would not have put the provision in the plan. There is not enough evidence provided to prove that the plan has suddenly become an acceptable tool to evaluate and compare performances during a Force Majeure event. In fact reasonable analysis confirms that the Force Majeure exemption for SEEM payments should continue and there has been no evidence that BellSouth has improperly applied this exemption in the past.

#### BellSouth Telecommunications, Inc.

#### Action Item 13

#### Attachment 1

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