BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION DOCKET NO. 990649-TP

ORIGINAL

SUPPLEMENTAL REBUTTAL TESTIMONY OF JOSEPH P. RIOLO ON BEHALF OF BLUESTAR NETWORKS INC., COVAD COMMUNICATIONS COMPANY AND RHYTHMS LINKS INC.

DATED: August 28, 2000

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I. INTRODUCTION AND SUMMARY

Q. Please state your name, title and business address.

A. My name is Joseph P. Riolo. I am an independent telecommunications consultant. My business address is 102 Roosevelt Drive, East Norwich, New York 11732.

Q. Have you previously filed testimony in this proceeding?

A. Yes. I filed testimony on July 31, 2000 in the current phase of this proceeding. Exhibit ______(JPR-1) attached to my July 31st testimony describes my qualifications and relevant experience.

Q. What is the purpose of your supplemental rebuttal testimony?

A. BlueStar Networks, Inc. ("BlueStar"), DIECA Communications, Inc. d/b/a Covad Communications Company ("Covad") and Rhythms Links Inc. ("Rhythms") have asked me to address the revised direct testimony and cost study presentations made by BellSouth Telecommunications, Inc. ("BST") and to provide technical support for cost witness Terry L. Murray.

Q. Please summarize the conclusions in your testimony.

A. After reviewing BST's revised cost studies, I conclude that they still do not reflect efficient engineering practices. The criticisms that I presented in my July 31st testimony continue to apply. In addition, BST's revised studies present several new faulty assumptions.

First, BST's increased dispatch rate assumption for Service Level 1 ("SL-1") voice grade loops is unreasonably high and entirely unsupported. Second, as I explained at length in my July 31st testimony, nonrecurring "conditioning" charges for DSL-capable loops are inconsistent with current engineering practices. Even if the Commission allows BST to impose such charges, BST's proposed costs for its two new distribution sub-loop "conditioning" elements are vastly overstated relative to the cost it would actually incur using efficient outside plant management practices. Finally, BST has incorrectly modeled the costs of Universal Digital Channels, as it did for ISDN-capable loops.

II. BST'S REVISED NONRECURRING COST STUDY CONTINUES TO ASSUME INEFFICIENT ENGINEERING PRACTICES.

A. The Commission Should Reject BST's Revised Dispatch Rate Assumption for Voice-Grade Loops.

Q. In its revised nonrecurring cost filing, BST has increased its dispatch rate assumption for SL-1 voice-grade loops from 20% to 38%. Is this increase appropriate?

A. No. As Ms. Murray explains in her testimony, it is not appropriate to include any level of fieldwork costs in the nonrecurring charge for a SL-1 loop. However, even if the Commission were to accept the idea that some fieldwork costs should be included in the nonrecurring charge, it should reject BST's assumed dispatch rate increase.

Q. Why should the Commission reject BST's dispatch rate assumption?

A. A dispatch rate of 38% is simply too high. Local exchange companies have long understood that dispatch is costly and to be avoided to the greatest extent possible. They have designed their plant under "Cut-Through" design to avoid the need for field dispatches to lay in a simple cross connection at the Serving Area Interface ("SAI"), and have pre-connected more than one pair of drop wire conductors at the Drop Terminal and the Network Interface Device ("NID"). Internally, local exchange carriers typically measure their success in avoiding field dispatches via a performance measure referred to as the "NPV" rate (*i.e.*, "No Premises Visit"). In my experience, successful operations normally operate at an NPV rate between 85% and 90% (which corresponds to a dispatch rate of 10% to 15%.). Improvements in outside plant engineering design and operating practices have been steadily lowering the need for the actual dispatch of a technician. Even BST's original rate of 20% was high. Therefore, instead of increasing that rate, BST's forward-looking analysis should show decreasing dispatch rates.

Unfortunately, BST has filed no evidence or supporting material that would allow me to analyze how it arrived at its dubious 38% conclusion. Indeed, BST has not even supported its original dispatch rate assumption of 20%. Mr. James R. McCracken, one of BST's subject matter experts for the Installation & Maintenance ("I&M") and Special Services Installation & Maintenance ("SSI&M") work groups, admitted that he doesn't know the source of the dispatch percentages and further that he doesn't have any experience with SL-1 loop installation. [*See* Deposition of James R. McCracken, July 28, 2000, Tr. at 81-83.]

For all of these reasons, if the Commission decides to allow any nonrecurring dispatch charge, BST's original estimate of a 20% dispatch rate is a much more reasonable, and even a generous, proxy for field visits than its revised, unsupported estimate of 38%.

B. BST Continues to Inflate Loop "Conditioning" Costs.

Q. In its revised cost study filing, BST has proposed two additional "conditioning" elements: "2W/4W Copper Distribution Load Coil/Equipment Removal" and "2W/4W Copper Distribution Bridged Tap Removal." Do the nonrecurring charges that BST has proposed for these elements reflect efficient engineering practices?

A. No. As Ms. Murray and I have both testified, it is inappropriate to apply any nonrecurring charges for loop "conditioning" because the outmoded design that has created such a situation was made obsolete 20 to 30 years ago. [*See* Riolo Direct and Rebuttal, at 65-80.] *Bellcore Notes on the Networks*, December 1997, page 12-5 states, "All CSA loops must be unloaded and should consist of no more than two gauges of [copper] cable."

In addition, distribution plant, frequently referred to as "the last mile," is not likely to contain load coils. In fact, transmission design standards require that no load coils may exist in the last 3,000 feet closest to the customer's location, and that there may be between 3,000 feet and 12,000 feet of a copper loop between the last load coil and the customer's location. [*See* Bellcore Telecommunications Transmission Engineering, Volume 3, Networks and Services, 1990, at 106.] This situation exists, of course, unless an engineering design error has occurred.

Furthermore, BST has inflated the costs for removing these elements by assuming that distribution "conditioning" jobs would be performed on only one pair at a time. As I explained in my July 31st testimony [at 81-90], it is a standard efficient engineering practice to deload and unbridge more than one loop at a time. Indeed, it is important to prevent multiple re-entries into outside plant splices because multiple re-entries can cause serious deterioration in the wire insulation that will cause telephone wires to break or short out. It is standard engineering practice to attempt to maintain "binder group integrity," that is, to splice and otherwise treat all of the pairs in a given binder group as a unit. Single pair splicing, *i.e.*, splicing only one or a few of the pairs in a given binder group for some purpose, has been avoided for decades.

Q. What would be a reasonable number of distribution pairs to "condition" at one time?

A. As I explained in my July 31st testimony [at 83-84], for cables serving customers less than 18,000 feet from the central office, it would always be appropriate to remove all load coils when a dispatch occurs. Even if embedded plant might have one or more load coils on a loop, they should not be there for POTS lines either. It is entirely irrelevant if those coils are on feeder or distribution plant — load coils do not belong on POTS lines of less than 18,000 feet, and the existence of such load coils degrades the speed of plain old analog modems. The ubiquitous removal of all load coils on loops containing less than 18,000 feet of copper would be appropriate, even if it involved only a single 25-pair binder group designated to provide POTS service.

Copper cables closer to the central office normally consist of larger cable sizes. Those cables closer to the central office are typically administered, and should be deloaded, in groups of 300 pairs, because all copper cables of 600 pair and larger are manufactured in 300-pair increments (such as 600-pair, 900-pair, and 1200-pair cables).

Distribution cable is, however, normally farther from the central office. Whereas 100 to 300 pairs, or even more, would easily be conditioned at one time on a cable close to the central office, it might not be possible to condition that many pairs on smaller distribution cables farther from the central office. Hence, when the conditioning effort is limited to distribution, the total number of lines that could efficiently be conditioned at one time would be smaller than for loops looked at in total (*i.e.*, considering feeder and distribution). That does not, however, change the fact that it is clearly inefficient to condition only one pair at a time. An engineer would endeavor to maintain binder group integrity wherever possible, thereby supporting my opinion that costs should be based on no more than 1/25th of the cost of the dispatch and work to condition loops at one site.

Q. Is it logical to adjust the number of loops conditioned at one time to account for very small cables?

A. No. BST has gone on record in Florida as stating that it does not utilize cables smaller than 25 pairs. [*See* for example, BST's copper cable material prices in Florida Order No. PSC 99-0068-FOF-TP.] In addition, transmission design dictates that load coils must be pushed back a minimum of 3,000 feet from the customer's location. The smallest cables in the loop will be adjacent to the customer premises; the cables closer to the central office will typically be larger size (fatter) cables. Load coils would not be found on the smallest cables, rather they will be found closer to the central office on those fatter cables. (Remember that as much as 12,000 feet of end section between the last load coil and the customer's location is appropriate transmission design. [*See* Bellcore Telecommunications Transmission Engineering, Volume 3, Networks and Services, 1990, at 106.])

Q. Do the task and task time assumptions underlying BST's proposed costs for these new distribution "conditoning" elements reflect efficient practices?

A. No. BST's proposed costs for these two new elements reflect the same inefficient tasks and work times that BST used in its other "conditioning" elements.

Q. If the Commission were to award BST the right to charge for load coil removal from a distribution sub-loop, what task and task time assumptions would be appropriate?

A. If the Commission elects to permit the BST to impose such charges — which it should not — then such charges should be based on practices generally employed in the telecommunications industry and on reasonably efficient task time estimates.

As I explained in my previous testimony, usually only three load coils would appear on a loop at 6,000-foot intervals (for example, at 3,000 feet, 9,000 feet, and at 15,000 feet). Two of these would typically be in the underground portion of the loop. Typically that would leave one load coil in the aerial or buried portion of the loop. Even if the last load coil were to appear in the "last mile" distribution portion of the loop, BST has unaccountably assumed that on average 1.2 load coils will appear in that distribution portion. This is particularly odd given BST's assumption that a loop will contain 2.1 load coils on average. Thus, BST appears to be saying that more than half of the load coils on a loop occur in the distribution portion, which is clearly suspect. I have assumed that where loaded distribution cable is involved, only one load coil would appear in that distribution portion of a loaded loop, on average.

It is likely that very little, if any, of the distribution portion will be underground. (Total actual sheath kilometers of cable as reported in the FCC's ARMIS database indicates only 11.5% underground for both feeder and distribution plant — available at *http://gullfoss.fcc.gov:8080/cgi-bin/websql/prod/ccb/armis1/forms/43-08/frame1a.hts.*) However, I have conservatively used BST's assumption that 10% of the distribution load coils would actually appear in underground facilities. I have also conservatively assumed that 45% of the time the load coils would be at an aerial location and 45% of the time the load coil would be at a buried location. The Commission can use the following work steps and conservative time estimates to develop the costs involved in removing an interfering load coil from a distribution sub-loop:

Underground Cable Load Coil Removal from Distribution in a Manhole (10% occurrence)		
Step	Description	Task (min.)
1	Travel time to underground splice location	20
2	Set up work area protection and underground work site	5
3	Pump and ventilate manhole	15
4	Buffer cable / Rerack cable / set up splice	5
5	Open splice case	5
6	Identify pairs to be deloaded	5
7	Bridge binder group for service continuity (if necessary)	5
8	Remove / sever connection from main cable to load "in" & "out" taps	3
9	Rejoin / splice pairs through main cable	5
10	Remove bridging modules from Step 7	2
11	Clean, reseal, and close splice case	10
12	Rack cables, pressure test cables in manhole	10
13	Close down manhole, stow tools, break down work area protection	10
	Total Minutes	100
	Total Hours	1.67
	No. Technicians	2
	Total Timesheet Hours	3.33
	No. Locations	0.10
	Total Hours	0.33
	Pairs deloaded	25
	Weighted Average Minutes per pair	0.80 min.

Aerial Cable Load Coil Removal from Distribution at a Pole (45% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location from underground splice location	10
2	Set up work area protection	5
3	Set up ladder or bucket truck	10
4	Open splice case	5
5	Identify PIC pairs to be deloaded	2
6	Bridge binder group for service continuity (if necessary)	5
7	Remove / sever connection from main cable to load "in" & "out" taps	3
8	Rejoin / splice pairs through main cable	5
9	Remove bridging modules from Step 6	2
10	Clean, reseal, and close splice case	10
11	Secure splice case to strand and clean up work area	10
12	Close down aerial site, stow tools, break down work area protection	10
	Total Minutes	77
	Total Hours	1.28
	No. Technicians	1
	Total Timesheet Hours	1.28
	No. Locations	0.45
	Total Hours	0.58
	Pairs deloaded	25
	Weighted Average Minutes per pair	1.39 min.

Buried Cable Load Coil Removal from Distribution at a Pedestal (45% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location from underground splice location	10
2	Set up traffic cone at rear bumper of truck	1
3	Walk to site & open splice pedestal	2
5	Identify PIC pairs to be deloaded	2
6	Bridge binder group for service continuity (if necessary)	5
7	Remove / sever connection from main cable to load 'in' & 'out taps	3
8	Rejoin / splice pairs through main cable	5
9	Remove bridging modules from Step 6	2
10	Secure splice within buried pedestal and clean up work area	3
11	Close down buried site, stow tools and traffic cone	5
	Total Minutes	38
	Total Hours	0.63
	No. Technicians	1
	Total Timesheet Hours	0.63
	No. Locations	0.45
	Total Hours	0.29
	Pairs deloaded	25
	Weighted Average Minutes per pair	0.68 min.

Q. If the Commission were to award BST the right to charge for load coil removal from a distribution sub-loop, what charges would be appropriate?

A. The Commission should use work steps and time estimates I have listed, along with the labor rates it adopts for BST, to estimate the costs involved in removing load coils. I have estimated that the total average time for removing the load coil from a distribution sub-loop as just under 3 minutes per average pair. For example, at a labor rate of $45 per hour, a load coil removal charge of $2.15 per pair would apply.

Q. If the Commission were to award BST the right to charge for bridged tap removal from a distribution sub-loop, what task and task time assumptions would be appropriate?

A. Again, if the Commission elects to permit BST to impose such charges — which it should not — then such charges should be based on reasonably efficient practices generally employed in the telecommunications industry.

Using the same criteria as stated earlier, I would conservatively assume that a single case of bridged tap, if it occurs, would occur 50% of the time at an aerial location and 50% of the time at a buried location. Accordingly, the Commission can use the following work steps and conservative time estimates to estimate the costs involved in removing bridged tap from a distribution sub-loop:

Aerial Cable Bridged Tap Removal from Distribution at a Pole (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to aerial splice location	20
2	Set up work area protection	5
3	Set up ladder or bucket truck	10
4	Open splice case	5
5	Identify PIC pairs for bridged tap removal	2
6	Remove bridging modules or cut & clear pairs	2
7	Clean, reseal, and close splice case	10
8	Secure splice case to strand and clean up work area	10
9	Close down aerial site, stow tools, break down work area protection	10
	Total Minutes	74
	Total Hours	1.23
	No. Technicians	1
	Total Timesheet Hours	1.23
	No. Locations	0.5
	Total Hours	0.62
	Pairs Unbridged	25
	Weighted Average Minutes per pair	1.48 min

Buried Cable Bridged Tap Removal from Distribution at a Pedestal (50% occurrence)		
Step	Description	Task (min.)
1	Travel time to buried splice location	20
2	Set up traffic cone at rear bumper of truck	1
3	Walk to site & open splice pedestal	2
4	Identify PIC pairs for bridged tap removal	2
5	Remove bridging modules or cut & clear pairs	2
6	Secure splice within buried pedestal and clean up work area	3
7	Close down buried site, stow tools and traffic cone	5
	Total Minutes	35
	Total Hours	0.58
	No. Technicians	1
	Total Timesheet Hours	0.58
	No. Locations	0.5
	Total Hours	0.29
	Pairs Unbridged	25
	Weighted Average Minutes per pair	0.70 min.

Q. If the Commission were to award BST the right to charge for bridged tap removal from a distribution sub-loop, what charges would be appropriate?

A. Again, the Commission should use the work steps and time estimates I have listed, along with the labor rates it adopts for BST, to estimate the costs involved in removing bridged tap. I have estimated that the total average time for removing a bridged tap from a distribution sub-loop is just under one and a half minutes per pair. For example, at a labor rate of $45 per hour, a bridged tap removal charge of $1.63 would apply.

III. BST HAS INCORRECTLY MODELED UDC COSTS.

Q. In its revised cost study filing, BST has proposed an additional loop element, the "Universal Digital Channel." Do you have any comments on this element?

A. As Ms. Murray explains in her testimony, it is difficult to comment on BST's so-called "Universal Digital Channel" ("UDC") because BST has not provided a definition of this element and nor explained how BST imagines it would differ from an ISDN-capable loop, if at all. However, it is my understanding that a UDC has the same exact technical specifications as an ISDN loop.

Q. Since a UDC apparently has the technical specifications of an ISDN loop, is it necessary for a UDC to be "designed" or engineered?

A. No. As I explained in my July 31st testimony [at 53 and 62-64], ISDN can be provided over standard loop facilities. This holds also for a UDC. In fact, Mr. James R. McCracken, one of BST's subject matter experts for the

Special Services Installation & Maintenance ("SSI&M") work group, admitted that BST does not "design" ISDN loops in Georgia. [Deposition of James R. McCracken, July 28, 2000, Tr. at 31.]

Q. How do the costs of UDC differ from voice-grade loops?

A. UDCs use the same facilities as ISDN-capable loops. Therefore, my July 31st comments regarding the incremental costs of ISDN-capable loops versus voice-grade loops apply to UDCs as well. [*See* Riolo Direct and Rebuttal, at 50-53.] Over copper loops, there is no difference. Because the plug-in card required for ISDN provided over fiber/Digital Loop Carrier is more expensive than the plug-in card required to support basic voice grade service, longer ISDN loops cost somewhat more than comparable basic voice service loops. I agree with Ms. Murray that recurring charges for ISDN/UDC loops should be set at the recurring charge for basic loops, plus an increment to account for the higher cost of an ISDN card at the remote terminal as compared to a POTS card, weighted by the percentage of fiber feeder in the forward-looking network.

Q. Does this conclude your testimony?

A. Yes, it does.