

Exhibit No:  
Issues: Depreciation Rates  
Witness: Dr. Ronald E. White  
Type of Exhibit: Rebuttal Testimony  
Sponsoring Party: Aquila Networks  
Case No: GR-2004-0072  
Date to Be Filed: February 13, 2004

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO. GR-2004-0072**

**REBUTTAL TESTIMONY**

**OF**

**DR. RONALD E. WHITE**

**ON BEHALF OF**

**AQUILA, INC.**

**d/b/a**

**AQUILA NETWORKS – MPS**

**and**

**AQUILA NETWORKS – L&P**

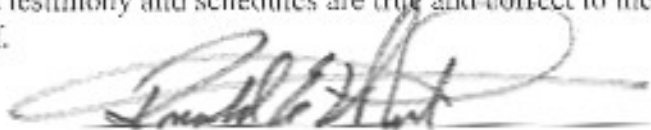
**Omaha, Nebraska**

**February, 2004**

State of Florida     )  
                                  ) ss  
County of Lee        )

AFFIDAVIT OF RONALD E. WHITE

Ronald E. White, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony and schedules entitled "Rebuttal Testimony of Ronald E. White"; that said testimony was prepared by him and/or under his direction and supervision; that if inquiries were made as to the facts in said testimony and schedules, he would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of his knowledge, information, and belief.

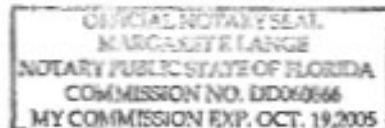


Subscribed and sworn to before me this 10<sup>th</sup> day of February, 2004.



Notary Public

My Commission expires:



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1                                   **REBUTTAL TESTIMONY OF DR. RONALD E. WHITE**

2    **Q.    WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

3    A.    My name is Ronald E. White. My business address is 17595 S. Tamiami Trail,  
4           Suite 212, Fort Myers, Florida 33908.

5    **Q.    ARE YOU THE SAME RONALD E. WHITE WHO FILED DIRECT TESTIMONY**  
6           **ON BEHALF OF AQUILA NETWORKS (“AQUILA” OR “COMPANY”) IN THIS**  
7           **PROCEEDING BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION**  
8           **(“COMMISSION”)?**

9    A.    Yes, I am.

10                                   **PURPOSE OF TESTIMONY**

11   **Q.    WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

12   A.    I was asked by Aquila to respond to the pre-filed direct testimony of Commission  
13           Staff (“Staff”) Witness Rosella L. Schad. In particular, I was asked to review and  
14           comment on adjustments advocated by Witness Schad to the depreciation rates  
15           recommended by Foster Associates for gas properties owned and operated by  
16           Aquila Networks—MPS and Aquila Networks—L&P. I will also comment on rates  
17           advocated by Staff for Aquila Corporate Assets shared with other business units,  
18           including MPS and L&P.

19                                   **RESPONSE TO STAFF WITNESS SCHAD**

20   **Q.    WHAT IS THE DIFFERENCE IN THE ANNUAL DEPRECIATION RATES AND**  
21           **ACCRUALS REQUESTED BY THE COMPANY AND THOSE ADVOCATED BY**  
22           **STAFF?**

23   A.    Table 1 provides a summary of the difference in annual depreciation rates and

1       accruals requested by the Company and those advocated by Staff. With the ex-  
2       ception of Corporate Assets, this comparison is based on December 31, 2001  
3       plant and reserves reported in the 2002 Depreciation Rate Studies.<sup>1</sup>

Business Unit	Accrual Rate			2002 Annualized Accrual		
	Company	Staff	Difference	Company	Staff	Difference
A	B	C	D=C-B	E	F	G=F-E
<b>MPS</b>						
Gas	3.46%	2.31%	-1.15%	\$2,896,743	\$1,935,378	(\$961,365)
Corporate	11.86%	9.42%	-2.44%	6,256,676	4,970,471	(1,286,205)
Total MPS	6.71%	5.06%	-1.65%	\$9,153,419	\$6,905,849	(\$2,247,570)
<b>L&amp;P</b>						
Gas	3.55%	2.31%	-1.24%	\$271,161	\$176,395	(\$94,766)
Corporate	11.97%	9.37%	-2.60%	2,046,124	1,601,228	(444,896)
Total L&P	9.37%	7.19%	-2.18%	\$2,317,285	\$1,777,623	(\$539,662)
<b>Total</b>	<b>7.12%</b>	<b>5.39%</b>	<b>-1.73%</b>	<b>\$11,470,704</b>	<b>\$8,683,472</b>	<b>(\$2,787,232)</b>

Table 1. Company vs Staff Rates and Accruals

- 4   A.    It can be observed from Table 1 that Staff is advocating a composite depreciation  
5       rate reduction of 1.73 percentage points from that requested by the Company.  
6       The reduction in depreciation rates advocated by Staff reduces the Company's  
7       requested 2002 annualized depreciation expense by \$2,787,232, or more than  
8       24 percent.
- 9   A.    The currently prescribed composite accrual rate of 2.33 percent provides an an-  
10       nualized accrual of \$3,753,719. The change in depreciation rates advocated by  
11       Staff increases currently approved annualized depreciation expense by  
12       \$4,929,753 (\$8,683,472 – \$3,753,719). The change in depreciation rates re-  
13       quested by the Company provides an additional annualized accrual of  
14       \$7,716,985 (\$11,470,704 – \$3,753,719).

<sup>1</sup> The comparison for Corporate Assets is based on forecasted December 31, 2002 plant and reserves reported in the 2003 Depreciation Rate Study.

1 Q. **WHAT IS THE DIFFERENCE IN THE ANNUAL DEPRECIATION RATES AND**  
2 **ACCRUALS REQUESTED BY THE COMPANY AND THOSE ADVOCATED BY**  
3 **STAFF FOR MPS OPERATIONS?**

4 A. Table 2 provides a summary of the difference in annual depreciation rates and  
5 accruals requested by the Company and those advocated by Staff for MPS op-  
6 erations.

Function	Accrual Rate			2002 Annualized Accrual		
	Company	Staff	Difference	Company	Staff	Difference
A	B	C	D=C-B	E	F	G=F-E
Transmission	1.36%	1.71%	0.35%	\$99,584	\$125,191	\$25,607
Distribution	3.61%	2.25%	-1.36%	2,681,404	1,675,558	(1,005,846)
General Plant	5.66%	6.58%	0.92%	115,755	134,629	18,874
Corporate	11.86%	9.42%	-2.44%	6,256,676	4,970,471	(1,286,205)
<b>Total</b>	6.71%	5.06%	-1.65%	\$9,153,419	\$6,905,849	(\$2,247,570)

**Table 2. Company vs Staff Rates and Accruals - MPS Operations**

7 It can be observed from Table 2 that Staff is advocating a composite depreciation  
8 rate reduction for MPS operations of 1.65 percentage points from that requested  
9 by the Company. The reduction in depreciation rates advocated by Staff reduces  
10 the Company's requested 2002 annualized depreciation expense by \$2,247,570,  
11 or nearly 25 percent.

12 The currently prescribed composite accrual rate of 2.45 percent provides an an-  
13 nualized accrual of \$3,341,299. The change in depreciation rates advocated by  
14 Staff increases currently approved annualized depreciation expense by  
15 \$3,564,550 (\$6,905,849 – \$3,341,299). The change in depreciation rates re-  
16 quested by the Company provides an additional annualized accrual of  
17 \$5,812,120 (\$9,153,419 – \$3,341,299).

1 Q. **WHAT IS THE DIFFERENCE IN THE ANNUAL DEPRECIATION RATES AND**  
2 **ACCRUALS REQUESTED BY THE COMPANY AND THOSE ADVOCATED BY**  
3 **STAFF FOR L&P OPERATIONS?**

4 A. Table 3 provides a summary of the difference in annual depreciation rates and  
5 accruals requested by the Company and those advocated by Staff for L&P op-  
6 erations.

Function	Accrual Rate			2002 Annualized Accrual		
	Company	Staff	Difference	Company	Staff	Difference
A	B	C	D=C-B	E	F	G=F-E
Transmission	3.55%	2.27%	-1.28%	\$265,617	\$170,045	(\$95,572)
Distribution	3.49%	4.00%	0.51%	5,544	6,350	806
Corporate	11.97%	9.37%	-2.60%	2,046,124	1,601,228	(444,896)
<b>Total</b>	<b>9.37%</b>	<b>7.19%</b>	<b>-2.18%</b>	<b>\$2,317,285</b>	<b>\$1,777,623</b>	<b>(\$539,662)</b>

**Table 3. Company vs Staff Rates and Accruals - L&P Operations**

7 It can be observed from Table 3 that Staff is advocating a composite depreciation  
8 rate reduction for L&P operations of 2.18 percentage points from that requested  
9 by the Company. The reduction in depreciation rates advocated by Staff reduces  
10 the Company's requested 2002 annualized depreciation expense by \$539,662, or  
11 more than 23 percent.

12 The currently prescribed composite accrual rate of 1.67 percent provides an an-  
13 nualized accrual of \$412,420. The change in depreciation rates advocated by  
14 Staff increases currently approved annualized depreciation expense by  
15 \$1,365,203 (\$1,777,623 – \$412,420). The change in depreciation rates re-  
16 quested by the Company provides an additional annualized accrual of  
17 \$1,904,865 (\$2,317,285 – \$412,420).

1 Q. **WHY ARE THE DEPRECIATION RATES AND ACCRUALS ADVOCATED BY**  
2 **STAFF SIGNIFICANTLY DIFFERENT FROM THOSE REQUESTED BY**  
3 **AQUILA?**

4 A. The differences in depreciation rates and accruals advocated by Staff and those  
5 requested by Aquila are largely attributable to:

- 6 a) The depreciation *procedure* used to develop accrual rates;
- 7 b) The depreciation *technique* used to develop accrual rates;
- 8 c) Modification of service life statistics; and
- 9 d) Elimination of net salvage accruals.

10 **DEPRECIATION PROCEDURE**

11 Q. **WHAT IS A DEPRECIATION PROCEDURE?**

12 A. As discussed in my direct testimony, a depreciation procedure identifies the level  
13 of grouping or sub-grouping of assets within a plant category. Both MPS and  
14 L&P are currently using a broad-group procedure which Staff retained. Deprecia-  
15 tion rates requested by Aquila were developed using a vintage-group procedure.  
16 The level of asset grouping identified in the broad-group procedure is the total  
17 plant in service from all vintages in an account. Each vintage is estimated to have  
18 the same average service life. The level of asset grouping identified in the vin-  
19 tage-group procedure is the plant in service from each vintage. Average service  
20 lives (or remaining lives) are estimated for each vintage and composite life statis-  
21 tics are computed for a plant account.

22 Q. **WHY DID YOU RECOMMEND A VINTAGE-GROUP PROCEDURE FOR BOTH**  
23 **MPS AND L&P?**

24 A. The matching and expense recognition principles of accounting provide that the



1 cost of an asset (or group of assets) should be allocated to operations over an  
2 estimate of the economic life of the asset in proportion to the consumption of ser-  
3 vice potential. It is the opinion of Foster Associates that the objectives of depre-  
4 ciation accounting can be more nearly achieved using the vintage–group  
5 procedure (combined with the remaining–life technique). Unlike the broad–group  
6 procedure in which each vintage is estimated to have the same average service  
7 life, the vintage–group procedure distinguishes average service lives among vin-  
8 tages and provides cost apportionment over the estimated weighted-average re-  
9 maining life or average life of a rate category.

10 Q. **HAS THE VINTAGE–GROUP PROCEDURE BEEN APPROVED FOR AQUILA**  
11 **IN OTHER JURISDICTIONS?**

12 A. Yes, it has. Foster Associates has conducted depreciation studies for Aquila in  
13 Minnesota, Michigan and Kansas. Each of these jurisdictions has approved de-  
14 preciation rates derived from a vintage–group procedure. Depreciation rates are  
15 also being developed for Aquila in Colorado and Iowa using the vintage–group  
16 procedure. It is not unreasonable, therefore, to request that Missouri also ap-  
17 prove depreciation rates derived from a vintage–group procedure to more nearly  
18 achieve the goals of depreciation accounting and to maintain consistency in the  
19 procedure used by Aquila in all jurisdictions.

20 Q. **WHAT IS THE DIFFERENCE IN DEPRECIATION RATES AND ACCRUALS**  
21 **FOR MPS AND L&P RESULTING FROM A USE OF THE VINTAGE–GROUP**  
22 **PROCEDURE RATHER THAN THE BROAD–GROUP PROCEDURE?**

1 A. Table 4 provides a comparison of depreciation rates and accruals using the vin-  
2 tage–group procedure, remaining–life technique and the broad–group procedure,  
3 remaining–life technique combined with the parameters and redistribution of re-  
4 serves requested by Aquila.

Business Unit	Accrual Rate			2002 Annualized Accrual		
	VG	BG	Difference	VG	BG	Difference
A	B	C	D=C-B	E	F	G=F-E
<b><u>MPS</u></b>						
Gas	3.46%	3.47%	0.01%	\$2,896,743	\$2,902,466	\$5,723
Corporate	11.86%	11.85%	-0.01%	6,256,676	6,253,148	(3,528)
Total MPS	6.71%	6.71%	0.00%	\$9,153,419	\$9,155,614	\$2,195
<b><u>L&amp;P</u></b>						
Gas	3.55%	3.58%	0.03%	\$271,161	\$272,969	\$1,808
Corporate	11.97%	11.96%	-0.01%	2,046,124	2,044,281	(1,843)
Total L&P	9.37%	9.37%	0.00%	\$2,317,285	\$2,317,250	(\$35)
<b>Total</b>	7.12%	7.12%	0.00%	\$11,470,704	\$11,472,864	\$2,160

**Table 4. Vintage-Group vs Broad-Group Rates and Accruals**

5 It can be observed from Table 4 that marginally higher depreciation rates and ac-  
6 cruals result from an application of the broad–group procedure. By comparison,  
7 depreciation accruals derived from an application of the parameters and whole–  
8 life technique advocated by Staff would be increased by \$105,633 (\$8,789,105–  
9 \$8,683,472) by adoption of the vintage–group procedure. Clearly, the procedure  
10 requested by Aquila and approved for the Company in other jurisdictions was not  
11 selected to maximize depreciation expense. It was selected to more nearly  
12 achieve the goals and objectives of depreciation accounting.

### **DEPRECIATION TECHNIQUE**

14 Q. **WHAT IS A DEPRECIATION TECHNIQUE?**

15 A. As discussed in my direct testimony, a depreciation technique describes the life  
16 statistic used in the formulation of a depreciation rate. Both MPS and L&P are  
17 currently using a whole–life technique. Depreciation rates requested by Aquila

1 were developed using a remaining-life technique. The whole-life technique was  
2 retained by Staff.

3 The principal distinction between a whole-life rate and a remaining-life rate is the  
4 treatment of depreciation reserve imbalances caused largely by imprecise esti-  
5 mates of service life statistics and net salvage rates. A reserve imbalance is  
6 measured as the difference between a theoretical or computed reserve and the  
7 corresponding recorded reserve for a rate category.

8 A remaining-life rate is equivalent to the sum of two components: a) a whole-life  
9 rate; and b) an amortization of any reserve imbalance over the composite  
10 weighted average remaining life of a rate category. Stated as an equation, a  
11 whole-life rate is given by

$$12 \quad \text{Accrual Rate} = \frac{1.0 - \text{Average Net Salvage Rate}}{\text{Average Life}}.$$

13 The formulation of an account accrual rate using the remaining-life technique is  
14 given by

$$15 \quad \text{Accrual Rate} = \frac{1.0 - \text{Reserve Ratio} - \text{Future Net Salvage Rate}}{\text{Remaining Life}}$$

16 which is equivalent to

$$17 \quad \text{Accrual Rate} = \frac{1.0 - \text{Average Net Salvage Rate}}{\text{Average Life}} + \frac{\text{Computed Reserve} - \text{Recorded Reserve}}{\text{Remaining Life}}$$

18 where both the computed reserve and the recorded reserve are expressed as ra-  
19 tios to the plant in service.

20 **Q. WHY DID YOU RECOMMEND REMAINING-LIFE DEPRECIATION RATES**  
21 **FOR BOTH MPS AND L&P?**

1 A. Unlike the currently prescribed whole-life rates in which reserve imbalances are  
2 addressed by the presence of compensating deviations in the estimated average  
3 service life of each vintage, the remaining-life technique provides a systematic  
4 amortization of these imbalances over the composite weighted average remain-  
5 ing life of a rate category. A permanent excess or deficiency will be created in the  
6 depreciation reserve by a continued application of the whole-life technique if ser-  
7 vice life deviations are not exactly offsetting. The likelihood of a permanent re-  
8 serve imbalance is eliminated by an application of the remaining-life technique.

9 Q. **HAS THE REMAINING-LIFE TECHNIQUE BEEN APPROVED FOR AQUILA IN**  
10 **OTHER JURISDICTIONS?**

11 A. Yes, it has. Foster Associates has conducted depreciation studies for Aquila in  
12 Minnesota, Michigan and Kansas. Each of these jurisdictions has approved re-  
13 maining-life depreciation rates. Depreciation rates are also being developed for  
14 Aquila in Colorado and Iowa using the remaining-life technique. It is not unrea-  
15 sonable, therefore, to request that Missouri also approve remaining-life deprecia-  
16 tion rates to more nearly achieve the goals of depreciation accounting and to  
17 maintain consistency in the technique used by Aquila in all jurisdictions.

18 Q. **WHAT IS THE DIFFERENCE IN DEPRECIATION RATES AND ACCRUALS**  
19 **FOR MPS AND L&P RESULTING FROM A USE OF THE REMAINING-LIFE**  
20 **TECHNIQUE RATHER THAN THE WHOLE-LIFE TECHNIQUE?**

21 A. Table 5 provides a comparison of depreciation rates and accruals using the vin-  
22 tage-group procedure, remaining-life technique and the vintage-group proce-  
23 dure, whole-life technique combined with the parameters and redistribution of

1 reserves requested by Aquila.

Business Unit	Accrual Rate			2002 Annualized Accrual		
	R/L	W/L	Difference	R/L	W/L	Difference
A	B	C	D=C-B	E	F	G=F-E
<b><u>MPS</u></b>						
Gas	3.46%	3.26%	-0.20%	\$2,896,743	\$2,729,316	(\$167,427)
Corporate	11.86%	8.09%	-3.77%	6,256,676	4,270,881	(1,985,795)
Total MPS	6.71%	5.13%	-1.58%	\$9,153,419	\$7,000,197	(\$2,153,222)
<b><u>L&amp;P</u></b>						
Gas	3.55%	3.19%	-0.36%	\$271,161	\$243,538	(\$27,623)
Corporate	11.97%	8.09%	-3.88%	2,046,124	1,382,613	(663,511)
Total L&P	9.37%	6.58%	-2.79%	\$2,317,285	\$1,626,151	(\$691,134)
<b>Total</b>	<b>7.12%</b>	<b>5.35%</b>	<b>-1.77%</b>	<b>\$11,470,704</b>	<b>\$8,626,348</b>	<b>(\$2,844,356)</b>

Table 5. Remaining-Life vs Whole-Life Rates and Accruals

2 It can be observed from Table 5 that marginally higher depreciation rates and ac-  
3 cruals result from an application of the remaining-life technique. By comparison,  
4 depreciation accruals derived from an application of the parameters and broad-  
5 group procedure advocated by Staff would be increased by \$4,219,012  
6 (\$12,902,484-\$8,683,472) by adoption of the remaining-life technique.  
7 The technique requested by Aquila and approved for the Company in other juris-  
8 dictions, however, was not selected to maximize depreciation expense. It was se-  
9 lected to more nearly achieve the goals and objectives of depreciation  
10 accounting.

11 Q. **WHY IS THE DIFFERENCE BETWEEN REMAINING-LIFE ACCRUALS AND**  
12 **WHOLE-LIFE ACCRUALS BASED ON PARAMETERS ADVOCATED BY**  
13 **STAFF SIGNIFICANTLY LARGER THAN THE DIFFERENCE OBTAINED**  
14 **FROM PARAMETERS REQUESTED BY AQUILA?**

15 A. Apart from a relatively small difference attributable to the broad-group proce-  
16 dure, the reserve imbalance derived from Staff parameters (*i.e.*, service life and  
17 net salvage statistics) is less than the imbalance derived from parameters esti-

1 mated by Foster Associates. However, the time–period over which the reserve  
2 imbalance would be amortized is considerably shorter using Staff parameters  
3 compared with those estimated by Foster Associates. It can be observed from  
4 Table 6 that the reserve imbalance derived from Staff parameters is \$13,998,635  
5 compared with an imbalance of \$22,541,115 derived from parameters requested  
6 by Aquila.

Business Unit	Recorded	Company		Staff	
		Computed	Imbalance	Computed	Imbalance
A	B	C	D=B-C	E	F=B-E
<b><u>MPS</u></b>					
Gas	\$26,053,965	\$31,660,494	(\$5,606,529)	\$23,044,548	\$3,009,417
Corporate	2,051,206	14,280,435	(12,229,229)	15,510,562	(13,459,356)
Total MPS	\$28,105,171	\$45,940,929	(\$17,835,758)	\$38,555,110	(\$10,449,939)
<b><u>L&amp;P</u></b>					
Gas	\$3,483,626	\$4,168,382	(\$684,756)	\$2,618,450	\$865,176
Corporate	697,985	4,718,586	(4,020,601)	5,111,857	(4,413,872)
Total L&P	\$4,181,611	\$8,886,968	(\$4,705,357)	\$7,730,307	(\$3,548,696)
<b>Total</b>	<b>\$32,286,782</b>	<b>\$54,827,897</b>	<b>(\$22,541,115)</b>	<b>\$46,285,417</b>	<b>(\$13,998,635)</b>

**Table 6. Company vs Staff Reserve Imbalances**

7 The amortization derived from Staff parameters would be \$4,219,012 over a pe-  
8 riod of 3.3 years compared with an amortization of \$2,844,356 over a period of  
9 7.9 years derived from the parameters requested by Aquila. As noted earlier, the  
10 difference between a remaining–life accrual and a whole–life accrual is the amor-  
11 tization of a reserve imbalance.

12 Q. **ACCORDING TO WITNESS SCHAD, “STAFF’S RESULTS FOUND AN**  
13 **APPROXIMATE \$3.8 MILLION OVER–ACCRUAL OF THE DEPRECIATION**  
14 **ACCRUED RESERVE FOR THE MPS (GAS) PLANT AND AN APPROXIMATE**  
15 **\$0.9 MILLION OVER ACCRUAL OF THE DEPRECIATION ACCRUED**

1       **RESERVE FOR THE L&P (GAS) PLANT.”<sup>2</sup> WHY DOES TABLE 6 INDICATE A**  
2       **RESERVE DEFICIENCY USING EITHER COMPANY OR STAFF PARAME-**  
3       **TERS?**

4    A.    Table 6 contains both gas operations and corporate assets assigned to MPS and  
5       L&P. Staff did not include corporate assets in comparing computed and recorded  
6       reserves. This is not to suggest that all corporate assets associated with MPS  
7       and L&P are assigned to gas operations. However, the purpose of Table 6 (and  
8       all other referenced tables) is to contrast and compare Staff and Company de-  
9       preciation rates and accruals resulting solely from an application of different pa-  
10      rameters and depreciation systems. The amount of corporate assets and  
11      common plant allocated to business units is not relevant to an understanding of  
12      the differences attributable to fundamental depreciation principles.

13      **SERVICE LIFE STATISTICS**

14    Q.    **WHAT IS THE DIFFERENCE IN DEPRECIATION RATES AND ACCRUALS**  
15      **FOR MPS AND L&P RESULTING FROM THE MODIFICATION OF SERVICE**  
16      **LIFE STATISTICS ADVOCATED BY STAFF?**

17    A.    Table 7 provides a comparison of depreciation rates and accruals using service  
18      life statistics (*i.e.*, projection life and projection curve) requested by Aquila and  
19      service life statistics advocated by Staff. The procedure, technique, net salvage  
20      rates and redistribution of reserves requested by Aquila were retained in the  
21      comparison to isolate differences solely attributable to the changes in service life  
22      statistics advocated by Staff.

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<sup>2</sup> Schad Direct Testimony, Page 12, Lines 11–13.

Business Unit	Accrual Rate			2002 Annualized Accrual		
	Company	Staff	Difference	Company	Staff	Difference
A	B	C	D=C-B	E	F	G=F-E
<b><u>MPS</u></b>						
Gas	3.46%	3.22%	-0.24%	\$2,896,743	\$2,692,395	(\$204,348)
Corporate	11.86%	15.67%	3.81%	6,256,676	8,269,416	2,012,740
Total MPS	6.71%	8.03%	1.32%	\$9,153,419	\$10,961,811	\$1,808,392
<b><u>L&amp;P</u></b>						
Gas	3.55%	3.47%	-0.08%	\$271,161	\$265,237	(\$5,924)
Corporate	11.97%	15.91%	3.94%	2,046,124	2,720,248	674,124
Total L&P	9.37%	12.07%	2.70%	\$2,317,285	\$2,985,485	\$668,200
<b>Total</b>	7.12%	8.65%	1.53%	\$11,470,704	\$13,947,296	\$2,476,592

**Table 7. Company vs Staff Service Life Statistics**

1 It can be observed from Table 7 that service life statistics advocated by Staff  
2 produce a composite depreciation rate increase of 1.53 percentage points from  
3 that requested by the Company. The change in depreciation rates increases the  
4 Company's requested 2002 annualized depreciation expense by \$2,476,592, or  
5 more than 19 percent.

6 **1. STAFF DATA CONCERNS**

7 A. According to Witness Schad, "The L&P (Gas) data includes placements in the  
8 data file of vintages prior to 1979 that were not recorded until 1979. In addition,  
9 there are no retirements from those vintages recorded until 1979. This results in  
10 some plant being almost 70 years with no retirements occurring."<sup>3</sup>

11 Q. **IS THIS AN ACCURATE DESCRIPTION OF THE L&P DATABASE?**

12 A. No, it is not. The L&P database contains plant transactions (*i.e.*, additions, re-  
13 tirements, transfers and adjustments) recorded over the period 1979–2001. Vin-  
14 tage years recorded during this band of activity years are dated as early as 1931,  
15 depending upon the inception date of an account. The opening balances re-  
16 ported in 1979 (by vintage year of placement) are net of all retirements prior to

<sup>3</sup> Schad Direct Testimony, Page 9. Lines 12–15.



1 1979. It is incorrect to assert that no retirements were recorded prior to 1979.  
2 The number of activity years included in the database provides sufficient retire-  
3 ment experience to conduct a statistical analysis of most L&P plant accounts. It is  
4 neither necessary nor appropriate to apply MPS parameters to the L&P ac-  
5 counts.

6 Q. **STAFF ALSO CLAIMS THAT "... THE LACK OF ANY HISTORICAL**  
7 **RETIREMENTS IN THE L&P (GAS) NON-METALLIC MAINS ACCOUNT,**  
8 **ACCOUNT 376.002, MAY INDICATE THAT THE ACCURACY OF THE DATA**  
9 **IS QUESTIONABLE."**<sup>4</sup> **IS THE ACCURACY OF THE DATA QUESTIONABLE?**

10 A. No, it is not. It is evident from the coded database and unadjusted plant history  
11 Schedule C provided to Staff in response to Data Request Nos. 0085 and 0086  
12 that the non-metallic mains account was created in 2001 by a transfer of  
13 \$1,511,130 from the metallic mains account. The amount transferred was by vin-  
14 tage year of placement. The earliest vintage transferred was 1968. The history of  
15 plant accounting transactions recorded prior to 2001 remains in the metallic  
16 mains account. The accuracy of the data is not questionable.

17 **2. FULL-MORTALITY CATEGORIES**

18 Q. **WHAT IS A FULL-MORTALITY CATEGORY?**

19 A. Full-mortality categories are plant categories in which additions, retirements and  
20 replacements are anticipated to continue with no foreseeable date at which all  
21 plant will be retired irrespective of age. A mains account, for example, is a full  
22 mortality category in which mains will most likely be added, retired and replaced  
23 indefinitely.

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<sup>4</sup> Schad Direct Testimony, Page 9. Lines 18-20.

1 Q. **HOW ARE SERVICE LIVES ESTIMATED FOR A FULL-MORTALITY**  
2 **CATEGORY?**

3 A. Statistical methods of life analysis combined with engineering judgment are used  
4 to examine and describe the forces of retirement acting upon a full-mortality  
5 category. The descriptors most often used are survival functions expressed as  
6 probability distributions. The objective of a life analysis is to quantify the attrib-  
7 utes of the parent population from which observed retirements were extracted as  
8 a random sample. Life indications obtained from an analysis of observed retire-  
9 ment activity must be tempered with informed judgment to the extent that future  
10 forces of retirement or failure rates are anticipated to be different from those ob-  
11 served in the past. The tempering of observed life indications is called *life estima-*  
12 *tion*. A variety of statistical techniques have been developed for estimating  
13 service lives of physical property, some of which are more robust than others.

14 Q. **HOW WOULD YOU DESCRIBE THE LIFE ANALYSIS TECHNIQUE USED BY**  
15 **STAFF?**

16 A. It is a mechanized version of a visual curve-fitting technique employed long be-  
17 fore the advent of computers. Prior to the availability of mechanized systems, a  
18 series of survivor proportions obtained from an observed life table was typically  
19 plotted on graph paper and overlaid with correspondingly scaled graphs of survi-  
20 vor curves such as the lowa-type curves. The type-curves were drawn with vari-  
21 ous average service lives such that both the dispersion and average service life  
22 of the observed proportion surviving could be selected from a visual inspection of  
23 which curve appeared to best "fit" the data.

1 A mechanized version of the same technique merely replaces the visual inspec-  
2 tion with a fit criterion, such as a minimum sum of squared differences between  
3 the observed proportion surviving and the theoretical proportion surviving ob-  
4 tained from a table of the points displayed in a graphical representation of a  
5 type-curve. The type-curves used in such an analysis can be scaled to any av-  
6 erage service life, thereby providing a description of both the dispersion and av-  
7 erage service life of the fitted data.

8 **Q. HOW DO THE LIFE ANALYSIS TECHNIQUES USED BY FOSTER**  
9 **ASSOCIATES IN CONDUCTING DEPRECIATION STUDIES FOR AQUILA**  
10 **DIFFER FROM THOSE USED BY STAFF?**

11 **A.** Based upon extensive independent research and development of life analysis  
12 techniques, Foster Associates uses a multi-step procedure in which various es-  
13 timators of the observed hazard rates (*i.e.*, conditional probabilities of retirement)  
14 obtained from an observed life table are first graduated without regard to the ob-  
15 served proportion surviving. A survivorship function is then derived from a trans-  
16 formation of a parametric form of the hazard function and numerically integrated  
17 to obtain an estimate of the expected or mean service life of the population from  
18 which the retirements displayed in the observed life table are viewed as a ran-  
19 dom sample. The transformed survivorship function is then fitted by a weighted  
20 least-squares procedure to type-curves (*e.g.*, Iowa) to obtain a mathematical de-  
21 scription or classification of the dispersion characteristics of the data.

1 Q. **WILL THE LIFE ANALYSIS TECHNIQUE USED BY FOSTER ASSOCIATES**  
2 **PRODUCE THE SAME DISPERSION AND SERVICE–LIFE INDICATIONS AS**  
3 **THE TECHNIQUE USED BY STAFF?**

4 A. Not necessarily. The techniques used by Foster Associates were designed to  
5 overcome a serious limitation in the technique used by Staff. Each successive  
6 measurement of the proportion surviving developed in an observed life table is  
7 dependent upon the proportion surviving in prior age–intervals. One or more  
8 anomalous retirements, therefore, will dictate the proportion surviving in subse-  
9 quent age–intervals. Fitting a survivor curve to the observed proportion surviving  
10 will seldom produce an accurate description of the underlying forces of mortality.  
11 The techniques used by Foster Associates maximize the informational content of  
12 the data and minimize the influence of extraneous events by extracting the un-  
13 derlying forces of mortality from an analysis of the hazard rates.<sup>5</sup> This is not to  
14 suggest that an analyst must be highly trained in actuarial statistics to conduct a  
15 depreciation study. Absent this knowledge, however, life analysis becomes an  
16 exercise in curve–fitting rather than an attempt to quantify the attributes of the  
17 parent population from which observed retirements were extracted as a sample.  
18 It is not surprising therefore that Witness Schad would find different curve fits and  
19 service lives than Foster Associates identified from a more rigorous analysis of  
20 the underlying forces of mortality.

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<sup>5</sup> Although some correlation can be found in the conditional proportion retired, the covariance between the hazard rates in two age–intervals is asymptotically zero. This property has permitted the development of various methods of weighting that reflect serial independence of the disturbance term.

1 **NET SALVAGE ACCRUALS**

2 Q. **WHAT IS THE DIFFERENCE IN DEPRECIATION RATES AND ACCRUALS**  
3 **FOR MPS AND L&P RESULTING FROM THE ELIMINATION OF NET**  
4 **SALVAGE RATES ADVOCATED BY STAFF?**

5 A. Table 8 provides a comparison of depreciation rates and accruals using net sal-  
6 vage rates requested by Aquila and the elimination of net salvage advocated by  
7 Staff.

Business Unit	Accrual Rate			2002 Annualized Accrual		
	Company	Staff	Difference	Company	Staff	Difference
A	B	C	D=C-B	E	F	G=F-E
<b><u>MPS</u></b>						
Gas	3.46%	2.32%	-1.14%	\$2,896,743	\$1,938,810	(\$957,933)
Corporate	11.86%	11.84%	-0.02%	6,256,676	6,250,191	(6,485)
Total MPS	6.71%	6.00%	-0.71%	\$9,153,419	\$8,189,001	(\$964,418)
<b><u>L&amp;P</u></b>						
Gas	3.55%	1.91%	-1.64%	\$271,161	\$145,791	(\$125,370)
Corporate	11.97%	11.95%	-0.02%	2,046,124	2,043,388	(2,736)
Total L&P	9.37%	8.85%	-0.52%	\$2,317,285	\$2,189,179	(\$128,106)
<b>Total</b>	<b>7.12%</b>	<b>6.44%</b>	<b>-0.68%</b>	<b>\$11,470,704</b>	<b>\$10,378,180</b>	<b>(\$1,092,524)</b>

Table 8. Company vs Staff Net Salvage Rates

8 The procedure, technique and service life statistics requested by Aquila were re-  
9 tained in the comparison to isolate differences solely attributable to the elimina-  
10 tion of net salvage rates advocated by Staff.

11 It can be observed from Table 8 that the elimination of net salvage advocated by  
12 Staff produce a composite depreciation rate reduction of 0.68 percentage points  
13 from that requested by the Company. This reduction in depreciation rates re-  
14 duces the Company's requested 2002 annualized depreciation expense by  
15 \$1,092,524, or more than 9 percent.

16 Q. **WHAT IS YOUR UNDERSTANDING OF THE TREATMENT OF NET SALVAGE**  
17 **ADVOCATED BY STAFF?**

1 A. It is my understanding that Staff is advocating a disallowance of an accrual for  
2 net salvage as a component of depreciation rates. The treatment advocated by  
3 Staff is a cost of service allowance equal to an average of the annual net salvage  
4 realized over the most recent five years. This treatment is equivalent to a current  
5 period recognition of net salvage with a revenue allowance intended to approxi-  
6 mate net salvage associated with current retirements.

7 Q. **WHAT IS THE THEORETICAL BASIS FOR INCLUDING NET SALVAGE IN**  
8 **DEPRECIATION RATES?**

9 A. Depreciation is a measurement of the service potential of an asset that is con-  
10 sumed during an accounting interval. The cost of obtaining a bundle of service  
11 units (*i.e.*, a future net revenue stream) is represented by an initial capital expen-  
12 diture which creates a revenue requirement for return and depreciation, and a fu-  
13 ture expenditure which creates a revenue requirement for cost of removal  
14 reduced by salvage proceeds. The matching principle of accounting provides that  
15 both the initial and future expenditures should be allocated to the accounting pe-  
16 riods in which the service potential of an asset is consumed. The standard or cri-  
17 terion that should be used to determine a proper net salvage rate is cost  
18 allocation over economic life in proportion to the consumption of service poten-  
19 tial. If some other standard (such as cash flow or revenue requirements) is con-  
20 sidered more important in setting depreciation rates, then cost allocation theory  
21 must be abandoned as the foundation for depreciation accounting.  
22 The need to include cost of removal in the development of depreciation rates is  
23 widely recognized and accepted by a substantial majority of state regulatory

1 commissions as a standard ratemaking principle. The FERC Uniform System of  
2 Accounts, for example, describes depreciation as the "... loss in service value"  
3 where service value is defined as "... the difference between original cost and net  
4 salvage value of electric plant." Net salvage value means "the salvage value of  
5 property retired less the cost of removal."

6 The economic principle underlying both the accounting and ratemaking treatment  
7 of cost of removal is that in addition to return *of* and return *on* invested capital  
8 and taxes, a revenue requirement for cost of removal (or a reduction in the reve-  
9 nue requirement attributable to gross salvage) is created when an asset is placed  
10 in service. It is appropriate, therefore, to include a net salvage component in de-  
11 preciation rates to more nearly achieve the goals of depreciation accounting and  
12 to equitably distribute the revenue requirement for net salvage over the period in  
13 which the assets that created the requirement are used to provide utility service.

14 Q. **WHAT IS YOUR UNDERSTANDING OF THE EVOLUTION OF THE**  
15 **TREATMENT OF NET SALVAGE ADVOCATED BY STAFF IN THIS**  
16 **PROCEEDING?**

17 A. To my knowledge, the earliest attempt by Staff to deliberately reduce deprecia-  
18 tion expense by adjusting net salvage rates was introduced with a novel formula-  
19 tion of a whole-life depreciation rate designed to provide an allowance for net  
20 salvage equal to the average *realized* net salvage observed over a recent band  
21 of years.<sup>6</sup> The adjustment advocated by Staff was derived by replacing the aver-  
22 age net salvage rate in a whole-life formulation of the accrual rate by the product  
23 of a realized net salvage rate and the ratio of the average service life to a quo-

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<sup>6</sup> Direct Testimony of Paul W. Adam in Laclede Gas Company Case No. GR-98-324.

1       tient obtained by dividing the plant balance by average annual retirements.  
2       It can be easily demonstrated that this formulation of the accrual rate is equiva-  
3       lent to a two-part rate in which the first term is the reciprocal of the estimated av-  
4       erage service life and the second term is the ratio of average net salvage  
5       realized during a specified band of years and the balance recorded in a plant ac-  
6       count. The application of this adjusted rate to a plant account yields the sum of a  
7       whole-life accrual without net salvage and a net salvage allowance equal to the  
8       average net salvage realized over the selected band of years. Although this for-  
9       mulation of an allowance for net salvage advocated by Staff was significantly less  
10      than the average of realized and future net salvage, it is important to note that  
11      the allowance was treated as a component of depreciation expense and posted  
12      to the depreciation reserve.

13      While the “net salvage allowance” advocated by Staff did not provide cost alloca-  
14      tion of net salvage over the service lives of the assets that created a salvage or  
15      cost of removal requirement, the reserve treatment minimally provided an oppor-  
16      tunity for eventual recovery of the capital costs incurred to remove earlier retire-  
17      ments. Preservation of the opportunity for capital recovery was subsequently  
18      viewed by Staff as an obligation that ratepayers should not be required to as-  
19      sume.

20      It was apparently realized that ratepayers could be relieved of the obligation for  
21      full capital recovery by removing net salvage from the depreciation rate and  
22      granting the corresponding amount as a cost of service allowance. This modified



1 treatment of net salvage was advanced by Staff in recent rate applications and is  
2 again advocated by Staff in this proceeding.

3 Q. **WHAT IS YOUR ASSESSMENT OF THE COST OF SERVICE TREATMENT OF**  
4 **NET SALVAGE NOW ADVOCATED BY STAFF?**

5 In my opinion, it is both wrong in theory and inequitable in its application. As  
6 noted earlier, the theory of including a net salvage allowance in depreciation  
7 rates is predicated on the proposition that, in addition to return *of* and return *on*  
8 invested capital and taxes, a revenue requirement for cost of removal (or a re-  
9 duction in the revenue requirement attributable to gross salvage) is created when  
10 an asset is placed in service. It is appropriate, therefore, to include net salvage  
11 as a component of a depreciation rate to equitably distribute the revenue re-  
12 quirement for net salvage over the period in which the assets that created the re-  
13 quirement are used to provide utility service. This objective will not be achieved if  
14 the net salvage rate included in a whole-life depreciation rate produces less than  
15 the average of both realized and future net salvage requirements.

16 The treatment of net salvage as a cost of service allowance is inequitable to the  
17 extent that realized cost of removal in excess of the cost allowance is non-  
18 recoverable. The opportunity for capital recovery, albeit untimely, was preserved  
19 when the allowance and realized amounts were posted to the depreciation re-  
20 serve.

21 Q. **DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

22 A. Yes, it does.

23