

Exhibit No.:  
Issues: Observation of Site  
Screening, Sound  
Abatement, and Pollution  
Witness: Leon C. Bender  
Sponsoring Party: MO PSC Staff  
Type of Exhibit: Rebuttal Testimony  
Case No.: EA-2006-0309  
Date Testimony Prepared: April 4, 2006

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY OPERATIONS DIVISION**

**REBUTTAL TESTIMONY**

**OF**

**LEON C. BENDER**

**AQUILA, INC.  
D/B/A AQUILA NETWORKS - MPS  
AND AQUILA NETWORKS - L&P**

**CASE NO. EA-2006-0309**

**Jefferson City, Missouri  
April 2006**

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of the Application of Aquila, )  
Inc. for Permission and Approval and a )  
Certificate of Public Convenience and )  
Necessity Authorizing it to Acquire, )  
Construct, Install, Own, Operate, )  
Maintain, and otherwise Control and )  
Manage, and otherwise Control and )  
Manage Electrical Production and Related )  
Facilities in Unincorporated Areas of Cass )  
County, Missouri Near the Town of )  
Peculiar )

Case No. EA-2006-0309

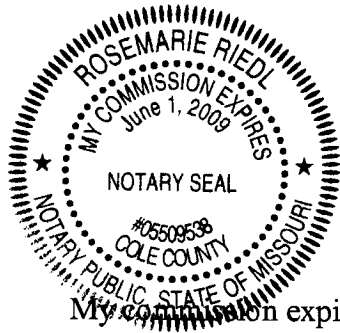
**AFFIDAVIT OF LEON C. BENDER**

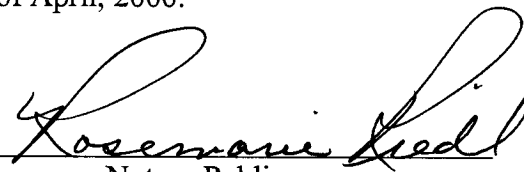
**STATE OF MISSOURI**     )  
  ) ss  
**COUNTY OF COLE**     )

Leon C. Bender, of lawful age, on his oath states: that he has participated in the preparation of the following Rebuttal Testimony in question and answer form, consisting of 7 pages of Rebuttal Testimony to be presented in the above case, that the answers in the following Rebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

  
\_\_\_\_\_  
Leon C. Bender

Subscribed and sworn to before me this 3<sup>rd</sup> day of April, 2006.



  
\_\_\_\_\_  
Notary Public

My commission expires June 1, 2009

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**LEON C. BENDER**

**D/B/A AQUILA NETWORKS - MPS  
AND AQUILA NETWORKS - L&P**

Q. Please state your name and business address.

Q. By whom are you employed and in what capacity?

## Executive Summary

A. My rebuttal testimony responds to the direct testimony filed by [REDACTED] in this case and describes Staff's participation in the monitoring of Aquila's [REDACTED] to address the site specific conditions of visual screening, sound abatement, and [REDACTED] on testing at South Harper Station.

A. I received a Bachelor of Science degree in Mechanical Engineering in August 1978 from Texas Tech University. I was employed by Southwestern Public Service Company (SPS) as a power generation plant design engineer in September

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1 1978. While employed by SPS, I was lead engineer on many projects involving the  
2 design and construction of new power generating stations and the upgrading of its older  
3 plants. In 1983, I became a registered Professional Engineer in the state of Texas. In  
4 1986, I transferred to SPS's newly formed subsidiary company, Utility Engineering  
5 Corporation, and was responsible for various projects at various other clients' power  
6 generation plants. In June 1990, I accepted employment as a systems engineer with  
7 Entergy Operations, Inc. at the nuclear powered generating station, Arkansas Nuclear  
8 One. In December 1995, I joined the Commission Staff.

9 Q. Have you filed testimony in previous cases before this Commission?

10 A. Yes, I filed testimony in Case Nos. ER-2005-0436, ER-2004-0570, ER-  
11 2004-0034, EC-2001-001, ER-2001-299, ER-97-515, EC-97-394 and EM-97-362.

12 Q. Do you have experience with combustion turbine-generator projects?

13 A. Yes. During my ten years at the Commission, I have toured most of the  
14 combustion turbine-generator (CTG) sites owned or operated by the electric companies  
15 regulated by the Commission. I have witnessed the construction phase as well as the  
16 startup, running, and shutdown of many of those CTG units visited. The most recent  
17 combustion turbine projects I have monitored are Aquila's South Harper Station,  
18 AmerenUE's Venice Plant CTG's, AmerenUE's Bowling Green CTG's, and Aquila's  
19 Greenwood CTG's.

20 Q. What is the purpose of your rebuttal testimony in this case, Aquila, Inc.  
21 (Aquila) D/B/A Aquila Networks-MPS (MPS) and Aquila Networks-L&P (L&P) Case  
22 No. EA-2006-0309?

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1           A.     My rebuttal responds to the direct testimonies of Block M. Andrews and  
2     Norma F. Dunn and in doing so, describes Staff's monitoring of Aquila's efforts to  
3     address the site specific conditions of visual screening, sound abatement, and pollution  
4     testing at South Harper Station as mentioned in Staff witness Warren Wood's rebuttal  
5     testimony.

6           Q.     Please describe the South Harper Station.

7           A.     South Harper Station is located just south of Peculiar, Missouri, at the  
8     intersection South Harper Road and 243rd St., next to a Southern Star Gas Compressor  
9     Station. On the property, Aquila installed three new Siemens Westinghouse simple  
10    cycle combustion turbine generators that are approximately 105 MW each. In addition,  
11    Aquila built a control/service building on the site. Aquila also installed a 161/69 KVA  
12    Substation on the site to handle the full output of all three generating units.

13          Q.     Please describe your involvement in monitoring the progress of the  
14    construction project?

15          A.     I obtained construction and testing schedules and monitored the progress  
16    of the construction and testing. I made eight visits to the construction site and had  
17    numerous telephone conversations with Aquila's managerial personnel during my visits  
18    to the site throughout the construction and testing phases of the project. I also observed  
19    some of the sound testing and air quality testing performed by Aquila, and Aquila's  
20    contractors.

21          Q.     While monitoring the progress of construction and testing at the South  
22    Harper Station site did you observe any visual screening efforts made by Aquila?

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1           A.     Yes. I observed that Aquila built berms on the north, south, and east sides  
2     of the site. Additionally, I observed that trees and grass were planted on the berms.  
3     Aquila personnel at the site said the purpose of the berms is to prevent erosion, absorb  
4     sound, and block the view of the site from nearby residences.

5           Q.     Please describe the area immediately around the South Harper plant site  
6     border?

7           A.     On the west border of the site is a row of dense mature trees which  
8     extends the entire length of the property on that edge. Berms with trees are located on  
9     the north, south, and east sides of the plant. The trees are newly planted and thus have  
10    not yet grown to mature height. To the south of the property line is another line of  
11    mature trees. Southern Star Gas Compressor station is located on the northeast corner  
12    just immediately outside of the Aquila property. South Harper Road is immediately  
13    outside of Aquila property on the east side of the plant and across that road is an empty  
14    field with trees and a large water pond. A residence is located directly across the street  
15    to the east of the Southern Star Gas Compressor Station.

16          Q.     Are any residences visible from the plant property?

17          A.     I toured the site on each of my visits and from ground level in the  
18    immediate area around the combustion turbines on the company property I could not  
19    see any residences.

20          Q.     Was the plant visible from any residences in the area?

21          A.     Yes. I drove down 243rd Street from Highway C to South Harper Road  
22    but did not see the plant except for the upper portion of the exhaust stacks until I was at  
23    the gate entrance. For a map of the immediate region please see Schedule one. The

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1 first visible building was the Southern Star Gas Compressor Station. From Lucille  
2 Street north of the plant, and the area of 241st Street directly north of the plant, it is  
3 visible. Further on South Harper Road and east on 241st Street, I could see the upper  
4 portion of the exhaust stacks of the plant. The substation and electrical transmission  
5 lines were visible from both South Harper Road and 241<sup>st</sup> Street. During sound testing  
6 I was allowed on the property of two nearby residences located on 241st Street. At  
7 various locations on those properties, I could see the upper portion of the exhaust stacks  
8 and the substation and transmission lines.

9 Q. Did the South Harper Station units have to meet any sound guarantees?

10 A Yes. Staff's In Service Criteria established for these units require that all  
11 operational guarantees had to be met. The turbine generator manufacturer, Siemens  
12 Westinghouse, had near-field sound-level guarantees of 90 dbA that the units had to  
13 meet. Also, the stack manufacturer, Higgott Krane, had near-field guarantees of 85  
14 dbA. I submitted direct testimony in Aquila's recent rate increase case, Case No. ER-  
15 2005-0436, which stated that Aquila submitted documentation to prove all guarantees  
16 in the Staff's In Service Criteria were met. Aquila also met the Cass County Noise  
17 Ordinance of less than 55 dbA according to the sound testing performed by Burns &  
18 McDonnell.

19 Q. Please describe Aquila's efforts to address the potential noise problems?

20 A. Documentation I reviewed for Case No. ER-2006-0436 revealed that  
21 Aquila knew early in the project that noise could be a potential problem and sought to  
22 reduce the sound levels. Aquila's efforts included purchasing the low-noise exhaust  
23 stack, installing sound attenuation around the gas reducing station vents, installing

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1 sound attenuation around the air inlet ducting, installing silencers on the compressed air  
2 vent, installing alarms inside of the service building rather than outside, and installing  
3 sound attenuating devices around the starting motors. Trees planted around the site  
4 may also dissipate some of the sound energy.

5 Q. Were you present during any of the sound level testing?

6 A. Yes. I was present on August 11, 2005, when Aquila and Siemens  
7 Westinghouse personnel were measuring the sound levels in the turbine area, exhaust  
8 stack area, and outside the property line while the generators were at maximum  
9 capacity. I was also present when Burns & McDonnell was performing a Residential  
10 Noise Assessment Study.

11 Q. Please describe the sound levels you observed during those visits.

12 A. During the testing performed by Aquila and Siemens Westinghouse  
13 personnel, the sound levels were below the guaranteed levels by the manufacturers. On  
14 August 11, 2005, I accompanied Aquila personnel outside the gate to observe sound  
15 level testing. The level measured on Aquila's calibrated noise instrument was 47 dbA.  
16 That is below the level of the County Noise Ordinance requirement of 55 dbA. On the  
17 same day I accompanied Aquila and Burns & McDonnell personnel during the part of  
18 the Residential Noise Assessment Study performed by Burns & McDonnell. I  
19 accompanied Burns & McDonnell personnel to two of the nearest residences and  
20 observed sound level readings taken in various locations on the properties with  
21 calibrated instruments. On many spots the sound of the plant was not observable  
22 because of the noise created a car passing on the gravel road and the outside air  
23 conditioning units running and cycling on and off. In other areas, where it was possible



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1 to get a good measurement of South Harper Station without other noise, such as cars on  
2 gravel roads or outside air conditioning units, no sound levels of South Harper Station  
3 measured were above the acceptable limits.

4 Q. Did Aquila have to meet any environmental requirements?

5 A. Yes. The Siemens Westinghouse guarantee includes air quality limits.  
6 Aquila hired Air Hygiene International, Inc. to perform all emissions testing. I was  
7 present June 30, 2005, and observed most of the testing. As my prepared testimony in  
8 Case No. ER-2006-0436 states, documentation presented by Aquila verified that all the  
9 Siemens Westinghouse guarantees for air quality were met. The South Harper Station  
10 also had to meet, and must continue to meet, the air quality permit limits set by the  
11 Missouri Department of Natural Resources (DNR) and the U.S. Environmental  
12 Protection Agency (EPA). Members of DNR and EPA witnessed these tests on June  
13 30, 2005, also. Each exhaust stack has its own continuous emissions monitoring  
14 system to ensure that the units continue to meet the permitted limits.

15 Q. Have the South Harper Station units been operating this year?

16 A. No. According to Aquila's operating logs, which I reviewed on March 30,  
17 2006, the last day a unit operated at South Harper Station was December 6, 2005.

18 Q. Does this conclude your rebuttal testimony?

19 A. Yes, it does.

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