

Exhibit No.:  
Issue: Iatan 1:  
Air Quality Control Equipment  
Witness: Carl Churchman  
Type of Exhibit: Direct Testimony  
Sponsoring Party: Kansas City Power & Light Company  
Case No.: ER-2009-\_\_\_\_  
Date Testimony Prepared: September 5, 2008

**MISSOURI PUBLIC SERVICE COMMISSION**

**CASE NO.: ER-2009-\_\_\_\_**

**DIRECT TESTIMONY**

**OF**

**CARL CHURCHMAN**

**ON BEHALF OF**

**KANSAS CITY POWER & LIGHT COMPANY**

**Kansas City, Missouri  
September 2008**

**DIRECT TESTIMONY**

**OF**

**CARL CHURCHMAN**

**Case No. ER-2009-\_\_\_\_\_**

1 **Q: Please state your name and business address.**

2 A: My name is Carl Churchman. My business address is 1201 Walnut, Kansas City,  
3 Missouri 64106-2124.

4 **Q: By whom and in what capacity are you employed?**

5 A: I am employed by Kansas City Power & Light Company (“KCP&L” or the “Company”)  
6 as Vice President of Construction.

7 **Q: What are your responsibilities?**

8 A: My responsibilities include oversight of all of the Company’s construction activities that  
9 relate to generation facilities, including oversight of the construction and installation of  
10 certain air quality control equipment on the existing coal-fired generating unit at the Iatan  
11 Generating Station (“Iatan 1”), as well as the construction of Iatan 2.

12 **Q: Please describe your experience and employment history.**

13 A: I have more than thirty years of electric utility generation construction experience. Prior  
14 to coming to KCP&L, I was with Bechtel Power. Immediately prior to leaving that  
15 position, I was Project Director, Construction Completion. In that role, I was responsible  
16 for overseeing the completion of Unit 2 of the Tennessee Valley Authority’s (“TVA”)  
17 Watts Bar Nuclear Generation Station. Prior to that assignment, I was the Senior Project  
18 Manager, Steam Generator Replacement. In that role I oversaw the steam generator  
19 replacement at the San Onofre Nuclear Generation Station. Prior to working for Bechtel

1 Power, I spent twenty-eight years at Arizona Public Service Company (“APS”) where I  
2 held a number of positions including Director of Nuclear Engineering. In that role I had  
3 accountability for all engineering disciplines. While at APS, I was also directly  
4 responsible for the steam generator replacement project at the Palo Verde Nuclear  
5 Generation Station. While at APS, I also had responsibility for managing the  
6 procurement activities for large-scale construction projects.

7 **Q: Have you previously testified in a proceeding at the Missouri Public Service  
8 Commission (“Commission”)?**

9 A: Yes. I have testified before the Nuclear Regulatory Commission and the Institute of  
10 Nuclear Power Operations.

11 **Q: What is the purpose of your testimony?**

12 A: The purpose of my testimony is to describe the air quality control (“AQC”) equipment  
13 being installed on Iatan 1.

14 **Q: Please summarize your role with respect to the construction and installation of the  
15 AQC equipment at Iatan 1.**

16 A: As the Vice President of Construction, I am ultimately responsible for all aspects of the  
17 project.

18 **Q: Please describe the AQC equipment that is being added to Iatan 1.**

19 A: As part of the Stipulation and Agreement approved by the Commission in Case No. EO-  
20 2005-0329, KCP&L committed to add certain AQC equipment to Iatan 1. Specifically,  
21 KCP&L committed to add (i) a selective catalytic reduction facility (“SCR”); (ii) a flue  
22 gas desulphurization unit (“Scrubber”); and (iii) a fabric filter system for the removal of  
23 particulates (“Baghouse”).

1 **Q: What is the purpose of an SCR on a coal-fired generating unit?**

2 A: The production of nitrous oxides is a by-product of coal combustion. The U.S.  
3 Environmental Protection Agency (“EPA”) regulates the emission of nitrous oxides. The  
4 purpose of an SCR is to reduce the amount of nitrous oxides in the flue gas of a coal-fired  
5 generating unit. The SCR converts nitrous oxides, which consist primarily of nitrous  
6 oxide and lesser amounts of nitrous dioxide, to nitrogen and water by a chemical reaction  
7 with ammonia and a catalyst.

8 **Q: Please describe the SCR at Iatan 1.**

9 A: The SCR at Iatan 1 is located between the furnace economizer and the air heater. It is  
10 principally comprised of a substantial amount of duct work, an ammonia injection grid, a  
11 catalyst chamber, and considerable preparation, handling, and storage facilities for the  
12 ammonia and catalyst.

13 **Q: What is the purpose of a Scrubber on a coal-fired generating unit?**

14 A: The production of sulfur dioxide is a by-product of coal combustion. The EPA regulates  
15 the emission of sulfur dioxide. The purpose of a Scrubber, or “absorber” as it is  
16 sometimes called, is to reduce the amount of sulfur dioxide in the flue gas of a coal-fired  
17 generating unit. A “wet” Scrubber, such as the Iatan 1 Scrubber, removes sulfur dioxide  
18 from the flue gas by injecting a limestone slurry into the flue. The resulting chemical  
19 reactions convert the sulfur dioxide and limestone to calcium sulfite and water.

20 **Q: Please describe the Scrubber at Iatan 1.**

21 A: As noted above, the Scrubber at Iatan 1 is a “wet” scrubber, which means that the catalyst  
22 it uses for the chemical reaction to remove sulfur dioxide is limestone slurry. The  
23 Scrubber is located between the induced draft fans and the chimney. It is principally

1           comprised of the absorber vessel, a recycle spray system, and considerable preparation,  
2           handling, and storage facilities for the limestone slurry.

3   **Q:    What is the purpose of a Baghouse on a coal-fired generating unit?**

4   A:    The combustion of coal creates particulate matter. The EPA regulates the emission of  
5           particulate matter. The purpose of a Baghouse is to capture particulates in the flue gas  
6           before it is released into the atmosphere by directing the flue gas to flow through a  
7           system of fabric filters.

8   **Q:    Please describe the Baghouse at Iatan 1.**

9   A:    Particulate matter, or small particles of fly ash, is captured on the outer surface of the  
10          fabric filter bags. The bags are then periodically cleaned by a pulse of air, which  
11          removes the fly ash from the bag. The fly ash is then collected in a hopper and conveyed  
12          to a storage facility. The Baghouse at Iatan 1 is located between the air heater outlet and  
13          the induced draft fans. The Baghouse is principally comprised of duct work, isolation  
14          dampers, twenty-eight baghouse compartments, more than 20,000 fabric filter bags, a  
15          pulse jet air system, and ash conveying equipment. It replaces the existing precipitator,  
16          which also removed fly ash from the flue gas but less effectively and efficiently than the  
17          Baghouse. Replacing the precipitator will help ensure that the Company can meet the  
18          requirement to remove particulate matter from the flue gas that is larger than ten microns.

19   **Q:    How does the Iatan 1 AQC equipment project compare to your past experience on  
20          large-scale construction projects?**

21   A:    What I have seen concerning the construction and installation of the Iatan 1 AQC  
22          equipment is consistent with my past construction experience in that every project faces  
23          scheduling challenges and cost pressures. What is different about the Iatan 1 project is

1 the degree of cost pressure to which it is subject because of what is going on in the  
2 overall construction industry. The market for large-scale and specifically generation-  
3 related construction is facing some particularly difficult challenges concerning major  
4 issues such as labor productivity and availability, availability of qualified personnel,  
5 rapid increases in commodity prices, and scarcity of materials and qualified vendors.  
6 Every construction project in the country is subject to these issues and the cost pressures  
7 associated with them are considerable.

8 **Q: Does that conclude your testimony?**

9 **A:** Yes, it does.

