

Exhibit No.: KCP&L-18(NP)
Issue: Iatan Project Overview and Iatan 2
Prudence
Witness: Brent C. Davis
Type of Exhibit: Direct Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2010-____
Date Testimony Prepared: June 4, 2010

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2010-____

DIRECT TESTIMONY


OF

BRENT C. DAVIS

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

Kansas City, Missouri
June 2010

 Designates "Highly Confidential" Information
Has Been Removed.
Certain Schedules Attached To This Testimony Designated "(HC)"
Have Been Removed
Pursuant To 4 CSR 240-2.135.

KCP&L Exhibit No. 18-NP
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DIRECT TESTIMONY

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ON BEHALF OF

KCP&L GREATER MISSOURI OPERATIONS COMPANY

**Kansas City, Missouri
June 2010**

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DIRECT TESTIMONY

OF

BRENT C. DAVIS

Case No. ER-2010-_____

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

2 A: My name is Brent C. Davis. My business address is 1200 Main Street, Kansas City,
3 Missouri 64105.

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 Currently, I am the Operational Interface/Project Director for the new Unit 2 at the Iatan
7 Generating Station (Iatan Unit 2).

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

9 A: My responsibilities include assisting Robert N. Bell, Senior Director of Construction, and
10 his direct reports on the Unit 2 Project. I am also the primary interface and responsible
11 for coordination between the Iatan Unit 2 Project and KCP&L Operations and
12 Maintenance.

13 **Q: Please describe your education, experience and employment history.**

14 A: I received a Bachelor of Science degree in engineering management from the University
15 of Missouri at Rolla in 1980, followed by a Master in Business Administration degree
16 from Rockhurst University in 1999. I began working at KCP&L in 1981 as a
17 maintenance engineer at the Montrose Generating Station. In 1985 I left the Company
18 for a short period of time to accept a position at Dayco Manufacturing in Springfield,
19 Missouri as maintenance superintendent. I returned to KCP&L later that year. Since that

1 time, I have held various engineering and management positions at each of KCP&L's
2 coal-fired generating facilities, *i.e.*, the Montrose Generating Station, the LaCygne
3 Generating Station, the Iatan Generating Station, and the Hawthorn Generating Station.
4 Immediately prior to starting on the Iatan Project, I was plant manager at Hawthorn. I
5 was the Project Director for both Iatan Unit 1 and Unit 2 from June 2006 to November of
6 2007. In 2007, I was asked to turn my full attention to Iatan Unit 1 as the Unit 1 Project
7 Director, but I have always been involved to a certain extent with the construction of
8 Unit 2. Once the construction completed on Unit 1, I was asked by Carl Churchman to
9 work as an advisor to Unit 2. In February 2010, I was asked to become the Operational
10 Interface/Project Director for Unit 2.

11 **Q: Have you previously testified in a proceeding at the Missouri Public Service**
12 **Commission ("MPSC")?**

13 A: Yes. I filed testimony in KCP&L's last rate case, Case No. ER-2009-0089
14 ("0089 Docket"). My direct testimony from that case is attached as Schedule BCD2010-
15 1. I also filed testimony in KCP&L Greater Missouri Operations Company's ("GMO")
16 last rate case, Case No. ER-2009-0090.

17 **Q: What is the purpose of your current testimony?**

18 A: The purpose of my testimony is: (1) to describe the scope of the Iatan Unit 2 Project; (2)
19 discuss the management of the major contractors on the Project including ALSTOM
20 Power Inc. ("ALSTOM"), Kiewit, and other contractors during the course of the Project;
21 (3) to compare the Iatan Unit 2 Project to others on which I have worked during my
22 career; (4) to discuss the formation of the contract with Kiewit Power Constructors Co.
23 ("Kiewit") for the remaining balance of plant work on the Iatan Unit 2 Project; and (5) to

1 discuss the Project Definition Report (“PDR”) issued by Burns & McDonnell in 2004 and
2 the Supplement issued in 2007; and (6) to provide information regarding the Iatan Unit 2
3 in-service criteria.

4 **OVERVIEW OF THE IATAN UNIT 2 PROJECT**

5 **Q: In general, please describe the Iatan Unit 2 Project.**

6 A: Company witness Chris Giles testifies that building Iatan Unit 2 was the best option for
7 the least cost for Missouri ratepayers for adding generation capacity. The Iatan site
8 already contained a 670 MW coal-fired plant that was originally built in the 1970s. The
9 Iatan Unit 2 Project is a new, 850 MW (net) supercritical, pulverized coal unit that burns
10 Powder River Basin (“PRB”) coal. The new unit includes emissions control equipment
11 that meets current Best Available Control Technology (“BACT”) standards, including a
12 selective catalytic reduction system (“SCR”) for NO_x control, a wet flue gas
13 desulfurization system (“Scrubber”) designed to use a limestone slurry solution for SO₂
14 control, and a pulse jet fabric filter (“Baghouse”) for particulate control. Additionally, a
15 powdered-activated carbon system will be installed to remove mercury.

16 **Q: What are the major components of Iatan Unit 2?**

17 A: Iatan Unit 2 is comprised of a new steam generator (the “boiler”), a new steam turbine
18 generator, new limestone receiving and preparations systems, modifications to the
19 existing Iatan Unit 1 coal handling system to support Iatan Unit 2, new cooling towers, a
20 new single chimney with separate flues for Iatan Unit 1 and Iatan Unit 2, and state of the
21 art emissions control technology including an SCR, Scrubber and Baghouse.
22 Photographs depicting the major components of Iatan Unit 2 are attached as Schedule
23 BCD2010-2.

1 Q: Can you describe the overall complexity of the Iatan Unit 2 Project?

2 A: Iatan Unit 2 is a complex project based upon its size and scope. The Iatan Unit 2 Project
3 required massive amounts of civil, structural, mechanical and electrical commodities as
4 explained in more detail below. For this Project, KCP&L entered into approximately 150
5 contracts, issued 1100 Purchase Orders, and coordinated 55 separate on-site contractors.
6 The Project reached its highest employment level in late 2008 with approximately 4000
7 people on site on a daily basis. This number included craft workers and the
8 administrative / management personnel necessary to support the construction effort. The
9 Iatan Unit 2 Project is one of the first new coal plants built in over 25 years in the United
10 States, and is also one of the largest. Much of the equipment selected for the Iatan Unit 2
11 Project is state-of-the-art.

12 Q: Can you please identify the major vendors to the Iatan Unit 2 Project and a general
13 description of the services they provided?

14 A: Yes. The major vendors who provided services on-site for Iatan Unit 2 are as follows:

- 15 • **Burns & McDonnell Engineering (“Burns & McDonnell”)**: Burns & McDonnell
16 is the Owner’s Engineer for KCP&L. Burns & McDonnell’s design responsibilities
17 generally included conceptual design of the plant, development of technical
18 specifications for procurement of equipment and services, and design of the balance
19 of plant work. Burns & McDonnell has also provided on-site construction and
20 engineering support services to KCP&L throughout the Iatan Unit 2 Project.
- 21 • **ALSTOM Power Inc. (“ALSTOM”)**: ALSTOM provided engineering,
22 procurement, construction, and start-up services for the boiler and Air Quality
23 Control Systems (“AQCS”).

- 1 • **Kiewit Power Constructors Co. ("Kiewit")**: Kiewit provided construction services
2 for the balance of plant equipment, including electrical construction, turbine building
3 erection, steam turbine generator assembly and piping, and interconnections between
4 systems provided by others, including as supplied by ALSTOM.
- 5 • **Kissick Construction Company ("Kissick")**: Kissick provided construction
6 services for foundations required for equipment provided by KCP&L and ALSTOM,
7 including but not limited to the boiler, AQCS foundations and steam turbine
8 generator pedestal, as well as underground piping and duct banks.
- 9 • **Pullman Power, Inc. ("Pullman")**: Pullman provided engineering, procurement and
10 construction ("EPC") services for the erection of a dual flue chimney for Iatan Unit 1
11 and Unit 2.
- 12 • **Automatic Systems, Inc. ("ASI")**: ASI provided EPC services for the Iatan Unit 2
13 Project material handling and dust suppression systems.
- 14 • **Fisher Tank Company ("Fisher")**: Fisher provided furnish and erect services for all
15 holding tanks on site to support boiler and turbine operations.
- 16 • **SPX Cooling Technologies, Inc. ("SPX")**: SPX provided furnish and erect services
17 for the cooling tower erection.
- 18 • **Toshiba Corporation ("Toshiba")**: Toshiba provided the steam turbine generator
19 for Unit 2.

20 **Q: Please describe the steam generator, or boiler, for Iatan Unit 2.**

21 **A:** As stated above, when in operation, the boiler for Iatan Unit 2 will be a pulverized-coal
22 steam generator that will supply steam to the steam turbine generator at a supercritical
23 pressure of 3690 psig and at main steam and reheat temperatures of 1080°F. The

1 function of a boiler is to provide controlled release of heat during the combustion of fuel
2 (in this case, Powder River Basin ("PRB") coal) and efficient transfer of heat to the
3 feedwater and steam. The transfer of heat produces steam at the pressure and
4 temperature required to operate the turbine.

5 **Q: What is important about the distinction of "supercritical" pressure?**

6 A: Supercritical technology produces higher energy efficiency. Conventional pulverized
7 coal plants are broken down into two categories: subcritical and supercritical. The terms
8 subcritical and supercritical refer to the critical point of water (3,203.6 psig, 705.4°F).
9 The critical pressure of water is the maximum pressure that liquid and vapor can co-exist
10 in equilibrium. At this critical point, the density of steam and the density of water are
11 equal and there is no distinction between the two states. Supercritical plants operate at
12 temperatures and pressures that are greater than the critical point of water. As a result,
13 supercritical plants have increased thermal efficiency. This efficiency improvement
14 reduces fuel costs, emissions, sorbents consumption, ash and waste production, as well as
15 water consumption.

16 **Q: Are there any unique design parameters to a supercritical boiler as compared to a**
17 **subcritical boiler?**

18 A: Yes. A supercritical unit is also known as a "once through" design because water is
19 intended to circulate and re-circulate for efficiency purposes. With a conventional
20 subcritical boiler, it is necessary to have a steam drum that serves in essence as a filter for
21 the water entering the boiler. With a supercritical design, there is no need for a steam
22 drum but the water must be demineralized before being introduced, so there must be a
23 water treatment facility on site to support this function, and the feedwater supplied to the

1 boiler needs to be free of deposits that could cause damage to the boiler's components.
2 Supplying water quality that meets the specification for the boiler is a chief concern to
3 the project, and as I describe below, we have taken great care to ensure that the water
4 entering the boiler meets such specifications. Also, because supercritical units run at
5 higher temperatures and pressures, materials selected for use in pressure parts and vessels
6 must be capable of withstanding greater demands. Often this results in specification of
7 high alloy compounds in boiler tubes and other components.

8 **Q: Which contractors had responsibility for the boiler?**

9 A: The boiler was designed, fabricated, built and installed by ALSTOM. The concrete
10 foundations for the boiler were designed by Burns & McDonnell on the basis of structural
11 load information from ALSTOM, and were constructed by Kissick.

12 **Q: What is the purpose of a steam turbine generator?**

13 A: The purpose of the steam turbine generator is to convert the thermal energy of the steam
14 from the boiler into electrical energy.

15 **Q: Please describe the steam turbine generator.**

16 A: The steam turbine generator sits on top of a specially-designed concrete pedestal that is
17 meant to absorb the high vibration caused from the rotation of the internal components.
18 The pedestal is integrated into the structure of the powerhouse or turbine generator
19 building adjacent to the boiler. The major components of the steam turbine generator are
20 the generator frame, the stator, and rotor. The operation of this equipment involves the
21 expansion of steam through stages of the turbine to create rotating motion. Ultimately
22 this rotating motion causes the generator rotor to become magnetized and generate
23 electrical power. The turbine generator connects to a transformer in the existing

1 switchyard at the Iatan site for transmission and distribution of electricity.

2 **Q: Is there anything unique about the steam turbine generator selected for Iatan**
3 **Unit 2?**

4 A: The steam turbine generator for Iatan Unit 2 is supplied by Toshiba. Compared to the
5 steam turbine generator for Iatan Unit 1, the Toshiba unit is physically much larger. This
6 is necessary so that the turbine can process more steam, operate at the elevated
7 temperatures and pressures produced by the supercritical boiler, and ultimately deliver
8 850 megawatts to the electrical grid.

9 **Q: Which contractors had responsibility for the steam turbine generator?**

10 A: As I stated above, the steam turbine generator was supplied by Toshiba. The turbine
11 pedestal was designed by Burns & McDonnell and constructed by Kissick. The turbine
12 itself was assembled and installed by Kiewit, who also performed the piping, electrical,
13 structural and concrete construction of the building in which the turbine generator is
14 housed (the "Turbine Generator Building"). The engineering for the Turbine Generator
15 Building and all associated components and systems was provided by Burns &
16 McDonnell.

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

18 A: SCR stands for selective catalytic reduction, a process used to limit emissions of nitrogen
19 oxides ("NO_x") into the air. The production of NO_x is a by-product of coal combustion.
20 The U.S. Environmental Protection Agency ("EPA") regulates the emission of NO_x. The
21 purpose of an SCR is to reduce the amount of NO_x in the flue gas of a coal-fired
22 generating unit. The SCR converts NO_x, which consists primarily of nitrous oxide and

1 lesser amounts of nitrous dioxide, to nitrogen and water by a chemical reaction with
2 ammonia and a catalyst.

3 **Q: Please describe the SCR at Iatan Unit 2.**

4 A: The SCR at Iatan Unit 2 is located on top of the air heater and adjacent to the furnace
5 economizer. It is principally comprised of a substantial amount of duct work, an
6 ammonia injection grid, a catalyst chamber with two layers of catalyst, and considerable
7 preparation, handling, and storage facilities for the ammonia and catalyst. The SCR for
8 Iatan Unit 2 was designed by ALSTOM to operate at a NO_x emission level of less than or
9 equal to 0.054 lb/mmBtu over a continuous four hour period while the generating unit is
10 operating at or above 95 percent of its design load.

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

12 A: The production of the acid gas sulfur dioxide ("SO₂") is a by-product of coal combustion.
13 The EPA regulates the emission of SO₂. The purpose of a Scrubber, or "absorber" as it is
14 sometimes called, is to reduce the amount of SO₂ in the flue gas of a coal-fired generating
15 unit. A "wet" Scrubber, such as the Iatan Unit 2 Scrubber, removes SO₂ from the flue gas
16 by injecting a limestone slurry solution into the flue gas. The resulting chemical
17 reactions convert the SO₂ and limestone to calcium sulfate, or gypsum, and water
18 ("slurry") which is subsequently dewatered and transported to an on-site landfill for
19 storage. When in operation, Iatan Unit 2 will produce approximately 70,508 pounds of
20 slurry per hour.

21 **Q: Please describe the Scrubber at Iatan Unit 2.**

22 A: The Scrubber at Iatan Unit 2 is a "wet" scrubber, which means that the catalyst it uses for
23 the chemical reaction to remove SO₂ is limestone slurry. The Scrubber is located

1 between the induced draft fans and the chimney. It is principally comprised of the
2 absorber vessel, a recycle spray system, and considerable preparation, handling, and
3 storage facilities for the limestone slurry.

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

5 A: The combustion of coal creates particulate matter primarily composed of ash and
6 unburned carbon. The EPA regulates the emission of particulate matter. The purpose of
7 a Baghouse is to capture particulate in the flue gas before the gas is released into the
8 atmosphere by directing the flue gas to flow through a system of fabric filters. The gas
9 stream is pulled through the fabric filter by two sets of induced draft ("ID") fans and then
10 exits through the absorbers and ultimately the stack. The particulate matter leaves the
11 boiler either as bottom ash, economizer ash, or fly ash. The bottom ash collects at the
12 bottom of the boiler and is periodically removed. The economizer ash typically separates
13 from the flue gas and drops into hoppers for removal in the economizer area. The fly ash
14 is the particulate matter that is relatively small and continues to be carried in the flue gas
15 until it is removed by the Baghouse.

16 **Q: Please describe the Baghouse at Iatan Unit 2.**

17 A: Particulate matter, or small particles of fly ash, is captured on the outer surface of the
18 fabric filter bags. The bags are then periodically cleaned by a pulse of air, which knocks
19 the fly ash loose from the bag. The fly ash is then collected in hoppers located at the
20 bottom of the Baghouse and is conveyed from the hoppers to a storage facility. The
21 Baghouse at Iatan Unit 2 is located between the air heater outlet and the ID fans. The
22 Baghouse is principally comprised of duct work, isolation dampers, thirty-two baghouse

1 compartments, more than 26,800 fabric filter bags, a pulse jet air system, and ash
2 conveying equipment.

3 **Q: Which contractors are responsible for the SCR, the Scrubber and the Baghouse?**

4 A: All three have been designed, fabricated and installed by ALSTOM. As with the boiler,
5 the concrete foundations for this equipment was designed by Burns & McDonnell on the
6 basis of structural load information from ALSTOM, and these foundations were
7 constructed by Kissick.

8 **Q: In summary, what emission controls are being put into service with the Iatan Unit 2
9 Project?**

10 A: Iatan Unit 2 will remove 98 percent or more of SO₂ and it is designed to emit less than
11 0.050 lbs/mmBtu of NO_x, less than 1.50 lbs/trillion Btu of mercury, and 10 percent
12 opacity or less particulate matter, which represents some of the lowest emissions levels in
13 the country for coal-fired plants. Once Iatan Unit 2 is operating, the combined emissions
14 from Iatan Units 1 and 2 of NO_x, SO₂, and particulate matter will be less than the
15 emissions from Iatan Unit 1 prior to the recent AQCS addition and other plant
16 improvements.

17 **Q: What is the purpose of the cooling tower?**

18 A: The cooling tower is a heat rejection device which cools the circulating water to a lower
19 temperature. The Iatan cooling tower uses "evaporative cooling," meaning that the
20 cooling tower allows a small portion of the water being cooled to evaporate into the
21 atmosphere which in turn cools the rest of the water stream.

1 **Q: Please describe the cooling tower.**

2 A: The cooling tower is a four-story high structure containing labyrinth-like "fill." Fill is the
3 component facilitating the air-water interface for air heating and evaporation to occur.
4 The cooled water descends along the fill to be collected and re-circulated through the
5 system. The cooling water flow rate (water flowing from the cooling tower to the
6 condensers and back) is 430,000 gallons per minute.

7 **Q: Which contractor was responsible for the cooling tower?**

8 A: The cooling tower was engineered and constructed by SPX, whose construction was
9 managed by Kiewit, who also installed the piping that connected the cooling tower to the
10 rest of the plant.

11 **Q: What is the purpose of the water treatment facilities being placed into operation for
12 the Iatan Unit 2 Project?**

13 A: Water is a critical component of the operation of a steam-generating coal-fired power
14 plant. Water is used for many purposes including: equipment cooling, maintenance
15 cleaning, air pollution control (e.g., the Scrubber), solids conveying, and as the working
16 fluid for the steam in the Unit which, as noted above, must be demineralized before it
17 enters the boiler. The term "water treatment" refers to any physical or chemical process
18 that improves the usability of the water treated. The purpose of water treatment and
19 conditioning is to maintain the life of the Unit by preventing corrosion and the resulting
20 risk of decreased production capacity and increased operating costs and the associated
21 economic losses. Iatan Unit 2 was designed to produce zero liquid discharge.

1 Q: **What does Zero Liquid Discharge mean?**

2 A: Zero Liquid Discharge ("ZLD") means that all water is either evaporated or retained on
3 site. ZLD is accomplished through the combination of evaporation followed by
4 crystallization. The use of such technology further reduces environmental impacts by
5 limiting the amount of wastewater discharged from the plant.

6 Q: **Which contractors were responsible for the water treatment facilities?**

7 A: Most of the equipment for the water treatment facilities was supplied by Aquatech, Eco-
8 Tec and WesTech Engineering. The water treatment facilities were installed by Kiewit.

9 Q: **What is the tank farm?**

10 A: The tank farm is a cluster of various liquid storage tanks used in the water treatment
11 facilities. It is physically located adjacent to the coal yard. The tank farm was
12 engineered, supplied and installed by Fisher.

13 Q: **What is the Balance of Plant?**

14 A: The Balance of Plant refers to the scope of work performed by or managed by Kiewit. It
15 includes the work outside of the Iatan Unit 2 boiler and Iatan Unit 1 and Unit 2 AQCS,
16 including the SCR, Scrubber and Baghouse in ALSTOM's EPC contract. The Balance of
17 Plant scope would include, but not be limited to: the erection of the turbine generator
18 building; the erection of equipment within that building including the turbine generator
19 itself and the condensers; electrical wiring of all devices including those within
20 ALSTOM's scope of work; foundations and substructures under all major equipment; the
21 erection of the cooling tower for Iatan Unit 2; the erection of the multiple tanks and water
22 treatment facility that would be common to both Iatan Unit 1 and Iatan Unit 2, the ZLD
23 building; some civil work; painting; and heat tracing and insulation.

1 **Q: Please describe the amount of civil, structural, and environmental commodities used**
2 **on the Iatan Unit 2 Project.**

3 A: The Iatan Unit 2 Project utilized approximately over 150,000 cubic yards of concrete and
4 approximately 25,000 tons of steel. To put the quantity in context, the amount of
5 concrete that was poured on the Iatan Unit 2 Project would be sufficient to create a
6 sidewalk that would stretch approximately 325 miles, or from Kansas City, Missouri to
7 Little Rock, Arkansas. Additionally, the Project included the creation of an on-site 27
8 acre landfill along with a 1.3 acre leachate pond and a 4.5 acre storm water pond to safely
9 store the material by-products from the generation process.

10 **Q: Please describe the mechanical components and other equipment installed in the**
11 **Iatan Unit 2 Project.**

12 A: The contractors installed over 200,000 linear feet of pipe, more than 1,800,000 linear feet
13 of boiler tubes (which, if laid end-to-end would travel a distance of over 347 miles), 300
14 pumps, 7,500 pipe hangers and supports approximately 12,000 valves or other devices to
15 transport water, air, chemicals, steam, ash, slurry and other materials throughout the Iatan
16 Unit 2 and common facilities.

17 **Q: Please describe the electrical and instrumentation and controls installed in the Iatan**
18 **Unit 2 Project.**

19 A: The Iatan Unit 2 Project contains more than 5 million feet of electrical cable, which all
20 told is approximately 950 miles long. There are approximately 11,000 discrete circuits,
21 and associated cable and conduit terminates to over 150,000 devices.

1 **Q: How many man-hours have been earned to date on the Project?**

2 A: As of May 16, 2010, the total project including all construction and start-up work had
3 earned 5,316,686 manhours of the cumulative 5,455,812 planned hours, and the project
4 was estimated to be 99% percent complete.

5 **Q: How would you describe the amount of coordination between the major contractors**
6 **on the Iatan Unit 2 Project?**

7 A: One of the best ways to describe this effort is through Exhibit A-1 of the Kiewit Contract,
8 which is titled Division of Responsibility ("DOR"). This document is attached as
9 Schedule BCD2010-3. It illustrates the level of coordination and turnovers between
10 contractors during the Project. The entities referenced in the DOR include: KCP&L,
11 Kiewit, Burns & McDonnell, ALSTOM and Kissick.

12 **Q: What is the purpose of the DOR?**

13 A: The DOR illustrates the procurement, engineering, construction, start-up and
14 commissioning requirements for all systems related to the Balance of Plant work as
15 divided between and among KCP&L, Kiewit, Burns & McDonnell, ALSTOM and
16 Kissick. The DOR outlines the responsible party regarding the following work scopes:
17 (1) purchase of material/equipment; (2) receipt of material/equipment; (3) foundation
18 work; (4) installation of the material/equipment; (5) piping; (6) electrical wiring; and
19 (7) start-up and commissioning. To the extent that these activities are divided among
20 multiple contractors, the DOR indicates hand-offs or turnovers that must occur for a
21 given scope of work on the Project. These turnovers (sometimes referred to as
22 "Construction Turnovers," "Commissioning Turnovers," or "CTOs") have been critical
23 to KCP&L's management of the schedule on the Iatan Unit 2 Project.

PROJECT SCHEDULE

1

2 **Q: Can you provide an overview of the scheduling tools used by KCP&L for managing**
3 **the Iatan Unit 2 Project?**

4 A: The most basic tool we have utilized is the "Level 1 Schedule" chart that we include in
5 the quarterly "Strategic Infrastructure Investment Status Reports," or simply the
6 "Quarterly Reports," given to the Staff of the MPSC, the Office of the Public Counsel
7 ("OPC") and the parties to the Stipulation and Agreement in Case No. EO-2005-0329
8 ("0329 S&A"). As Company witness Chris Giles testifies, we have also met with Staff,
9 OPC, and representatives of the 0329 S&A signatories¹ on a regular basis ("Quarterly
10 Meetings"), at which we review the Level 1 Schedule with the meeting's attendees. As
11 an example, I have attached the Level 1 Schedule that KCP&L presented as part of the
12 Quarterly Report for third quarter 2009. (Schedule BCD2010-4)

13 **Q: Please describe the Level 1 Schedule.**

14 A: This schedule was developed to provide a high-level overview of the Project's major
15 work in a critical path format. It shows the key sequences of work on a sub-project basis
16 for the following areas: (1) Boiler/Steam Generator/Selective Catalytic Reduction
17 System ("SCR")/Pulverizer & Air Heater (the "Boiler Path"), which was primarily
18 ALSTOM scope of work; (2) Powerhouse/Turbine (the "Turbine Generator Building
19 Path"), which was primarily Kiewit's scope of work; (3) Air Quality Control Systems
20 ("AQCS") including the absorber, fabric filter and ID fans (the "AQCS Path"), for which
21 ALSTOM had the primary responsibility; and (4) the Unit 2 Balance of Plant, which is a
22 series of ancillary systems such as the Coal and Limestone Handling, Water Treatment,

¹ All 0329 S&A signatories were given the opportunity to attend these meetings. However, not all 0329 S&A signatories attended every meeting.

1 Cooling Tower and miscellaneous other structures (the "Ancillary Balance of Plant
2 Path"), which were procured and constructed from a number of different vendors. Our
3 Project Controls Team prepares this Level 1 Schedule as a summary of over 15,000
4 detailed schedule activities. The Level 1 Schedule summarizes those activities through
5 its series of yellow, blue and red arrows on the Level 1 Schedule. The flags that are
6 shown in the Level 1 Schedule signify key milestones or events that occurred throughout
7 the Iatan Unit 2 Project. These bars and flags on the Level 1 Schedule also refer to two
8 sets of dates: the "planned" dates for an activity and the "actual" dates for an activity.
9 The "actual" dates referenced, or the dates that reflect when actual events occurred, are
10 accompanied by an "A".

11 **Q: What is the genesis of the Level 1 Schedule?**

12 **A:** My understanding is that during the first quarter of 2006, Burns & McDonnell, the
13 Project Team and Schiff Hardin, LLP ("Schiff"), our project oversight team who has
14 worked with us on project controls, procurement and compliance issues, developed a
15 strategic schedule for the work that identified the key procurement dates needed for
16 planning purposes. That strategic schedule was developed to provide a guideline to the
17 Project Team for the major procurements and the Level 1 Schedule that KCP&L used as
18 described above. Even though KCP&L ultimately developed a detailed, computerized
19 Level 3 Schedule with over 15,000 activities for Iatan Unit 2, KCP&L used the Level 1
20 Schedule as a planning tool and for providing information to Staff and to our partners
21 regarding the Project's status.

1 **Q: How has the Project Team used the detailed Level 3 Schedule?**

2 A: The Level 3 Schedule is one of the essential management tools on the Iatan Unit 2
3 Project. It encompasses all of the activities for the work performed by all of the
4 contractors on site, who contributed their planned schedules at the outset of their work.
5 Our Project Controls Team worked with the contractors to develop the Level 3 Schedule
6 so that it reflects the proper sequence and duration for all of the work. The Level 3
7 Schedule is used in every discussion KCP&L has with the contractors on the Project.

8 **Q: How was the Level 3 Schedule developed?**

9 A: After the execution of the contract with ALSTOM in August 2006, ALSTOM began
10 work on its detailed as-planned schedule that showed its plan for each portion of its work.
11 Because of ALSTOM's importance to the Iatan Unit 2 Project, KCP&L needed
12 ALSTOM to complete its as-planned schedule as a precursor to developing a full Project
13 schedule. In the fourth quarter of 2006, our scheduling team began the process of
14 integrating the baseline schedules of ALSTOM, Burns & McDonnell and the other on-
15 site contractors into an overall computerized schedule network. This effort culminated in
16 April 2007 when KCP&L's Project Controls Team issued the Iatan Unit 2 Project's
17 "Baseline Schedule" that incorporated and integrated all of the work for the Project
18 including engineering and procurement activities. This schedule also included
19 placeholders for the unawarded work, much of which was ultimately awarded to Kiewit.
20 Project Controls has been maintaining this Level 3 Schedule since that time, utilizing
21 input from the contractors on a weekly basis to update the baseline schedule as the work
22 is completed. The schedule has also formed the basis for the Iatan Unit 2 Project's

1 earned value system that is used for tracking the progress and productivity of the
2 contractors.

3 **Q: How has KCP&L used earned value to track the Iatan Unit 2 Project?**

4 A: Company witness Kenneth Roberts described how earned value is used. Earned value is
5 an extremely valuable tool for tracking large volumes of work and establishing forecasts
6 for contractor performance. We used earned value to track the contractors' work and
7 employed similar methods in the development of and tracking of the start-up schedule's
8 activities. However, it is essential that the management team also monitor the project's
9 schedule to ensure that the work is being done in the correct sequence. This becomes
10 extremely important as a project nears completion. By the end of the construction period
11 for Iatan Unit 2, we became more focused on the contractors' schedule adherence and
12 completion of tasks.

13 **Q: Which method did KCP&L and the contractors employ to track schedule adherence
14 at the end of the project's construction period?**

15 A: On the Iatan Project for both Units 1 and 2 KCP&L, ALSTOM and Kiewit agreed to a
16 series of "Construction Turnover Dates" or "CTOs". As Company Witness Robert Bell
17 testifies, "the CTOs are the key interface points between Kiewit, ALSTOM and KCP&L
18 related to the sequence of events for completing construction, start-up, and
19 commissioning activities for Iatan Unit 2." (Testimony of Robert N. Bell p. 7 ll. 14-16).
20 The "CTO dates" were the dates for those key interface points. Thus, for the schedule of
21 the work to be fully coordinated, the CTO dates required complete buy-in by all affected
22 parties. Toward the end of construction, KCP&L continued to track earned hours but
23 focused more intensely on the contractors' completion of CTOs.

1 MANAGEMENT OF THE MAJOR CONTRACTORS

2 **Q: What have been some of the challenges for KCP&L on the Iatan Unit 2 Project**
3 **regarding management of the major contractors?**

4 A: A significant, ongoing challenge for the KCP&L management team has been maintaining
5 a sound, working relationship with the project-level executives from ALSTOM, Kiewit,
6 Burns & McDonnell and the other significant contractors on site. A related challenge has
7 been working with the contractors to meet schedule and control costs.

8 **Q: What has the Project Team done to manage the contractors' day-to-day**
9 **performance on the Iatan Unit 2 Project?**

10 A: The KCP&L Project Team has actively managed the contractors' work. Many of the
11 techniques KCP&L employed on the Iatan Unit 2 Project were successfully used on Iatan
12 Unit 1.

13 **Q: What were some of the methods KCP&L used for actively managing the**
14 **contractors' performance on Iatan Unit 1?**

15 A: ALSTOM was the primary contractor whose work was critical to the Unit 1 Outage. As
16 a result, KCP&L closely managed ALSTOM's work on a daily basis during the
17 preparation for and performance of the work on the Unit 1 Outage. For example, the
18 Project Team instituted a Plan of the Day meeting that held the contractors accountable
19 for their performance against the planned schedule. We also had detailed, near-daily
20 meetings with ALSTOM's project management team in which we discussed ALSTOM's
21 earned value, productivity, completed and open tasks, rework and inefficiencies.
22 ALSTOM's level of transparency regarding issues impacting its work significantly
23 increased over the course of the Unit 1 Outage preparation period and the outage itself.

1 Additionally, we initiated a weekly meeting with the senior project management of
2 ALSTOM, Kiewit, Burns & McDonnell and Kissick ("Senior Management Meetings").
3 The purpose of the Senior Management Meetings was to look ahead several weeks in the
4 construction process to identify potential conflicts or other construction issues and
5 achieve timely resolution. I believe that KCP&L's active engagement with the
6 contractors resulted in mitigation of problems as they occurred during the Unit 1 Outage.

7 **Q: Describe how you have transferred the same management techniques that were**
8 **successful from the Iatan Unit 1 Project to the Iatan Unit 2 Project.**

9 A: We have continued to engage the contractors, particularly ALSTOM and Kiewit, on a
10 daily basis in discussions about optimizing the schedule and removing barriers to allow
11 for full cooperation in the field. The Iatan Unit 2 Project's Management Team has
12 maintained the schedule of regular meetings, including the Senior Management meetings
13 and the Plan of the Day meeting, through the Iatan Unit 2 Project. In addition, we have
14 required throughout the Iatan Unit 2 Project the same level of transparency of reporting
15 from the contractors, and we have engaged in joint discussions regarding how the
16 contractors can make continuous improvements in the field. During the critical
17 construction phases of the Iatan Unit 2, we maintained a regular weekly meeting with the
18 project-level management of ALSTOM, Kiewit and KCP&L during which Schiff Hardin,
19 LLP, our project oversight team, and our Project Controls team made a joint presentation
20 regarding key elements of the Project's earned value and schedule status. We have
21 continued these types of meetings as the project has moved into the start-up and
22 commissioning phase. These various meetings are open forums in which the contractors'
23 field leads engage in discussion regarding the Project's progress, barriers and goals. We

1 also hold a weekly meeting focused on materials management at which each contractor
2 and KCP&L must report the status of all material deliveries, installation and warranty
3 issues. The level of cooperation and transparency we have maintained has aided us in
4 meeting the challenges of the project's performance, including schedule issues that have
5 been encountered. Maintaining KCP&L's relationships with the contractors at the Senior
6 Management and Executive levels, through the active management of the contractors has
7 resulted in reduced cost and greater cooperation in the field, and has eased resolution of
8 commercial issues throughout the Iatan Unit 2 Project.

9 **Q: Can you provide an example of KCP&L's active management of ALSTOM on the**
10 **Iatan Unit 2 Project?**

11 A: Yes, KCP&L and ALSTOM have worked through a series of issues related to problems
12 detected in the welding of and the material used for the Iatan Unit 2 Project's boiler's
13 waterwalls.

14 **Q: What are waterwalls?**

15 A: Waterwalls are the tube panels that form the furnace for a boiler. They are made from
16 metal alloy tubes that are welded together with metal filler material to form a "wall."
17 The tubes in the waterwalls carry steam that is heated by combustion in the furnace and
18 must be capable of withstanding both high temperatures and pressures.

19 **Q: ** [REDACTED] ****

20 **A: ** [REDACTED]**
21 **[REDACTED]**
22 **[REDACTED]**
23 **[REDACTED]**

1

[REDACTED]

2

[REDACTED]

3

[REDACTED]

4

[REDACTED]

5

[REDACTED]

6

[REDACTED]

7

[REDACTED]**

8

Q: ** [REDACTED] **

9

A: ** [REDACTED]

10

[REDACTED]

11

[REDACTED]

12

[REDACTED]

13

[REDACTED]

14

[REDACTED]

15

[REDACTED]

16

[REDACTED]

17

[REDACTED]

18

[REDACTED]

19

[REDACTED]

20

[REDACTED]

21

[REDACTED]

22

[REDACTED]**

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1 Q: **What is the outcome of this investigation?**

2 A: ALSTOM's metallurgical team has concluded that the boiler is fit for operation and does
3 not require any changes to its operating parameters. KCP&L's experts agree that the
4 boiler should perform as designed under operation, though there may need to be certain
5 precautions taken when the boiler is off-line so as not to damage the boiler tubes when
6 the unit is at temperatures below 180 degrees Fahrenheit. Further, KCP&L and
7 ALSTOM have increased the focus on water quality needed to supply the boiler during
8 start-up and have taken all reasonable measures to ensure that the water supplied does not
9 damage the boiler tubes. As an example, ALSTOM and KCP&L have engaged a third-
10 party tester of water quality. Thus far, these measures appear to have been successful
11 though the performance of T-23 in the boiler remains the project's most significant risk.

12 Q: **How has KCP&L's management of ALSTOM facilitated the investigation of the
13 various problems you described with the waterwall panels?**

14 A: Had it not been for KCP&L's active management of ALSTOM in which KCP&L
15 required ALSTOM to be transparent about its problems in the field, it is likely that
16 neither ALSTOM nor KCP&L would have obtained the knowledge necessary to fully
17 investigate these problems in a timely manner. ** [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]**

1 KIEWIT CONTRACT

2 **Q: Do you recall the strategy that KCP&L had planned to employ for the Balance of**
3 **Plant work at the time that you became the Project Director for the Iatan Unit 2**
4 **Project?**

5 A: Yes. The original contracting strategy for the Balance of Plant work was on a multi-
6 prime basis.

7 **Q: What does "multi-prime" mean?**

8 A: A multi-prime contracting strategy is when an owner contracts directly with several
9 different contractors of different disciplines to perform work on the same project at the
10 same time rather than contract with a single "general" contractor for all of the work.
11 Under a multi-prime strategy, the owner may function as the coordinator of the various
12 prime contractors, or hire a construction manager to do all of the coordination on its
13 behalf.

14 **Q: In your experience, what are the advantages of a multi-prime contracting strategy**
15 **over other contracting strategies?**

16 A: The primary benefits to a multi-prime contracting strategy can include the following: if
17 the project is well run, a multi-prime project is potentially less costly due to eliminating
18 additional contractor profit, overhead and maybe excess contingency depending on the
19 pricing method used; the owner's project team has greater degree of control of schedule
20 and progress and retains the ability to determine the scheduling priorities; the owner's
21 project team has significant control of key data regarding the project's progress and can
22 instill a high level of transparency over the work; and the owner's engineer functions on

1 the owner's behalf, and is an important advocate in maintaining control over the design
2 and construction process.

3 **Q: What are the potential downsides of a multi-prime project?**

4 A: The most significant downside is that the owner accepts greater risk due to accepting full
5 coordination of construction work and responsibility for design. The owner also takes on
6 risk for the availability and quality of the labor force, safety and site management,
7 materials management and project controls.

8 **Q: How did KCP&L assess the risk of labor availability for the Iatan Unit 2 Project?**

9 A: In February 2006, as part of its development of the Iatan Unit 2 Project's estimate, Burns
10 & McDonnell commissioned an independent consultant to assess the likely labor
11 conditions during the construction phase of the Iatan Unit 2 Project.

12 **Q: Who was Burns & McDonnell's consultant?**

13 A: Gary Schumacher of Schumacher Consulting LLC was Burns & McDonnell's consultant.
14 Company witness Daniel Meyer testifies regarding Schumacher's February 14, 2006
15 report which is attached to Mr. Meyer's testimony as Schedule DFM2010-5.

16 **Q: What was the substance of Schumacher's assessment of local labor conditions?**

17 A: Mr. Schumacher identified a high risk around craft labor availability and the high
18 potential for labor shortages within certain trades. Mr. Schumacher identified a number
19 of competing projects, both in the utility industry and local commercial construction that
20 would be competing with the Iatan Unit 2 Project for craft labor resources. As an
21 example, Mr. Schumacher identified a potential shortage of pipefitters. Mr. Schumacher
22 noted that Kansas City Local 533 for the Pipefitters Union only employs 600 craft
23 workers which were projected to be insufficient for the needs of the planned local

1 projects. During the Iatan Unit 2 Project's projected peak period of fall of 2008 to spring
2 of 2009, Mr. Schumacher predicted that the Project would need as many as 800
3 pipefitters. Based on other scheduled projects for the area, the Local 533 was predicted
4 to need 200-250 craft workers for other work. As a result, Mr. Schumacher concluded
5 that there was a potential shortage of 400 pipefitters at a time when Iatan's construction
6 on both units would be peaking.

7 **Q: Were you familiar with the labor market in Kansas City in 2006?**

8 A: Yes. I have had a long association with the locals in Kansas City. After I joined the
9 Iatan Unit 2 Project in June 2006, I became the primary interface with the Kansas City
10 Building Trades.

11 **Q: Does Mr. Schumacher's report comport with your recollection of the labor market
12 in Kansas City at this time?**

13 A: Yes. I believe Mr. Schumacher accurately described the market at that time. There was a
14 lot of uncertainty expressed by the unions regarding labor availability during the 2006 to
15 2008 time frame.

16 **Q: What experience do you have with multi-prime construction projects?**

17 A: I have been involved in a number of plant outages and upgrades that employed a multi-
18 prime contracting method. The most notable multi-prime project in my career at KCP&L
19 was the rebuilding of Hawthorn Unit 5 after an explosion on February 17, 1999 destroyed
20 the existing boiler. However, while Hawthorn Unit 5 was a large and successful project,
21 it was entirely schedule driven. The construction cost of rebuilding the plant was
22 significantly less than the cost of replacement power necessary while the plant was non-
23 operational. As a result, decreasing the construction schedule duration took precedence

1 over minimizing the construction costs. Moreover, the Balance of Plant scope was not
2 nearly as large as on the Iatan Unit 2 Project because while we were replacing the boiler
3 and adding the AQCS, the turbine generator building was intact. Nonetheless, I have had
4 quite a bit of experience with multi-prime projects and the specialty contractors typically
5 involved in such projects. I am very familiar with the companies in the Kansas City area
6 that perform specialty work, and have probably been involved with each and every one of
7 the larger Kansas City contractors over the course of my career.

8 **Q: Do you know why the Iatan Unit 2 Project's plan was to proceed on a multi-prime**
9 **basis?**

10 **A:** My understanding is that the multi-prime method was viewed as preferable for a few
11 notable reasons. First, we had been successful at Hawthorn Unit 5 using several small to
12 medium sized, Kansas City-based specialty contractors for Balance of Plant work.
13 Second, it was recommended by Burns & McDonnell that we proceed with a multi-prime
14 strategy to expedite procurement by converting design packages into construction
15 packages as soon as possible as they were completed. Third, my understanding at that
16 time, which is corroborated by the testimony of Company witness Steven Jones, is that
17 there was no interest among the handful of large general contractors who were capable of
18 performing the Balance of Plant work for the Iatan Unit 2 Project. So, the multi-prime
19 method was not only the preferred method at that time, it may have been our only option
20 in the absence of interest by a major contractor like Kiewit, Fluor, Bechtel or others of
21 that nature.

1 Q: **By the end of 2006, was the Company still intent on performing the Balance of Plant**
2 **on a multi-prime basis?**

3 A: Yes. With the ALSTOM contract in place, many of the other long-lead items procured
4 and the scope better defined, the Project Team was able to prepare the cost estimate that
5 ultimately became the Project's Control Budget Estimate ("CBE") and was approved by
6 the KCP&L Board of Directors in December 2006. However, as the Project Team
7 developed the Control Budget Estimate, the risks of coordinating all of the multiple
8 contractors were clear.

9 Q: **How did the Project Team come to this realization?**

10 A: As we worked through refining the estimate, and in particular the contingency for the
11 Control Budget Estimate, KCP&L realized that it would not only have the inherent risk
12 of coordinating the multiple specialty contractors but could potentially also have
13 problems getting the local contractors to competitively bid the work.

14 Q: **Why is that?**

15 A: As I previously testified, concerns regarding the local labor market had been raised by
16 Mr. Schumacher and others as we were developing the Control Budget Estimate in
17 December 2006. My concern was these market conditions would limit the availability of
18 the local specialty contractors when the design was completed to bid the different
19 packages for the Iatan Unit 2 Project.

20 Q: **What made you think that there would be difficulty competitively bidding the**
21 **Balance of Plant packages?**

22 A: KCP&L had a lack of interest from multiple qualified contractors on the very first of the
23 Balance of Plant packages, the foundations and substructures contract that we ultimately

1 awarded to Kissick. As is reflected in the Recommendation to Award Letter for this
2 procurement (Schedule BCD2010-5), Kissick was the only responsible bidder for the
3 work, because the other companies in town who do concrete work refused to bid the work
4 on a fixed-price or unit-priced basis. We then had to satisfy concerns from the Executive
5 Oversight Committee that Kissick had the wherewithal as a company to perform such a
6 large project. ** [REDACTED]

7 [REDACTED]
8 [REDACTED] ** Kissick
9 wound up performing extremely well on the Iatan Unit 2 Project, though I was
10 concerned, as were others, that this lack of bid interest could repeat itself for later bidding
11 of key electrical and mechanical packages resulting in a commercial disadvantage.

12 **Q: How did these concerns regarding the Balance of Plant work impact the Control**
13 **Budget Estimate?**

14 A: The contingency for the CBE was reviewed in light of these risks and ** [REDACTED]
15 [REDACTED]
16 [REDACTED] **

17 **Q: Was there a point at which the contract methodology for Balance of Plant work**
18 **changed?**

19 A: Yes. Within six months of completion of the CBE, the Executive Oversight Committee,
20 based on the recommendation from the Project Team, decided to change course and
21 contract with Kiewit for the Balance of Plant work.

1 **Q: How did Kiewit enter the picture?**

2 A: My understanding before I came to the Iatan Unit 2 Project was that Kiewit had
3 expressed some lukewarm interest in the Iatan Unit 2 Project though later withdrew even
4 that amount of interest because of its large backlog of work. On December 21, 2006, I
5 was informed by Kiewit's Steve Logue of Kiewit's renewed interest in performing work
6 on the Iatan Unit 2 Project. Mr. Logue explained to me that a project that Kiewit had
7 contracted to perform in the area had been deferred, creating a team of people who could
8 be re-assigned immediately to the Iatan Unit 2 Project. Kiewit proposed to assemble a
9 team to evaluate and prepare an estimate for the remaining Balance of Plant work scope
10 for the Iatan Unit 2 Project. Kiewit asked that KCP&L and Burns & McDonnell provide
11 resources for developing this estimate.

12 **Q: What was your reaction to Kiewit's offer?**

13 A: I told them that I would have to inform the Executive Oversight Committee of Kiewit's
14 offer and that I would get back to them.

15 **Q: Did you inform the Executive Oversight Committee of Kiewit's interest?**

16 A: Yes. On January 10, 2007, as part of our presentation to the Executive Oversight
17 Committee, we provided the members with a summary of the then-current Balance of
18 Plant contracting strategy, a description of the contacts with Kiewit regarding the Project
19 including the offer to create an estimate and pros and cons of contracting with Kiewit.
20 (Schedule BCD2010-6)

1 **Q: At that time, what did you see as the advantages to proceeding with Kiewit's**
2 **estimate?**

3 A: The integration of the multi-prime specialty contractors under one umbrella would reduce
4 KCP&L's coordination risk. As a result, one of the advantages to Kiewit's participation
5 in the Iatan Unit 2 Project would be the risk-shifting to a large experienced international
6 contractor with a depth of construction management resources.

7 **Q: What did the Executive Oversight Committee decide on January 10, 2007?**

8 A: The Executive Oversight Committee agreed to accept Kiewit's offer to prepare an
9 estimate for the Balance of Plant work and authorized me to contact Kiewit and make
10 arrangements for it to begin.

11 **Q: What happened next with respect to Kiewit's estimate preparation?**

12 A: Kiewit met with our Project Team and Burns & McDonnell's lead engineers, and Burns
13 & McDonnell provided Kiewit with drawings, specifications and other documents that
14 Kiewit needed for performing its estimate. Kiewit, the Project Team, and Burns &
15 McDonnell engaged in ongoing dialogue to address questions that arose through mid-
16 February 2007.

17 **Q: Do you recall when Kiewit completed its Balance of Plant estimate?**

18 A: Yes. Kiewit completed the estimate on April 12, 2007. I scheduled a special meeting of
19 the Executive Oversight Committee for the following week and on April 16, 2007,
20 Kiewit made a presentation to the Executive Oversight Committee members, members of
21 the Project Team, and Schiff.

1 **Q: Do you recall the presentation that Kiewit made at that meeting with the Executive**
2 **Oversight Committee?**

3 A: Yes. Company witnesses William Downey and Daniel Meyer, who also were in
4 attendance, testify regarding this meeting and I agree with their testimony. Kiewit's team
5 was well prepared and was very knowledgeable about the risks that KCP&L was facing
6 with the Iatan Unit 2 Project. Its proposal included the advantages of having Kiewit on
7 the Project and details of its cost proposal.

8 **Q: Was there any one aspect of Kiewit's presentation that you found most interesting?**

9 A: Yes. I found Kiewit's approach to labor management most interesting. Kiewit's team
10 spoke at length regarding its proven ability to manage labor in the field. Representatives
11 from Kiewit explained how Kiewit plans its work and assembles "work packs" that are
12 prepared in advance of craft going to the field. Kiewit presented a concrete proposal for
13 how it intended to staff the Project and how it would attract labor. Kiewit also spoke of
14 its proposal to "co-locate" with Burns & McDonnell to review the engineering product as
15 it was being released so that it could work with the engineers on optimizing the plant's
16 design for constructability purposes.

17 **Q: Why did you focus on these points?**

18 A: Because in our analysis of the Balance of Plant work going-forward, we had identified
19 labor management, labor availability, coordination of the work in the field, and
20 completion and integration of the final design as among the most significant risks to the
21 Iatan Unit 2 Project at that time.

1 **Q: What was the next step with Kiewit's proposal?**

2 A: I recall that David Price joined KCP&L on May 1, 2007 as the Vice President of
3 Construction. Mr. Price was very interested in pursuing a proposal from Kiewit's
4 management on how to proceed. I recall that Mr. Price, Mr. Stephen Easley, the former
5 Senior Vice President of Operations, and Mr. Terry Bassham, our Chief Financial
6 Officer, engaged Kiewit's executives in some initial conversations regarding the next
7 steps. I believe it was at this initial meeting in which KCP&L's team proposed, and
8 Kiewit conceptually accepted, taking the risk for its labor productivity for its work. As
9 Company witness Daniel Meyer testifies, we then engaged in a months-long process of
10 vetting Kiewit's estimate.

11 **Q: What was the result of the vetting of Kiewit's estimate?**

12 A: Company witness Daniel Meyer testifies to the final outcome. In general, we were
13 satisfied that Kiewit had provided a good estimate of the construction costs necessary to
14 perform to the design at that time. There were some differences between Kiewit's
15 estimated man-hours and quantities and those developed by Burns & McDonnell that all
16 parties knew would not be fully reconciled until the production of final engineering
17 documents.

18 **Q: Did Kiewit's estimate for the work change during the vetting process?**

19 A: Yes. Kiewit's original estimate included engineered materials and commodity items that
20 KCP&L had already purchased or intended to purchase, so these were deleted from the
21 cost estimate. In addition, as discrepancies (either additions or deletions) were found in
22 the estimate during the vetting process, Kiewit adjusted its numbers accordingly.
23 However, it is important to note that the design basis for Kiewit's estimate was the design

1 as it existed as of the first quarter of 2007. Therefore, Kiewit's estimate was prepared on
2 the basis of approximately 20 percent complete design documents.

3 **Q: Are you familiar with the amount of the final estimate from Kiewit?**

4 A: Yes. Kiewit's final estimate was ** [REDACTED] ** for both Iatan Unit 1 and Unit 2.
5 That was the number that was incorporated into Kiewit's contract.

6 **Q: What was the portion of Kiewit's estimate that related to the Iatan Unit 2 Project?**

7 A: I believe the Iatan Unit 2 portion was ** [REDACTED] **.

8 **Q: Do you believe the award of the contract to Kiewit was timely?**

9 A: Yes.

10 **Q: What is the basis for your opinion?**

11 A: First of all, we had previously mitigated the needs for Balance of Plant work scope
12 needed to maintain the schedule with the early contract awards for Kissick, Pullman, and
13 site clearing. Second, at the time that we entered into the Limited Notice to Proceed
14 ("LNTP") with Kiewit in June 2007, we released Kiewit to perform any work that was
15 essential to keeping the Project moving and support the construction schedule while we
16 completed the negotiations. By the time that we completed the contract in November
17 2007, Kiewit was able to hit the ground running on all other work in its contract.

18 **Q: Do you believe that KCP&L has prudently managed Kiewit work on the Iatan
19 Unit 2 Project?**

20 A: Yes, I believe that we have prudently managed Kiewit's work.

21 **Q: Did KCP&L make the right decision to award Kiewit the Iatan Unit 2 Balance of
22 Plant work in 2007?**

23 A: Yes. It was the best possible decision for the Iatan Unit 2 Project at that time.

1 **Q: What is the basis for your opinion?**

2 A: As I testified earlier, the risks of proceeding with a multi-prime Balance of Plant
3 contracting strategy were becoming very apparent, and those risks carried significant
4 uncertainty. My greatest concerns regarding the multi-prime approach were our ability to
5 manage and coordinate this work, whether there would be adequate labor forces to
6 support construction, whether the specialty contractors in Kansas City would be too busy
7 with all of the work planned and proceeding in the area to competitively bid the Iatan
8 Unit 2 Project, and whether these smaller contractors had the level of sophistication
9 necessary to plan and execute such a large project. Kiewit's presence on the Iatan Unit 2
10 Project mitigated these and other risks that were known at that time.

11 **Q: Do you believe that the shift in the strategy from multi-prime to Kiewit performing**
12 **the Balance of Plant work resulted in increased costs to the Iatan Unit 2 Project?**

13 A: In my opinion, I believe the cost of performing the work on a multi-prime basis may have
14 significantly exceeded Kiewit's cost and the schedule would have been at risk throughout
15 the Project.

16 **Q: What is the basis for your opinion?**

17 A: First, as Company witness Mr. Meyer testifies, the design for the Balance of Plant work
18 matured significantly from the time of Kiewit's estimate in February 2007 to February
19 2009. The design work was approximately 20-25 percent complete at the time of
20 Kiewit's estimate which formed the basis of Kiewit's contract, and the quantities and
21 complexity of performing the work changed as the design matured. To the extent that
22 Kiewit's costs increased due to design maturity, these increases would have been the
23 same regardless of who was doing the work (e.g., Kiewit or multiple small contractors).

1 Second, the risks that I discussed related to managing the Balance of Plant work
2 on a multi-prime basis were very real concerns. I know the level of sophistication of the
3 contractors in this area from my many years at KCP&L and the associated outage and
4 other construction work that I participated in during that time. We used a number of the
5 best local contractors for the Hawthorn Unit 5 project. While we could have proceeded
6 down the same path for Iatan Unit 2, Kiewit's performance of the Balance of Plant work
7 mitigated the inherent risks to schedule, budget and safety that come with using multiple
8 specialty contractors in a multi-prime arrangement.

9 Third, I believe that we needed a contractor of Kiewit's reputation and substance
10 to deal with a very tight labor market. I was KCP&L's primary interface with the
11 building trades in Kansas City and was very attuned to the labor situation throughout the
12 Project. I knew that we would be competing with a number of other large industrial,
13 commercial and utility projects in the 2007 to 2010 time frame. In addition, the
14 rebuilding of the Gulf Coast in the aftermath of Hurricanes Katrina and Rita had further
15 thinned the ranks of mobile union labor. If in Kiewit's place, we had a number of small
16 contractors competing with each other for the same labor, it is likely that labor
17 productivity and availability would have been the single-most important issue on the
18 Iatan Unit 2 Project. Instead, as was reflected in our Quarterly Reports, these were risks
19 that were mitigated throughout the Project.

20 These and other reasons are documented in the Justification to Award to Kiewit
21 that is attached to Company witness Steven Jones' testimony as Schedule SJ2010-3, and
22 they provide the basis of my opinion.

1 **PROJECT DEFINITION REPORT**

2 **Q: What is a Project Definition Report (“PDR”)?**

3 A: It is a document prepared by an owner’s engineer to examine the broad outlines of scope
4 and viability for a potential future project.

5 **Q: Was there a PDR prepared for Iatan Unit 2?**

6 A: Yes. The original PDR was prepared by Burns & McDonnell in August 2004 and
7 provided to KCP&L’s John Grimwade on September 9, 2004 (Schedule BCD2010-7).
8 There were two supplements to the PDR that Burns & McDonnell prepared after I joined
9 the Iatan Unit 2 Project.

10 **Q: What was the purpose of the PDR?**

11 A: The PDR, as described in the September 9, 2004 cover letter from Burns & McDonnell to
12 KCP&L, discussed the possible expansion of the Iatan facility to include an 800 MW
13 (net) coal plant, and included evaluations regarding permitting, economics of major
14 technology components, integration of the project into KCP&L’s Integrated Resource
15 Plan and it provided for internal budget appropriations. It included sections regarding
16 general design criteria, scope of work and general assumptions for technology,
17 identification of certain commercial terms Burns & McDonnell thought to be advisable,
18 project cost estimates and a high level schedule.

19 **Q: How would you term the level of design in the original PDR?**

20 A: A PDR or document of that type is a pre-cursor to even conceptual design work and is
21 only highly representative of the broad outlines of the project.

1 Q: Did Burns & McDonnell identify risks to the potential cost of the Iatan Unit 2
2 Project in the PDR?

3 A: ** [REDACTED]

4 [REDACTED]

5 [REDACTED]
6 [REDACTED]
7 [REDACTED]
8 [REDACTED]
9 [REDACTED]
10 [REDACTED]
11 [REDACTED]
12 [REDACTED]
13 [REDACTED]

14 [REDACTED]

15 [REDACTED]

16 [REDACTED]

17 [REDACTED]

18 [REDACTED]

19 [REDACTED]**

20 Q: How did Burns & McDonnell advise KCP&L to mitigate these risks?

21 A: Burns & McDonnell advised KCP&L to determine whether the Project was economically
22 viable and, assuming that it was viable, begin engineering work as quickly as possible.

23 Q: How much contingency was included in the PDR estimate?

24 A: Burns & McDonnell included ** [REDACTED] ** as part of its PDR cost estimate.

25 ** [REDACTED]

26 [REDACTED]**

1 Q: How did Burns & McDonnell characterize an ****[REDACTED]**** contingency for this
2 project in the PDR?

3 A: Burns & McDonnell stated that an ****[REDACTED]**** contingency was adequate to cover
4 normal deviations in pricing and normal deviations in the assumptions used to develop
5 the project costs. ****[REDACTED]****

6 **[REDACTED]**
7 **[REDACTED]**
8 **[REDACTED]**
9 **[REDACTED]**
10 **[REDACTED]****

11 Q: What was the basis for Burns & McDonnell's PDR cost estimate?

12 A: ****[REDACTED]****
13 **[REDACTED]**
14 **[REDACTED]**
15 **[REDACTED]**
16 **[REDACTED]**
17 **[REDACTED]**
18 **[REDACTED]****

19 Q: How would you characterize the estimate that Burns & McDonnell provided in the
20 PDR?

21 A: Company witness Daniel Meyer testifies that the cost estimate embedded in the PDR was
22 very preliminary, at best, and I agree with that testimony. The design was conceptual at
23 this time, and the concept in the PDR was for a plant that was substantially different than

1 the project KCP&L ultimately chose to build. Also, the proposed Project duration upon
2 which the estimate was based could not be met, because there was no longer 60 months
3 remaining to design, procure and construct the Project if the goal was to meet a
4 Provisional Acceptance in the summer of 2010. ** [REDACTED]

5 [REDACTED]

6 [REDACTED]**

7 **Q: When did Burns & McDonnell issue an update to the PDR?**

8 A: There were two supplements to the PDR, the first of which was a siting study that Burns
9 & McDonnell completed after the initial PDR was completed. The second supplement
10 contains a full reassessment of the changes to the Iatan Unit 2 Project's definition as of
11 June 28, 2007.

12 **Q: Why did Burns & McDonnell prepare this second supplement to the PDR?**

13 A: It was at KCP&L's request. The Project had undergone significant change since the PDR
14 was created and those changes were embedded in the Control Budget Estimate that was
15 approved by the Board of Directors in December 2006. I thought it was necessary for the
16 PDR to be updated to match the scope and complexity of the project that KCP&L had
17 chosen to build. Mr. Easley and I spoke with Burns & McDonnell's project manager
18 about the need to update this information, and they agreed to provide it.

19 **Q: What were some of the major changes in the scope of the Iatan Unit 2 Project from
20 August 2004 to June 2007?**

21 A: ** [REDACTED] ** The
22 changes included: (1) increased unit capacity from 800 MW to 850 MW; (2) increased
23 steam temperatures from 1050°F to 1080°F; (3) postponement of the schedule by nine

1 months; and (4) scope refinements including: a deaerator, storage tank and feedwater
2 booster pumps to enhance water control; modifications to the coal handling system to
3 comply with PSD permit; carbon injection system to control mercury; sizing of emissions
4 control equipment in concert with permit; added liner to solid waste landfill; combined
5 control room facility; upgrades to the transformer connection; change to chimney liner
6 materials; and other changes.

7 **Q: Did this document result in any changes to the Control Budget Estimate?**

8 A: No. Schedule BCD2010-8 merely records the process of updating the design basis for
9 Control Budget Estimate.

10 **PROJECT SCHEDULE STATUS**

11 **Q: Are you aware of the current projection for the Iatan Unit 2 Project's in-service
12 date?**

13 A: Yes. As Company witness Robert Bell testifies, the current projected in-service date for
14 Iatan Unit 2 is forecasted to occur during the fourth quarter of 2010.

15 **Q: Are you familiar with how this projection was developed?**

16 A: Yes. Company witness Robert Bell testifies regarding the Risk Assessment the project
17 team developed based upon risks that are normally associated with start-up of a plant the
18 size and complexity of Iatan Unit 2 (Schedule RNB2010-1).

19 **Q: Were you involved in the development of the Risk Assessment?**

20 A: Yes. I was responsible for developing portions of it as well as vetting of the results.

21 **Q: Do you agree with the results of the Risk Assessment?**

22 A: Yes, I believe the Risk Assessment has adequately identified the most likely issues that
23 could impact the in-service date for Iatan Unit 2.

1 Q: Do you believe that the risks identified in the Risk Assessment were appropriately
2 captured in the 2010 cost reforecast?

3 A: Yes.

4 Q: Was Staff informed of KCP&L's conclusions regarding the reforecast of the
5 project's schedule and cost?

6 A: Yes. Representatives from KCP&L met with the Staff on April 15, 2010 in the Staff's
7 offices in Jefferson City, Missouri. I walked members of Staff through the analysis we
8 have performed and how it was prepared.

9 **IN-SERVICE CRITERIA FOR IATAN UNIT 2**

10 Q: What did the 0329 S&A provide regarding in-service criteria for Iatan Unit 2?

11 A: Paragraph HIB1(I) of the 0329 S&A states "KCPL, Staff And Public Counsel have
12 agreed to the in-service criteria in Appendix H for the below list of existing generating
13 units, the future Iatan 2 coal unit, and the future wind units in accordance with the
14 requirements specified under Section 393.135 RSMo 2000." Appendix H contains the
15 technical requirements of the coal plant in-service test criteria. (See attached Schedule
16 BCD2010-9). KCP&L, Staff and OPC have reached agreement concerning the in-
17 service criteria for Iatan Unit 2. The criteria details are attached as Schedule BCD2010-
18 10.

19 Q: Does that conclude your testimony?

20 A: Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Kansas City)
Power & Light Company to Modify Its Tariffs to) Docket No. ER-2010-____
Continue the Implementation of Its Regulatory Plan)

AFFIDAVIT OF BRENT C. DAVIS

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Brent C. Davis, being first duly sworn on his oath, states:

1. My name is Brent C. Davis. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Iatan Project Director.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of forty-three (43) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

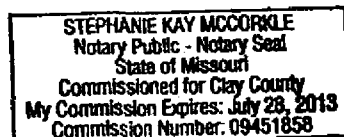
3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Brent C. Davis
Brent C. Davis

Subscribed and sworn before me this 20th day of May, 2010.

Stephanie Kay McCorkle
Notary Public

My commission expires: July 28, 2013



BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of KCP&L Greater)
Missouri Operations Company to Modify Its) Docket No. ER-2010-____
Electric Tariffs to Effectuate a Rate Increase)

AFFIDAVIT OF BRENT C. DAVIS

STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Brent C. Davis, being first duly sworn on his oath, states:

1. My name is Brent C. Davis. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Iatan Project Director.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of KCP&L Greater Missouri Operations Company consisting of forty-three (43) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Brent C. Davis
Brent C. Davis

Subscribed and sworn before me this 20th day of May, 2010.

Stephanie Kay McCorkle
Notary Public

My commission expires: July 28, 2013

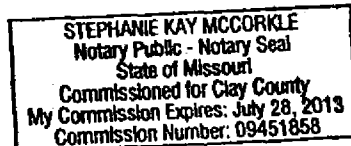


Exhibit No.:
Issue: Iatan 1:
Air Quality Control Equipment
Witness: Brent C. Davis
Type of Exhibit: Direct Testimony
Sponsoring Party: Kansas City Power & Light Company
Case No.: ER-2009-____
Date Testimony Prepared: September 5, 2008

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ER-2009-____

DIRECT TESTIMONY

OF

BRENT C. DAVIS

ON BEHALF OF

KANSAS CITY POWER & LIGHT COMPANY

**Kansas City, Missouri
September 2008**

**Certain Schedules Attached To This Testimony Designated ("HC")
Have Been Removed
Pursuant to 4 CSR 240-2.135.**

DIRECT TESTIMONY

OF

BRENT C. DAVIS

Case No. ER-2009-_____

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

2 A: My name is Brent C. Davis. My business address is 1201 Walnut, Kansas City, Missouri
3 64106.

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 the Iatan Unit 1 Project Director.

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

8 A: My responsibilities include oversight of the construction and installation of certain air
9 quality control equipment on the existing coal-fired generating unit at the Iatan
10 Generating Station ("Iatan 1").

11 **Q: Please describe your education, experience and employment history.**

12 A: I received a Bachelor of Science degree in engineering management from the University
13 of Missouri at Rolla in 1980, followed by a Master in Business Administration from
14 Rockhurst University in 1999. I began working at KCP&L in 1981 as a maintenance
15 engineer at the Montrose Generating Station. In 1985 I left the Company for a short
16 period of time to accept a position at Dayco Manufacturing in Springfield, Missouri as
17 maintenance superintendent. I returned to KCP&L later that year. Since that time, I have
18 held various engineering and management positions at each of KCP&L's coal-fired
19 generating facilities, *i.e.*, the Montrose Generating Station, the LaCygne Generating

1 Station, the Iatan Generating Station, and the Hawthorn Generating Station. Immediately
2 prior to accepting my current position, I was plant manager at Hawthorn.

3 **Q: Have you previously testified in a proceeding at the Missouri Public Service**
4 **Commission ("Commission") or before any other utility regulatory agency?**

5 A: Yes, I provided testimony to the Commission about construction activities at the Iatan
6 Generating Station during the proceedings concerning the acquisition of Aquila, Inc.
7 ("Aquila") by Great Plains Energy Incorporated (Case No. EM-2007-0374).

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

9 A: The purpose of my testimony is (i) to provide an overview of the Iatan 1 air quality
10 control ("AQC") projects, including a description of the oversight of the projects; (ii) to
11 discuss the in-service criteria for the projects; (iii) to explain how the anticipated cost to
12 complete the projects compares to the initial control budget estimate; and (iv) to identify
13 the portion of the Iatan 1 / Iatan 2 common facilities that should be included in rates in
14 this case because they are necessary for the operation of Iatan 1.

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

17 A: I have been involved with the Iatan 1 AQC projects since June 2006. Initially, I was
18 responsible for the overall Iatan construction project, including the Iatan 1 projects as
19 well as the construction of Iatan 2. In November of 2007, I was asked to concentrate my
20 efforts on the completion of the Iatan 1 AQC projects.

1 **Overview of the Iatan AQC Projects and Summary of Oversight**

2 **Q: Please describe the Iatan 1 AQC projects.**

3 A: Company witness Carl Churchman describes the equipment in greater detail in his Direct
4 Testimony. Briefly, however, as part of the Stipulation and Agreement concerning the
5 Comprehensive Energy Plan ("CEP"), which the MPSC approved in Case No. EO-2005-
6 0329 ("Regulatory Plan Stipulation"), KCP&L committed to add to Iatan 1 (i) a selective
7 catalytic reduction facility ("SCR"); (ii) a flue gas desulphurization unit ("Scrubber");
8 and (iii) a fabric filter system for the removal of particulates ("Baghouse") (jointly
9 referred to as the "AQC projects" or "AQC equipment"). The SCR reduces the amount
10 of nitrous oxides emitted into the atmosphere. The Scrubber, or absorber as it is
11 sometimes called, reduces the amount of sulfur dioxide emitted into the atmosphere. The
12 Baghouse captures particulates in the flue gas before it is released into the atmosphere.

13 **Q: Who owns Iatan 1?**

14 A: Iatan 1 is jointly owned by KCP&L, Aquila, and The Empire District Electric Company
15 ("Empire"). KCP&L owns 70%. Aquila owns 18%. Empire owns 12%. The Company
16 is seeking to include in its rates as part of this case only its commensurate share of the
17 costs of the equipment. For clarity, later in my testimony when I discuss the cost of the
18 Iatan 1 AQC projects, I will be speaking in terms of the overall cost as opposed to the
19 Company's share of that cost.

20 **Q: Who is responsible for constructing and installing the Iatan 1 AQC equipment?**

21 A: KCP&L operates the unit and is ultimately responsible for constructing and installing the
22 Iatan 1 AQC equipment. However, the design, construction, and installation of the
23 equipment are highly specialized. Consequently, KCP&L contracted with a number of

1 parties for various aspects of the construction and installation activities. KCP&L used a
2 multiple prime contracting approach, meaning that KCP&L retained several primary
3 contractors to work on different aspects of the projects.

4 **Q: Who are those entities and what are their roles?**

5 A: The first I would mention is Burns & McDonnell ("B&M"). As KCP&L's engineer for
6 the project, B&M is responsible for designing the overall project, from foundations to the
7 various components of the AQC equipment. The next vendor is ALSTOM Power
8 Service ("ALSTOM"). ALSTOM is responsible for designing, procuring, and
9 constructing the primary components of the AQC equipment, that is, the SCR, Scrubber,
10 and Baghouse. KCP&L's contract with ALSTOM is an engineering, procurement, and
11 construction ("EPC") contract, which means that ALSTOM is responsible for
12 engineering the projects, procuring the labor and equipment necessary for the projects,
13 and constructing the projects. Kissick Construction Company ("Kissick") is responsible
14 for constructing the foundations for the various components of the projects. Pullman
15 Power ("Pullman") is another significant contractor. Pullman is responsible for erecting
16 the flue chimney that will ultimately be utilized by both units, including the liners.
17 Lastly, Automatic Systems Inc. is responsible for the limestone material handling system
18 that will supply limestone to the reagent preparation system being supplied by ALSTOM.

19 The scope and complexity of the projects require a high degree of coordination
20 among the contractors. The foundations for the AQC equipment present a good example.
21 ALSTOM had to complete their design of the equipment before it could provide load and
22 location information to B&M for its use in engineering the foundations. B&M then
23 designed the foundations and passed the designs on to Kissick, who constructed them.

1 Kissick's work, in turn, had to be completed before the foundations could be turned over
2 to ALSTOM so that it could begin to construct the AQC equipment.

3 **Q: Under the multiple prime contracting approach, was KCP&L responsible for**
4 **managing these contractors and coordinating their efforts?**

5 A: Yes, it was. The complexity of managing the interface of these contractors was one of
6 the factors that lead KCP&L to execute a "balance of plant" contract with Kiewit Power
7 ("Kiewit"). Under that contract, which was executed in November of 2007, Kiewit is
8 responsible for the majority of the work on the Iatan 1 AQC projects that is not covered
9 by one of the contractors I described above.

10 **Q: What are the benefits of executing the balance of plant contract with Kiewit?**

11 A: Absent such an agreement, KCP&L would have needed to bring seven or eight additional
12 contractors on site and manage their interface with the existing contractors. By executing
13 the Kiewit balance of plant contract, KCP&L was able to contract for the completion of
14 the project while adding only one contractor. This minimized any additional interface
15 risk from having more contractors on site. The balance of plant contract also minimized
16 other potentially significant risks, such as labor cost and productivity. Instead of KCP&L
17 bearing that risk, as it likely would have had we continued the multiple prime contracting
18 approach, Kiewit took on much of that risk.

19 **Q: Could you please describe the oversight to which the Iatan 1 AQC projects have**
20 **been subject?**

21 A: The projects are subject to extensive oversight from both internal and external sources. A
22 project of this size and complexity requires the use of a sophisticated cost control system.
23 Developing and implementing such a system was also a condition of the Regulatory Plan

1 Stipulation. With the assistance of Schiff Hardin LLP ("Schiff") and in consultation with
2 the signatory parties to the Regulatory Plan Stipulation, KCP&L developed and
3 implemented a state-of-the-art cost control system. KCP&L also hired individuals with
4 extensive construction experience for its internal project management team. In addition
5 to myself, there is Carl Churchman, Vice President of Construction, Russ Finkle and Paul
6 Waddell, the construction managers; Steve Jones, the procurement manager; Terry
7 Foster, the project controls manager; Mike Hermsen, the safety manager; Hugh Miller,
8 the start-up manager; and Roy Douglas, the quality control manager. Each of these
9 individuals has extensive experience on large-scale construction projects. The team is on
10 site at the Iatan Generating Station and manages day-to-day construction activities. Also
11 internal to the Company is the CEP Oversight Committee, comprised of Company
12 executives from different areas of the Company. The project team periodically presents
13 information to the CEP Oversight Committee concerning the status of the project and
14 challenges being addressed by the project team. The CEP Oversight Committee provides
15 feedback and direction to the project team as necessary. KCP&L's internal audit
16 department has also played an active role with respect to the construction of the Iatan 1
17 AQC projects.

18 **Q: You also mentioned external oversight. Could you also describe the external**
19 **oversight to which the construction of the AQC equipment at Iatan 1 is subject?**

20 **A:** As I have noted, Schiff provides external oversight by providing an independent review
21 of the status of the construction and installation of the Iatan 1 AQC equipment both in
22 terms of cost and schedule. Schiff is nationally renowned for its expertise in the
23 oversight and management of large-scale construction projects. The members of the

1 Schiff team have significant experience with power plant construction both in the United
2 States and abroad. As described in the Direct Testimony of Company witness Kenneth
3 M. Roberts, Schiff helped KCP&L develop and implement its cost control system. Schiff
4 also provides ongoing oversight for the projects and assists with ongoing negotiations
5 with contractors. Schiff provides information concerning its reviews to the project team
6 as well as the CEP Oversight Committee. Ernst and Young also provides oversight,
7 including a review of the Company's cost control system, safety, schedule, among other
8 processes they reviewed. The projects are also subject to review from the joint owners of
9 Iatan 1, *i.e.*, Aquila and Empire. There are periodic joint owner meetings to address
10 issues related to the projects, and Aquila and Empire have the right to audit KCP&L's
11 construction expenditures. They have diligently exercised that right.

12 Lastly, the signatory parties to the Regulatory Plan Stipulation, including the
13 Commission's Staff and the Office of Public Counsel ("OPC") also play an oversight
14 role. KCP&L provides quarterly reports to the signatory parties concerning issues related
15 to the projects. KCP&L then meets with the parties to discuss those reports. In addition,
16 the signatory parties have the ability to investigate issues related to KCP&L's
17 implementation of the Regulatory Plan Stipulation. KCP&L has supplied Staff with a
18 considerable amount of data concerning the projects as a result of its exercise of this
19 investigatory power.

20 **In-Service Date and Criteria**

21 **Q: What are the in-service criteria for the SCR, Scrubber, and Baghouse at Iatan 1?**

22 A: As part of the Regulatory Plan Stipulation, KCP&L, Staff, and OPC agreed to develop in-
23 service criteria for the AQC equipment to be installed on KCP&L's existing coal-fired

1 generating units. In 2007, KCP&L installed an SCR on Iatan 1 of its LaCygne
2 Generating Station ("LaCygne 1"). KCP&L, Staff, and OPC agreed on in-service criteria
3 for that facility. The LaCygne 1 SCR satisfied that criteria and was included in
4 KCP&L's rates as part of its 2007 rate case (Case No. ER-2007-0291). Concerning Iatan
5 1, KCP&L, Staff and OPC have reached agreement concerning the in-service criteria for
6 the Iatan 1 AQC equipment. The criteria details are attached as Schedule BCD-2.

7 **Q: What is the basis for including the Iatan 1 SCR, Scrubber, and Baghouse in this**
8 **case?**

9 **A:** The Regulatory Plan Stipulation provides for a true-up period. Among the items to be
10 trued up is plant in service. The Iatan 1 SCR, Scrubber and Baghouse comprise plant in
11 service that will go into service during the true-up period. Consequently, the equipment
12 is appropriate for inclusion in this case.

13 **Changes in Cost and Schedule**

14 **Q: What is the currently anticipated cost of the Iatan 1 AQC projects?**

15 **A:** As described above, construction of the AQC equipment has not yet been completed.
16 Consequently, the Company does not know at this time the precise cost of the equipment.
17 The exact dollar amount will have to be resolved as part of the true-up process in this
18 case. I can say, however, that KCP&L currently estimates that the total cost of the AQC
19 equipment will not exceed \$484.2 million. While that figure is greater than the initial
20 control budget estimate for the projects developed in December 2006 when the projects
21 were approximately 20% to 25% engineered, the current estimate is entirely consistent
22 with the results of the cost reforecast that the Company completed in April 2008 and

1 presented to the Commission during the merger proceedings in Case No. EM-2007-0374.

2 A summary of the results of the reforecast is attached as Schedule BCD-1 (HC).

3 **Q: How does the current estimated cost of completion compare to the control budget**
4 **estimate that was developed in December 2006?**

5 A: The Company's initial control budget estimate for the Iatan 1 AQC projects was
6 \$376.8 million, which is \$107.4 million less than the current estimated cost of
7 completion.

8 **Q: Please describe the differences between the results of the control budget estimate**
9 **and the reforecast cost, including the primary areas in which costs have increased.**

10 A: Of the estimated \$107.4 million increase, \$86.4 million is attributable to an anticipated
11 increase in the base estimate of the project. The remaining \$21 million of the estimated
12 increase is reserved as a contingency for potential future use should the need arise. Given
13 the complexity and risks associated with projects such as the Iatan 1 AQC projects,
14 companies routinely include a contingency in their budgets to address costs that might
15 arise after the budget for the project has been finalized.

16 As the Company has previously explained to the Commission, its Staff and other
17 interested stakeholders, there are four categories of costs that resulted in the base estimate
18 increase: (i) scheduling changes associated with design maturation; (ii) scope design
19 changes attributable to maturation of the projects; (iii) escalations in the price of labor
20 and supplies; and (iv) expenditures to optimize operation or construction of Iatan 1, *i.e.*,
21 to reduce the Unit's long-term operations and maintenance expenses. These four
22 categories of costs account for more than 97% of the anticipated increase in the base
23 estimate of the Iatan 1 AQC projects.

1 Q: Was the initial control budget estimate wrong or inadequate?

2 A: No, I would not say that. I would say that the initial control budget estimate was a good
3 number based upon the information that was available at the time it was developed.

4 Q: If the initial control budget estimate was not flawed, why did the Company
5 reforecast the cost of the project?

6 A: As a preliminary matter, I want to clarify that to say the Company "reforecast" the cost of
7 the projects earlier this year does not mean that the Company has not been actively
8 monitoring and responding to cost changes and challenges since it provided the initial
9 control budget estimate. To the contrary, the Company has continuously monitored and
10 updated cost estimates for the projects since it provided the initial control budget
11 estimate. To do so is a key element of the Company's cost control processes. Having
12 said that, beginning in late 2007, the Company began a comprehensive, bottom-up review
13 of the cost of the projects. This is the process that the Company completed in April of
14 this year and what is commonly referred to as "the reforecast." See Schedule BCD-1
15 (HC). There are a variety of reasons that led us to undertake that process. First, the Iatan
16 1 projects were approximately 90% engineered at that time. Second, we had just
17 executed the balance of plant contract with Kiewit that I described earlier in my
18 testimony. Third, the Company observed that the contingency portion of the budget for
19 the projects was being depleted more rapidly than anticipated. Finally, the ongoing cost
20 monitoring, reforecasting process the Company had employed, as typified by risk and
21 opportunity tables, indicated that potentially significant cost pressures were on the
22 horizon and the Company wanted to be in a position to address them proactively and

1 holistically. It was a combination of all of these factors that led us to undertake what has
2 become known as the reforecast.

3 **Q: Please describe the reforecast process.**

4 A: The reforecast was a comprehensive, bottom-up review of the cost and schedule
5 associated with completing the Iatan 1 AQC projects. We looked at what it would cost to
6 complete the projects, including an assessment of the potential for certain subsequent
7 events to adversely impact the cost and schedule of the projects.

8 **Q: Does KCP&L have a cost control process in place concerning the construction of the
9 Iatan 1 AQC projects?**

10 A: Yes, it does. As I described earlier in my testimony, a project of this size and complexity
11 requires a sophisticated cost control process. KCP&L developed and implemented a
12 sophisticated and robust cost control system in consultation with a variety of experts in
13 the field of large-scale construction projects. Mr. Roberts describes the cost control
14 process in some detail in his Direct Testimony in this case.

15 **Q: What steps did KCP&L take to control the ultimate cost of the Iatan 1 AQC
16 projects?**

17 A: As a preliminary step, KCP&L entered into fixed-price contracts for a majority of the
18 Iatan 1 AQC projects. The ALSTOM EPC contract for the AQC equipment is a fixed-
19 price contract. It is the largest contract for the projects, accounting for more than sixty
20 percent of the control budget estimate. KCP&L also used a fixed-price contract for
21 several engineered equipment procurements, including the ash handling equipment,
22 electrical and controls equipment, and the economizer. Given the challenges the
23 construction industry has seen since those contracts were executed, the decision to pursue

1 fixed-price contracts was a particularly good one. Another type of contract KCP&L used
2 to control cost is a unit price, or quantity-based contract. The Kiewit balance of plant
3 contract, for example, is a quantity-based contract. Such a contract helps control cost by
4 pegging the cost of the project to the materials that comprise the project, which works to
5 shield the Company from risks associated with labor costs and productivity.

6 The cost control system that KCP&L developed and implemented for the Iatan 1
7 projects tracks awarded costs and approved change orders to compute a total commitment
8 compared against the initial control budget estimate. Any subsequent contract awards or
9 change orders that are different (more or less) than the original control budget estimate
10 amount are withdrawn or added to contingency. Cost reports are updated and analyzed
11 monthly for trending data to identify potential cost exposure to the project. In addition,
12 the output of the cost reforecast has been incorporated into this system to reflect the new
13 budget amount discussed earlier.

14 **Q: With all of these cost control efforts in place, how do you explain the discrepancy**
15 **between the current estimated cost to complete the Iatan 1 AQC projects and the**
16 **initial control budget estimate?**

17 **A:** Cost control systems, even one as sophisticated and robust as the one used by the
18 Company for the Iatan AQC projects, cannot guarantee that a project will not experience
19 cost pressures or even increases. Nothing can do that. The construction industry as a
20 whole, and in particular power plant-related construction, has experienced intense cost
21 pressures over the last few years. Global and domestic prices for general construction
22 materials and the specialized components for a project such as this have risen
23 dramatically. Operating in this environment, I believe the Company's cost control

1 processes have worked well. Without those processes in place, the ultimate cost of the
2 AQC projects would have been much higher than it is.

3 **Common Facilities**

4 **Q: What are “Common Facilities” and why are they an issue in this case?**

5 A: Common Facilities are facilities that Iatan 1 and Iatan 2 will ultimately share once Iatan 2
6 goes into service. However, those facilities are necessary now for the operation of
7 Iatan 1 with the new AQC equipment. Because the facilities are essential for the
8 operation of Iatan 1, it is appropriate to include a portion of their cost in rates at the same
9 time the Iatan 1 AQC equipment goes into rates. However, because some portion of the
10 cost is more appropriately associated with Iatan 2, it would not be appropriate to include
11 their entire cost in rates at this time. The issue before the Commission in this case is to
12 determine what portion of Common Facilities should be included in the Company’s rates
13 in this case because they are used and useful with respect to the operation of Iatan 1, and
14 what portion should be addressed in the subsequent rate case involving Iatan 2.

15 **Q: What are some examples of Common Facilities?**

16 A: The new flue gas chimney is probably the simplest example. The original Iatan 1
17 chimney could not be used with the new AQC equipment. Consequently, a new chimney
18 had to be built for Iatan 1. A chimney would also need to be constructed for Iatan 2. The
19 Company decided to build a single, shared concrete chimney with two separate liners to
20 be used by each unit because doing so is more efficient than building two separate
21 chimneys. With this consideration in mind, it is appropriate to include a portion of the
22 cost of the new chimney in rates associated with the Iatan 1 projects and to allocate a
23 portion to be in rates associated with Iatan 2. This is but one example. Other examples

1 include the various systems necessary to support the AQC equipment on both units,
2 e.g., storage and handling facilities for limestone, limestone reagent preparation
3 equipment, scrubber sludge, and treatment facilities for the various waste products.

4 **Q: Please explain the basis for KCP&L's proposed allocation of the cost of between**
5 **Iatan 1, which are included in this case, and the remainder, which will be proposed**
6 **to be included in the rate case associated with the completion of Iatan 2.**

7 A: The Company allocated the cost of the Common Facilities between Iatan 1 and Iatan 2
8 based on the generation capacity of the respective units, *i.e.*, 670 MW for Iatan 1 and 850
9 for Iatan 2. Cost is also allocated based on the different ownership structures of the two
10 units, that is, KCP&L's share is based on a weighted average of its ownership interest in
11 each unit, which is approximately 61%.

12 **Q: What would such an allocation add to the Iatan 1 costs the Company seeks to**
13 **include in rates in this case?**

14 A: The allocation of Common Facilities has been included in the Plant adjustment (Adj-21)
15 reflected in Schedule JPW-2 attached to the Direct Testimony of Company witness John
16 Weisensee. The precise amount will need to be addressed during the true-up phase of
17 this case.

18 **Q: You mentioned earlier that the original Iatan 1 chimney could not be used with the**
19 **new AQC equipment. Has the original chimney been retired?**

20 A: The chimney has not yet been physically removed. However, for the purposes of this
21 case the Company has removed the net book value of the chimney from the rate base.

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

23 A: Yes, it does.

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

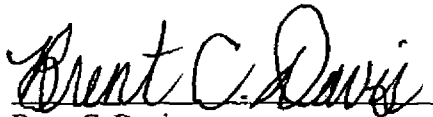
In the Matter of the Application of Kansas City)
Power & Light Company to Modify Its Tariff to) Case No. ER-2009-____
Continue the Implementation of Its Regulatory Plan)

AFFIDAVIT OF BRENT C. DAVIS

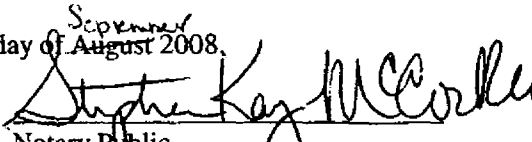
STATE OF MISSOURI)
) ss
COUNTY OF JACKSON)

Brent C. Davis, being first duly sworn on his oath, states:

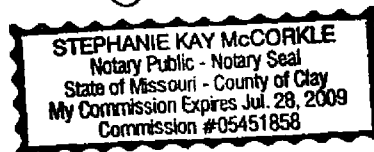
1. My name is Brent C. Davis. I work in Kansas City, Missouri, and I am employed by Kansas City Power & Light Company as Project Director, Iatan 1.
2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Kansas City Power & Light Company consisting of fourteen (14) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.
3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.


Brent C. Davis

Subscribed and sworn before me this 4th day of August 2008.


Notary Public

My commission expires: July 28, 2009



SCHEDULE BCD-1

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**In-Service Criteria for Iatan 1--Particulate and Opacity Control
Equipment**

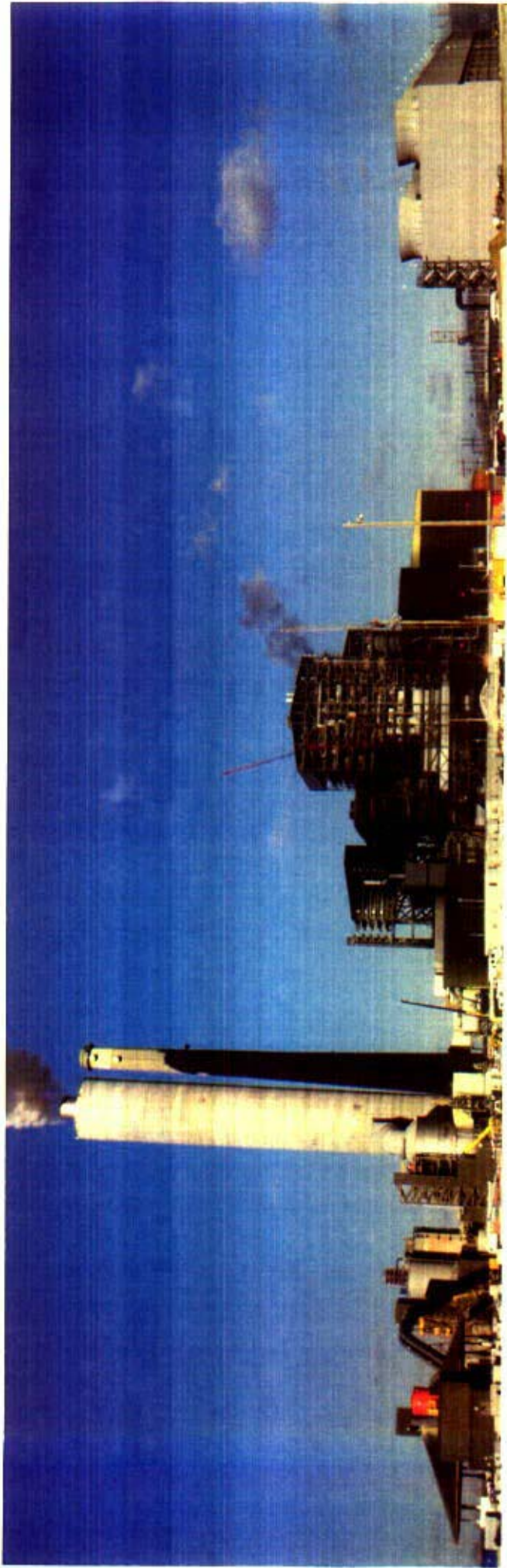
1. All major construction work is complete.
2. All preoperational tests have been successfully completed.
3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)
4. The equipment shall be operational and demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).
5. The equipment shall also demonstrate its ability to operate at a stack opacity (six minute average) less than or equal to 11.5% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).
6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the opacity emissions to satisfy the parameters in items (4) and (5) above.

In-Service Criteria for Iatan 1--NO_x Control Equipment

1. All major construction work is complete.
2. All preoperational tests have been successfully completed.
3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)
4. The equipment shall be operational and demonstrate its ability to operate at a NO_x emission level of 0.090 lb/mmBtu over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).
5. The equipment shall also demonstrate its ability to operate at a NO_x emission level of 0.100 lb/mmBtu over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).
6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the NO_x emissions to satisfy the parameters in items (4) and (5) above.

In-Service Criteria for Iatan 1--SO₂ Control Equipment

1. All major construction work is complete.
2. All preoperational tests have been successfully completed.
3. Equipment successfully meets operational contract guarantees. (Note: Some operational contract guarantee verification periods may extend beyond the duration of the schedule for a rate case. These guarantees will be evaluated for applicability.)
4. The equipment shall be operational and demonstrate its ability to operate at a SO₂ reduction efficiency equal to or greater than 91% over a continuous four (4) hour period while the generating unit is operating at or above 95% of its design load (670 MWnet).
5. The equipment shall also demonstrate its ability to operate at a SO₂ reduction efficiency equal to or greater than 86% over a continuous 120-hour period while the generating unit is operating at or above 80% of its design load (670 MWnet).
6. Continuous emission monitoring systems (CEMS) are operational and demonstrate the capability of monitoring the SO₂ emissions to satisfy the parameters in items (4) and (5) above.



**SCHEDULES BCD2010-3
through BCD2010-8**

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