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DIRECT TESTIMONY
OF
SAMUEL G. SUMNER, JR.
On Behalf of
MISSISSIPPI POWER COMPANY
BEFORE THE MISSISSIPPI PUBLIC SERVICE COMMISSION
DOCKET NO. 2013- UN-_____

Q. Would you please state your name, position and business address?

A. My name is Samuel G. Sumner, Jr. I am the Plant Manager, Kemper County IGGC Plant (Plant) for Mississippi Power Company (MPC or the Company). My business address is 2992 West Beach Boulevard, Gulfport, Mississippi 39501.

Q. Please describe your education and professional experience.

A. I received my degree in Mechanical Engineering from the University of Alabama Birmingham in 1993. I have been an employee of the Southern Company for a cumulative sixteen years and have served in a variety of positions of increasing responsibilities in the areas of plant engineering, plant management, finance and enterprise asset management. From 1989 – 1993, I was an engineering co-operative education student at Alabama Power Company plants Gorgas and Miller. From 1993 – 2001, I was a field engineer, project manager and Six Sigma manager for GE Power Systems executing gas and steam turbine construction, startup and maintenance projects. From 2001 – 2002, I was the maintenance manager at Georgia Power Plant Bowen. In 2003, I was assistant to the Chief

1 Production Officer for Southern Company. In 2004, I was a financial manager in
2 Southern Company Finance. From 2005 – 2006, I was plant manager at
3 Mississippi Power for plants Watson, Eaton and Sweatt. From 2007 – 2010, I
4 was the project director for the implementation of the enterprise asset
5 management and financial systems for Southern Company. Since October of
6 2010, I have been at Mississippi Power where I am the plant manager for the
7 Kemper Plant.

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

9 **A.** My testimony will describe the proposed operation plan for the Kemper Plant and
10 provide a summary of the non-fuel operation and maintenance (O&M) expense
11 and maintenance capital estimates contained within the proposed 7-year plan
12 described in the direct testimony of Mr. Feagin. The estimates provided in my
13 testimony are totals and are not reduced to reflect the allocation to SMEPA or the
14 wholesale jurisdiction. The rate allocations of these O&M estimates to the retail
15 jurisdiction are contained in Mr. Feagin's testimony.

16 **Q. Do you sponsor any exhibits with your testimony?**

17 **A.** Yes. I am sponsoring two exhibits:

18 Exhibit____(SGS-1) Kemper Plant Organization Chart

19
20 Exhibit____(SGS-2) Projected O&M Expense and Maintenance Capital
21 Estimates for the Kemper Plant
22

23 **Q. Were these exhibits prepared under your supervision and control?**

24 **A.** Yes.

1 **Q. Please provide a brief description of the operational characteristics of the**
2 **Kemper Plant.**

3 **A.** The Kemper Plant will be fueled with Mississippi lignite which is surface mined
4 at the mine site adjacent to the Plant. The lignite will be delivered to the Plant
5 over conveyors, through crushers, into silos, and then into dryers where the lignite
6 is dried to approximately one-half of its original moisture content. The lignite is
7 then pulverized and fed into the gasifier. Inside the gasifier, a chemical process
8 similar to fluid catalytic cracking heats the lignite and extracts the syngas.

9 After the syngas is cooled, it goes through the processes necessary to
10 remove particulates, sulfur, nitrogen oxides (NO_x), carbon dioxide (CO₂) and
11 mercury contained in the syngas. During the process of cleaning the syngas,
12 marketable sulfuric acid and ammonia products are produced, transported and
13 sold. The captured CO₂ is compressed, delivered and sold to the off-takers for
14 sequestration via an enhanced oil recovery process.

15 The cleaned syngas is then used to fuel a combined cycle generating plant
16 similar to Plant Daniel Units 3 and 4. This combined cycle configuration consists
17 of two gas turbines (GTs) with associated generators, two heat recovery steam
18 generators (HRSG) and a single steam turbine generator. The syngas powers the
19 two GTs and the gas turbine exhaust provides heat to the HRSGs to produce
20 steam that is then supplemented with steam from the gasifier system to drive the
21 steam turbine. The combined net output of the three generators is delivered to the
22 electrical grid.

1 The Plant is a zero liquid discharge facility—no process water will be
2 discharged into any rivers or streams. Process wastewater streams will be treated
3 and evaporated by the cooling towers. To provide makeup supply water to the
4 cooling system to replace water lost through evaporation, reclaimed treated
5 municipal wastewater from two publicly owned treatment works in Meridian,
6 Mississippi, will be used. This treated effluent will be transported to the site via
7 pipeline from a dedicated pumping station located at the Meridian treatment
8 facility. Because the flow of reclaimed water from the Meridian facility varies
9 seasonally and to provide for weather related events, MPC has constructed an
10 approximately 1,500 acre-foot pond on the plant site to manage the supply of
11 makeup water.

12 **Q. How was MPC's overall O&M strategy for the Kemper Plant developed?**

13 **A.** MPC and Southern Company have extensive experience in operating, maintaining
14 and optimizing electric generating facilities. MPC has leveraged this experience
15 and knowledge in developing the overall O&M strategy for the Plant. Given that
16 a significant portion of the Plant consists of chemical processes and equipment,
17 existing and well-developed best practices from the chemical industry have also
18 been used to develop the overall Kemper Plant O&M plan.

19 **Q. What efforts did MPC undertake to ensure a robust O&M strategy for the
20 Kemper Plant?**

21 **A.** Southern Company Generation has a set of best practices designed to provide
22 consistent management for all aspects of power plant safety, operations,
23 maintenance, engineering, compliance and support. All applicable Southern

1 Company guidelines are implemented in the Kemper Plant strategy to ensure
2 consistency with current Southern Company best practices and to take advantage
3 of economies of scale efficiencies. The scope of the strategy includes staffing
4 organization and level, outsourcing of key plant activities and maintenance plans.
5 The Plant O&M strategy was supplemented by visiting and discussing this topic
6 in great detail with several petro-chemical refinery facilities, one operating IGCC
7 plant, the Southern Company Power Systems Development Facility (PSDF)
8 where the TRIG™ technology was developed and deployed as a demonstration
9 plant, Southern Company Gasification Technology personnel, outside chemical
10 consultants and several Southern Company combined cycle and fossil plants.

11 The O&M plans for the combined cycle process and the plant support staff
12 were developed from visits and discussions with existing Southern Company
13 plants. The Southern Company Generation staffing organization model was
14 implemented as applicable to the TRIG™ technology in the areas of safety,
15 compliance & support, maintenance, planning and engineering. The results of
16 these meetings and visits are the basis upon which the final combined cycle and
17 support O&M plans were developed.

18 **Q. Has MPC contracted with third-parties to operate any portion of the**
19 **Kemper Plant?**

20 **A.** Yes. Consistent with MPC's existing management and operation philosophy,
21 smaller ancillary and support activities are expected to be contracted out to
22 various third-parties when appropriate. Examples would include HVAC

1 maintenance, pipeline maintenance, ash hauling, grounds keeping and janitorial
2 services.

3 Based on the visits to the petro-chemical refinery facilities and power
4 plants, MPC has also contracted with third-party experts to be the primary
5 operator of certain processes. This strategy will allow MPC to concentrate on
6 optimizing the operation of the Kemper Plant in the first several years of
7 operation. MPC has also solicited advice from several original equipment
8 manufacturers in the development of the Kemper Plant O&M plan. For example,
9 for the Siemens combustion turbines and generators, MPC has executed a long-
10 term parts and services contract, similar to our long-term service agreement for
11 Plant Daniel that will govern the O&M plan for these critical assets in the
12 combined cycle island.

13 Southern Company has considerable experience with water plant O&M,
14 but limited experience with operating a waste water plant. A decision was made
15 to entertain a proposal from Aquatech International Corp. (Aquatech) to evaluate
16 the viability of an outsourcing strategy. Upon analyzing the proposal, MPC
17 determined that O&M services from a third-party would be comparable in cost to
18 a self-perform option. Therefore, a decision was made to have Aquatech operate
19 and maintain the water treatment and wastewater systems located at the Kemper
20 Plant. An operations contract has already been executed with Aquatech.

21 MPC is currently in discussions with Air Liquide Large Industries U.S. LP
22 (Air Liquide) for Air Liquide to supply the nitrogen needs of the Kemper Plant

1 pursuant to a full requirements contract still being negotiated. The air separation
2 unit (ASU) produces nitrogen which is a key input to the TRIG™ IGCC process.

3 The O&M estimates discussed in my testimony assume these contractual
4 arrangements are in place.

5 **Q. What is the O&M responsibility of MPC with respect to the lignite mine and**
6 **linear facilities?**

7 **A.** The lignite mine is owned by MPC, but will be operated by Liberty Fuels, LLC, a
8 subsidiary of North American Coal. Pursuant to the lignite mining agreement
9 between MPC and Liberty Fuels, Liberty Fuels is responsible for mining and
10 transporting the lignite to one of three specified storage areas on the Kemper Plant
11 site. Liberty Fuels will also operate the lignite delivery facility (LDF) up to the
12 tripper floor. Liberty Fuels is responsible for maintaining all of the equipment
13 and facilities utilized at the lignite mine and all equipment in the LDF upstream to
14 the tripper floor.

15 MPC is the owner of the treated effluent pipeline up to the point of
16 interconnection between the pumping station and the Meridian wastewater
17 treatment facility. MPC is the owner of the CO₂ pipeline from the plant site to the
18 designated metering points for the two off-takers. Finally, MPC is the owner of
19 the natural gas pipeline from the Plant site to the point of interconnect with the
20 Tennessee Gas Pipeline network. MPC is responsible for the operation and
21 maintenance of these pipeline facilities up to the various points of interconnect
22 described above.

23

1 **Q. Please describe MPC's staffing plan for the Kemper Plant.**

2 **A.** The Kemper Plant non-fuel O&M estimates assume an initial Company staffing
3 of 167 positions to operate and maintain the Plant and related facilities subject to
4 the scope of responsibilities described above. Exhibit____(SGS-1) provides an
5 organizational chart developed by MPC for the management and operation of the
6 Kemper Plant.

7 The Kemper Plant organization will consist of the Plant Manager and four
8 primary departments: (1) Environmental, Health & Safety; (2) Operations; (3)
9 Maintenance, Planning and Engineering; and (4) Chemical Products, Compliance
10 and Support. The overall staffing level assumes contract employees will perform
11 the bulk of the work during scheduled maintenance in the combined cycle island.
12 This approach is consistent with MPC's maintenance strategy at all of its existing
13 generating plants. In addition, because the Plant consists of petro-chemical
14 processes and equipment, MPC's hiring effort has focused on hiring personnel
15 with prior experience in the petro-chemical industry.

16 **Q. What is MPC's outage strategy for the Kemper Plant?**

17 **A.** The Plant's planned outage schedule will largely be dictated by the operating
18 hours of the combustion turbines. Similar to MPC's existing fleet, the Plant's
19 O&M estimates are largely driven by the scope and schedule of planned outages.
20 It is MPC's intent to complete other equipment maintenance activities during the
21 combustion turbine outage window.

22 After consultation with Siemens, MPC developed an expected planned
23 outage schedule for the entire Plant. MPC's outage strategy is also largely

1 dependent upon plant availability. The O&M estimates contained in my
2 testimony assume the same availability ramp assumed during the Certificate
3 proceedings. Therefore, depending upon the extent to which the Kemper Plant
4 availability deviates from the assumed availability ramp, the outage schedule may
5 require revising to accommodate accelerations or delays in major maintenance
6 activities.

7 For all of the above reasons, MPC believes it is reasonable to track the
8 variations in O&M annually to allow for an overall review of any variances that
9 may arise at the end of the 7-year plan as explained further by Mr. Feagin.

10 **Q. What other O&M cost and schedule drivers are unique to the Kemper Plant?**

11 **A.** The Kemper Plant will use more catalysts, sorbents and solvents than is typical in
12 MPC's existing generating fleet. MPC's goal is to optimize the catalyst life by
13 balancing the performance of the catalyst with the outage cycle in order to
14 favorably impact both O&M cost and schedule.

15 **Q. What are the Company's O&M estimates for the proposed 7-year Plan?**

16 **A.** Exhibit____(SGS-2) provides detailed O&M expense and capital maintenance
17 estimates for the 7-year Plan beginning in 2014. As explained earlier in my
18 testimony, the estimates in Exhibit____(SGS-2) represent the total amount
19 required to operate and maintain the Plant. Mr. Feagin's testimony explains the
20 revenue requirements associated with these estimates and the allocation of these
21 costs to the retail jurisdiction.

22

1 **Q. In your opinion, are the O&M estimates reasonable?**

2 **A.** Yes. We have taken advantage of available expertise and knowledge in
3 developing the Kemper O&M estimates. These estimates reflect, to the greatest
4 extent possible, the current design and operational philosophy necessary to
5 operate the Kemper Plant.

6 **Q. Does this conclude your testimony?**

7 **A.** Yes, it does.

BEFORE THE MISSISSIPPI PUBLIC SERVICE COMMISSION

MISSISSIPPI POWER COMPANY
EC-120-0097-00

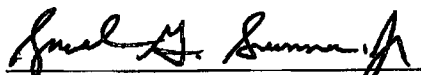
DOCKET NO. _____

IN RE: NOTICE OF INTENT OF MISSISSIPPI POWER COMPANY FOR A
CHANGE IN RATES TO ESTABLISH A RATE MITIGATION PLAN IN
CONNECTION WITH THE KEMPER COUNTY IGCC PROJECT

AFFIDAVIT OF SAMUEL G. SUMNER, JR.

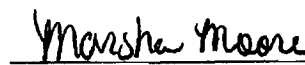
PERSONALLY appeared before the undersigned officer authorized to administer oaths, SAMUEL G. SUMNER, JR., who being duly sworn, deposes and says; that the foregoing direct testimony was prepared by him or under his supervision; that said testimony was prepared for use as direct testimony on behalf of Mississippi Power Company in the captioned proceeding; that the facts stated therein are true to the best of his knowledge, information and belief; and that if asked the questions appearing therein, his answers, under oath, would be the same.

Dated at Gulfport, Mississippi, the 26 day of February, 2013.



SAMUEL G. SUMNER, JR.

Sworn to and subscribed before me this the 26th day of February, 2013.



Notary Public

My Commission Expires:

December 3, 2013

