ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In Re: Petition on behalf of Citizens of the State of Florida to require Progress Energy Florida, Inc. to refund customers $143 million	)))))	DOCKET NO. 060658-EI March 6, 2007

REBUTTAL TESTIMONY OF DAVID J. PUTMAN

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ON BEHALF OF THE CITIZENS OF THE STATE OF FLORIDA

Q. Please state your name, business address, and employment affiliation.

My name is David J. Putman. My address is 2236 Royal Crest Drive, Birmingham, AL 35216. I am self-employed.

Q. Please describe your educational background and your professional experience.

A. I have the degree of Bachelor of Mechanical Engineering from Georgia Institute of Technology and the degree of Juris Doctor from Birmingham School of Law.

I began work with Alabama Power Company in 1970 as a plant engineer. With APCO I held the positions of a plant maintenance supervisor, plant representative for testing and acceptance of equipment of a large new unit, Assistant Plant Manager, APCO Manager of Labor Relations, Assistant to an Executive VP, plant retrofit construction superintendent, Manager of Quality Assurance for the construction of two units of Miller Steam Plant, and APCO Corporate Headquarters Building addition construction Superintendent.

In 1983 I transferred to the affiliate Southern Company Services as a General Manager in the Fuel Services Department. SCS Fuel Services was the organization for acquiring and delivering all the fuel requirements for the Southern Company generation plants. At various times, during the period from

November 1983 to August 2000, I had general management responsibility for strategic planning, economic analysis, price forecasting, coal procurement, rail , barge and truck service procurement, coal inventory management, coal transportation logistics, railcar fleet management, coal quality and natural gas procurement. I retired from Southern Company in September 2000.

Following retirement I have provided consulting services on occasion to coal companies and utilities. The consulting assignment of most interest to this case was a five year assignment with a coal company managing their rail logistics program between their mines and the Alabama State Docks facility in Mobile Alabama.

Q. For whom do you testify in this docket?

A. I appear on behalf of the Citizens of the State of Florida, as represented by the Florida Office of Public Counsel.

Q. What is the purpose of your testimony?

A. I will rebut certain assertions made by PEF witnesses Rod Hatt and James N. Heller.

Q. Please summarize the main points of your rebuttal testimony.

A. The principal points of my testimony, which I will support in the statements that follow, are these:

- PEF witness Rod Hatt states that PRB coal likely will lose Btu content between the time it is mined and the time it arrives at the site of the purchasing utility. When I was an engineer with Southern Company, among my

responsibilities was oversight of and responsibility for the planning, purchasing and shipment of up to 19,000,000 tons of PRB coal annually to four different power plants, to be burned in 10 different units. In order to perform those duties successfully it was necessary that I maintain active contact and communication with the plant personnel at those plants that were responsible for receiving, processing, and burning those coals. Over time, we monitored the Btu content of PRB coal prior to and after shipment. In our experience, there was no discernible pattern with respect to changes in Btu content. Sometimes the measured Btu's decreased slightly; other times the measured Btu content increased slightly; frequently there was no material difference prior to shipment and following delivery. Based on Southern Company's experience, I did not—and do not-- regard the possibility of declining Btus as a material concern.

• PEF witness Rod Hatt testifies at length concerning the hazards of storing and handling PRB coal, due to the dustiness of the coal and the propensity of the coal to self-ignite if not handled properly. Having been personally responsible for the storage, handling, and burning of several types of coal at a 5 - unit power plant and through personal observation and active communication with the plant personnel that were responsible for receiving, processing, and burning those coals at the four plants that burned PRB coals, I can attest that, with appropriate housekeeping and safety protocols PRB coal can be safely and successfully handled, stored, and processed. Further, the expense associated with modifications needed to handle PRB safely were extremely minor in relation to the substantial savings that PRB achieved for our customers during the period

1994 to my retirement in 2000 and that I know continue today. Certainly PRB coal has the properties that Mr. Hatt describes, and certainly those properties require proper procedures and a continuous focus on good housekeeping, but in my experience those are matters that a competent utility can accomplish. The safety considerations he raises are not impediments to the ability to purchase and burn the most economical fuel for the benefit of customers.

- Mr. Hatt states that it would be necessary to conduct both short-term and long-term test burns before deciding to switch from bituminous to a blend of PRB and bituminous coals. He describes a "long-term" test burn of three to six months. In my opinion, particularly in view of the design parameters and PEF's opportunity to test the units and enforce contractual performance commitments at the outset, such tests at this point should be excessive and unnecessary for CR4 and CR5. In Southern Company's experience, test burns of approximately three weeks were sufficient to provide us with the information that we needed on which to base a decision—and our units were not originally designed to burn PRB coal. Longer term concerns that might exist were viewed as better handled through coal and transportation contract provisions.

- Mr. Hatt describes the combustion properties of PRB coal at length, and predicts that extensive boiler modifications would be necessary to prevent outages and deratings. Southern Company's experience was very different. Once we modified the arrangements of sootblowers in the boilers to match the nature of the PRB coals, we encountered no particular difficulty in managing the slagging tendencies of PRB coal. Further, we experienced no deratings on

the eight large units at Plant Scherer and Plant Miller when burning PRB coal, and this includes units that were shifted to burning 100% PRB coal. The only units that did have a derate were the units at the Mississippi Power's, Plant Daniel and Plant Watson, which were originally designed to burn oil and therefore had relatively smaller boiler boxes.

- Mr. Hatt offers his opinion that the two existing stacker reclaimers are insufficient to blend the PRB and bituminous coals at the Crystal River site. Based on my personal knowledge, he is mistaken. I am aware that McDuffie Terminal at the Alabama State Docks employs similar stacker reclaimers to blend coals from multiple stockpiles to match very exacting coal specifications for export shipments. In addition, I am aware of the use of stacker reclaimers from my experience at Barry Steam Plant and from my observations of the equipment at Plant Scherer and Plant Miller. I observed the stacker reclaimers at Crystal River and I am aware of the arrangement of the belt speed control and weighing system, which are the real keys to a successful blending operation, and my knowledge and experience indicates that the existing system is fully adequate to perform blending.
- Mr. Hatt questions the adequacy of the existing coal handling and conveying system to deliver to the boilers of CR4 and CR5 the increased tonnage that would be necessary to sustain operations at the 5% overpressure condition of which the units are capable when burning bituminous coal. Having reviewed the schematic representation of the layout and capacities of coal handling equipment at Crystal River, having toured and observed those facilities, and

having reviewed Mr. Hatt's calculations and rationale, I concur with the statement of OPC witness Joseph Barsin that Mr. Hatt is mistaken, and that the existing conveying equipment is capable of the speeds and quantities necessary to support operations at full load—that is, the 5% overpressure condition-- when burning the 50/50 PRB/bituminous blend of coals.

- PEF witness Heller states that producers of PRB coal were inactive and unwilling to submit bids to PEF's RFPs during the period in question. That assertion is certainly contrary to my experience. I was responsible for acquiring large quantities of PRB coal for power plants in Georgia and Alabama during the period 1994 to 2000. Throughout my involvement, I found PRB producers to be—not only willing participants--but aggressive and very competitive bidders.
- PEF Witness Heller jumps to the conclusion that an all rail movement from the PRB to the plant is not possible or economic. That conclusion, which is not based on evidence and that is contrary to my experience, drives many of his conclusions and results in an unsupported conclusion. In addition, Mr. Heller elects to ignore the very real opportunity for an all rail movement from the PRB to the McDuffie Terminal in Mobile, Alabama combined with a shorter barge movement to the plant. The failure to analyze this option creates another bias against the PRB option and further reduces the credibility of his conclusions.
- PEF Witness Heller readily accepts Mr. Hatt's estimate of necessary capital modifications and ongoing operating costs. Clearly Mr. Hatt does not have the background or qualifications to make an estimate of this type and it appears that

he only made a short examination of the plant, without consideration of the design parameters and capabilities built into the units. Mr. Hatt's conclusions are completely out any semblance of reasonableness based on Southern Company experience in their plant conversions. The use of those estimates is an additional unsupported major driver in Mr. Heller's conclusion.

- PEF Witness Heller accepts what, in my experience, is a casual, business as usual, approach to coal procurement, and allows that approach to justify missed opportunities in a changing industry and changing market.

EXPERIENCE WITH POWDER RIVER BASIN COAL

Q. Please describe the nature and extent of your experience with Powder River Basin (PRB) coal.

I was employed by Southern Company as a General Manager in the Fuel Services Department. SCS Fuel Services was the organization for acquiring and delivering all the fuel requirements for the Southern Company generation plants. During the period from November 1983 to August 2000, I had general management responsibility for strategic planning, economic analysis, price forecasting, coal procurement, rail , barge and truck service procurement, coal inventory management, coal transportation logistics, railcar fleet management, and coal quality for all coal-fired units on Sothern's system. Beginning in the early 1990's Southern Company saw an opportunity, based on changes in the relative delivered costs of PRB coal and bituminous coal, to save money for its customers by

converting several units to PRB coal. They included Scherer, Miller, Watson, and Daniel. None of these units were originally designed to primarly use sub-bituminous coal such as PRB coal, although Scherer 3 & 4 did consider a wider range of coal specifications in its design. I was responsible for the coal program for these units during the conversion and subsequent operation of the units using PRB sub-bituminous coal.

Q. Please describe Scherer units 3 and 4.

The four units at Plant Scherer are operated by Georgia Power, a subsidiary of Southern Company. The units have a mix of owners that include Florida Power and Light and Jacksonville Electric Authority, among others.

Scherer units 3 and 4 are twin units. They each have nameplate ratings of 818 MW's. The boilers were designed by Combustion Engineering. They have a design steam flow capacity of 5,789,914 pounds per hour at 2,400 PSIG steam throttle pressure. They began operation in 1987 and 1989, respectfully.

All coal is received at Scherer by rail, and the plant is currently captive to Norfolk Southern. The coal is unloaded at an elevated trestle with the bottom dump rail cars moving across the trestle and opening to unload without stopping.

Q. Were Scherer units 3&4 originally designed to burn PRB coal?

They were not designed specifically for PRB coal, but the design did consider a wider range of coal specifications than units 1&2. For this reason they were more flexible and were judged to be better candidates for PRB coal.

What modifications to Scherer did Georgia Power make prior to burning PRB coal in Scherer?

Because these units were the first Southern units to burn PRB coal, some modifications were made at the start of the conversion and other more minor changes were made based on plant experience. Additional sootblowers were added because of the expected slagging characteristics of the coal. The dust suppression system at the trestle unloading facility was upgraded to handle the duster PRB coal.

Q. **Describe the nature and duration of any test burns at Scherer that Southern conducted prior to converting the units.**

A. Test burns were conducted at Plant Scherer as part of the decision process to convert to PRB coal. The logistics of moving and storing sufficient coal limited the practical duration of a test. I no longer have access to the reports of the tests, but my recollection is that we arranged for several trains to arrive prior to the start of a test and then scheduled trains to continue to arrive while the test was conducted. An initial test would have been over a two to three week period. The initial test surpassed the general expectations of the plant personnel and that encouraged further discussions with coal suppliers and both the western railroads and Norfolk Southern.

Plant personnel identified plants with PRB experience and held lengthy discussions with their counterparts at those plants to learn from their experiences.

The physical test burn was a significant part of the decision process, but only one component.

What changes in the handling and storage of coal did Georgia Power implement to address the dusty nature of the coal and its propensity to self-ignite if not handled properly?

A. Based on the knowledge gained from information gathering, it was clear that it would be necessary to keep PRB storage piles neat and well compacted to allow good water run off and reduce wind effects causing dusting. Rubber-tired equipment was identified as doing a better job of compacting, but tread equipment worked if the proper attention was paid to the method used. My recollection is that the transition to rubber tired equipment was done over time and not immediately as a result of a conversion. Belt systems, transfer points and other points where coal dust could collect were identified and new work procedures instigated to keep these points very clean with wash down practices.

Q. How expensive were the capital investments and additional O&M expenses?

A. Again, I do not have access to the actual costs, but the numbers were very small in relation to the obvious fuel savings. A related issue that was discussed in dealing with the capital and O & M was recognition of the fact that changes in those costs could only be recovered through changes in base rates that would involve a rate case process with long time delays. Fuel cost reductions, on the other hand would flow to the rate payers much quicker. It was always clear in the decision process that the ratepayer would come first in the decision.

Q. Did Georgia Power burn a blend of coals or 100% PRB coal at Scherer?

A. During the initial decision review, the goal was to convert a unit or units to 100% PRB coal, and that is what occurred. Much later, while units 3 & 4 were burning PRB coal and Units 1 & 2 were burning CAPP coal as their standard supply, various mixes of PRB in units 1 & 2 and CAPP coal in units 3 & 4 were tried and used. At Scherer the preferred method of using both coal types was not to blend the coal prior to fueling the plant, but to fill bunker/pulverizer paths with different coal types and thereby fire different boiler elevations with the different coals. This gave the boiler operator excellent control of the amount and location of heat input into the boiler.

Q. Did Georgia Power experience any deratings of Scherer units 3&4 as a consequence of shifting to PRB coal?

A. No. In fact one of the several pleasant surprises in the conversion was a small increase in net unit output due to reductions in plant station service.

The boiler was fully able to maintain full boiler design steam flow output, including 5% overpressure when required.

Q. Did you experience any problems in the nature of fires, explosions, damages at Scherer during the period in which you were responsible for operations with PRB there?

A. Not to my knowledge.

Q. Please describe Scherer units 1 and 2

A. Scherer units 1 and 2 are twin units. Their design output is similar to Scherer 3 & 4. They each have nameplate ratings of 818 MW's. The boilers were designed by Combustion Engineering. They have a design steam flow capacity of

5,789,914 pounds per hour at 2,400 PSIG steam throttle pressure. They began operation in 1982 and 1984, respectfully. The major design difference between the two sets of units was in the precipitators.

Q. Were Scherer units 1 and 2 originally designed to burn PRB coal?

A. No.

Q. What modifications to Scherer 1 & 2 did Georgia Power make prior to burning PRB coal in these Scherer units?

A. The details of the design changes in these units were made after my retirement, so I am not fully qualified to answer that question. I am aware that the conversion did require a major modification to the precipitators, which were not originally designed for PRB coal, including the addition of a sulfur injection system. Although I was not involved in the engineering studies of the conversion of the units to burn PRB coal I was involved in studies of then current and forecasted market conditions for all candidate coals for Southern plants including PRB, CAPP Coals and South American import coals. These fuel studies did indicate, with a high degree of certainty, that PRB coal would continue to be the low cost coal supply for Plant Scherer well into the future.

Q. Describe the nature and duration of any test burns at Scherer that Southern conducted prior to converting the units.

A. Because Units 3 & 4 had successfully burned large quantities of PRB over several years, test burns were not viewed being as critical as during the initial conversion decision process. In addition, quantities of PRB coal had been burned in the units

in the years leading up to the conversion of units 1 & 2. There was a much higher level of knowledge and experience with the use of PRB coal in these units.

Q. Why were these units not converted at the same time Units 3 & 4 were converted?

A. At the time of the conversion of units 3 & 4 Plant Scherer was obligated to several large quantity, high price and long term contracts for CAPP coals. These contracts could have been allowed to run their course, but the obvious fuel savings for the customer if these contracts could be replaced with PRB coal drove an active, aggressive and innovative program of negotiations over several years in order to finally eliminate those contractual constraints several years ahead of their original termination dates. This strategy resulted in significant additional savings for the customers.

What changes in the handling and storage of coal did Georgia Power implement to address the dusty nature of the coal and its propensity to self-ignite if not handled properly?

A. The equipment changes and operational processes were mostly in place when Units 3 & 4 were converted. Some additional dust controls had to be added in the specific units.

Q. How expensive were the capital investments and additional O&M expenses?

A. Minimal in relation to the savings.

Q. Please describe Miller Units 1, 2, 3, and 4

A. The four units at Plant Miller are owned and operated by Alabama Power Company, a subsidiary of Southern Company. The four units were designed to be

identical units. They each have nameplate ratings of 660 MW's. The boilers were designed by B & W. They have a design steam flow capacity of 4,711,000 pounds per hour at 2,400 PSIG steam throttle pressure. They began operation in 1978, 1985, 1989 and 1991, respectively. All coal is received at Miller by rail, and the plant was captive to Norfolk Southern when the units were built. At the time when the decision to convert some or all of the units to 100 % PRB coal was under serious consideration and negotiations with Norfolk Southern were not progressing satisfactorily, the decision was made to construct an access link to a Burlington Northern main line in order to create a competitive transportation option. Only after the line was actually constructed did Norfolk Southern provide a rate that made their piece of the long movement the competitive best option. The coal is unloaded at an elevated trestle with the bottom dump rail cars moving across the trestle and opening to unload without stopping.

Q. Were the Miller units originally designed to burn PRB coal?

A. No.

Q. What modifications to Miller did Alabama Power make prior to burning PRB coal in Miller?

A. Additional sootblowers were added because of the expected slagging characteristics of the coal. The dust suppression system at the trestle unloading facility was upgraded to handle the dustier PRB coal. A rail yard for the temporary receiving of trains was constructed nearby the plant.

Q. Describe the nature and duration of any test burns at Miller that Alabama Power conducted prior to converting any of the units.

A. Test burns were conducted at Miller as part of the decision process to convert to PRB coal. The logistics of moving and storing sufficient coal limited the practical duration of a test. I no longer have access to the reports of the tests, but my recollection is that we arranged for several trains to arrive prior to the start of a test and then scheduled trains to continue to arrive while the test was conducted. An initial test would have been over a two to three week period. The initial test surpassed the general expectations of the plant personnel and that encouraged further discussions with coal suppliers and both the western railroads and Norfolk Southern. Plant personnel identified plants with PRB experience and held lengthy discussions with their counterparts at those plants to learn from their experiences. The physical test burn was a significant part of the decision process, but only one component.

Q. What changes in the handling and storage of coal did Alabama Power implement to address the dusty nature of the coal and its propensity to self-ignite if not handled properly?

A. Based on the knowledge gained from information gathering it was clear that it would be necessary to keep PRB storage piles neat and well compacted to allow good water run off and reduce wind effects causing dusting. Rubber- tired equipment were identified as doing a better job of compacting, but tread equipment worked if the proper attention was paid to the method used.

Belt systems, transfer points and other points where coal dust could collect were identified and new work procedures instigated to keep these points very clean with wash down practices.

Q. How expensive were the capital investments and additional O & M expenses?

A. Again, I do not have access to the actual costs, but the numbers were very small in relation to the obvious fuel savings.

Q. Did Southern Company burn a blend of coals or 100% PRB coal at Miller?

A. 100% PRB on a unit by unit basis. For a period of time only one unit burned the PRB coal at a time, because the existence of coal contracts for Alabama coal that did not leave plant capacity for more PRB coal. The existence of the PRB option allowed Southern to take a very aggressive position during a contractual price review. The result was an early termination of the major contractual constraint and the move to low cost PRB coal much earlier than originally expected. This strategy resulted in very significant savings for the customers. Plant Miller became the lowest cost coal fired generation option in the Southern system.

Q. Did Alabama Power experience any deratings of Miller units as a consequence of shifting to PRB coal?

A. No. The boiler was fully able to maintain full boiler design steam flow output including 5% overpressure when required.

Q. Did you experience any problems in the nature of fires, explosions, damages at Scherer during the period in which you were responsible for operations with PRB there?

A. Not to my knowledge.

Q. Did any other Southern Company plants burn PRB coal during the 1996 to 2004 time period?

A. Yes, Plant Daniel in Mississippi burned PRB coal starting in 1995 and ending in 2000. In addition Plant Watson in Mississippi also experimented with blends including PRB coal in 1998 to 2000.

Q. Please describe Plant Daniel.

A. Plant Daniel is jointly owned by Mississippi Power and Gulf Power, both subsidiaries of Southern Company. The plant is operated by Mississippi Power. Because of the joint ownership, fuel cost savings are shared by rate payers in Florida.

The Plant has two twin units, Units 1 & 2. They each have nameplate ratings of 500 MW's. The boilers were designed by Combustion Engineering. They have a design steam flow capacity of 3,611,242 pounds per hour at 2,400 PSIG steam throttle pressure. They began operation in 1977 and 1981, respectively. The units were originally designed to be oil fired but converted to coal early in their life.

All coal is received at Daniel by rail and the plant is captive to a local short line railroad.

Why did Plant Daniel begin burning PRB coal in the 1995 time period?

A. Mississippi Power adopted a fuel procurement strategy based on maintaining significant flexibility on quantities purchased. This was the result of the Mississippi units not being the highest loaded units on the Southern system, so their burn varied widely from year to year. This allowed Mississippi to take advantage of low cost opportunity coals as they became available. During the period beginning in 1995 PRB coals were the low cost fuel supply option.

Q. Why did the plant stop burning PRB Coal?

A. Because the boiler was designed for oil, it had a small boiler box. This reduced amount of heat exchange surface caused the unit to suffer a derate with the lower Btu PRB coal. As electrical demand in the Southern system increased the Daniel units were called on more often for full generation. At that point it became the economic solution to use a higher Btu coal that would allow the units to operate at full unit capacity. The decision was made to switch the primary source to western bituminous coal.

Q. Other than the derate effect, were there any other operational issues that caused the switch away from PRB coal?

A. No, it was totally the result of the economic evaluation of the best fuel for the lowest cost generation.

Q. Please describe the PRB experience at Mississippi Power's Plant Watson.

A. Plant Watson is a five unit plant in Mississippi. Unit 5 is the largest unit and has a nameplate rating of 500 MW's. The plant coal supply is delivered by barge. During the 1998 to 2000 time period, bids received for coal supply to Plant Watson indicated that the lowest cost Btu for the plant was from the PRB. The boiler design indicated that a blend of PRB coal with a higher Btu bituminous coal would be the best match for the boiler.

Relatively small quantities of PRB coal were purchased and delivered by rail to the Alabama State Docks in Mobile. The coal was transloaded to barges and delivered to the plant. Coal blends of various mixes were used in the plant. Over time, other coal suppliers, primarily from Illinois became more aggressive in an

effort to recapture Plant Watson and the PRB solution was no longer the lowest cost supply.

Q. Were there any major issues or costs involved with burning a blend that included PRB coal at Plant Watson?

A. By the time Plant Watson began to burn this coal there was enough knowledge and experience in the Southern system as well as in the industry in general that the use of the PRB coal was an easy decision and easy implementation. It should also be noted that the blending at the plant was done with moving equipment and did not require complex systems.

Q. Did Southern make any calculations of the fuel savings it achieved for its customers by converting all these units from bituminous coal to PRB coal when PRB became the more economical choice?

A. Yes, calculations were made at each plant that converted to PRB both on a prospective basis and then on an actual basis. I do not have access to those calculations anymore, but the clear message from the large 4 - unit plants at Scherer and Miller is that in both cases a first step was made to convert initial units to PRB and then after gaining more experience in both the operational aspects of the coal, and the market advantages of the coal, the decision was made at both plants to convert the other units to 100% PRB.

RESPONSES TO SPECIFIC ASSERTIONS BY PEF WITNESSES

Q. At page 14, PEF witness Rod Hatt states that PRB coal loses Btu content between the time it is shipped and the time it is received by the purchasing

utility. When you were with Southern Company, did you find that to be the case?

A. No. It is the practice of the Southern Company to require a split of the coal ample taken at loading that will be used for determining the Btu content for payment. This split, which is statistically the same as the sample retained by the coal supplier, is mailed to the lab operated by the purchasing operating company. The analysis of the split is compared to the split analysis used by the vendor. The mailed sample generally arrived at the operating company lab and was analyzed very close in time to when the train arrived at the plant. Experience showed that the two analyses were very close and that there was no trend up or down. Our conclusion was that the coal did not degrade solely due to the time between when it was loaded and when it arrived at the plant.

Q. Did you have any other methods to evaluate possible degradation of the coal?

A. Yes. All coal is sampled as it is sent to the boiler to be burned. This is called an "As burned sample" and is used for determining boiler efficiency among other uses. The as burned samples are analyzed and the coal quality is routinely compared to as purchased results. When coal has been just received and then burned in the boiler it is a good comparison point to see if the quality of the coal has changed from when it is loaded to when it is burned. Our ongoing reviews showed that sometimes the Btu level improved and sometimes it dropped. These results were heavily dependent on the weather experienced during the trip from the basin. Clear, warm weather dried the coal and improved the Btu level. Rain would add moisture and reduce the Btu level. Again there was no clear trend.

Q. Is this Btu degradation issue a significant concern?

A. Not in the big scheme of things. A 100 Btu change like Mr. Hatt implies is normal is about a 1% change in an 8,800 Btu coal. And because experience shows that even this change does not regularly occur and can even go either way, this issue is a tiny point compared to the large dollars saved by using PRB coal vs. using higher priced alternatives.

Q. Mr. Hatt describes hazards associated with the improper handling and storage of PRB coal. Similarly, PEF witness Clifford Toms refers to PRB coal as a "nightmare." In your experience, do the properties and characteristics of PRB coal present problems that a competent utility cannot manage successfully?

A. All coal can be dangerous if not treated properly. Unfortunately, there are deaths in coal mines almost every year caused by explosions, mostly in bituminous mines. If the appropriate attention is not given to it, PRB can cause fires and explosions. The risks are well known in the coal and utility industries, as are the proper measures for safeguarding against them effectively. For utility management to say that they can not handle this coal because it would take too much attention, care, training and minor modifications is amazing to me. That position is even more amazing given the opportunity PRB has presented over time to significantly reduce fuel costs for the customer. Utilities are burning hundreds of millions of tons of this coal every year and have been for approaching two decades with a minimum of actual problems.

Q. Mr. Hatt states that before shifting to a blend of PRB and bituminous coals PEF should conduct short and long-term test burns; that the long-term test should last three to six months; and that all of the capital investments he recommends, including $38.7 million for new blending equipment to replace existing stacker reclaimers, should precede the longer test burn. Do you have any comments?

A. I would agree that short term test burns are very appropriate for a plant or unit that is about to experience a new coal for the first time. This is especially true for PRB coal, which is very different from bituminous coal. However, my experience with Southern was that the learning curve during a test is very steep. Knowledgeable and experienced plant operating personnel that know their unit learn very quickly what the good and the bad aspects of a new coal are. They can quickly adjust operations and can determine what works and what does not. They see where a fix might be required. They can also recognize where the new coal might work better than the current coal. It is my experience that test burns over two to three weeks are a waste. The vast majority of the necessary information is gained in the first several days. After that it is just fiddling.

Q. What about the need for longer test burns and the need to make major modifications before conducting the longer tests?

A. I feel obligated to answer this question in terms of the specific situation of Crystal River Units 4 & 5, and not in general terms. It is clear from the design documents and specification requirements that the PEF parties responsible for defining the vision for these units had a broad and future focused concept in mind. They

defined units that could handle and burn a wide range of coal specifications. The units were to be capable of generating above "normal' load levels continuously. The persons responsible for specifying the units required extensive safety provisions and environmental safeguards that became standard on later units for handling PRB coal. A sophisticated system for blending coals using inline belt scales and variable speed belts was specified. These units constituted the state of the art at the time.

The engineering firm, Black and Veatch, and the boiler designer, B & W, accepted the challenge and designed and built these units to the vision. Naturally, PEF paid the designers and constructors for the additional costs associated with the features necessary to provide the flexibility and the performance capabilities that were specified, as well as the guarantees provided by the designers and contractors.

However, when the units were completed, the utility made the decision that it was not necessary to test the performance of these units at the level envisioned. This was the time for a "long term test burn". PEF paid for a premium pair of units and had the opportunity to test to that premium level. The specified design coal was a 50/50 blend of PRB coal and CAPP Coal. However, no effort was made to purchase and burn this blend. If a guarantee test burn had been conducted, there would have been documented history as to what the units could do. Any problems or lack of performance could have been fixed; all under the paid for

guarantees. Instead, the premium price paid to acquire PRB – burning capabilities was added to the rate base and the premium paid for by the customers, month after month. When the PRB economics improved significantly in the early 1990's PEF did not act. Given its involvement in specifying the units, for PEF to claim that it was not confident that the units could do what they were designed to do is not credible in my opinion. If so, the situation was of its own making.

Q. Given that the best opportunity to test the units was right after construction and that opportunity was missed, what is your view about the need for longer test burns and the need to make major modifications before conducting the longer tests?

A. Elsewhere I rebut the notion that the existing blending equipment needs to be replaced. Mr. Barsin establishes that the boilers and related equipment already possess the features Mr. Hatt contends are needed to deal with a PRB blend. Therefore, I disagree that in the cases of CR 4 and CR 5 there would be a need for major modifications. Beyond that, the design of boilers and all the required supporting equipment has gone way beyond a guessing game. There are several major engineering companies that are fully able to review an existing plant considering a new coal source and provide a total plan for any changes necessary for the new coal source to work successfully. These companies are also prepared to guarantee their work. If there are significant concerns after an initial test, than a prudent utility should employ one of these firms to make such a review. Based on that review and recommendation, if the economics still indicate that the fuel switch is the economic choice, the utility should implement the recommendations

and make the changes. Once the changes are made another test burn can be conducted that should be even shorter than the first.

Q. How should the utility protect itself from long term impacts of the new coal that can only be determined by long term operations?

A. The answer to long term concerns is through contractual provisions. The engineering company that reviews the plant and recommends changes should guarantee that the unit will continue to perform in an acceptable manner for a reasonably long period of time. Coal contracts and transportation contracts should have provisions for cancellation if the coal creates irresolvable problems over time. With these safeguards in place unit operation becomes normal not a test.

Q. Mr. Hatt predicts that the severe slagging and fouling characteristics of PRB coal would require PEF to make expensive modifications to its boilers before it could burn the coal successfully. Does your experience with Southern Company's use of PRB coal provide any insight as to whether his predictions are well founded?

A. My experience at Southern units that converted to PRB coal was that problems were controllable with minor equipment additions, primarily additional sootblowers, coupled with more careful and detailed operating and maintenance practices.

Q. Beginning at page 25 Mr. Hatt contends that the two existing stacker reclaimers at Crystal River are insufficient to blend PRB and bituminous coals. Are you aware of any circumstances that would disprove his claim?

A. Mr. Hatt describes the stacker reclaimers as crude devices for blending coal. He ignores the real keys to blending, which are the belt speed controllers and the inline scale system, both of which are in place at Crystal River. These devices allow an operator to regulate the quantities of each component very accurately after the stacker places the coal on the belt. I worked with a coal company that was blending coal at the Alabama State Docks facility (McDuffie Terminal) for sale into the metallurgical export market. The docks facility used stacker reclaimers and scales and belt speed controllers to blend coals from multiple piles to meet much more precise specifications than required for a 50/50 blend from two plies.

I think that this is an appropriate point to explain that the 50/50 blend point is a target and not an absolute. The real goal in boiler operations is to put enough Btu's into the boiler in the form of coal to create enough heat exchange to create enough steam flow through the steam throttle into the turbine and maintain the throttle pressure at the target control point. If the blend of the coal going into the boiler is not perfect and the average Btu is too high or too low, the boiler control system will adjust the quantity of coal entering the boiler in order to control the heat input and thus maintain the target pressure level. The boiler controls can function within a pretty wide range of average Btu's in the coal.

Q. At page 27 of his testimony, Mr. Hatt raises the concern that the existing coal handling and conveying equipment at Crystal River may be insufficient to supply the increased quantities of coal that would be necessary to operate

CR4 and CR5 at the 5% overpressure condition when burning the 50/50 blend of coals. Do you have an opinion as to whether his concern is valid?

A. The design documents show that the conveying system will be adequate. The schematic diagram of the existing system "as built" shows that the system is adequate. While Mr. Hatt says the system is operating at about 700 tons per hour, the design rate available is 800 tons per hour. With a 50/50 blend of 8,800 Btu PRB coal and 12,000 CAPP coal a little over 14,000 tons will be required to match the current 12,000 tons of 12,000 Btu CAPP coal. Under normal operation with two belts the 14,000 tons can be moved in 16 hours with each belt operating at a very low speed of less than 500 tph. The two belts running from transfer point 28 to the plant were designed to be redundant. If one belt has to be out of service for maintenance or for a breakdown the other belt can fuel the plant with 14,000 tons in 17.5 hours at 800 tph, the design speed. In an emergency the single belt could run for 20 hours at 700 tph and fuel the plant with 14,000 tons. Capacity of the conveyor system should not be a concern.

Q. PEF witness Heller says that producers of PRB coal were not interested in submitting bids to PEF's requests for proposals. Based on Southern Company's experience, does this seem plausible?

A. No. It was my experience during this same time frame discussed by Mr. Heller that PRB coal suppliers were very anxious to expand their production levels and were very aggressive in searching out any possible customer. The notion that they would ignore or even avoid offering their coal to PEF is contrary to every thing I experienced or observed in my Southern Company position. They were

even willing to sell coal to tiny Plant Watson. I do not understand the claim that PRB was "unavailable" to PEF.

Q. Are their any other points in Mr. Heller's testimony that you would question?

A. Throughout Mr. Heller's testimony he consistently downplays the all - rail option for bringing coal to the plant from the PRB. On page 11 and 12 he accepts as fact that congestion on the final short leg of the delivery cannot be fixed. On page 13 he jumps to the conclusion that because an all - rail movement would be one of the longest hauls in the US the cost "would almost certainly be more costly than a rail-water movement." On page 18 he recognizes that waterborne transport was generally more costly than rail delivery, but then discards the option in his analysis. His testimony does not indicate anywhere that bids for an - all rail movement were requested by PEF or that even discussions with western railroads or CSX, the only available eastern option, ever took place. Mr. Heller's and PEF's lack of apparent interest in the - all rail option forces the analysis to include constraints on the amount of PRB coal that could be delivered to the plant and it brings in non-market costs for some parts of the movement. Thus, their resulting answer is based on an unproven assumption.

The most important factor in the delivered cost of PRB coal to a distant plant is the transportation component. This piece will usually be three times or more the cost of the coal. During the time that Southern was making decisions on conversion of Scherer and Miller, we spent a great deal of time dealing with and

conducting hard negotiations with the railroads. We did find that both the two western and the two eastern railroads were very interested in our long hauls and very aggressive in their pricing. In fact, it was a railroad that first approached Southern to introduce the idea of burning PRB coal at Scherer.

Q. Were their other transportation options that Mr. Heller did not fully consider and evaluate?

A. Yes, another rather obvious route to Crystal River, if waterborne coal was desired, was to rail coal directly to the McDuffie Terminal at the Alabama State Docks in Mobile. The terminal is served by several railroads, creating competition opportunities. At the terminal the coal could have been transloaded to barges for the movement to the plant. The distance from Mobile to the plant is less than from IMT, near New Orleans. This option was not considered by Mr. Heller and he again took the business as usual approach and focused on the IMT facility, possibly because that is what PEF used during the period under review.

An aggressive coal procurement program should investigate all possible supply and transportation options. A review of a procurement program's performance should also consider all options, not just the ones selected.

Q. Do you have other concerns about Mr. Heller's testimony?

A. On page 33, Mr. Heller accepts Mr. Hatt's estimates for capital costs and operating costs that would be required by a conversion to the 50/50 blend of coal. He then uses those numbers to create a high threshold for his analysis.

Based on my experience and my observations at Crystal River, Mr. Hatt's projection of the need and the cost of blending equipment, boiler modifications

etc. are not well founded. The fact that Mr. Heller accepts Mr. Hatt's numbers further reduces the credibility of Mr. Heller's analysis and his conclusions.

Q. Are their other issues or concerns that you identified in Mr. Heller's testimony?

A. Yes, based on my experience and the reporting of PEF's procurement process by Mr. Heller, PEF appears to have had a casual, business as usual approach to fuel acquisition. The fact that Mr. Heller accepts this approach and builds his analysis on that base is another reason why my experience with Southern during this same time frame, dealing with similar decisions and concerns, tells me Mr. Heller's conclusions are not credible.

Let me point out some examples. On page 17 of Mr. Heller's testimony he discusses the evolution of industry practice to move from very long term contracts during the 1980's to shorter term contracts with more quantity and price flexibility during the 1990's. He does not, however, indicate that PEF made that transition. He also does not indicate that PEF had a strategy to modify, improve or eliminate contracts that were no longer appropriate in the changing market. Instead, he uses these older contracts to justify PEF's decisions regarding PRB coal.

On Page 21 Mr. Heller discusses the PEF 1998 RFP and the claim that PEF did not receive any PRB bids. He then accepts that this ended the question of using PRB coal during that period. By 1998 Southern was burning large quantities of

PRB coal at three different plants and had been doing it for several years. The industry was actively trying to burn more PRB coal all over the country. The customers of our companies and those of other utilities were enjoying the savings of these efforts. But, PEF apparently took no affirmative action to get bids. Business as usual-and Mr. Heller accepts that in his analysis.

On pages 24 and 25 Mr. Heller discusses his extensive experience with companies that evaluated and made the switch to PRB coal. He explains the complicated and detailed effort to make the conversion decision, and that matches Southern's process. But, then he accepts that PEF did not truly begin that type of review until 2005 and 2006. That is an inexcusable 10-15 years of lost opportunity and customer savings.

Beginning on page 28 Mr. Heller discusses the transportation assumptions of his analysis. I have already expressed my opinion that he ignores two options, that in my experience were lower cost options than the ones he analyzed-all rail to the plant and rail to McDuffie Terminal and barge to the plant. In the routes he did study he relies for several components on the "transportation regulator", which I understand to be a non-market established price. In the changing transportation market of the time my procurement experience does not allow me to accept this approach as reasonable for this type of review. All it does is lock in a set of decisions made at the time. This review should be about what decisions a prudent

utility should have been making at the time, based on information that was known or should have been known at the time.

In summary, the period under review was a time when the industry was changing pretty quickly. The introduction of low cost PRB coal was just one factor. Clean air requirements were changing, sulfur allowances were being discussed and then implemented. A growing market for electric sales outside a utility's boundaries rewarded the low cost marginal supplier. Many utilities recognized that some old contracts had gotten way out of line with the current market and were taking aggressive steps to renegotiate or even buy out of them. Procurement strategies were focusing more on staying flexible. Aggressive utilities were approaching coal companies and transportation suppliers in an effort to negotiate deals that gave them a step up on their electric competitors.

In spite of all this background, Mr. Heller's analysis seems to reward PEF for ignoring change and opportunity and instead reaches the conclusion that PEF did the right thing by continuing to charge the rate payer higher costs because they made mistakes in the past.

Q. Does this conclude your testimony?

A. Yes.

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of foregoing Rebuttal Testimony of David J. Putman has been furnished by U.S. Mail on this 6th day of March, 2007, to the following:

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