No. 112, Original

IN THE SUPREME COURT OF THE UNITED STATES

October Term, 1987

STATE OF WYOMING,

Petitioner,

vs.

STATE OF OKLAHOMA,

Respondent.

ORIGINAL ACTION

APPENDIX TO BRIEF ON THE MERITS FOR THE STATE OF OKLAHOMA

ROBERT H. HENRY
ATTORNEY GENERAL OF OKLAHOMA

NEAL LEADER*
ASSISTANT ATTORNEY GENERAL
CHIEF, CIVIL DIVISION

THOMAS L. SPENCER
ASSISTANT ATTORNEY GENERAL
CHIEF, GENERAL COUNSEL DIVISION

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May, 1991
*Counsel of Record

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OKLAHOMA'S EXHIBIT "A"

IN THE SUPREME COURT OF UNITED STATES

October Term, 1987

STATE OF WYOMING,	)	
	)	
Plaintiff,	)	
	)	
v.	)	No 112, Original
	)	
STATE OF OKLAHOMA,	)	
	)	
Defendant.	)	

PLAINTIFF'S RESPONSE TO REQUEST FOR ADMISSIONS

COMES NOW the State of Wyoming, by Joseph B. Meyer, Attorney General for the State of Wyoming, and through Steve Jones and Mary B. Guthrie, Senior Assistant Attorneys General, and for their response to the Defendant's request for admission hereby submits the following:

1. Wyoming's coal severance tax is assessed on the basis of the amount of coal

mined or produced and not on the amount of coal sold.

RESPONSE:

Denied, based upon the phraseology used. The Plaintiff admits, however, that Wyoming's coal severance tax is assessed on the current and continuing privilege of severing or extracting coal in the State of Wyoming. The value of the privilege is based on the amount of coal mined or produced.

2. Wyoming's coal severance tax is assessed against the persons mining or producing coal in Wyoming and is not assessed against Oklahoma utility companies.

RESPONSE:

The Plaintiff admits that its coal severance tax is not assessed against Oklahoma utility companies. The Plaintiff denies the rest of the sentence, due to phraseology used, but admits that Wyoming's

coal severance tax is assessed against the person or persons extracting or severing coal in the State of Wyoming.

3. Wyoming exercise tax on the extraction of coal under Wyo. Stat. § 39-6-302(a)-(f)(Supp. , 1985) is based on a percentage of the value of the coal severed.

RESPONSE:

Admitted.

4. The amount of the Wyoming excise tax on the extraction of coal is determined by multiplying the applicable statutory percentage by the market value of the coal, which value is determined at the time of severance.

RESPONSE:

The Plaintiff admits that the amount of the Wyoming excise tax on the extraction of coal is determined by multiplying the applicable statutory percentage by the fair cash market value of the coal. The

Plaintiff denies that the value is determined at the time of severance. However, the Plaintiff admits that the fair cash market value of the coal is determined at the mine or mining claim where produced, after the mining or production process is completed. (See W.S. 39-2-202(a).)

Respectfully submitted this 30th day of May, 1989.

Steve Jones
Senior Assistant
Attorney General
123 Capitol Building
Cheyenne, Wyoming 82002

Mary B. Guthrie
Senior Assistant
Attorney General
123 Capitol Building
Cheyenne, Wyoming 82002

CERTIFICATE OF SERVICE

I, Steve Jones, hereby certify that I served a true and correct copy of the foregoing PLAINTIFF'S RESPONSE TO REQUEST FOR ADMISSIONS by depositing a copy of the same in the United States Mail, postage prepaid this 30th day of May, 1989, addressed as follows:

Neal Leader
Assistant Attorney General
Chief, Civil Division
112 State Capitol Building
Oklahoma City, OK 73105

_____
Steve Jones
Senior Assistant
Attorney General

OKLAHOMA'S EXHIBIT "C"

AFFIDAVIT OF MARY STAUFFER

State of Oklahoma)
) ss:
County of Craig)

I, MARY STAUFFER, being first duly sworn, depose and state as follows:

1. I am an Accounts Payable Supervisor for the Grand River Dam Authority (G.R.D.A.), which is headquartered in Vinita, Oklahoma.

2. In my capacity as Accounts Payable Supervisor, I have access to certain cost information related to the cost of coal and rail transportation for the G.R.D.A.

3. The records of the G.R.D.A. reflect that between 1981 through 1988, the cost of rail transportation ranged from 59.9% to 76.4% of the total delivered cost for coal delivered to G.R.D.A.'s plant at Choteau, Oklahoma.

FURTHER AFFIANT SAYETH NOT:

Mary Stauffer

SUBSCRIBED AND SWORN TO before me, this 24th day of October, 1989.

Notary Public

My Commission Expires:

(SEAL)

OKLAHOMA'S EXHIBIT "D"

AFFIDAVIT OF J.T. COFFMAN

State of Oklahoma)
) ss:
County of Oklahoma)

I, J.T. Coffman, being first duly sworn, depose and state as follows:

1. I am the Manager of Generation Services of Oklahoma Gas and Electric Company (OG&E), which is an Oklahoma utility company headquartered in Oklahoma City, Oklahoma. OG&E is an investor owned utility.

2. As the Manager of Generation Services I am responsible for the department of OG&E which oversees the acquisition of coal for OG&E's two coal-fired generating plants in Red Rock, Oklahoma, and Muskogee, Oklahoma. In this capacity I also supervise the acquisition of rail and transportation services for the delivery of the coal to these two facilities.

3. In my capacity as Manager of Generation Services, I have access to certain cost information related to the cost of coal and rail transportation for OG&E.

4. The records of OG&E reflect that between 1981 through 1988, the cost of rail transportation ranged from 55% to 73% of the total delivered cost for coal delivered to OG&E's plants at Red Rock and Muskogee.

FURTHER AFFIANT SAYETH NOT.

J.T. COFFMAN

Subscribed and sworn to before me, this 16th day of October, 1989.

Notary Public

My Commission Expires:

(SEAL)

OKLAHOMA'S EXHIBIT "E"

A F F I D A V I T

State of Oklahoma)
) ss:
County of Caddo)

I, Robert A. Orme, the undersigned Affiant, being duly sworn, state the following:

1. I am employed as Manager of Power Production by Western Farmers Electric Cooperative (WFEC), a cooperative corporation duly organized pursuant to the laws of the State of Oklahoma.

2. The acquisition of coal utilized in the operation of WFEC's only coal-fired generation plant, located near Fort Towson, Oklahoma, is within the responsibility of the Power Production Division.

3. Included in the WFEC's total cost of delivered coal is rail transportation cost for coal shipped from the State of Wyoming to WFEC's plant and trucking cost for coal

shipped from mines located in Southeastern Oklahoma to WFEC's plant.

4. As reflected by WFEC's records, its cost of rail transportation for the delivery of coal ranges from 50% to 70% of the total delivered price of coal delivered to its Fort Towson plant from the State of Wyoming during the years 1982 through 1988.

FURTHER, AFFIANT SAITH NOT.

_____
Robert A. Orme

Subscribed and sworn to before me this 20th day of October, 1989.

_____
Notary Public

My Commission Expires:

_____
(SEAL)

OKLAHOMA'S EXHIBIT "F"

AFFIDAVIT OF MASOUD MAHMOUD-NEJAD

State of Oklahoma)
) ss:
County of Tulsa)

I, MASOUD MAHMOUD-NEJAD, being first duly sworn, depose and state as follows:

1. I am Director, Fuels for Public Service Company of Oklahoma (PSO), which is an Oklahoma utility company headquartered in Tulsa, Oklahoma. PSO is an investor-owned utility.

2. I am Director of the Department at PSO which oversees the acquisition of coal for PSO's Northeastern 3&4 coal-fired generating plant in Oologah, Oklahoma. In this capacity I also supervise the acquisition of rail and transportation services for the delivery of the coal to this facility.

3. In my capacity as Director, I have access to certain cost information related

to the cost of coal and rail transportation for PSO.

4. The records of PSO reflect that between 1979 through 1988 the cost of rail transportation ranged from a low of 45% to a high of 65% of the total delivered cost for coal delivered to PSO's plant at Oologah, Oklahoma.

FURTHER AFFIANT SAYETH NOT.

_____
Masoud Mahmoud-Nejad

Subscribed and sworn to before me this 9th day of October, 1989.

_____
Notary Public

My Commission Expires:

_____
(SEAL)

OKLAHOMA'S EXHIBIT "G"

No. 112, Original

IN THE SUPREME COURT OF THE UNITED STATES

October Term, 1987

STATE OF WYOMING,

Plaintiff,

v.

STATE OF OKLAHOMA,

Defendant.

AFFIDAVIT OF DAVID M. WEINSTEIN

I, David M. Weinstein, being first duly sworn, depose and state as follows:

1. I have a B.A. in economics from Amherst College, a M.A. in economics from Stanford University, and a J.D. from Yale Law School. I have studied and assessed energy and coal-related issues since 1974. My resume, which includes my educational background and list of publications, is

attached to this affidavit (Exhibit A). It accurately reflects my educational background and my professional experience.

2. I have reviewed the "Stipulation of Facts" ("Stipulation") submitted on 11 August 1989 in the above-entitled matter.

3. I have also reviewed several additional documents ("the Documents") related to this matter, namely:

- "The Economic Effects of Oklahoma Statutes Title 45 § 939, Title 45 § 939.1 and Title 74 § 85.32 on Oklahoma's Electric Utilities Fuel Purchasing Decisions," written by Sam J. Flaim and Ross C. Hemphill ("Flaim/Hemphill").

- "Amicus Curiae Brief of the Wyoming Mining Association in Support of Motion of the State of Wyoming for Summary Judgment" ("Amicus").

- "Motion of the State of Wyoming for Summary Judgment and Brief in Support of Motion" ("Wyoming Motion").
- "Affidavit of Richard J. Marble" ("Marble Affidavit").

4. I have been employed by the State of Oklahoma to review the reasonableness of several statements and allegations in "the Documents" as they relate to OKLA. STAT., tit. 45, § 939 (Supp. 1986) ("the Act"). My comments focus on the following areas:

- Coal purchases by Oklahoma utilities
- Wyoming severance tax revenues
- Errors in fact, inconsistencies or misleading allegations in "the Documents."

COAL PURCHASES BY OKLAHOMA UTILITIES

5. "The Documents" incorrectly allege that "ten percent of the Oklahoma coal market has been saved for Oklahoma producers" and that "Oklahoma's utilities were forced to reduce their purchases of

Wyoming coal to 90% of their needs." (See, for example, "Amicus," p.6, last full sentence in text; "Wyoming Motion," p. 19, first full paragraph; "Wyoming Motion," p. 24, last full paragraph, first line.)

In fact, as shown in "Stipulation" (items 10 - 13), in the two full years that "the Act" has been in effect (1987 and 1988) Oklahoma's share of the Oklahoma utility market has been 5.7 percent and 5.4 percent. The remaining coal in both years, more than 94 percent of the Oklahoma utility market, was provided by Wyoming producers. In the year before "the Act" took effect, Oklahoma's share of the Oklahoma utility market was 2.1 percent. It is incorrect, therefore, to allege that "the Act" has "forced" Oklahoma utilities to reduce their purchases of Wyoming coal to "90% of their needs."

WYOMING SEVERANCE TAX REVENUES

Actions by the State of Wyoming and changes in the coal market have caused much greater reductions in severance tax revenues than any revenues that might have been lost as a result of "the Act."

6. The reduction of the severance tax rate by the State of Wyoming in 1988 had a far greater impact on Wyoming state tax revenues than any alleged impact of "the Act."

In 1988, the State of Wyoming reduced its severance tax rate on coal from 10.5 percent to 8.5 percent. (See "Stipulation," item 6, last sentence.) That year, $85,473,220 was generated from Wyoming coal severance taxes. (See "Marble Affidavit," p. 2, item 4.) Had the State of Wyoming not changed its severance tax, those potential revenues could have been $105.58 million, or over $20 million higher.

In contrast, the "Marble Affidavit" alleges (p. 2, item 7, and p. 3, item 12) that severance taxes lost in 1988 as a result of "the Act" were $542,352. Even assuming that the "Marble Affidavit" is correct in its calculation of lost severance taxes due to "the Act," the impact of the action by the State of Wyoming in decreasing the severance tax rate was approximately 37 times greater in magnitude.

7. The decline in coal market prices also had a far greater impact on the State of Wyoming's revenues than any alleged impact of "the Act" during the same period.

Wyoming's coal severance tax is based on the mine-mouth price of the coal that is produced ("Stipulation," item 5). According to U.S. government figures (Energy Information Administration, Coal Production 1987, Table C31, p. 150), the average mine price for coal produced in

Wyoming declined from $10.85 per ton in 1986 to $9.80 in 1987. This reduction price for Wyoming coal in 1987 (the first year of "the Act"), resulted in the loss of tax revenues.

According to "Marble Affidavit," Wyoming coal severance tax revenues in 1987 were $115,554,537 (p. 1, item 3). Had the average mine-mouth price of Wyoming coal not dropped from $10.85 per ton in 1986 to $9.80 in 1987, severance tax revenues would have been approximately $127.9 million, or $12.38 million higher.

Thus, over $12.38 million in "lost severance tax revenues" in 1987 could be attributed to the change in price of Wyoming coal. In comparison, "Marble Affidavit" attributes $535,886 in "lost severance taxes" to "the Act" (p. 3, item 12). Even assuming that the "Marble Affidavit" is correct in its calculation of

"lost severance taxes," the market price effect was approximately 23 times greater.

8. In any event, the "Marble Affidavit" overstates "the Act's" impact on Wyoming state revenues. In calculating that the severance tax revenues allegedly lost in 1988 as a result of "the Act" were $542,352 ("Marble Affidavit," p. 2, item 7 and p. 3, item 12), the author assumes that 100 percent of the Oklahoma coal used by Oklahoma utilities would have come from Wyoming if not for "the Act."

That ignores the fact ("Stipulation," items 10 - 13) that 1983 was the last year that Wyoming provided 100 percent of the coal used by Oklahoma facilities. In fact, even though "the Act" only became effective as of January 1, 1987, utilities in Oklahoma bought Oklahoma coal in 1984 (20,100 tons), 1985 (24,200 tons) and 1986 (255,700 tons). (See "Stipulation," items 10 - 13.)

ERRORS, INCONSISTENCIES OR MISLEADING ALLEGATIONS IN "THE DOCUMENTS"

9. "Amicus" asserts that in 1987 "Wyoming mines would likely have sold an additional 690,000 tons of coal" to Oklahoma if not for "the Act" (p. 7, first two lines). Similar allegations appear in "Marble Affidavit" (p. 2, items 5, 7, 9, and p. 3, item 12). This tonnage represents the entire amount of coal purchased by Oklahoma utilities from Oklahoma producers. "Amicus" and "Marble Affidavit" are therefore implying that Oklahoma utilities would have bought no coal from Oklahoma producers in 1987 - 1989 if "the Act" were not in effect.

This assertion ignores the buying history of Oklahoma utilities in the years before "the Act." As can be seen in "Stipulation" (items 10 - 13), Oklahoma utilities have bought some Oklahoma coal every year since 1983. In 1986, the year

before "the Act" took effect, Oklahoma utilities bought 255,700 tons of Oklahoma coal, or 2.1 percent of their total coal usage.

10. "The Documents" mention in several places ("Amicus," p. 5, first and second full paragraphs; Flaim/Hemphill," pp. 16-17) that Wyoming coal is much cheaper to mine than Oklahoma coal, implying that Wyoming coal is automatically preferable to Oklahoma coal. However, for utility coal purchasers the important cost criterion is the delivered price (in cents per million Btu), not the F.O.B. price nor the cost of mining. Therefore, it is necessary to compare the market price of Wyoming coal delivered to Oklahoma utilities with the delivered market price of Oklahoma coal.

11. "The Documents" assert that all Oklahoma electric utility plants "were designed to burn" ("Wyoming Motion," p. 23, second full paragraph, fourth sentence) or

"are best suited for" ("Flaim/Hemphill," p. 2, third paragraph, second sentence) Wyoming coal. In fact, the "Flaim/Hemphill" report states in another section (p. 19, second paragraph, third sentence) that "GRDA 2 ... is designed for a 50/50 blend of Oklahoma and low Western sulfur coal."

12. "Amicus" alleges or implies in several places (e.g., p. 2, lines 12 - 15; p. 3, first full paragraph, third sentence; p. 9, last paragraph) that "the Act" has, by encouraging the use of higher sulfur Oklahoma coal, made it "more difficult for the nation to solve its pressing air pollution problem." To support its argument on p. 9, "Amicus" cites "Flaim/Hemphill," pp. 18 - 21.

Yet on page 20 of "Flaim/Hemphill," the authors of that document state that all Oklahoma utilities (excluding GRDA) "can blend the higher sulfur [Oklahoma coal]

into their existing operations and still be within compliance [of the Clean Air Act]." (Emphasis added.) GRDA has one plant "that requires a scrubber to meet the standards established by the Clean Air Act." ("Flaim/Hemphill," p. 20, second full paragraphs.

FURTHER AFFIANT SAYETH NOT.

David M. Weinstein

Subscribed to and subscribed before me this 1st day of November, 1989.

Notary Public, Middlesex County Commonwealth of Massachusetts

My Commission Expires:

_____

OKLAHOMA'S EXHIBIT "H"

No. 112, Original

IN THE SUPREME COURT OF THE UNITED STATES

October Term, 1987

STATE OF WYOMING,

Plaintiff,

vs.

STATE OF OKLAHOMA

Defendant.

AFFIDAVIT OF JAMES S. HAMM, JR. CONSULTING ENGINEER FOR THE DESIGN AND CONSTRUCTION OR GRDA COAL-FIRED PLANT UNIT NO. 2

STATE OF OKLAHOMA)
) ss
COUNTY OF TULSA)

I, James S. Hamm Jr., being first duly sworn upon my oath, make the following statement, to wit:

1. This Affidavit is given to be used in the State of Oklahoma's Motion for Summary Judgment and Opposition to Wyoming's Motion for Summary Judgment, in the above-referenced case.

2. I am a Licensed Professional Engineer (#10425, State of Georgia; registration attained in 1976).

3. I have twenty-two (22) years of power generation experience with emphasis on Coal-Fired Utility Applications.

4. All of my opinions expressed in this Affidavit are either based on personal knowledge, public documents and other sources, all of which are reliable, and all of which are commonly used by other professionals in the engineering field to form professional opinions. While I will more fully discuss the facts supporting my opinions later in this Affidavit, I hereby make the following statements and/or opinions:

A. The Grand River Dam Authority (GRDA) Unit No. 2 was specifically designed to burn up to a 50/50 blend of Oklahoma & Wyoming coals as measured on a BTU basis. This unit would perform more efficiently when burning this blend of coal.

B. All coal-fired generating units in Oklahoma could burn a 10/90 blend of Oklahoma to Wyoming coal without violating sulfur emission requirements.

C. Some of the underlying reports upon which the "Flaim/Hemphill" report were based (specifically the GDS Associates Report on GRDA prepared for KAMO), contain flawed data provided by GRDA personnel and ignore relevant cost-saving factors resulting from the burning of Oklahoma coal. In my opinion there is no reliable data to attribute higher maintenance and operation costs to the burning of Oklahoma coal which

cannot be offset by cost-savings from burning Oklahoma coal.

D. Most of the difficulties experienced at the GRDA units are attributable to the GRDA's personnel refusal or reluctance to operate the plant as it was designed to be operated. Some of these problems and additional costs are actually caused by not burning the 50/50 blend of Oklahoma and Wyoming coal according to the design.

The Design of GRDA Unit No. 2 and its initial operation.

5. I was employed by The Benham-Group d/b/a The Benham-Holway Power Group from 1981 to the end of 1987. Benham-Holway Power Group was the design, engineering and construction management firm for the Grand River Dam Authority for their two Coal-Fired Power stations. At Benham, I was Vice President of Power Engineering for the

corporation and served as Technical Project Manager fc all design, engineering, construction and start-up activities for GRDA 2, a 520-MW Coal-Fired Station placed in commercial operation during the Spring of 1986, in Chouteau, Oklahoma. In this capacity, I directed all technical activities related to Benham's role in the project and interfaced on a daily basis with top GRDA Power Production, Engineering, Management and Staff Personnel. I attended monthly GRDA-2 Progress Meetings with the GRDA General Manager and his top staff. I regularly attended GRDA Monthly Board of Directors meetings.

6. In addition to my primary assignment as Technical Project Manager for the GRDA-2 Project, I also consulted with GRDA on operating problems relating to GRDA-1 and on the selection of coal to be burned for GRDA-2.

7. As a Consultant to GRDA on GRDA-1, I observe operating problems relating to the burning of Wyoming coal and participated in a series of corrective modifications that cost GRDA millions of dollars in additional capital costs, as well as lost power production and GRDA labor costs. Some of these problems that were corrected could have been at least partially solved by blending some Oklahoma coal with the Wyoming coal. No consideration was given by GRDA management to burn Oklahoma coal in GRDA-1, although 10,000 tons was purchased and tested in 1984.

8. From GRDA-2's conception in 1981, it was always planned for the plant to have the capability of burning up to a 50/50 blend of Oklahoma and Wyoming coal (BTU basis). The Project Conceptual Design documents, all project descriptions including bond sale prospectuses, and all

environmental licensing documents confirm the 50-50 blend criteria.

9. GRDA's engineering contract with Benham-Holway Power Group signed in 1981 acknowledges that GRDA-2 would be designed to burn a mixture of Oklahoma and Wyoming coal. As such, it was Benham's responsibility to assure that all provisions be incorporated in the plant design to assure that the GRDA-2 Power Facility could successfully burn the desired Oklahoma and Wyoming coal mixture and this was done.

10. All relevant GRDA-2 vendor equipment specifications and construction contracts included the necessary criteria to assure successful plant operation with the 50-50 coal blend and the appropriate guarantees were requested and obtained.

11. The GRDA coal handling facilities were designed to receive Oklahoma coal only by truck. No provisions were made to

receive, store, segregate, and reclaim Oklahoma coal when brought in by rail. This design criteria was based on allowing more Oklahoma suppliers the opportunity to sell coal to GRDA. After GRDA-2 became operational, this philosophy was changed and the costly truck receiving facility has been abandoned. Allowing only for coal shipments by rail greatly limits the number of potential Oklahoma suppliers since most do not have convenient rail sidings.

12. I am not aware of any effort by GRDA to burn higher percentages of Oklahoma coal (up to the 50% level) or to investigate why the plant could not handle the burning the higher percentage of Oklahoma coal. GRDA/Benham Engineering Service Contract and all equipment vendors contracts included provisions and guarantees to accommodate the 50-50 blend.

13. During GRDA-2's first years of operation, the normal series of problems

arose limiting operation. Since many of these problems concerned the Flue Gas Desulfurization System (FGD) supplied by Flakt, Inc. GRDA's experience with the higher sulfur Oklahoma coal has been hampered.

High Maintenance Costs at GRDA Attributable to Operational Errors and Wyoming Coal-Not to Oklahoma Coal

14. The problems the GRDA-2 unit has experienced with their (FGD) cannot be attributed to the use of Oklahoma coal. Most of these problems are not related to the coal. Of the operational problems related to the coal, more problems can be attributed to the higher abrasiveness of the Wyoming coal ash. This is just the opposite of the data presented in a report by GRDA dated 4-19-88 evaluating the cost of Wyoming vs. Oklahoma coal use. (This same report appears to have been used by

GDS Associates in their report upon which Flaim & Hemphill relied. The GDS Associates Report will be discussed later in this Affidavit.)

15. In the 4-19-88 evaluation, GRDA attributes higher slagging rates to the use of the blend coal as compared to burning only Wyoming coal. GRDA further stated that this is the cause of bottom ash handling system failure with high repair costs and increased maintenance. This occurrence is more likely attributable to the manner in which GRDA has chosen to burn Oklahoma coal than to the Oklahoma coal per se. Before coal is burned in a generating plant, it must be pulverized into a finer form. As confirmed in the 4-19-88 report, GRDA is feeding Oklahoma coal to only two (2) of the six (6) pulverizers. Therefore, two sets of coal burners in the furnace are introducing blended coal while the other four sets of burners are firing straight

Wyoming coal. This is not the manner in which the unit was designed to operate and slagging is the result. High slagging on the furnace walls leads to large clinkers being dropped to the bottom ash system. While this does result in increased effort on the part of operational personnel to continue to operate the bottom ash system, the total destruction of the equipment as claimed by GRDA in the 4-19-88 evaluation can only be attributed to operational error.

16. The GRDA evaluation penalized the use of Oklahoma coal because of this higher bottom ash system repair and maintenance costs. I attended several meetings with GRDA and Babcock and Wilcox (B&W), the system supplier, concerning problems GRDA was experiencing with the bottom ash system. Although advice was requested and given concerning how to handle clinkers, the continual destruction of drag chain

flight bar and crusher repair work due to burning Oklahoma coal was never discussed. The biggest problem discussed with B&W concerned build-up of ash and coal fines in the submerged chain conveyor hopper and pluggage in the various drains, chutes, pipes, closed circuit cooling lines and heat exchangers. These pluggage and build-up problems were directly attributable to the high calcium in the Wyoming coal ash. The only solution that we could come up with was increased maintenance by GRDA personnel (i.e. continuous manual cleaning) in conjunction with costly chemical treatment. Again these problems are attributable to the Wyoming coal, not the Oklahoma coal.

17. In the 4-19-88 report, GRDA attributes increased pulverizer wear to the "harder" Oklahoma coal. This is difficult to understand since the Oklahoma coal is

softer than the Wyoming coal and requires much less energy to grind.

18. Other cost and evaluation methods used by GRDA in the 4-19-88 report were erroneous and/or highly speculative.

Erroneous Statements and Flaws in the "Flaim-Hemphill Report" Prepared for Wyoming

19. I have reviewed the report "The Economic Effects of Oklahoma Statues Title 45, § 939, Title 45, § 939.1 and Title 74, § 85.32 on Oklahoma's Electric Utilities Fuel Purchase Decisions", by Sam J. Flaim and Russ C. Hemphill, dated September 11, 1989, hereafter referred to as "Wyoming Report". The Wyoming Report was attached to affidavits prepared by Mr. Flaim and Mr. Hemphill, and appear in the appendix attached to Wyoming's Motion for Summary Judgment. I make the following statement concerning the "Flaim/Hemphill Report."

20. In Section 1.0 of the Flaim/Hemphill Report, Summary and Conclusions, it is stated in Paragraph 2, Page 2 that:

> "Until 1984, Wyoming coal was the exclusive fuel used in all Oklahoma coal plants. Tests burns of Oklahoma/Wyoming coal blends were conducted in 1984 and 1985 and small purchases of Oklahoma mined coal are reflected in those years. These test samples indicated significant increase in the operating costs of these units and future purchase of Oklahoma mined coal were deferred."

21. No evidence is provided to support this conclusion. The amounts of coal burned prior to 1986 are much too small to support a finding such as this. A report prepared by United Engineers, and Constructors, Inc. for the Grand River Dam Authority in May, 1980 entitled "Future Coal Supply Study" concluded that, " The Powder River Basin and Oklahoma coals are compatible for blending in 50/50 weight ratios." (United Report, Section II, Page

3, Paragraph 3). United Engineers, is one of the largest engineering firms in the world and their partner in preparing this report was the Paul Weir Company, the premier coal consulting firm in the United States.

22. Section II, page 3, paragraph 4 of the United report states that the blend would be "no worse than either component coal from the standpoint of slagging and fouling classification." The lower moisture and higher BTU content of the Oklahoma coal will improve operations and increase efficiency while its higher ash and sulfur content represent negative factors.

23. Nine (9) Oklahoma coal generating units were constructed under the 1970 Clean Air Act, which allowed the use of low sulfur (compliance) coal as an alternate to flue gas scrubbing. Only the additional coal handling cost at the plant and the delivered cost of the coal are cost

factors, as long as the amount of Oklahoma coal blended with the Wyoming coal does not result in a sulfur dioxide emission exceeding 1.2 pounds per million BTU's of coal burned. The low sulfur Wyoming coal allows the ten (10) percent Oklahoma coal required by Oklahoma statute to be burned with a comfortable margin within the 1.2 limitation, at all nine (9) units. The Flaim/Hemphill Report concedes that the burning of Oklahoma coal has not resulted in any of the utilities violating emission standards. (Flaim/Hemphill Report, pg. 20).

24. Contrary to the Flaim-Hemphill Report, the nine (9) Oklahoma coal-fired generating units that were constructed under the 1970 Clean Air Act requirements are not "best suited for the low-sulfur subbituminous Wyoming coal". They are equally suited for a 90/10 blend of Wyoming and Oklahoma strip-mined coal. And, burning only Wyoming coal does not "result

in these nine plants meeting emissions standards with significantly lower operating costs". As long as the 1.2 pounds of So2 per million BTU's of coal burned is not exceeded, the Wyoming/Oklahoma blend does not increase the costs. Also, the blended coals do not necessarily produce more solid waste than the Wyoming coal alone for the plants that do not require flue gas scrubbing. The amount of solid waste for these plants is a function of the ash content of the coals burned.

25. The GRDA coal fired plant was constructed subject to the Clean Air Act amendments of 1977 (Regulations issued in 1979). Therefore, GRDA-2 was required to incorporate "Best Available Control Technology". (i.e. a FGD to limit So2 emissions). This was required even if low sulfur coal was the only fuel burned.

26. In Section 8.0 of the Flaim/Hemphill Report "A Discussion of Utilities Fuel Purchasing Decisions", many general statements are made with little or no substance. In the first paragraph, there is a reference to some "studies", but they are not identified. The most comprehensive study that I am familiar with that specifically addresses the feasibility of blending Wyoming and Oklahoma coal for use in Oklahoma plants is the United Engineering/Paul Weir Company study (referred to above). That study concluded it was viable to blend the two coals for use at GRDA-2 and recommended this be done. This study was performed prior to the Oklahoma legislature actions and was adopted by GRDA in 1981. Although the fuel cost escalation from 1980 through 1987, used in the United study, do not reflect the drop in fuel costs that occurred during this period, it is important that this

reduction not be interpreted as a permanent trend. Coal prices typically move up and down in response to many factors. However, over the long term, coal and rail prices have escalated at a fairly constant rate with rail prices historically increasing at a higher rate than coal prices.

27. Page 18, Paragraphs 3 & page 19, paragraph 1 of the Flaim/Hemphill Report are irrelevant as none of the Oklahoma utilities are considering the addition of expensive flue gas scrubbing equipment to meet the requirements of the Oklahoma statutes and are, in fact, not necessary to burn a 10% to 90%, Oklahoma to Wyoming coal blend. On pg. 20 of the same report Flaim/Hemphill admit that the Oklahoma coal can be burned without "scrubbing".

Flaim & Hemphill's Reliance on the GDS Associates Report Which Relied on Inaccurate or Misleading Data

28. The Flaim/Hemphill Report next presents some cost data developed by GDS Associates, Inc. for KAMO Electric. The GDS report is addressed below.

29. I have reviewed "An Assessment of the Cost of the Impact of Oklahoma Coal Legislation Upon the Production Costs of GRDA Unit 1 and 2", prepared in May, 1988 for KAMO Electric Cooperative, Inc. by GDS Associates, Inc. I have the following statements to make about this report.

30. GDS appears to have based their analysis on operating data furnished to them by GRDA. This operating data, concerning the cost of burning blend coal versus Wyoming coal alone, appears to be the same as presented by Roger Burger (GRDA) in his cost study transmitted to Robert Sullivan (GRDA) on April 19, 1988.

31. On page 14 of the GDS Report, GDS states that they have used an efficiency improvement factor of 0.5% for an 81/19

Wyoming Oklahoma blend versus Wyoming coal alone. This improved efficiency is due to less moisture being present in the Oklahoma coal as well as increased efficiency due to the Oklahoma coal being considerably higher in BTU content. This efficiency improvement is approximately one-half of what it should be. Foster Wheeler's boiler design originally specified a boiler efficiency of 88.95 per cent when generating 3,700,000 pounds of steam at design condition with a 50/50 blend. When burning performance Wyoming coal alone the boiler efficiency was reduced to 86.22 per cent. This presents a difference of 2.73 percent between 50/50 Wyoming/Oklahoma and Wyoming coal alone. (Foster Wheeler later increased their efficiencies approximately 0.5 percent for both cases by adding four (4) additional loops of economizer surface. However, the percent difference of 2.73 remained the same). A straight line

interpretation of 20/50 (2.73) = 1.09 percent. This is more than double the value given by GRDA to GDS, Inc. Using the approximate annual fuel cost for GRDA-2 of $25,520,327, an efficiency increase of 1.09 percent has an annual value of $278,172.00. The additional 0.59 percent represents a savings of $150,570.00 not considered by GDS.

32. One explanation for the difference in the efficiency GRDA is experiencing versus what is expected is the manner in which GRDA has elected to operate the boiler. Contrary to the design philosophy of the plant and the design criteria followed by Foster Wheeler to optimize GRDA-2 boiler operation, GRDA blends the Oklahoma coal with the Wyoming coal in only two (2) of the plant's six (6) pulverizers. The plant was designed to blend the coals in all pulverizers. This variation in fuels introduced to the furnace is

responsible for the greater than expected slagging, with resulting heavy slag falls to the plant bottom ash system. This was pointed out to GRDA plant management by Foster Wheeler experts at a meeting in Chouteau, Oklahoma on January 30, 1987 but GRDA continues to operate the unit in the off-nominal manner.

33. Although GRDA has elected not to burn Oklahoma coal in the GRDA-1 boiler, the Unit 1 and 2 boiler are essentially the same design and blending some percentage of Oklahoma coal would also result in a boiler efficiency increase for GRDA-1.

34. On page 5, GDS attributes an additional $486,000.00 lime cost to the 81/19 blend. This appears to be high based on a $52.00 per ton lime cost (given by GRDA at the May, 1988 board meeting as cost of lime) and the assumed operation of GRDA-2 at an annual capacity factor of 55 percent. The GRDA-2 FGD was tested at 400

MW (approximately 75 percent load) in 1987. Approximately six (6) tons per hour of lime was required to remove 87.8 percent of the sulfur dioxide produced when burning a 50/50 blend of Wyoming and Oklahoma coals. The FGD was specified and tested to remove a minimum of 85 percent So2. However, the actual So2 removal requirements are a function of the coals burned. When using an 80/20 blend, a removal efficiency of 70 percent is required for the blend of Wyoming and Oklahoma coals used at the GRDA. For this removal rate, only about 2.4 tons of lime per hour should be required. For the assumptions used by GDS, the total annual cost of lime if burning an 80/20 blend should be approximately $820,000.00. This is considerably less than the $1,300,795.00 dollars attributed against the blend coal by GDS to evaluate busbar costs. Likewise, this $486,000.00

cost difference between the 81/19 blend Wyoming coal should be reduced.

35. While there is no question that the higher sulfur blend will require some additional lime, GRDA's lime costs are too high and may be explained by the manner in which GRDA elects to operate the flue gas scrubber. The plant was designed to operate with all four (4) FGD modules in service but with the capability, when necessary, to maintain full load with one (1) FGD module out of service. The FGD guarantees and performance tests were based on four (4) modules in service. To operate at high plant load continuously with only three (3) modules in service subjects the FGD equipment to additional wear and tear, increases the pressure drop through the FGD system, and increases the potential to wet the FGD vessel walls, increases the amount of water carried over to the precipitator

and greatly increases induced fan horsepower.

36. The GDS Report, based on information from GRDA, has attributed additional annual FGD maintenance costs of $288,000.00 to the use of Oklahoma coal. This compares to GRDA's (Burger report, dated 4-19-88) claims of additional cost of $769,500 for each 3,750 hours of operation. GDS bases their value on the fact that the 81/19 blend coal requires more lime flowing through the atomizers. GDS specifically excludes consideration of the abrasiveness of recycled fly ash, a significant exclusion considering the high abrasiveness of the Wyoming fly ash.

37. A technical paper, "The GRDA Unit Dry FGD System: Performance and Operating Experience," presented at the EPA's 10th Symposium on FGD in October of 1988, on page 16 under the section titled "Atomizers" attributes atomizer problems to

poorly assembled lube oil piping and high speed bearing failures due to dirty lube oil. On page 17, same section the paper states "atomizer disk wear rates are influenced by recycled ash composition and ash quantity. The Powder River coal used at the GRDA has a very abrasive ash. The GRDA system utilizes a very high recycle ash quantity to reduce lime costs. For the purpose of economic use of lime, GRDA chose to operate with double the design recycle rate, and accepted the degradation in the disk wear rate. These two factors require regular maintenance of the atomizer nozzles and wear plates." This paper was authored by GRDA and FLAKT (The FGD Supplier) management personnel.

38. While the burning of Oklahoma coal may require more lime in the desulfurization process, these costs of GRDA are almost entirely offset by the fuel saved when burning Oklahoma coal due to the

increase in boiler efficiency. Again, the efficiency saving figures used by GDS are less than they should be. These values indicate either poor operating practices or errors in GRDA's calculations. The FGD atomizers require more operating horsepower when blend coal is used but this is not a straight-line relationship since less water is required when burning Oklahoma coal. This is due to a reduction in the total gas flow when burning the higher BTU, more efficient blend fuel.

39. Burning blend coal also substantially reduces the forced draft and induced draft fan horsepower due to reduced gas flow through the boiler and the FGD. This is a significant cost-savings factor which has not been considered by either GRDA or GDS in calculating plant busbar costs. Rather than benefitting from this savings derived from burning Oklahoma coal, GRDA's inefficient operating procedure of

using only three (3) FGD vessels at high loads increases fan horsepower even more due to the increase in pressure drop that must be overcome with fan energy.

40. GRDA's manner of operating the boiler with only two (2) pulverizers blending Oklahoma coal increases boiler slagging, increases soot blowing requirements, reduces heat transfer in the boiler, increases fuel requirements and increases pressure drops. All of these factors affect plant busbar costs.

41. While GRDA has experienced major problems with the FGD atomizers, there is no indication that this is related to the use of Oklahoma coal. GDS' assumption that FGD maintenance is a function of total lime used, ignores the actual facts. The FGD atomizers initially failed due to faulty installation of lube oil components leading to bearing failures. These problems were corrected. Other problems are attributable

to GRDA's lack of experience and the use of Wyoming coal. GRDA has lacked experienced operating and maintenance personnel related to the FGD system. This has been a major problem. The problem of accelerated wear of FGD atomized components is due to GRDA's higher than design recycle rate and the abrasiveness of Wyoming coal ash in the recycle products.

42. Neither GRDA nor GDS has addressed wall shedding. This was a major problem in the initial operation of the GRDA-2 FGD and is a continuing maintenance problem at present. It has been reported that work crews require an average of 10 hours per month to manually clear large pieces of hardened slurry falling from the reactor walls. Wall buildup is attributed to over spraying and wetting the reactor walls. Buildup accelerates when Wyoming coal is used by itself due to the lower density

slurry (less lime, more water) used during this mode of operation.

43. While GDS's report is professionally done its underlying reliance on GRDA for operational and maintenance cost data renders it highly biased against the use of the Oklahoma coal.

FURTHER AFFIANT SAITH NOT.

DATED: November 2, 1989

BY: _____
James S. Hamm, Jr.

Subscribed and sworn to before me this 2nd day of November, 1989.

_____
Notary Public

My commission expires:

_____

WYOMING'S EXHIBIT "G"

IN THE

SUPREME COURT OF THE UNITED STATES

October Term, 1987

STATE OF WYOMING, Plaintiff,	)	
v.	)	No. 112, Original
STATE OF OKLAHOMA, Defendant.	)	

OKLAHOMA'S RESPONSE TO WYOMING'S INTERROGATORIES

The State of Oklahoma, by and through Neal Leader and Thomas L. Spencer, Assistant Attorneys General, respond to the interrogatories submitted to the State of Oklahoma, as follows:

INTRODUCTION

The government of the State of Oklahoma has in excess of 600 distinct agencies.

There are also in excess of 50,000 state employees. It would be impossible to canvass each and every one of these state employees and agencies to respond to these interrogatories. The undersigned counsel has contacted and consulted with the agencies which were believed to be the most likely to possess the requested documents. The agencies contacted were the State Mining Department, Commerce Department and the Grand River Dam Authority. We have also attempted to obtain responses from the three private utilities in the State of Oklahoma and the Association of General Contractors which represents most of the coal mining companies in the State of Oklahoma. These interrogatories are limited to the information received by the three state agencies and material voluntarily supplied by the private utilities. If the Plaintiff identifies another agency of the State of Oklahoma

which it believes may possess the information it seeks, the undersigned counsel could send the interrogatories to that agency for an appropriate response.

INTERROGATORIES

PLEASE ANSWER THE FOLLOWING:

1. Considering the constitutional infirmities of S.B. No. 458 (Okla. Stat. tit. 45, § 939 (Supp. 1986)), explain why the Governor of Oklahoma, who must have taken an oath to uphold the Constitution of the United States, did not veto that legislation.

OKLAHOMA'S ANSWER: This is an irrelevant question based on an erroneous legal conclusion and the State of Oklahoma hereby objects to its form and relevance.

2. Why did the Oklahoma legislature pass S.B. No. 458 (Okla. Stat. Title 45, Section 939 (supp. 1986)) (hereinafter

referred to as the "Act")? Explain in detail your answer.

OKLAHOMA'S ANSWER: In asking why the Legislature passed the Act you have asked what the legislative intent of the statute is. The intention of the Legislature in enacting the statute is a legal question determined by resort to the language used, available legislative history and the purpose served by the legislation. The statutes in question (the "Act"), which includes both §§ 939 and 939.1 promote lower utility rates, by insuring that Oklahoma electric utilities will not become solely reliant on a single source of supply primarily shipped by one railroad company. Reliance on sole suppliers and shippers constituted a threat to competitive utility rates when the Act was passed. The threat to reasonable utility rates was made even greater when Congress lifted rail price controls. These statutes also lessened the

potential harm from possible energy supply cutoffs.

3. * * * *

RESPECTFULLY submitted this 12th day of July, 1989.

ROBERT H. HENRY
ATTORNEY GENERAL OF OKLAHOMA

NEAL LEADER
ASSISTANT ATTORNEY GENERAL
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CERTIFICATE OF MAILING

I certify that on the 12th day of July, 1989, I mailed a true and correct copy of the foregoing document to:

Mary Guthrie
Steve Jones
Senior Assistant
Attorneys General
123 Capitol Building
Cheyenne, WY 82002

THOMAS L. SPENCER

EXHIBIT 3 TO WYOMING'S EXHIBIT A

INFORMATION ON WYOMING COAL PRODUCTION

[Abstract of Totals from Stipulation of Facts]

Summary of Wyoming Coal Production

Year	Totals of Taxable Tons
1983	107,902,764
1984	125,931,455
1985	135,105,204
1986	128,145,751
1987	132,753,011
1988	163,815,884
89, 1st Qtr.	40,197,407
89, Pro Rated	160,789,628

EXHIBIT 4 TO OKLAHOMA'S EXHIBIT B

[Abstract of Totals on Wyoming Severance Tax Collection]

	1987 Taxable Value	Severance Tax Rec'd @ 10.5%	1988 Taxable Value	Severance Tax Rec'd @ 8.5%
	* * * *	* * * *	* * * *	* * * *
TOTAL	$1,101,486,981	$115,554,537	$1,006,229,592	$85,473,220