been given is, at best, counter-intuitive. SDB's discovery responses acknowledge that, "There were no specific commitments requested from or given by any of the Class I carriers with respect to future service to be provided to the Terminal." Interrogatory Response, SDB-5 at 2. In fact, CSXI officials had had some discussions with W&LE in 1993 about possible construction of an intermodal facility in Ohio at a location close to CSXT's mainline, but neither W&LE nor CSXI ever mentioned a site in Stark County.

By the time that CSXI was consulted about the Neomodal project, it was clear that the Terminal, already funded and under construction, was going to be finished and opened for business. Since its opening in December 1995, CSXI has made every reasonable effort to market its services to shippers that might use the Neomodal Terminal. Throughout early 1996, CSXT and CSXI engaged in discussions with W&LE to design rail intermodal service to the facility. In May 1996, CSXI established service to and from the facility and moves began on June 1, 1996. Since that time, and as recently as September 1997, CSXI has designed and distributed marketing brochures and other promotional materials and has actively promoted the Neomodal Terminal to its customers. A sampling of these marketing materials is set forth as Attachment D to SDB-5, in Volume 3. CSXI offers W&LE customers access to its Western network, interline connections with Western and Canadian carriers and service into and out of the Southeast U.S.

The proposed allocation of Conrail lines has had no effect on CSXI's marketing of Neomodal. CSXI's efforts to attract and enhance traffic at that facility have continued unabated since the Conrail transaction was announced. SDB's discovery responses

also acknowledge that "CSXI is aggressively marketing and selling the Terminal and its volume has been about 400 lifts per month." Interrogatory Response, SDB-5 at 3.

However, CSXI holds no illusions about the Terminal's commercial viability -- Neomodal has fundamental problems that no marketing program can overcome. The Neomodal Terminal was not constructed because there was a pressing need for an intermodal terminal in Stark County, Ohio or because there is some natural advantage to its location. In fact, there are fundamental and unalterable disadvantages to the location of that Terminal that render questionable the commercial merit of the Terminal's existence.

The Terminal's biggest problem is that it is not on or near the mainline of a Class I railroad and is thus not well-positioned to handle intermodal cargo in a time-efficient manner that allows effective competition with door-to-door motor carriage. Neomodal traffic must be interchanged by W&LE with a Class I railroad, which adds extra time, additional car costs, equipment per diem costs and other associated costs. For example, Neomodal freight originating in Stark County and destined for points on CSXT's network must be transported by the W&LE to Greenwich on the B&O line, which is 70 miles distant, then on to CSX's Willard Yard for connection, which is an additional 15 miles. At Willard, the cars must be switched to a CSXT premium service intermodal train operating today between Philadelphia and Chicago. The switching for both eastbound and westbound traffic requires the complex and time-consuming interaction of four trains at the Willard Yard, CSXT Q135 and Q136 and W&LE 105 and 106.

In addition, the Neomodal Terminal never has been the source of a significant amount of rail business because it is not located in an area that generates substantial volumes

of intermodal cargo. Because of the disadvantage associated with its location, the Neomodal Terminal suffers from intense truck competition. Intermodal transportation is generally most competitive with motor carriage at distances greater than 500 miles. However, Neomodal is only 450 miles from Northern New Jersey, 400 miles from Philadelphia and 337 miles from Baltimore. Thus, Neomodal has a natural competitive disadvantage with respect to freight originating at or destined to these major East Coast points. In addition, because cars originating or destined to Neomodal must be switched with CSXT trains at Willard Yard, which is west of Neomodal, such cars would have to backtrack east in order to reach eastern points.

Most of Neomodal's cargo is handled through Chicago, 357 miles from Neomodal, where it is switched with Western railroads. Again, because of the relatively short distance to Chicago and the operational issues addressed above, motor carriage presents a strong competitive option for shippers to move their freight between the Stark County area and Chicago. Further, there is simply not enough traffic at Neomodal to warrant a train dedicated to serve that market. Neomodal has projected a market of 14,000 units per year (see SDB-5, response to document request no. 1), which translates to about 19 lifts in and out per day, far short of the number of units typically needed to economically justify operation of such a train.

Neomodal also faces competition from Conrail's intermodal yard in Cleveland, which is only 60 miles distant from Neomodal. Collinwood is located on Conrail's mainline linking the Northeast with Chicago (a line to be allocated to CSX) and many intermodal

shippers interested in quick transit times to points on the CSX system may find Collinwood more attractive due to the advantages of its mainline location.

Neomodal has been a money-losing project from the day it began operating. Financial records produced by SDB show that the Terminal has lost money consistently since December 1995. See Intermodal Operators, Inc. financial records, set forth in Volume 3. The records also reflect no impact of the announcement of the Conrail transaction, contrary to Neomodal's claim that the transaction has already had an impact on the Terminal. Neomodal lost money as consistently in 1996 as it has in 1997, and in fact the losses in recent months have been smaller.

In the face of these circumstances, the conditions proposed by SDB and its supporters relative to Neomodal are unjustified. The problems about which SDB and W&LE complain have nothing to do with the Conrail transaction and any impact of the transaction on Neomodal will be, at most, marginal. Neomodal's problems are instead rooted in the decisions that were made by parties other than CSX to construct the Terminal.

CSX (either alone or with NS) should not be required to integrate into its system an intermodal terminal that is not even on its own mainlines and which it could not efficiently operate for the reasons I have stated. CSXI also should not be required to enter into long-term contracts to repay debt that was incurred by SDB and others in the Terminal's construction. These parties incurred that debt, and it is up to them to deal with it.

Providing extensive trackage rights to W&LE as a means of fixing Neomodal's problem, as suggested by W&LE in its Responsive Application and by State of Ohio witness Wesley Wilson at pages 19-20 of Exhibit 2 to OAG-4 is not justified. Neomodal's problems

pre-date this transaction -- and they relate in large part to a questionable decision by SDB to construct the Terminal on the lines at a location that is not convenient for quick connection to CSX or NS. There is nothing about the transaction that will change that unalterable problem and nothing that suggests that CSXI should assume risk that the builders of Neomodal assumed when they went forward with their plan.

Whether Neomodal succeeds or not is a decision that shippers, operating in the free market for intermodal transportation must make, and not one that should concern the Board. If the Neomodal Terminal represents an economic problem for SDB and W&LE -- and clearly they would not be raising these issues if it were not a problem -- it is for them and not CSXI to address. Further, shippers in the area served by Neomodal will retain excellent and competitive post-transaction rail service from CSX and NS. There is simply nothing here that requires Board intervention.

State of Michigan. Michigan's Department of Transportation submitted a letter from Governor John Engler urging CSX and NS to continue to participate in the development of a large intermodal terminal at Conrail's Junction/Livernois Yard in the Detroit area. CSX will review this matter in light of the needs of Michigan shippers for an expanded facility. Michigan has not requested, and the Board should not impose, any conditions concerning the further development of this facility.

State of New York/New York City Economic Development Corporation/Congressman Nadler, et al. These New York and Southern New England parties argue in favor of competitive intermodal rail transportation to New York City and other "East of Hudson" points. The State of New York and the New York Economic

Development Corporation have jointly submitted a responsive application in favor of a second rail carrier (additional to CSXT) operating over the Hudson Line linking Albany and New York City on the East Side of the Hudson. Congressman Nadler, et al. argue in favor of extending the Shared Assets operations to embrace a car float across New York Harbor from New Jersey to Brooklyn and rail lines linking Brooklyn with the Oak Point Yard and other facilities in Manhattan and the Bronx. A submission of several Connecticut Congressmen argues in favor of running "Road Railer" trains through Penn Station to/from Southern Connecticut.

A common thread of these filings is the proposition that East of Hudson points will not receive efficient or competitive intermodal service post-transaction. This is simply not true. Points in New York City, Long Island and Southern New England today receive such service through intermodal terminals in Northern New Jersey. The marketing reach of these (and other) CSXI terminals is at least 100 miles. While shippers in the East of Hudson areas must pay drayage costs to reach the North Jersey terminals, so too do other shippers in points in New Jersey not proximate to the intermodal terminals. The fact that North Jersey terminals (including CSXI's Little Ferry terminal) today attract traffic from East of Hudson shippers offers the best evidence that these areas receive adequate service. The competitive rail service that will flow from the transaction in the NJSAA will benefit these shippers as much as any others.

Transportation Intermediaries Association (TIA-2). The Transportation Intermediaries Association ("TIA"), an association of transportation third parties, requests special protections for its IMC members. TIA claims that recent Western railroad mergers

have hurt IMCs and intermodal transportation through the elimination of service lanes and intermodal terminals; increases in contract volume requirements; changes in credit terms; rate increases; equipment shortages and poor transit times. TIA seeks a condition that would prohibit CSXT and NS from imposing liquidated damages for IMC volume shortfalls resulting from rate increases, termination of intermodal service, poor service performance or increased cargo loss and damage. TIA also requests that CSXT and NS be required to submit plans demonstrating competitive intermodal service in certain traffic lanes between certain eastern points and Chicago and St. Louis, showing how they intend to allocate equipment and showing "continued interchange of intermodal railcars, containers and trailers with all other railroads." TIA-2 at 5.

None of these conditions is justified. TIA is obviously looking for special treatment to protect a class of competitors (who will in any event benefit from the transaction), rather than competition. Beyond the bald allegations of its counsel, TIA offers no evidence that recent mergers, or that the proposed Conrail transaction, would result in a deterioration of intermodal service. Quite the contrary is true of this transaction, as Applicants have amply demonstrated. Additional and expanded single-line services will be offered on numerous major routes described in the CSX Operating Plan. See CSX/NS-20, Vol. 3A at 7-75 and CSX/NS-19, Vol. 2A, Anderson VS at 276. Expanded single line service will also result in improved service levels and frequencies on many routes, as well as more efficient utilization of equipment. See CSX/NS-19, Vol. 2A, Anderson VS at 279-84. IMCs, like other users of intermodal services, will benefit from expanded and competitive intermodal services.

Apart from TIA's unsupported claims, Applicants are not aware of any IMC's which have voiced a concern about the prospect of deterioration in intermodal services, or about the allocation or interchange of equipment. The short answer to TIA's concerns in this area is that equipment will be allocated as market demand dictates and interchanges with other railroads will remain open. Finally, as to TIA's request that Applicants show that they will compete on certain Chicago/Northeast and St. Louis/Northeast routes, the CSX and NS Operating Plans speak for themselves. IMCs will benefit from competition on many new lanes where today Conrail is the sole railroad.

VERIFICATION

STATE OF FLORIDA)
) ss.
COUNTY OF DUVAL)

Peter A. Rutski, being duly sworn, deposes and says that he is Vice President - Business Planning of CSX Intermodal, Inc., that he is qualified and authorized to submit this Verified Statement, and that he has read the foregoing statement, knows the contents thereof, and that the same is true and correct.

Peter A. Rutski

Subscribed and sworn to before me by Peter A. Rutski this 8th day of December, 1997.

Notary Public
CC 618962
February 3, 2001

BEFORE THE
SURFACE TRANSPORTATION BOARD

FINANCE DOCKET NO. 33388

CSX CORPORATION AND CSX TRANSPORTATION, INC. AND
NORFOLK SOUTHERN CORPORATION AND
NORFOLK SOUTHERN RAILWAY COMPANY
--CONTROL AND OPERATING LEASES/AGREEMENTS--
CONRAIL INC. AND CONSOLIDATED RAIL CORPORATION

REBUTTAL VERIFIED STATEMENT OF ROBERT L. SANSOM

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REBUTTAL VERIFIED STATEMENT OF

ROBERT L. SANSOM

I. INTRODUCTION

My name is Robert L. Sansom. I am President of Energy Ventures Analysis, Inc. (EVA), an economic consulting firm specializing in the study of coal, natural gas and electric power markets in the U.S. and abroad. I previously submitted a verified statement as part of the opening evidence submitted by CSX Corporation and CSX Transportation, Inc. ("CSX") in this proceeding. My background and qualifications are described in my opening statement.

In my initial statement I outlined the benefits of the Conrail Transaction to the utility consumers of steam coal and the producers of coal in Central Appalachia and Northern Appalachia (the "B&O" and "MGA" producers). Briefly these benefits are:

- Increased single line hauls of low-sulfur coal to northeast and mid-Atlantic utilities.
- Two carrier access to the MGA coal producers giving more coal buying utilities access to this important source (the Pittsburgh seam) of low cost medium sulfur coal.
- Better links between Appalachian coal sources and the Great Lakes, including improved CSX/B&O coal access and two railroad MGA-to-the-lakes access.
- Reduction in the share of rail transportation in the relevant power markets currently dominated by Conrail.

I have reviewed and am replying herewith to the testimony and positions filed by the witnesses and attorneys for the following commenters:

1. The Department of Justice (as it relates to PEPCO)
2. Potomac Electric Power Co. ("PEPCO")

3. Centerior Energy
4. Consumers Energy
5. Niagara Mohawk Power Corp ("NIMO")
6. New York State Electric and Gas Corp. ("NYSEG")
7. Orange and Rockland Utilities ("ORU")

II. REPLY TESTIMONY TO PEPCO AND THE DEPARTMENT OF JUSTICE

In addressing the effect of the acquisition on PEPCO, I am replying to the testimony of PEPCO Witnesses Felton and Kaplan and also the testimony provided by the Department of Justice's Witness Peter A. Woodward and the "preliminary position" taken by DOJ.

In preparation for this testimony I reviewed the work papers provided by DOJ's Woodward, PEPCO's Kaplan and the discovery responses provided by PEPCO.

A. Major Benefits to PEPCO Are Ignored by PEPCO and DOJ Witnesses

After the Transaction, CSX will be able to single line haul to Morgantown and Chalk Point PEPCO's preferred CSX/B&O[1] coals instead of current costly two-line hauls. According to PEPCO's recent FERC filing (see the following Table), the two line hauls of B&O coal cost $16.79/ton for 2/3rds of coal delivered versus $10.73 for single line Conrail (non-MGA PA coal) coal. Note that the higher two line (CSX/Conrail) haul rates reported by PEPCO are for shorter mileage distances than the less expensive single line (Conrail) hauls. In my view, PEPCO will experience a significant reduction in rates on the two line haul coal shifted to single line service.

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[1] B&O coals are important to coal consumers that need a coal with around 2.0 lb. SO_2/MMBtu or less (down to 1.2 lb. SO_2/MMBtu) to meet State Implementation Plan limits. MGA coal is a medium to high sulfur coal which cannot meet these limits.

PEPCO'S FERC FILING
1995 DATA

RAIL TRANSPORTATION TO MORGANTOWN
AND CHALK POINT

Source (Co./County/State)	Miles	Rail Cost	
		¢/MMBtu	$/Ton
Two Line CSX/Conrail (B&O Coal)			
Buffalo Coal, Garrett, MD	265	63.19	16.50
Kingwood, Cambria, PA	296	65.72	17.33
Nauce, Garrett, MD	272	62.12	16.54
Average			**16.79**
Single Line Conrail (Central Pennsylvania Coal)			
Summers, Chesterfield, PA	430	42.82	11.07
Nauce, Cambria, PA	343	41.74	10.50
Foos, Clearfield, PA	431	39.19	10.42
PBS, Shade Creek, PA	360	40.94	10.92
Average			**10.73**
SOURCE: PEPCO's 1996 FERC Form 580 filing for 1994 and 1995.			

Conrail's MGA single line haul to PEPCO is preserved by CSX's post-Transaction access to MGA coal, if PEPCO elects to burn Pittsburgh seam coal.

Evidence provided by PEPCO in discovery shows a less dramatic but still substantial difference in $/ton comparing two line with single line hauls to Chalk Point and Morgantown than the data PEPCO provided to FERC. This data appears below.

RAIL RATES TO MORGANTOWN AND CHALK POINT ($/Ton)		
Year	Single Line Conrail	Two Line CSX/Conrail
1995	[[[ ]]]	[[[ ]]]
1996	[[[ ]]]	[[[ ]]]
1997 (thru 10/31/97)	[[[ ]]]	[[[ ]]]

These rates again confirm that PEPCO can expect significant gains from CSX's single line efficiencies in the movement of PEPCO's preferred CSX coals to these two plants.

Witness Woodward of DOJ and Witnesses Felton and Kaplan for PEPCO ignore this benefit to PEPCO of CSX's operating the Conrail lines to Morgantown and Chalk Point.

B. Water Delivery Option

PEPCO's documents reveal PEPCO has a credible barge option at Morgantown and a barge-to-truck option to Chalk Point, contrary to the assertions of PEPCO and DOJ.

DOJ Witness Woodward appears to have accepted the positions offered him in conversations with PEPCO's attorneys and employees without conducting an independent investigation of the barge option at Morgantown.

Woodward and I agree that the evidence is clear that in 1993 PEPCO used the barge option at Morgantown to achieve a major Conrail rate reduction. Woodward's notes [[[ ]]] record PEPCO as representing this reduction at [[[ ]]] PEPCO documents from September 1993 [[[ ]]] show a reduction of [[[ ]]].

But DOJ's Witness Woodward does not believe the water option is as viable today (Woodward p. 21-22). He is wrong.

First he offers (p. 22) the vague assertion that there is greater environmental sensitivity at the Morgantown site today than in 1993. Supposedly this would preclude the upgrade of PEPCO's oil barge unloading facility to a coal barge or vessel unloading facility. His source for this assertion is a PEPCO interview on October 10th. His notes on this interview [[[ ]]] demonstrate he accepted statements from PEPCO (and its attorneys) that cannot be supported. His notes cite [[[ ]]]. I found no evidence in his work papers that he reviewed the relevant documents.

I investigated these issues by reviewing PEPCO's studies and having an associate, an engineer, survey the Morgantown site, review key maps, and obtain relevant documents from the responsible office of the Corps of Engineers.

[[[[2]]]]. Larger vessels may also be able to unload. The Corps maintains a 24 foot channel up the Potomac River at Morgantown, which is about 45 miles up the river from the confluence of the Potomac with the Chesapeake Bay.

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[2] [[[ ]]]

Recently, the Corps of Engineers approved a "Shore Erosion Control Project" on the Potomac River at Morgantown in response to PEPCO's request.

After a public notice and comment period, no objections or actions were suggested other than the choice of aquatic species to be planted.

The final Corps of Engineer findings were:

No effect on navigation
No effect on future harbor lines
No effect on flood heights or drift
No effect on beach erosion
No effect on recreation
No effect on fish/wild life values
Consistent with Maryland's Coastal Zone Management Plan
No effect on aesthetics
No effect on human environment
No effect on historic sites
No endangered species
No endangered species habitat
No sustained objections

A well designed barge unloading facility at Morgantown should be similarly acceptable to the Corps of Engineers. As PEPCO's study found: [[[

]]]

A site visit confirms that the rural isolated location of Morgantown and PEPCO's abundant acreage at the plant site are positive factors. Dredging has previously taken place at the site for the oil barge unloading facility.

Earlier in a 1992 fuel procurement audit for the DC Public Service Commission by RCG/Hagler-Bailly, Inc.,[3] [[[

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[3] [[[ ]]]

]]]

PEPCO agrees that a barge unloader is feasible at Morgantown. [[[

]]]

In August 1997, a consultant, Hill & Associates, working for PEPCO solicited domestic and foreign coal sources for rail and barge bids for delivery to Morgantown.

The results from this survey undermine DOJ Witness Woodward's testimony (p. 21), again based on PEPCO representations, that sources of coal on the NS are PEPCO's only barge option and the NS alone would not be an aggressive barge bidder for deliveries to Morgantown. PEPCO's attorneys and witnesses have provided a host of reasons why even with a barge unloader, PEPCO could not get barge/vessel bids (see Felton p. 20 and Kaplan pp. 15-16). None of these claims have validity.

First, NS coal via Lamberts Point is not the only coal choice for barged coal into a Morgantown dock as is implied by Woodward, Felton, Kaplan, and PEPCO's attorneys.

PEPCO's own study by Hill and Associates shows [[[

]]][4] Coal from Baltimore is presently barged to BG&E's Brandon Shores and Wagner power plants. A benefit of the CSX/NS acquisition is dual MGA service to Baltimore for delivery of Pittsburgh seam coal. [[[

]]]

The next claim made by Kaplan (p. 16) and Woodward (p. 21) is that for some reason, the NS faces a capacity constraint at its export terminal at Lamberts Point. Woodward's source is PEPCO. PEPCO's source is Kaplan, but Kaplan's work papers cited by PEPCO's attorneys in response to a discovery request for Kaplan's support, do not address a capacity constraint at Lamberts Point.[5] The document cited is NS's 1996 SEC 10-K which reports that at Lamberts Point NS exported 29.5 mmt in 1996. This data shows the highest level of exports shown (the last five years) was 31.2 mmt in 1992. Nothing about a capacity constraint appears in Kaplan's documents. Moreover, Mr. Kaplan's testimony ignores Mr. Fox's testimony in this proceeding (Fox VS at 9) that "The Lamberts Point coal pier includes a transloading facility for coastwise barges and transoceanic vessels, with a capacity for handling up to 50 million tons per year."

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[4] [[[

]]]

[5] See CSX Second Set Interrogatories No. 2 and the Kaplan documents provided (0053-0055).

Already, over three million tons of coal from Lamberts Point moves as coastal trade (PEPC 0055P). Moreover, U.S. overseas steam coal exports are dropping in 1997 from 1996 levels; this year they will decline by six million tons. The NS's share of this decline creates further additional capacity at Lamberts Point, on top of what already existed. In short, Witness Felton, Kaplan, and Woodward have ignored the non-NS Lamberts Point sources of water delivered coal for Morgantown and claimed a potential capacity constraint at Lamberts Point that does not exist.

There is abundant evidence that imported and domestic coal by water constrains domestic rail rates to U.S. plants like Morgantown. Examples include the following plants: St. Johns River Power Park (JEA), Kraft (Savannah Electric and Gas), Eddystone (PECO), and Danskammer (CHG&E). Water delivery of imported and domestic coastal coal without rail competition is demonstrated at Brayton Point and Salem Harbor (NEES), Hudson and Mercer (PSE&G), Shiller (PSNH), Brandon Shores and Wagner (BG&E), and Bridgeport Harbor (UEI).

This does not mean that a barge facility for coal will be built at Morgantown. It does mean that such a facility is a effective constraint on rail rates. In 1993 the threat of a construction of a barge facility was sufficient (according to PEPCO) to discipline rail rates.

C. The Relevant Power Market

In concluding that the relevant power market includes as few as only two PEPCO plants, DOJ Witness Woodward uses a market definition that ignores the PJM interconnection. I testified in this proceeding and PEPCO witnesses have testified at FERC (see my Verified Statement in this Docket pp. 4-7) that the relevant market is the PJM market plus imported power. Woodward defines the market as Dickerson and Morgantown alone (p. 22-23), concluding that because PEPCO's NS served plant is inefficient, the Transaction as it relates to PEPCO is "more nearly a "2 to 1" merger." He also asserts (p. 20), the market may be PEPCO's coal-fired plants. He does not address my testimony or PEPCO's cited in my statement that the relevant market is the PJM plus imports.

PEPCO's Witnesses Kaplan (p. 6-7) and Felton (p. 10) recognize that PJM is the relevant market. Kaplan's testimony includes the fuel costs to other PJM plants (Exhibit SK-4) and Felton fears competition from other PJM utilities (p. 10).

If the relevant market for power sales (the concern of both PEPCO and DOJ) is properly defined as the PJM pool rather than merely the plants of PEPCO, the pro-competitive effects of the Transaction are clear. In Mr. Woodward's work papers he correctly calculates concentration based on Herfindahl-Hirschman Indexes (HHI), pre and post Transaction, for a PJM market definition. Woodward's calculations utilize the PJM data I presented on p. 11 of my initial testimony. Here are his results directly from his work papers (DOJ-2218HC).

WOODWARD'S CALCULATIONS PJM COAL ONLY CAPACITY PRE ACQUISITION				
	Coal (GWh)	Categories	Percent	HHI
Conrail sole	36.3	CR	43.25	1,870.6
CSX sole	3.2	CSX	10.15	103.0
NS sole	1.8	NS	1.8	3.24
CR/CSX	0.5	Other RR	13.4	179.6
CR/CSX/other	26.8			
Non-Rail	31.3	Non-Rail	31.3	979.7
			99.9	**3,136.13**

WOODWARD'S CALCULATIONS PJM COAL ONLY CAPACITY POST ACQUISITION				
	Coal (GWh)	Categories	Percent	HHI
NS sole	25.6	NS	33.9	1,149.2
CSX sole	13.0	CSX	21.3	453.7
NS/CSX	3.3	Other RR	13.4	179.6
NS/CSX/other	26.8			
Non-Rail	31.3	Non-Rail	31.3	979.7
			99.9	**2,762.2**

Woodward's results show the acquisition of Conrail by NS and CSX reduces the concentration as measured by the HHI by 373.93.[6] The important finding of Woodward's

[6] Woodward in effect reallocated the generation served by Conrail/CSX/NS with another delivery mode (barge, truck, or conveyor). He allocated half this market to his NS/CR/CSX "sole" categories and half to his "other RR" category.

HHI's is the reduction in concentration in the coal-fired served PJM bulk power market as measured by the change in HHI's. The absolute HHI level as calculated by Mr. Woodward is not relevant because it ignores the role of non-coal PJM power sources and imported power (see my initial verified statement pp. 10-12). But a 374 point HHI decline is evidence of a significant decline in market concentration.

D. PEPCO's Complaint About Increased PJM Competition

PEPCO Witnesses Kaplan and Pelton claim the fact that four PJM stations, Eddystone, Down, England, and Deepwater, will be part of a post-acquisition Shared Asset Area (SAA) hurts PEPCO. Putting aside whether an improvement in the competitive position of competitors on the PJM grid can be the basis for a complaint (because the SAAs are a consumer benefit), PEPCO's testimony has factual flaws.

First, all of PEPCO's witnesses and DOJ's witness ignored the benefit to the PJM merit order rankings of Morgantown and Chalk Point that will result from single line hauls to those stations after CSX begins serving those stations.

Second, Witness Kaplan uses delivered ¢/MMBtu as the measure for his PJM station rankings (see Exhibit SK-4). This is not the best indicator in this case because it ignores station heat rates and other non-fuel variable O&M costs which are critical to dispatch rank. Morgantown has a very low heat rate. England and Deepwater have higher heat rates. Another reason PEPCO has little to fear from Eddystone and England is that both stations have high variable O&M costs due to the fact there are SO_2 scrubbers (FGD units) on both stations. Chalk

Point and Morgantown do not have this disadvantage. This fact coupled with Witness Kaplan's higher fuel costs for H. Down,[7] England, and Deepwater (at Exhibit SK-4) mean PEPCO's Morgantown and Chalk Point units do not compete meaningfully with these plants and cannot, even assuming significant rate reductions due to their SAA status. It is true, as Witness Kaplan testifies (see p. 17) that there is competition from PECO's Eddystone plant,[8] PP&L's plants, and DP&L's plants. Indeed, due to the NS's service to these plants, this competition will be more intense, whereas previously these plants and PEPCO's two plants were rail-served exclusively by Conrail. Kaplan failed to mention many other PJM competitors to Morgantown and Chalk Point that will benefit from NS service in competition with CSX served Morgantown and Chalk Point. While PEPCO may not like this competition, it is a benefit of the Transaction.

As noted, Mr. Kaplan's list of plants, at his SK 2 to 5, that potentially compete with Morgantown is far too short. He left off the following PJM coal-fired competitors:

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[7] Vineland, New Jersey's Howard Down plant is a 23 MW unit that operates around 15 percent of the hours each year. It is not a significant power generator in PJM.

[8] Eddystone also already has the benefit of a water delivery option. As I discuss above, Morgantown could install a similar option.

OTHER COAL-FIRED COMPETITORS TO MORGANTOWN NOT INCLUDED IN KAPLAN'S LIST		
Plant	1996 GWh	Mode of Coal Delivery
Brandon Shores	8,822	Barge
Homer City	12,822	Truck
Shawville	3,503	Truck
Conemaugh	11,354	Truck, Conrail
Seward	1,222	Truck
Holtwood	495	Truck
Warren	283	Truck
Keystone	12,610	Truck, Conrail, CSX
Hudson	1,767	Barge/Vessel
Mercer	1,844	Barge/Vessel
Cromby	847	Conrail
Titus	1,192	Conrail
Crane	1,944	Conrail
Portland	1,670	Conrail
Potomac River	1,654	NS

In other words, Mr. Kaplan's list has only ten potential PJM competitors to Morgantown and Chalk Point, three of which are the SAA plants. He omitted the fifteen plants shown in my Table above. This omission creates the impression that the three significant SAA plants (Eddystone, England, and Deepwater) are, numerically more important than they are. The fact is that all fifteen coal plants listed in my table plus the ten in Mr. Kaplan's table compete with Morgantown and Chalk Point - for a total of twenty-five. Only three of these plants are SAA plants with significant generation. In addition, power-by-wire from ECAR and VACAR also competes with Morgantown and Chalk Point. Up to 7,000 MW of imports can compete in PJM during non-peak periods.

It is in this context that the potential change in the competitive status of Morgantown and Chalk Point due to the newly designated SAA plants must be evaluated. For this reason, in addition to those I have already provided above, there is no substance to the alleged new competition from the SAA plants, England, Deepwater, Eddystone and H. Down.

E. Pittsburgh Seam and Mine Eighty-Four Coal

PEPCO's testimony reveals a new-found interest in Pittsburgh seam coal, a product currently available to PEPCO by Conrail single line haul, but heretofore eschewed by PEPCO for reasons of suitability. Evidently PEPCO has solved these problems and even discovered an affinity for Mine Eighty-Four coal. The STB should be cautious about PEPCO's claims that Mine Eighty-Four coal offers anything unique to PEPCO.

1. Through 1996, PEPCO did not receive any Pittsburgh seam coal at its plants.

2. In 1997 through August, PEPCO's Chalk Point plants took 24,000 tons of MGA coal from Consol's Bailey mine out of a total of 849,000 tons and Morgantown took 381,000 tons of Bailey coal out of 1,536,000 tons. The record does not show PEPCO has burned Mine Eighty-Four coal.

3. [[

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4. Post-Transaction, PEPCO's ability to obtain Pittsburgh seam coal will be enhanced. It will still have single line MGA access via CSX. But it will have the added NS and CSX competition to deliver MGA coal to Baltimore should it elect to upgrade its barge unloader to receive barged coal and should such coal out compete imported coal.

F. Conclusions

The acquisition of Conrail by CSX and NS will result in more rail competition in PJM, the power pool in which Conrail has dominated rail transportation. The lack of utility opposition from other PJM utilities reflects the benefit of the acquisition to PJM ratepayers in Pennsylvania, New Jersey, Maryland, and Delaware.[9]

PEPCO's opposition is without merit, particularly due to its current dependence at Morgantown and Chalk Point on two-line CSX/Conrail hauls which are priced far above single line hauls. CSX/B&O and Pittsburgh seam coal delivered by single line haul to PEPCO after CSX's acquisition should result in a significant reduction in rail rates on two thirds of PEPCO's burn at these two stations.

In any event, PEPCO has a credible barge option at Morgantown. Using either imported coal, MGA coal competitively delivered to Baltimore, or NS coal delivered to Norfolk, PEPCO can insure competitive CSX deliveries to Morgantown and Chalk Point.[10]

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[9] The only exceptions are Atlantic City Electric, which will gain dual access, and GPU Generation, which raises no competitive concerns. Moreover GPU's coal buyer welcomes his post-Conrail alternatives (see my Verified Statement, p. 22).

[10] [[[

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III. CENTERIOR

In this section I reply to the testimony of Witnesses Kovach of Centerior and Harris of L.E. Peabody on behalf of Centerior. Centerior has the following complaints:

1. Centerior contends its Ashtabula and Eastlake plants, now served primarily with high sulfur Ohio coal from a single mine by a single line Conrail haul, will, after the acquisition, be served from this same Ohio (OVCC) mine by a two line haul.

2. Centerior also believes CSX will favor MGA coal over Ohio coal origins.

3. Centerior believes it will face a competitive disadvantage in ECAR grid competition with two Detroit Edison plants (Trenton Channel and River Rouge) that will be in an Shared Asset Area (SAA) and in competing in the PJM bulk power market with the South Jersey SAA.

Consequently, Centerior wants the STB to order rail competition to its plants, allowing the NS to deliver on lines to Eastlake, Ashtabula, and Lake Shore that will be operated by CSX after the Transaction. L.E. Peabody's Mr. Harris (p. 5) also claims the NS, which is now and will remain the exclusive rail carrier at Avon Lake and Bay Shore, will extract an acquisition premium from Centerior. He makes the same claim about CSX and its post-Transaction deliveries to Centerior at Eastlake, Ashtabula, and Lake Shore.

A. Centerior's Coal Transportation Situation Will Be Improved By The Acquisition

Centerior's Avon Lake and Bay Shore plants will be rail served by NS before and after the Transaction. Centerior's Eastlake, Ashtabula 5 and Lake Shore units were Conrail rail served before the Transaction and will become CSX rail served.

In 1997, trucked coal has been received at Eastlake, Avon Lake, Lake Shore, and at Ashtabula C.

As a result of the Transaction, Centerior will gain access to Pittsburgh seam coal via a single line haul to its NS served plants at Avon Lake and Bay Shore. Centerior will maintain single line service to the MGA coal mines that were served by Conrail served plants that will be served after the Transaction by CSX. In addition, CSX will add the capability to ship low sulfur Appalachian coal to Centerior's stations as called for by Centerior's acid rain compliance plan.[11]

B. Centerior's Claims About The Loss of Single Line Service From Ohio Coal Mines (OVCC) to Eastlake and Ashtabula Are Invalid

Centerior gains a single line OVCC NS haul to Avon Lake as a result of the acquisition. If Centerior desires to continue to burn very high sulfur Ohio coal, it can do so at Avon Lake in a blend with PRB or low sulfur Central Appalachian coal. (Centerior now blends down OVCC's sulfur at Eastlake).

OVCC's coal, very high in sulfur (6.5 to 7.0 lb. SO_2/MMBtu) was, according to Centerior's acid rain compliance plans, to be phased out at Eastlake and Ashtabula. CSX has agreed to extend, OVCC's single line rates to Eastlake and Ashtabula. At current SO_2 allowance prices ($107/ton SO_2), OVCC coal is penalized by $8.81/ton. After the January 1, 2000 Phase

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[11] See Centerior's plan at CEC 1699P-1738P. The plan to switch from Ohio high sulfur coal at Eastlake and Ashtabula is at CEC 1704P (p. 4).

II acid rain compliance deadline which will ratchet down the emission limit above which allowances must be acquired from 2.5 lb. SO_2/MMBtu to 1.2 lb. SO_2/MMBtu, allowance prices will rise to over $200/ton SO_2. Centerior's bid analysis [[[ ]]] in mid-1997 shows at current allowance prices, high sulfur Ohio coal has [[[ ]]] delivered to Eastlake. It will take only a [[[ ]]] increase in the allowance price to render this coal non-competitive. All SO_2 allowance price forecasts I am aware of project at least a 50% increase in allowance prices by the year 2000.

OVCC coal will, by 2000, become non-competitive in Centerior's non-FGD equipped units. Centerior has no FGD equipped units, although it leases 544 MW of the barge-served Bruce Mansfield plant. Presently, practically all of OVCC's coal, except that used by Centerior, moves to the river by Conrail (to become NS) and then by barge to FGD equipped units. [[[

]]] supports this finding.

C. Centerior Has Multiple Transportation Options to Threaten Its Rail Carriers

All of Centerior's plants, according to the Ohio PUC, can take trucked coal. All Ohio mines other than OVCC that are current (1996 and 1997 to date) suppliers to Centerior, ship by truck. [[[

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Centerior has demonstrated the economic and technical viability of PRB coal at its units. It received PRB coal by lake to its Lake Shore plant in 1997 (with a three mile truck haul) and by western carrier/NS to its Bay Shore plant. [[[

]]].

Centerior's primary source of generation is nuclear power, acknowledged by Witness Kovach to constitute up to 46 percent of Centerior's generation. [[[

]]]. Centerior owns a portion of the barge served Mansfield plant. Witness Kovach acknowledges (p. 8-9) that Eastlake units 1-4 and Ashtabula 5 (a 244 MW unit) are not base load units. Only Eastlake 5 operates base load. Eastlake 5 is a 597 MW unit, owned 68.8% by Centerior and 31.2% by Duquesne Light.

Centerior has ample spare capacity it could substitute for units where it wants to reduce volumes to discipline transportation rates. Presently Lake Shore 18, Acme 2, and Ashtabula 6 and 7 are shut down.

Centerior was recently acquired by Ohio Edison to form First Energy. Fuel procurement has been moved from Cleveland (Centerior's headquarters) to Akron (Ohio Edison's headquarters). Ohio Edison is primarily a barge served utility (Sammis, Toronto, Burger, and Mansfield) and can truck coal to its only rail-served plant (Niles). Ohio Edison has

idle coal-fired capacity it is making available for coal tolling or power sales. This barge served capacity could substitute for rail served capacity to discipline rail rates to Ashtabula, Eastlake, and Lake Shore.

The Pinney dock, which is now Conrail-served and after the Transaction will be served by NS, is between the Ashtabula dock and Centerior's Ashtabula power plant. Centerior takes coal into the Ashtabula dock, barges it across a narrow channel to the Pinney Dock and trucks it about a quarter-mile to the Ashtabula power plant.[12] Once the NS controls the majority of the throughput through the Ashtabula dock, it will have this same route of access to compete with CSX deliveries to the Ashtabula power plant. With the installation of a rail car unloader, the NS could deliver directly to the Pinney dock for the short haul to Ashtabula in off-road trucks.

In sum, Centerior has the ability to discipline CSX rail rates to the now-Conrail served plants through a variety of options. Among these are truck, vessel, and intramodal competition (at Ashtabula). In addition, Centerior can threaten to reduce generation to displace rail volumes, substituting non-coal generation or coal generation at other plants.

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[12] Centerior movements via the Pinney dock to Ashtabula totaled [[[ ]]] tons in 1995 and [[[ ]]] tons in 1996 (CEC 1932HC).

D. Centerior Is Uniquely Situated To Draw From Pittsburgh Seam, Central Appalachian, PRB Mines, or Ohio Mines. The Conrail Transaction Will Add to Centerior's Options

Centerior Witness Kovach (p. 12) admits that coal from Southeastern Ohio moved by rail to Ashtabula and Eastlake is at a comparable Centerior haul distance to the haul distance for Pittsburgh seam coal moved by CSX.

HAUL DISTANCES		
	OVCC	Pittsburgh Seam MGA
Ashtabula	232 miles[1]	224 miles[2]
Eastlake	193 miles[1]	257 miles[2]

1 Centerior's 1994 FERC Form 580 filing for 1992/1993 coal receipts.
2 Exhibit FSH-1.

CSX's B&O and Central Appalachian origins are further away. CSX and NS will provide Centerior with Pittsburgh seam competition among its units, a competition Centerior does not now enjoy. And if Centerior needs low sulfur Appalachian coal, CSX's acquisition of Conrail's lines to Ashtabula, Eastlake, and Lake Shore enhances that option because of CSX's access to the vast reserves of Appalachian low sulfur coal. Conrail did not have access to abundant low sulfur coal reserves.

E. Centerior's Alleged Adverse Effect Of Grid Competition

Centerior Witness Kovach states (p. 15) that Centerior will be disadvantaged because Detroit Edison's Trenton Channel and River Rouge plants will be in the Detroit SAA and four PJM power plants will be in the Philadelphia/South Jersey SAA.

The fact that other consumers will benefit from improved rail access, does not require or justify concessions to Centerior, which is not losing but gaining rail access.

Centerior's rail served units do not compete in PJM. Centerior is in ECAR. To the extent transmission capacity is available to move power from ECAR to PJM, Centerior's rail served coal plants are not competitive against its own nuclear and barge served[13] coal plants and the barge served AEP, APS, and Ohio Edison plants which are the lower cost units and would occupy the available transmission capacity.

Centerior does compete with Detroit Edison—but not with the units that will be CSX served. ECAR is not centrally dispatched. Detroit Edison and Consumers Power are centrally dispatched in a Michigan pool. Centerior is dispatched as part of the CAPCO group (Centerior, Ohio Edison and Duquesne Light). Detroit Edison can sell economy energy to wholesale buyers in Ohio, and Centerior can do the same to Michigan. This competition already exists and will not be materially changed by NS/CSX joint access to Trenton Channel and River Rouge. When Centerior has nuclear power at the margin, Centerior units will dispatch ahead

[13] Centerior formerly owned and now has a long term lease on a portion (544 MW) of the barge-served Bruce Mansfield plant.

of Detroit Edison's units (Detroit's Fermi nuclear plant would not be at the margin because Detroit's system is coal dominated).

Evidence of the fact Detroit Edison's units do not generally compete with Centerior's rail coal units appears in the following table:

1996 DATA*					
Plant	Transportation	Capacity Factor	1996 Spot c/MMBtu	Average	Heat Rate Btu/KWh
Detroit Edison					
Monroe	CN(GTW) Conrail,	73.8	101	119.5	9,724
River Rouge	Lake	68.6	101	132.4	9,996
Trenton	CN(GTW) Conrail,	61.5	104	133.8	10,365
Channel	Lake	62.2	105	144.6	10,672
St. Clair	Conrail, Lake	76.9	105	150.4	10,214
Belle River	CSX, Lake Lake				
Centerior					
Bay Shore	NS/Truck	54.6	146	177.6	9,840
Lake Shore	Conrail/Truck-Vessel	3.8	150	150.0	N/A
Eastlake	Conrail/Truck	57.7	121	131.3	10,103
Avon Lake	NS/Truck	60.7	120	153.2	10,307
Ashtabula	Conrail/Truck	43.9	110	136.2	12,002
* From FERC Form 1, FERC Form 759 and FERC Form 423 data.					

The table shows that the lowest cost (see the "Spot" column in Table above) Detroit Edison coal is less expensive than any coal delivered to Centerior. This results from Detroit Edison's access to rail and lake delivered PRB coal. Geography favors Detroit's rail and lake accessible-to-PRB coal plants. They are further west and have a developed ability to take PRB coal by rail or lake vessel.

Centerior's testimony (Kovach, bottom on p. 18) that only Eastlake 5 among all the units at Ashtabula, Eastlake and Lake Shore is a base load unit, in conjunction with the high (base load) capacity factors at River Rouge and Trenton Channel, shown in the table above, confirm that Centerior's claim that Trenton Channel and River Rouge compete with these to-be-CSX-served units is at best applicable to one unit Eastlake 5, and Eastlake 5 has higher incremental coal cost than Detroit's units.

It is true that Detroit Edison's Trenton Channel and River Rouge plants could compete with Centerior's NS served Bay Shore plant. In fact, according to the FERC 423 data, Bay Shore has in 1997 (Jan-Aug) reduced its delivered fuel cost to 135¢/MMBtu with a PRB/Central Appalachian coal blend delivered by NS rail. At the same time, Trenton Channel has reduced its delivered fuel cost to 124¢/MMBtu with a three way PRB/Pittsburgh seam/Central Appalachian blend. But as I noted earlier, rail service to Bay Shore is not affected by the Transaction. Bay Shore is exclusively rail served by NS today and that will remain so after the Transaction.

Centerior is attempting to bootstrap a claim for NS as well as CSX service to Eastlake, Ashtabula and Lake Shore on competition that may exist, elsewhere on its system, at a plant <u>not</u> at issue in the Conrail acquisition.

Thus, the plants for which Centerior is seeking relief do not compete with Detroit Edison. Even if they did, the additional competition at the SAA plants would not justify ordering dual access to Centerior's Eastlake, Ashtabula, and Lake Shore plants.

F. Witness Harris' Testimony On The "Acquisition Premium" and Pittsburgh Seam Coal

Witness Harris provides no evidence to support his assertion that CSX and NS can recover an "Acquisition Premium" at Centerior's plants. The evidence is that Centerior's plants face price elastic demand for rail delivered coal, that Bay Shore, Avon Lake, Lake Shore, Eastlake, and Ashtabula have intermodal (truck or vessel) options, and that Centerior and Ohio Edison could idle any of these plants.

It is also not true as Witness Harris asserts (p. 8) that "Centerior may suffer a monopoly at destination." Centerior has many options. Ohio Edison has additional alternatives. Witness Harris has addressed none of these.

Witness Harris is also wrong when he asserts (p. 9) that joint MGA access will not enhance Centerior's options. As noted earlier, after the Transaction, the NS and CSX will compete to deliver Pittsburgh seam coal by rail to Centerior. This will enhance Centerior's blend choices among Pittsburgh seam (Ohio or MGA), PRB, and Central Appalachian coal. With spare capacity, Centerior can compete NS versus CSX coal at its units. In fact, [[[

]]].[14]

[14] [[[ ]]].

[[[

]]].

Witness Harris (pp. 11-13) uses a CSX document which he claims makes his case that CSX will use its access to Eastlake and Ashtabula to foreclose Ohio coal from NS origins from those plants in favor of CSX originated MGA coal. The CSX document proves the opposite of what Mr. Harris alleges.

CSX was wrong about the FOB mine price for OVCC coal, but how would CSX know what OVCC bid to Centerior? The fact that this important information was made available to Witness Harris simply confirms an advantage utilities can have in negotiations with railroads who often do not have information on FOB mine prices that is as accurate as the utility buyer's information.

The CSX memorandum did say that the economics as calculated would allow CSX MGA coal to displace OVCC coal. But Witness Harris fails to point out that the OVCC rail rate in the CSX document is the low rail rate now available to OVCC. The implication: CSX's analysis assumed this rate would not change with a two line haul. [[[

]]]. If CSX had intended to do Centerior in by imposing a high two line rail rate on OVCC's post-acquisition two line haul, CSX's April 30, 1997 memorandum would have used a higher rail rate. The memorandum's rail rates are:

	OVCC	MGA
$/Ton Miles to Ashtabula Method	[[[ ]]] 224 miles two line NS/CSX	[[[ ]]] 257 miles single line CSX

Mr. Harris' second change to the CSX calculation is a mistake and conflicts with Centerior's own analysis. CSX calculated an SO_2 penalty to both OVCC and MGA coal on all emissions. Mr. Harris claims he can correct that by calculating the SO_2 penalty on only the emissions above the Phase I 2.5 lb. SO_2/MMBtu limit (Harris p. 13) whereas CSX calculated the SO_2 penalty on the emissions above 1.2 lb. SO_2/MMBtu.

It turns out both Mr. Harris and CSX's SO_2 analyses are wrong, but Mr. Harris' is more wrong. Centerior does the analysis correctly, which is to calculate the penalty on all emissions because all emissions count against Centerior's allowances. [[[

[15]

]]][16]

[15] See CEC 1739HC.

[16] Mr. Harris was also inconsistent. He adjusts CSX's penalty to a 2.5 lb. SO_2 basis for OVCC coal but not for MGA coal which in his calculation he leaves unchanged CSX's calculation on a 1.2 lb. SO_2 basis.

In sum, Mr. Harris' criticisms of CSX's memo are in one instance based on data CSX could not have had and in another are in error.

G. Conclusions

The testimony of Centerior Witnesses Kovach and Harris should be rejected because:

- It is a demonstrable benefit of the Conrail Transaction that Centerior's options are strengthened by the fact that it will have access to two single line carriers of mid-sulfur Pittsburgh seam coal.
- NS and CSX have agreed to apply the Conrail single line rate from Centerior's low cost high sulfur Ohio coal mine supplier to the two line NS/CSX post acquisition haul.
- After January 1, 2000 (SO_2 Phase II) Centerior's own analysis shows high sulfur OVCC coal cannot compete against Pittsburgh seam coal. This means Centerior has a low cost two line option for a period that fully covers Centerior's needs.
- If Centerior continues to want to use high-sulfur Ohio coal, it retains the ability to do this via a single line haul because the NS can haul this coal to Avon Lake or Bay Shore for blending with very low sulfur PRB coal. Prior to the NS/CSX acquisition, hauling OVCC coal to Avon Lake and Bay Shore would have, in each instance, required a two line haul.

IV. CONSUMERS POWER

A. Low Sulfur Eastern Coal In Michigan and The Great Lakes Region

Consumers' complaint (p. 2) is that CSX's acquisition "will allow CSX to solidify its position as the dominant transporter of low sulfur eastern coal to Michigan and the Great

Lakes Region, which places Consumers at competitive risk." This is meaningless rhetoric. Central Appalachia low sulfur coal has been in a full scale retreat in the Great Lakes Region and in any event has been delivered there for over one hundred years by the CSX and its predecessors and the NS and its predecessors. The NS terminal at Sandusky on Lake Erie has always competed with the CSX's Toledo Lake Erie terminal. The B&LE accesses low sulfur Appalachia coal from the Duquesne Wharf at Pittsburgh and delivers it to Lake Erie at Conneaut.

Powder River Basin coal, not eastern low sulfur coal, is the price-setting dominant source of low sulfur coal in "Michigan and the Great Lakes Region." Consider the following data describing coal receipts at the largest U.S. power plant in this region, the 3,000 MW Monroe Station which generated more than twice the KWh in 1996 than any other U.S. plant in the region described by Consumers attorneys. This plant is located on Lake Erie in easternmost Michigan and receives PRB coal hauled by rail 1,450 miles via Chicago.

PERCENT COAL RECEIVED BY SOURCE AT
DETROIT EDISON'S MONROE STATION

Region	1985	1990	1996	Jan-Aug 1997
Central Appalachia	82.6	61.7	30.6	17.4
Powder River Basin	8.2	22.8	46.7	56.0
Northern Appalachia	9.2	15.5	22.7	26.6

Other Great Lakes utilities rely on non-Central Appalachian low sulfur coal as shown in the table on the following page.

In short, the statement by Consumers' attorneys cannot be supported.

B. Consumers Power Gets Enhanced Coal Supply Options

Witness Garrity's testimony establishes (see the Table below) that Consumers has many fuel options at its plants and these will not be adversely affected by the NS/CSX acquisition of Conrail.

CONSUMERS TRANSPORTATION CHOICES			
Station	MW	Delivery Modes	(Jan-Aug 97) Coal Burned
Campbell	1,399	CSX	PRB, CAPP, W. BIT
Karn-Weadock	825	CSX,Conrail-CN-CM, Lake	PRB, CAPP
Cobb	296	Lake	PRB, CAPP, Pittsburgh
Whiting	310	CSX, Conrail-CN	CAPP

COAL SOURCES FOR GREAT LAKES AREA UTILITIES
1997 (JAN-AUG)

Utility	PRB		CAP		NAP		OTH		Total
	000 Tons	%	000 Tons	%	000 Tons	%	000 Tons	%	000 Tons
Wisconsin Elec Pwr	4,986	68%	130	2%	1,218	17%	1,043	14%	7,376
Commonwealth Edison	11,936	89%					1,421	11%	13,357
Wisconsin Public Service	2,299	100%							2,299
Marquette L&P	50	100%							50
Manitowoc, WI			23	20%	32	28%	59	51%	114
Lansing, MI	56	11%	435	89%					490
Detroit Edison	9,343	71%	1,879	14%	1,957	15%			13,179
Total	**28,669**	**78%**	**2,467**	**7%**	**3,207**	**9%**	**2,522**	**7%**	**36,865**

Note: "OTH" category includes Western Bituminous Coal, Illinois Basin Coal and Pet-Coke

Source: FERC Form 423

In fact Consumers gets three benefits from the Transaction:

1. As NS will operate Conrail's line from the Kanawha Valley to Columbus on which Central Appalachian coal moves to Karn-Weadock and Whiting, Consumers will retain access to Conrail's Central Appalachian mines.

2. Consumers will gain access to NS's Central Appalachian mines via NS to CN(GTW) hauls. .

3. CSX will be able to deliver Pittsburgh seam coal to Consumers' Campbell, Karn-Weadock and Whiting plants.

C. Consumers Attorneys Mischaracterize My Testimony

Consumers' attorneys claim (p. 7 of their "Argument") that I testified I had not examined Consumer's "internal . . . information". This is obviously true since it was not available to me. But I was aware from public data of all coal shipments to Consumers and so testified (Tr at p. 38). Moreover Consumers attorneys fail to point out that I testified (Tr p. 50 and 52) that I had discussions with Consumers' power plant engineers. Consumers' attorneys make much (p. 8 of their "Argument") of my testimony that "I didn't look at the Michigan SIP limits" (Tr p. 52). This is true, but I did not need to.[17] I had already testified (Tr p. 43 and 44) that Consumers usually buys one percent sulfur coal which I defined as "1.6 lb. SO_2 coal" and some "1.2 pound coal". This is correct. See Garrity's Exhibit WEG-01 and his testimony at p. 6.

[17] As EPA's Assistant Administrator in 1971-72, I approved Michigan's State Implementation Plan (SIP) which set all of Michigan and Consumers' SO_2 limits except at Campbell 3. The Campbell 3 standard (NSPS I) was established as a result of my 1971 recommendation.

D. Consumers Attorneys Are Wrong On The Pittsburgh Seam

In their argument, Consumers attorneys state "MGA coal has no meaningful role to play in satisfying Consumers' fuel requirements (Argument, p. 8). But Mr. Garrity, Consumers witness and Executive Manager of Fuel and Power Transactions states (p. 9):

> "The Applicants are correct that Consumers can utilize blended-coal strategies to satisfy our environmental requirements, and that we can do so with some MGA coal."

My testimony was that after the Transaction, CSX would have access to MGA coal which would enhance Consumers' options (Sansom Verified Statement, p. 24):

> "CSX also will have the ability to deliver MGA coal to Consumers Power's Campbell, Karn, Weadock and Whiting plants located in Michigan. This will add source competition for Consumers Power. To meet Consumers Power's sulfur limits, MGA coal may need to be blended with PRB coal. Consumers Power already blends PRB with Central Appalachian coal."

Mr. Garrity testifies (p. 7) that Conrail is not an effective rail carrier to Karn-Weadock. Accordingly, it is not surprising that MGA/PRB blends have not been pursued at Karn-Weadock because Conrail would have had to originate MGA coal. After the Transaction, CSX will be able to effectively move MGA coal to Karn-Weadock, Whiting and the Campbell units that can burn 1.67 lb. SO_2 coal blends. FERC 423 data show Consumers' lake accessible Cobb plant has received 75,000 tons of MGA coal in 1996 and 1997. This coal moved by Conrail to Ashtabula then by lake to Cobb. In the 1990's, no all-rail MGA coal has been received at Consumers' rail served plants.

E. Pittsburgh Seam Blends

Mr. Garrity's testimony on maximum MGA coal blends is carefully hedged and does not exclude the benefits CSX access to MGA coal will provide Consumers Power.

Mr. Garrity (p. 9) states that "At Present" [emphasis added] MGA coal is "only 5 percent" of Cobb's blend. His testimony is that 1.487% by weight is the sulfur content of MGA coal received by Consumers in 1996 and 1997. In his Exhibit (WEG-01), he uses a MGA heat content of 13,000 Btu/lb. The heat content of Consumer's receipts of MGA coal is higher, according to Consumers FERC Form 423 filing, at 13,205 Btu/lb.

Garrity's WEG-01 is the basis for his conclusion (p. 10) that "Cobb is the only Consumers plant that can use MGA coal in a blend with western coal and still maintain current emission restrictions." But Mr. Garrity's table cannot be relied on because he uses maximum PRB blend percentages based on Consumer's experience blending PRB with Central Appalachian coal not higher Btu/lb Pittsburgh seam coal. Pittsburgh seam coal runs about 13,200 Btu/lb compared to the 12,200 Btu/lb Central Appalachian coal purchased by Consumers.

I have recalculated key parts of Mr. Garrity's Exhibit WEG-01 based on the average Btu/lb of coal burned at Consumers stations in 1997 (Jan-Aug) or Mr. Garrity's value, whichever is lower. This average Btu/lb is a proxy for an acceptable blend for coal suitability (boiler burnability) purposes. Also, I have modified the Pittsburgh seam heat content (Btu/lb) to 13,200 to reflect actual MGA coal heat content. Finally, like Mr. Garrity I insure that the coal meets the Michigan 1.67 lb. SO_2/MMBtu limit and that 5% of the sulfur is retained in the ash.

I calculate that Weadock 7 and 8 could burn a 60% MGA/40% PRB blend and achieve the 1.67 lb. SO_2 Michigan SIP limit. Mr. Garrity's calculations are in error. Here are the results:

- MGA coal at 13,200 Btu/lb and 1.487% sulfur has a SO_2 emissions rate of 2.253 lb. SO_2/MMBtu before the 5% credit for ash removal or 2.14 lb. SO_2 after the 5% credit.
- PRB coal at 8,800 Btu/lb and 0.4% sulfur has a SO_2 emission rate of 0.909 lb. SO_2/MMBtu before the 5% credit for ash removal or 0.8636 lb. SO_2/MMBtu after.
- In a 60% MGA/40% PRB blend, the blend would have the following characteristics:

	SO_2		Btu/lb	
MGA PRB	0.6 x 2.14 0.4 x 0.863	1.28 0.34	0.6 x 13,200 0.4 x 8,800	7,920 3,520
SO_2		**1.62 lb./MMBtu**	**Btu/lb**	**11,444**

a. My conclusion: A 60/40 PRB/MGA blend would meet Weadock 7-8's SIP limit of 1.67 lb. SO_2/MMBtu and improve the station's Btu/lb from the 10,352 Btu/lb experienced from January to August 1997 to 11,444 Btu/lb, making a better coal burning product.

The same 60/40 MGA/PRB blend meets the requirements at Campbell 1 and 2, Karn 1 and 2, and Whiting.

Mr. Garrity's testimony must be rejected. Consumers, acting to reduce its coal cost, will undoubtedly consider such a blend after the CSX gets access to MGA coal.

Mr. Garrity offers another reason for rejecting MGA coal which is also invalid. He states (p. 10) that "After 1999, no plants (including Cobb) can meet Phase II acid rain restrictions utilizing MGA coals with current maximum blends of western coal." This is misleading. Consumers and other utilities can burn blends with emission rates of 1.67 lb. SO_2/MMBtu (or greater although not in Michigan) by using SO_2 allowances. Many utilities, including Consumers, will do this if the blend, including the cost of allowances, is the least cost fuel choice.

F. Non-CSX Central Appalachian Coal to Consumers

Consumers has purchased NS origin coal moved through Kenova, Portsmouth, and Columbus to the NS Lake Erie dock at Sandusky, Ohio. Massey's Wolf Creek coal has moved via this route to the Cobb plant. This option will be unchanged by the Transaction.

Witness Garrity testifies (p. 7 and 8) that Conrail can ship Central Appalachian coal to Karn-Weadock and Whiting, but this option has been constrained by "the limited number of eastern low sulfur mines served by Conrail" (p. 7).

Consumers' attorneys (p. 9 of their Argument) contend that after the Transaction, CSX will have a "lock on Great Lakes rail transportation of eastern low sulfur coals."

First, they argue the NS has some bias or fixation "in a southeasterly direction."

Second, they argue (p. 9) the NS has a "more circuitous routing to important interchanges such as Toledo, than Conrail currently has.

Neither of these points makes any sense. First, there is not a more direct route from the Central Appalachian coal fields to north-central Ohio (Bellevue) than the former N&W (now NS) route to Sandusky. From Bellevue to Toledo is only forty miles. The rail miles via the NS from Kenova to Toledo are 272; via the CSX, from the same origin to destination using the new CSX (former Conrail) line from Columbus to Toledo, the distance is 256 miles. This is not a significant disadvantage for an NS move to a Toledo exchange with the CN(GTW).

As for the NS's southern bias, if indeed it exists, it is a much lower priority than the NS's motivation to move coal tons and generate thereby revenues and profits. Accordingly, if Consumers is interested in tapping the NS's Central Appalachian low sulfur coal reserves, it can still do so via Sandusky, thence by water to Cobb and Karn-Weadock. With the CSX/NS acquisition of Conrail, Consumers will have the additional option to move Central Appalachian coal by NS-to-GTW rail to Karn-Weadock (with Central Michigan delivery) or Whiting.

G. Conclusions

Consumers Power's position cannot be supported. It contains critical factual errors. Consumers Power will benefit from the Conrail Transaction through:

- CSX access to MGA (Pittsburgh) seam coals.

- Better access to a Central Appalachian coal option (other than the CSX) through NS/CN and NS/CN-CM service to Whiting and Karn-Weadock respectively than it had with Conrail, due to Conrail's limited Central Appalachian reserves.
- Both CSX and NS's ability to move Pittsburgh seam coal to Lake Erie for delivery to Cobb. Now only Conrail has this access.

V. NIAGARA MOHAWK POWER

A. Introduction

NIMO's testimony is wrong in many respects and is misleading. I am replying to testimony of NIMO's Witnesses Fauth, Bonnie, Leuthauser, Mathis, and to assertions by NIMO's attorneys.

NIMO's Dunkirk & Huntley enjoy intermodal competition with vibrant rail, lake vessel and truck delivery options.

NIMO has actively used its intermodal options to achieve low cost coal deliveries. Year-to-date Jan-Aug 97 delivered coal prices to Dunkirk are 124¢/MMBtu and to Huntley 131¢/MMBtu. These are respectively the lowest and fourth lowest delivered coal prices to any NYPOOL coal-fired plant and are among the lowest in the east.

NIMO's situation is not going to deteriorate; it will improve. It will continue to have its intermodal options and be able to discipline CSX's rail rates just as it has Conrail's. But it will be able to compete two all rail-to-the lakes sources of Pittsburgh seam coal.

NIMO's alleges competitive threats from the SAAs in PJM and ECAR. NIMO seldom sells power to PJM because it has a higher valued market to the east in New York and NEPOOL. NIMO's concern about the Michigan SAA is also misplaced. It is not a power seller to Ontario Hydro but a power buyer from Ontario Hydro. Canadian consumers will be better served to buy ECAR power and wheel it into NYPOOL (NIMO). Even if NIMO were to face more intense competition from Detroit Edison's two SAA plants for sales to Ontario Hydro in Canada, that is not a basis for the STB to provide two line service to NIMO. Lower cost coal to Detroit Edison, if it occurs as a result of the SAA at Trenton Channel and River Rouge, will benefit consumers.

B. NIMO's Huntley and Dunkirk Plants Enjoy Intense Inter-Modal Competition and Low Delivered Coal Prices and the CSX/NS Acquisition Will Not Change This

Dunkirk is located on Lake Erie. Huntley is located near Lake Erie on the Niagara River. Both plants have efficient rail service and receive or have received lake coal. Both Dunkirk and Huntley have taken trucked coal as well, which Dunkirk being more truck accessible.

1996 deliveries by mode are shown below:

	Dunkirk		Huntley*	
	Tons	%	Tons	%
Rail	[[[ ]]]	[[[ ]]]	[[[ ]]]	[[[ ]]]
Vessel	[[[ ]]]	[[[ ]]]	[[[ ]]]	[[[ ]]]
Truck	[[[ ]]]	[[[ ]]]	[[[ ]]]	[[[ ]]]
	[[[ ]]]	100.0	[[[ ]]]	100.0

* In 1995 Huntley received [[[ ]]] tons by vessel. In 1992 Huntley received [[[ ]]] tons by vessel.

NIMO has employed intermodal competition to achieve competitive rail rates. In 1993 NIMO coal procurement officials told the trade press (Coal Transportation Report, January 11, 1993, p. 2) that because vessel coal moved to Huntley produced "good results," the utility was going ahead with plans to dredge at Dunkirk and install conveyors to receive coal from Lake Erie self-unloading vessels. [[[

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[[[[18]

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[[[

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[18] [[[ ]]]

This contract gave NIMO the benefits of the intermodal options at Huntley and Dunkirk. In 1996, the Consol contract was so favorable to NIMO, NIMO took no lake coal to Huntley and reduced its truck shipments to Dunkirk.

NIMO has enjoyed very low delivered coal prices, making its Dunkirk plant the lowest delivered cost coal-fired plant in the Northeast. Huntley is the fourth lowest cost plant in the Northeast. The data follow.

DELIVERED PRICES TO NYPOOL AND NEPOOL COAL PLANTS		
Utility	Plant	1996 ¢/MMBtu Delivered
Niagara Mohawk	Dunkirk	123
New York State E&G	Kintigh	126
New York State E&G	Milliken	128
Niagara Mohawk	Huntley	134
New York State E&G	Goudey	135
New York State E&G	Greenidge	140
Rochester G&E	Russell 7	140
New England Electric	Salem Harbor	159
PS New Hampshire	Merrimack	161
PS New Hampshire	Schiller	161
New England Electric	Brayton Point	170
Holyoke	Mt. Tom	174
Montaup Electric	Somerset	180
Union Illuminating	Bridgeport Harbor	191
Orange & Rockland	Lovett	192
Central Hudson E&G	Danskammer	196

C. NIMO's Options Are Improved As A Result Of The NS/CSX Acquisition of Conrail

NIMO's intermodal options are preserved. CSX rail replaces Conrail with continued access to MGA coal. Thus NIMO will continue to have access to abundant, multiple sources of Pittsburgh seam coal. NIMO uses BLE/Conneaut (barged to BLE) coal as its lake option. This option will still exist after the acquisition along with other lake coals (western, CAPP, and B&O).

NIMO will enjoy the added option of NS-originated Pittsburgh seam coal to the lake. On this point, Mr. Bonnie's testimony is very revealing. He admits (p. 16) this option will benefit Ontario Hydro. ("Under the proposed transaction, NS and CSX should aggressively compete for Ontario Hydro's increased volume from the jointly served MGA via Ashtabula. Consequently, Ontario Hydro will receive the benefit of lower coal transportation charges to NIMO's competitive disadvantage.")

This raises the question of how a utility like Ontario Hydro, with only lake options and no all-rail or truck options, is better off than NIMO which has the same options that Ontario Hydro has plus rail and truck options. There is no reason the NS will not compete as aggressively to move NIMO's Pittsburgh seam coal to Lake Erie as it does to move Ontario Hydro's.

Mr. Bonnie testifies (p. 7) that: "[the] Cumberland mine is one of the few longwall producers that is not captive to Conrail." This reflects his purchases from the Cumberland mine moved by barge down the Monongahela River to the Duquesne Wharf (at Pittsburgh) for loading on the B&LE for rail movement to the Conneaut P&C Terminal, thence by lake vessel to NIMO's plants. This source provided NIMO (and Consol) with leverage on Conrail's rail rates. Now, Mr. Bonnie will not need to go to such lengths to provide non-all rail competition from "longwall producers" because the NS will offer Pittsburgh seam all-rail coal

to the lakes. Mr. Bonnie fears this option when exercised by Ontario Hydro, but fails to embrace it as a benefit to NIMO of the NS/CSX acquisition of Conrail Transaction.

NIMO will also obtain an important year 2000 benefit from CSX service it neglects to mention. On January 1, 2000, NIMO's two plants will be subject to a 1.2 lb. SO_2/ MMBtu limit above which any emissions must be coupled with purchased SO_2 allowances. With CSX service, NiMO will be able to receive single line CSX Northern Appalachia low sulfur coal (B&O coal) or single line CSX Central Appalachia low sulfur coal.

D. NIMO Mischaracterizes its Lake and Truck Options

Huntley can and has received coal from Lake Erie via the Black Rock Lock and the Niagara River. The lock can handle 625 foot long self-unloading vessels that can carry 10,000 tons. In 1996, 30 trips by this size vessel moved through the Lock. Our contacts with vessel owners reveal these vessels are available for contracting as NIMO has often done.

NIMO testimony on the lake season, inventory needs, and seasonal burns as they affect Huntley's options is incomplete. Mr. Bonnie states (p. 9): "NIMO burn requirements are higher in the winter months than the rest of the year because of the winter energy peak demand." He states (p. 9) that Black Rock Lock is normally closed from January 1 to mid-April, and (p. 9) that NIMO would need to store 720,000 tons at Huntley to have enough coal to get through the winter until the re-appearance of barged coal in mid-April.

Our contacts with the manager of the Black Rock Lock found that the lock is closed 10 to 11 weeks per year not the 16 weeks asserted by Mr. Bonnie. Mr. Bonnie testifies the lock is closed from mid-December to mid-April. But the lock manager says it is closed January, February and one-half to three-fourths of March.

NIMO coal burn data in the following Table show that Huntley burns more coal in the summer peak period than in the winter peak period in contradiction to Mr. Bonnie's testimony (p. 9).

HUNTLEY COAL BURNS (Tons)			
Period	Months	1996	1997
Winter	Jan-Mar	392,767	345,541
Summer	Jun-Aug	408,148	439,707
SOURCE: FERC Form 759.			

The data above contradict Mr. Bonnie's claim (p. 9) that NIMO burns 6,000 tons per day and needs a 720,000 ton stockpile at Huntley. The January to mid-April coal burns at NIMO have been 446,975 in 1996 and 405,581 in 1997. Mr. Bonnie has exaggerated Huntley's winter coal needs by about 273,000 tons or 61% for 1996. This of course overlooks the ability of NIMO to take all rail coal for some of the January to mid-April period tonnage requirements and to threaten the all rail volumes for 8 to 9 months of the year. If a viable intermodal option is one capable of threatening 1/4 to 1/3 of coal volumes, NIMO's ability to threaten 8/12th or 67% of rail volumes meets the test of intermodal credibility.

It is very clear from NIMO's 1993 dock study that the ability to divert [[[

]]] for Huntley where about 1.3 mmt per year are burned. This is a [[[ ]]] portion of all coal moved.

NIMO has a western coal option too: NIMO has test burned western coal and is aware of western coal's potential in a blend with eastern coal. This gives NIMO the ability to compete western coal by vessel with all rail coal to Huntley and Dunkirk.

Mr. Bonnie (p. 10) is correct that the economics of trucked coal from Central Pennsylvania to NIMO are less attractive than in the past. He is correct that this decline is due to competition from MGA mines. But he fails to point out that the eclipse of Central Pennsylvania surface mines by the highly efficient Pittsburgh seam longwall mines has been to NIMO's benefit. NIMO's shift to all rail coal has enabled it to enjoy lower cost, higher quality coal deliveries as shown in the following table.

NIMO'S DELIVERED COAL PRICES AND SULFUR COAL QUALITY		
Year	¢/MMBtu	#'s SO_2 per MMBtu
1997 Jan-Aug	130.80	2.79
1996	129.06	2.94
1995	132.48	2.80
1994	138.40	2.90
1993	146.76	2.83
1993	142.56	2.84
1991	151.06	2.99
1990	149.95	3.02
SOURCE: FERC Form 423.		

These results show a decline in NIMO's delivered coal prices in nominal dollars and an improvement in coal quality. NIMO has benefitted from rail delivered MGA coal.

NIMO's Witness Fauth is also wrong in claiming that NIMO will suffer from the loss of single line access to Mine 84. FERC 423 records (see Table _____) show in 1995 NIMO took 71,600 tons of Mine 84 coal.[19] In 1996 and 1997 (Jan-Aug) NIMO has not taken Mine 84 coal. Over the last two and one half years, Mine 84 coal has represented less than 1% of NIMO's coal burn.

[19] NIMO corrected an error in Mr. Fauth's testimony. Instead of the [[[ ]]] tons set forth at p. 31 of his testimony, for 1995 Mine 84 deliveries to Huntley, the correct fiture according to NIMO's correction is [[[ ]]] (see December 1, 1997 Errata from NIMO's attorneys). As I note in the text above, FERC data filed by NIMO show only 71,600 tons of Mine 84 coal were taken in 1995 to August 1997.

NIMO COAL RECEIPTS
(1995, 1996, and Jan-Aug 1997)

C/S	CEEP	Supplier	Company	Division	Mine Name	SU	County	St	kTons	Btu/lb	Sulfur	Ash	SO2	$/Ton	C/MMBtu	Fuel Supplier
Niagara Mohawk																
Dunkirk										1995						
C	1296	Consol	Consol	Blackeville	Blackeville #2 Mine	U	Monongalia	WV	118.9	13295	2.53	7.56	3.81	33.89	127.47	CONSOLIDATION COAL CO
C	1296	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	326.5	13109	1.48	6.67	2.26	34.13	130.16	CONSOLIDATION COAL CO
C	1295	Cyprus Amax	Cyprus Amax	Cumberland	Cumberland Mine	U	Greene	PA	385.0	13179	2.41	7.97	3.66	32.44	123.08	CYPRUS CUMBERLAND RESOURC
C		Duquesne Light	Duquesne Light	Warwick	Warwick Mine	U	Greene	PA	17.6	12720	1.82	11.30	2.86	32.56	127.91	NEW WARWICK MINING CO
8		Consol	Consol	Blackeville	Blackeville #2 Mine	U	Monongalia	WV	121.8	13295	2.53	7.59	3.81	33.47	125.89	CONSOLIDATION COAL CO
8		Consol	Consol	Loveridge	Loveridge Mine	U	Marion	WV	16.8	13143	2.50	7.95	3.80	34.15	129.93	CONSOLIDATION COAL CO
8		Peabody	Peabody	Federal 2	Federal #2 Mine	U	Monongalia	WV	45.6	13346	2.24	6.26	3.51	32.39	121.34	EASTERN ASSOCIATED COAL C
8		Budge Mining	Budge Mining	Rosebud	Rosebud Mine	8	Armstrong	PA	48.8	13052	2.38	7.02	3.65	35.50	135.98	ROSEBUD MINING CO
8		Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	97.0	13131	1.67	6.68	2.54	33.34	126.94	CONSOLIDATION COAL CO
8		Duquesne Light	Duquesne Light	Warwick	Warwick Mine	U	Greene	PA	233.6	13672	1.71	11.67	2.70	32.50	118.24	NEW WARWICK MINING CO
8		Planet Mining	Energy Resources	Shawnut	Shawnut #33 Mine	S	Elk	PA	34.3	11256	1.03	13.00	1.83	37.49	122.12	PLANET MINING INC
									1,355.9	13044	2.06	8.30	3.15	33.03	126.61	
Total Dunkirk																
Huntley																
C	1296	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	1,102.3	13123	1.53	6.68	2.33	34.30	130.30	CONSOLIDATION COAL CO
8		AMCI	AMCI	Tanoma	Tanoma Prep	U	Indiana	PA	192.5	12906	3.04	9.03	3.16	35.07	135.85	TANOMA MINING CO INC
8		C & K Coal	C & K Coal	Shannon	Shannon Mine	8	Clarion	PA	22.3	13789	1.48	8.78	2.31	35.72	129.65	C & K COAL CO
8		R & P Coal	R & P Coal	Mine 84	Mine #84	U	Washington	PA	71.6	13334	1.62	6.87	2.43	37.95	142.29	ROCHESTER & PITTSBURGH CO
									1,388.7	13099	1.61	7.04	2.45	36.20	138.19	
Total Huntley																
Total Niagara Mohawk									2,744.6	13072	1.83	7.66	2.80	34.64	132.48	
Niagara Mohawk										1996						
Dunkirk																
C	1296	Consol	Consol	Blackeville	Blackeville #2 Mine	U	Monongalia	WV	203.2	13204	2.21	7.60	3.35	32.70	123.83	CONSOLIDATION COAL CO
C	1296	Consol	Consol	Humphrey	Humphrey Mine	U	Monongalia	WV	9.7	13021	2.57	7.87	3.95	33.01	122.92	CONSOLIDATION COAL CO
C	1296	Consol	Consol	Loveridge	Loveridge Mine	U	Marion	WV	182.6	13237	2.37	7.55	3.58	32.44	122.53	CONSOLIDATION COAL CO
C	1296	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	324.4	13166	1.82	7.00	2.76	32.38	122.98	CONSOLIDATION COAL CO
C	1297	Cyprus Amax	Cyprus Amax	Cumberland	Cumberland Mine	U	Greene	PA	511.2	13128	2.24	7.84	3.41	32.40	123.41	CYPRUS CUMBERLAND RESOURC
C		Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	9.1	13323	1.96	6.66	2.94	36.11	135.53	CONSOLIDATION COAL CO
8		Cyprus Amax	Cyprus Amax	Cumberland	Cumberland Mine	U	Greene	PA	36.6	13162	2.09	7.47	3.18	33.77	128.39	CYPRUS CUMBERLAND RESOURC
8		Planet Mining	Energy Resources	Shawnut	Shawnut #33 Mine	8	Elk	PA	29.7	11499	1.00	13.22	1.74	37.24	118.45	PLANET MINING INC
									1,296.5	13129	2.12	7.66	3.23	32.38	123.33	
Total Dunkirk																
Huntley																
C	397	Consol	Consol	Loveridge	Loveridge Mine	U	Marion	WV	9.2	13334	2.01	7.05	3.01	34.75	130.31	CONSOLIDATION COAL CO
C	397	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	1,124.3	13164	1.74	6.94	2.64	35.14	133.49	CONSOLIDATION COAL CO
C	1296	Duquesne Light	Duquesne Light	Warwick	Warwick Mine	U	Greene	PA	166.9	11862	1.75	11.62	2.95	33.05	139.32	NEW WARWICK MINING CO
8		C & K Coal	C & K Coal	Shannon	Shannon Mine	8	Clarion	PA	1.1	12891	1.45	7.62	2.25	37.00	143.51	C & K COAL CO
8		Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	111.5	13196	1.67	6.90	2.53	36.11	136.83	CONSOLIDATION COAL CO
									1,413.0	13013	1.74	7.49	2.67	34.97	134.37	
Total Huntley																
Total Niagara Mohawk									2,709.5	13068	1.92	7.57	2.94	33.73	129.06	
Niagara Mohawk										1997						
Dunkirk																
C	397	Consol	Consol	Blackeville	Blackeville #2 Mine	U	Monongalia	WV	117.0	13207	2.08	7.73	3.15	32.89	124.52	CONSOLIDATION COAL CO
C	397	Consol	Consol	Loveridge	Loveridge Mine	U	Marion	WV	255.6	13271	2.07	7.49	3.13	32.53	122.57	CONSOLIDATION COAL CO
C	397	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	137.0	13135	1.69	6.95	2.57	33.02	125.49	CONSOLIDATION COAL CO
C	1297	Cyprus Amax	Cyprus Amax	Cumberland	Cumberland Mine	U	Greene	PA	296.9	13220	2.10	7.84	3.30	32.95	124.63	CYPRUS CUMBERLAND RESOURC
									808.5	13220	2.05	7.56	3.10	32.83	124.13	
Total Dunkirk																
Huntley																
C	397	Consol	Consol	Loveridge	Loveridge Mine	U	Marion	WV	29.5	13201	2.16	7.49	3.27	34.74	131.59	CONSOLIDATION COAL CO
C	397	Consol	Consol	Bailey	Bailey Mine	U	Greene	PA	947.0	13134	1.65	6.96	2.51	35.86	136.51	CONSOLIDATION COAL CO
									976.5	13136	1.66	6.98	2.53	35.82	136.35	
Total Huntley																
Total Niagara Mohawk									1,785.0	13174	1.84	7.24	2.79	34.46	130.80	

Source: FERC Form 423.

Mr. Bonnie (p. 16) implies that Mine 84 has a lower sulfur content than MGA coal. Mine 84's Witness Thomas Majcher has offered an exhibit (TMM 3) using 1996 data that shows Mine 84's coal is higher in sulfur content than the Emerald Mine, not significantly lower in sulfur content than Consol's Bailey and Enlow Fork mines and comparable in Btu/lb to these mines.

[[[

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E. NIMO Will Not Be Adversely Affected by the Shared Asset Areas (SAA's)

Various NIMO Witnesses allege NIMO will be adversely affected by the SAA's in South New Jersey/Philadelphia and at Detroit Edison's River Rouge and Trenton Channel plants. This is apparently an effort to boost NIMO's claim for a Niagara Frontier SAA.

Witness Fauth makes assertions about grid competition to NIMO from the SAA's, but his testimony is uninformed and full of errors. Witness Fauth apparently has never testified on bulk power markets. He is unaware that NIMO's plants are in a different power pool than the SAA's he cites. His testimony displays no knowledge of bulk power markets and his comparisons are meaningless.

NIMO Witnesses Leuthauser and Mathis are obviously very knowledgeable on NYPOOL, the "tight" power pool in which NIMO's Huntley and Dunkirk plants are located, and are aware of the fast-evolving developments toward utility deregulation.

I agree with the following points in their testimony:

1. (p. 6) Huntley and Dunkirk are dispatched in the New York Power Pool (NYPP), a "tight" power pool.

2. (p. 7) the dispatch price for generation sold to others after native load is based on the average of the seller's incremental production cost and the buying utility's avoided cost.

3. (p. 8) NIMO's plants compete on a "minute-to-minute" basis "<u>with those of the other New York utilities</u>" [emphasis added]

4. (p. 8) dispatch transactions outside NYPP are <u>not</u> "minute-by-minute" dispatch based but are "bilateral transactions" which are "individually negotiated." [emphasis added]

NIMO Witnesses Leuthauser and Mathis also provide incomplete testimony that can be misinterpreted. They include a discussion (p. 4-6 with accompanying Table 1) that implies competition among all plants in PJM, ECAR and NYPOOL. See my Verified Statement at Exhibit 3 and the accompanying text (pp. 3-7) for a description of the relevant power pools. Note that NYPOOL is part of NPCC. NIMO's testimony by Leuthauser and Mathis implies the plants in their Table 1 compete with one another across the five states (Ohio, New York, Michigan, Pennsylvania, and New Jersey).

First, the data in Table 1, if one accepts the implication (by NIMO's Witnesses) that the listed plants compete with one another, is compelling evidence that the Philadelphia/South Jersey area plants cannot compete with Huntley and Dunkirk. The data show the following:

Location	Plant	Variable Gen Cost $/MWh
NIMO/NYPOOL	Dunkirk	14.27
NIMO/NYPOOL	Huntley	15.57
SAA/PJM	Eddystone	24.87
SAA/PJM	H.M. Down	54.90
SAA/PJM	Deepwater	23.94
SAA/PJM	England	21.43
SOURCE: Table 1 to NIMO Testimony of Witnesses Leuthauser and Mathis.		

If these data are accurate, these SAA plants are so expensive they are $6 to $40/MWh more expensive than NIMO's plants. Based on this data, to say these plants compete would be like saying caviar competes with corn.

The fact is these plants do not compete, not only because NIMO's plants are in a different league from a cost of production standpoint, but because NYPOOL coal power does not generally compete in PJM. The reason is that while NYPOOL is interconnected with PJM, power moves from PJM to NYPOOL because NYPOOL is a higher valued market. Consequently, NIMO's power will receive its highest value in the NYPOOL and NEPOOL markets to the east. There it will be fully absorbed prior to any PJM power from the identified high cost SAA plants ever being competitive in NYPOOL.

In short, NYPOOL power does not generally move into PJM. To support this assertion, herewith are the NYPOOL/PJM scheduled interchanges as reported by utilities to FERC on Form 714.

	GWh					
	1994		1995		1996	
	To PJM	From PJM	To PJM	From PJM	To PJM	From PJM
NYPOOL	288	4,894	1,234	6,345	0	8,363
Source: FERC Form 714.						

The "zero" entry in the table above shows there were no scheduled power interchanges from NYPOOL to PJM in 1996.

NIMO's witnesses are also concerned about competition to NIMO from the Trenton Channel/River Rouge SAA. There is a major flaw in the competition implied by Witnesses Leuthauser and Mathis on pp. 4-6 and in Table 1 between Detroit Edison's Trenton Channel and River Rouge plants and NIMO's two coal plants. The data in Table 1 do show these plants are in the same variable cost of production range. What NIMO's witnesses do not address is that these plants are in a different power pool. ECAR, where Detroit Edison's two to-be SAA plants are located, is not connected by the U.S. electrical grid to NYPOOL. By definition these plants cannot compete in each other's power pools (ECAR and NYPOOL) where NIMO's plants are located. They are only connected through Ontario Hydro's grid.

Both Detroit Edison plants have rail and lake vessel delivery options. The SAA will not change this reality. It will permit head-to-head MGA competition by NS/CSX. But the lowest cost coal to the Detroit Edison stations is all-rail delivered western coal delivered by the GTW (CN). That option already exists.

What is left is NIMO's argument that Trenton Channel and River Rouge may compete with Huntley and Dunkirk for power sales to Ontario Hydro now that Ontario may become a power buyer due to its nuclear plant problems. This argument has many problems:

- First, it is unlikely Dunkirk and Huntley can find a power market to the west in Canada that has a higher value than NIMO's market to the east in the populated eastern New York area. Also, the power will continue to flow west-to-east on the NIMO/Ontario Hydro intertie as ECAR power and reduced Ontario Hydro power exports offset the reduced nuclear generation by Ontario until that utility's nuclear plants are repaired. The true effect of Ontario Hydro's nuclear outages will be to enhance the value of NIMO power sold to eastern New York and New England (NEPOOL).

- Second, even if Canadian consumers do benefit from lower Trenton Channel and River Rouge prices at the expense of NIMO's alleged potential sales, such an occurrence is consumer benefit.

F. Conclusion

NIMO is attempting to use this proceeding opportunistically to obtain yet a fourth route for coal to its plants. NIMO already has a surfeit of options (truck, rail, vessel). It enjoys access to low cost coal and has intermodal options that will be available to it after NS and CSX acquire Conrail. Moreover NIMO will gain two important benefits:

1. Two carrier all-rail competition to Lake Erie for Pittsburgh seam coal.

2. The ability to tap via single line rail movement the low sulfur coal on the CSX in Kentucky and West Virginia to meet its January 1, 2000 acid rain requirements.

VI. NEW YORK STATE ELECTRIC AND GAS

A. Introduction

Most of NYSEG's complaints are about potential railroad operational problems on the MGA and on the Youngstown to Ashtabula route. Others will respond to these NYSEG claims. The only claims to which I will respond are NYSEG's assertions that:

1. It will not benefit from having two rail carrier service to its system as opposed to service at all of its rail-served coal plants by Conrail.

2. The loss of a single carrier to NYSEG's system is an economic loss to NYSEG because NYSEG will be unable to reap the equipment efficiencies it has enjoyed through its "Alliance" with Consol and Conrail.

NYSEG's rail-served coal plants have been exclusively served by Conrail. But, NYSEG's largest coal plant is its Homer City plant at 959 MW (50% ownership). This plant, located atop the Central Pennsylvania coal fields receives coal by conveyor and truck. The table below summarizes the 1996 performance of NYSEG's coal units.

NYSEG'S COAL PLANTS

Plants	Size MW	1996 Coal Burned (000 Tons)	1996 Capacity Factor %	Mode of Coal Delivery	1996 Generation GWh	Fuel Cost $/MWh
Homer City (50%)	959	2,424	74.9	C,T	6,205	15
Kintigh	684	1,615	74.0	R	4,452	14
Milliken	317	733	69.1	R,T	1,924	14
Greenidge	106	232	62.5	R,T	585	16
Goudey	84	232	78.3	R,T	582	15
Hickling	44	154	23.8	R,T	184	19
Jennison	71	157	30.4	T	190	22

SOURCE: FERC Form 759 and FERC Form 1 data.
R = rail T = truck C = Conveyor

The above data reveal that NYSEG receives coal by truck, conveyor and rail. Its largest source of generation is not rail served.

The Kintigh plant is located on Lake Ontario. It is feasible to build a lake vessel unloading dock at Kintigh. This option is described in Appendix B of NYSEG's Somerset Railroad Corporation's Final EIS (NYSEG P000831-883).

Kintigh and Milliken are the only NYSEG units with flue gas desulfurization (FGD) equipment. Because the variable costs of FGD operation are $1.00 to $2.00/MWh, when this cost is added to these two units in the table above (the fuel cost or $/MWh column), the result is that the five major NYSEG units produce power at a comparable $15-16/MWh variable costs.

B. The Benefits of the Alliance Testified to by Witness Brady Will Survive the NS/CSX Acquisition

The Alliance between Consol, Conrail, and NYSEG began with an April 1997 non-binding agreement. Because the agreement allows the use of 130 car trains at Kintigh and Milliken, NYSEG expects that on a yearly basis there will be 30 less train cycles at Kintigh and 27 less at Milliken.

Given that these benefits resulted from capital investments of about $170,000, split between the coal mine and at the Kintigh dumper, these new physical assets will remain in place after the Transaction. Moreover, the Loveridge Yard will gain two line origin service from CSX and NS. Consequently, the cost savings will survive the Transaction to the benefit of both carriers and NYSEG. According to Witness Brady, these savings were a foregone Conrail rail rate increase in 1996 of [[[ ]]] at Kintigh and [[[ ]]] at Milliken. There is no reason this benefit should not continue.

C. The Rail Rate Reduction At One NYSEG PLant is Not an Alliance Benefit and May or May Not Continue

According to Witness Brady (p. 66), the second benefit of the Alliance was a [[[[[[ ]]] rail rate reduction on increased tons to [[[ ]]]. But this benefit flows from an [[[ ]]] agreement (Brady, p.65) which pre-dates the Alliance by one year. Brady (p. 60) testifies the Alliance "was consummated on [[[ ]]] Further, Consol refused to be part of the [[[ ]]] arrangement (Brady p. 65).

Witness Brady testifies that [[[

]]]

It is speculative to assert as Mr. Brady does that the Transaction will bring to an end the Conrail rate reduction at [[[ ]]]. It may have ended anyway due to Ontario Hydro's nuclear problems. These problems by early 1998 will tighten the NYPOOL market due to a reduction in Ontario Hydro exports of power to NYPOOL. Another change in NYPOOL has been a reduction in the quantity of QF and IPP[20] "must run" power NYSEG and NIMO must take, regardless of its high costs. These developments represent explanations for ending the [[[ ]]] reduction because [[[ ]]] output should be readily sold to NYPOOL. [[[ ]]] This would

[20] Qualifying Facility and Independent Power Projects that were entered into in the 1980's by NYPOOL utilities at above market prices and provisions requiring the utility to buy power even if substitute power could be self-generated or bought from the grid at a lower price.

increase [[[ ]]] $/MWh price from about [[[ ]]] to [[[ ]]], an amount that should be easily recoupable in 1998's NYPOOL market.

These facts, rather than Mr. Brady's speculation (p. 66-67) about Conrail's motives, are more likely than the Conrail Transaction to underlay Conrail's reluctance to extend the deal beyond April 1998.

It is just as true, however, that the successors to Conrail will respond just as Conrail did to evidence that a rail rate reduction will enhance rail volumes. CSX's Witness Sharp and NS Witness Fox have so testified. There is no basis for Mr. Brady's testimony that they will not be similarly motivated.

D. NYSEG Will Benefit From Two Railroad Service

Many utilities benefit from having system service from two railroads. NYSEG's attorneys assert (p. 27) that concentrating 3.0 mmt on Conrail gives NYSEG more leverage than NYSEG will have if 1.7 mmt are moved by CSX to Kintigh and 1.3 mmt are moved by NS to Milliken, Goudey, and Greenidge. In my experience, reviewing coal and transportation contracts and procurements, tonnages far less than 1.3 mmt are adequate to motivate railroads to offer favorable rates. As NYSEG's testimony demonstrates, a dedicated unit train, whether CSX or NS, can move about 1.0 mmt per year. Railroads are highly motivated by the tonnage that can be hauled by a dedicated unit train.

The following utilities enjoy multiple railroad service and have no problem motivating railroads to ship a million tons: Centerior, Consumers Power, Commonwealth

Edison, Detroit Edison, NIPSCO, PEPCO, Virginia Power, Georgia Power, TVA, and AEP, to name a few. It is unlikely that any of these utilities would advocate that all of its rail service be consolidated with one carrier as NYSEG does.

NYSEG's attorneys contend (p. 28-29) that they can find no evidence where NS and CSX compete for tonnage on a utility system basis. They cite two documents (top of p. 29), one CSX, one NS. The documents prove the opposite from what NYSEG's attorneys contend.

The CSX document [[[

]]] Nonetheless, aggressive competition ensued. So aggressive in fact that the utility buyer won a prestigious award in part due to the lower fuel prices achieved.

NYSEG will be in an even better position than the utility subject of [[[

]]] because the volumes it will ship on the NS and CSX after the Transaction are very similar (1.7 mmtpy CSX vs. 1.3 mmtpy on NS).

The second document [[ ]] cited by NYSEG's attorneys proves nothing. In this document [[

]] This document does not show the NS ignores its smaller customers.

E. NYSEG's Third Train Can Move Between The NS and CSX

NYSEG witness testify that after the NS/CSX acquisition of Conrail, the third NYSEG train set will not be efficiently utilized because part of the time it will be needed to ship about 700,000 tons to Kintigh and part of the time it will be needed by the NS to ship about 300,000 tons to Milliken, Goudey, and Greenidge.

Because all four stations take MGA coal, these train sets can be easily shifted from CSX power to NS power. It would be sufficient that the two largest stations, Kintigh and Milliken, take from MGA mines to assure seamless unit train transfers because these two stations alone consumed 2.3 mmt in 1996. Because both stations have FGD units, it is very likely both will take coal from MGA coal mines. In short, if necessary, one train (NS) can serve Greenidge, Goudey, and Milliken; a second train can serve Kintigh; and the third train can serve Kintigh most of the time, and when needed be shifted to Milliken.

F. NYSEG's Witness Edwards is Overly Concerned About CSX and NS Trains Moving on the MGA and Youngstown-Ashtabula Line

Mr. Edwards' concerns are similar to those expressed by utilities and the C&NW when joint line service was initiated in 1984 in the Powder River Basin south of Gillette, Wyoming. At that time and through 1995, major portions of the joint line were single track.

It is now well established that from the first departure of a C&NW train from the PRB in August, 1984 to today, that the Joint Line has worked efficiently for the C&NW (now

UP) trains as well as the BN trains.[21] All trains are dispatched by the BN (see "A Niagara of Traffic from a Wyoming County the Size of Connecticut," pp. 42-63, especially p. 61, TRAINS, November 1989). There is no reason the NS and CSX experience on the MGA cannot run as smoothly.

The Joint PRB lines is 103.2 miles in length. The MGA is 162 miles. In the late 1980's the BN/C&NW Joint Line was originating one train per hour. Now, the rate is about two trains per hour. Presently, Conrail originates about 10 MGA trains per day.

The Wyoming experience demonstrates that successful Joint Line operations at train frequencies many times that expected on the MGA or on the Youngstown to Ashtabula line have proven successful.

VII. ORANGE AND ROCKLAND UTILITIES

A. Introduction

Orange & Rockland Utilities' (ORU's) Lovett power plant is located on the Hudson River about 25 miles north of New York Harbor. The plant is now served exclusively by Conrail for coal deliveries. But Lovett has a barge facility for unloading residual oil for other units on the same site. See Exhibit RLS-1. This barge unloading facility has been idle. The two coal units, totaling 372 MW in capacity, consume about 700,000 tons per year.

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[21] Recent difficulties moving PRB coal have not been attributed to BN/UP Joint Line operations in Wyoming.

This plant is subject to a stringent State Implementation Plan (SIP) SO_2 emissions limit of 1.0 lb. SO_2/MMBtu. The utility has contracted with a coal supplier, A.T. Massey to buy the bulk of its coal through 2007. ORU's contract with Conrail [[[

]]]

ORU's records reveal [[

]]. These problems have been generic and are described by Witness Debra A. Bogin at pp 3-5 of her statement as well as in other ORU documents.

B. ORU's Position

ORU is concerned that CSX's operation of the Conrail route down (or up) the Hudson River will not alleviate its service problems. It also contends it benefits from NS and CSX origin competition because Conrail has very limited access to super compliance coal (about 10% of ORU's burn). It fears CSX's single line haul will give CSX undue leverage over ORU's rates. ORU prefers that both the NS and CSX be given access to Lovett.

C. Analysis

Documents produced by ORU and the experience of another utility 26 miles further up the Hudson River tell a different story than ORU's testimony.

ORU has for years recognized it has a water delivery option but has not implemented that option. It is not captive to Conrail and will not be captive to CSX.

The best evidence of the water option is demonstrated by Exhibit 2 (RLS-2) which is a page from the 1996 Annual Report of Central Hudson Gas and Electric Corporation. This page contains a photograph of an ocean-going self-unloading ship of the type that delivers coal to CHG&E's Danskammer plant 26 miles up the Hudson River from ORU's Lovett plant. Similar ships pass Lovett on the way to Danskammer delivering the same super compliance coal ORU uses.[22] The Hudson is navigable at a 30 foot depth.

This is not news to ORU. [[[

]]]

[22] Elsewhere in its 1996 Annual Report (p. 8), CHG&E's Vice President states: "During 1996, as part of our continuing program to control the price of electricity, we expanded our fuel transportation and delivery system by building a coal unloading and handling facility which is enabling us to receive waterborne deliveries of coal from ocean-going vessels. Previously, we were dependent upon delivery of coal by rail to our Danskammer Electric Generating Plant."

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ORU Witness Debra A. Bogin's testimony does not mention the possibility of water deliveries to Lovett. But [[[

[23]

[23] [[[ ]]]

[24]

[25]

[24] [[[ ]]]

[25] [[[ ]]]

]]] This assessment by Ms. Bogin agrees with my earlier verified statement (p. 20) in this proceeding.

D. Conclusions

ORU will benefit from the transaction because it obtains an option it does not presently have to utilize single line CSX service from Massey and other U.S. coal suppliers' U.S. coal mines. This will replace a two line haul that has posed difficulties. ORU will retain its bargaining leverage because it has a water delivery option for NS coal delivered to Lamberts Point and will have another NS option to Baltimore. Finally, as Central Hudson G&E has proven at Danskammer just up the Hudson River from Hovett, [[[

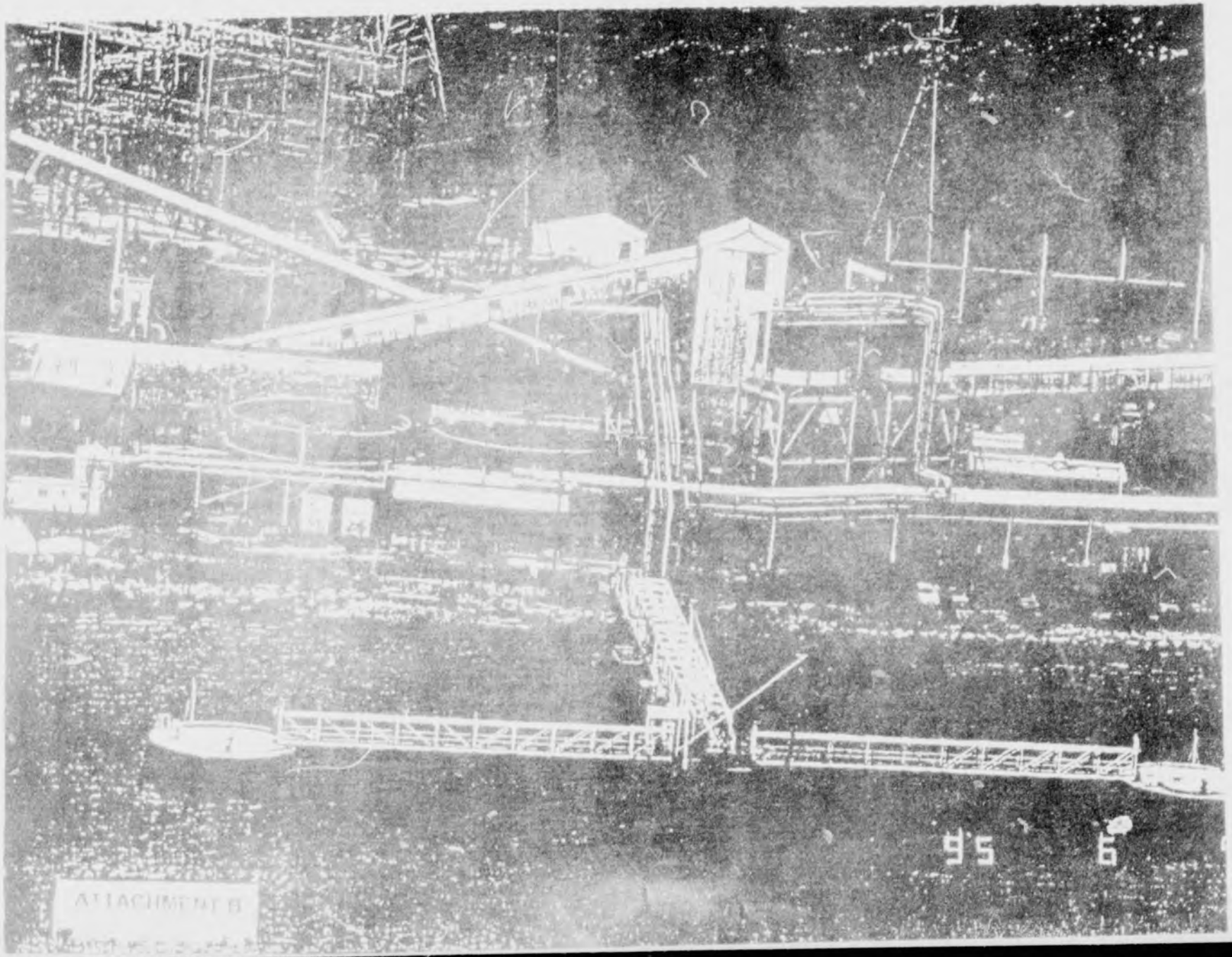
]]] ORU can import super compliance coal if necessary.

With these options, ORU should be able to gain the economic benefits of single line rail deliveries as well as improved service.

VERIFICATION

I, Robert L. Sansom, declare under penalty of perjury that the foregoing statement is true and correct. Further, I certify that I am qualified and authorized to file this Rebuttal Verified Statement. Executed on December 10, 1997.

ROBERT L. SANSOM


ATTACHMENT B

Managing the Cost of Fuel and Power Purchases Has Resulted in Major Savings for Customers

Allan R. Page, Senior Vice President Corporate Services

Effective Fuel Cost Management has made a significant contribution to lower costs.

During 1996, we negotiated new coal contracts which will enable us to achieve significant additional savings for our customers in the years ahead.

In the past, all of our coal had been purchased from domestic sources and delivered by rail. Last year, however, we negotiated a contract which provides for 50% of our coal requirements to be supplied from South America by waterborne delivery. To accommodate ocean-going vessels, we built a new unloading and handling facility to supply coal to our Danskammer Electric Generating Plant.

Having a new competitive source of coal enabled us to negotiate more favorable contracts for the domestic supply of coal and for its delivery by rail.

The significance of the new coal contracts and the coal terminal is illustrated by the fact that the cost of fuel represents about 50% of the cost of producing electricity. During 1996, our coal costs amounted to $41 million, of which 42% was transportation expense. By managing fuel and transportation costs, we are enhancing our ability to operate our Danskammer Plant more competitively now and in the future.

Another means of controlling the cost of electricity for our customers is through our participation in the wholesale electric energy market. In 1995, our energy purchases totaled 38 percent and the savings for customers amounted to $3.5 million. During 1996, we purchased 38.5 percent of our electric energy requirements from other generating sources, which saved our customers approximately $9 million.

Through our Power Marketing program, we are continually seeking opportunities to make the optimum use of our electric generating facilities by selling electricity in the wholesale markets.

During 1996, the Company's individual and joint participation in interstate pipeline proceedings and settlements in Washington D.C. has been successful in controlling natural gas costs. In addition, the Company lowered gas costs during 1996 by $1.9 million by renegotiating various transportation contracts, by releasing excess pipeline capacity and through off-system sales of natural gas.

Although we support competition, we do not believe that the attainment of this objective should be achieved at the expense of customers or system reliability, especially the reliability of the utilities' electric transmission systems. We believe that this issue must receive the highest priority among all the parties involved in bringing about competition in New York State.

As part of this process, we are complying with the requirements of the Federal Energy Regulatory Commission to open our electric transmission system to competitors, to share information about available transmission capacity, and to establish standards of conduct.

The ocean-going ship shown above is representative of the type of vessel which is delivering coal from South America to a new Company coal unloading and handling facility on the Hudson river at Newburgh. As a result of having a new competitive source of coal, the Company has been able to negotiate more favorable contracts for the domestic supply of coal and rail transportation.

REBUTTAL VERIFIED STATEMENT

OF

DR. IAN P. SAVAGE

NORTHWESTERN UNIVERSITY

My name is Dr. Ian P. Savage. I have been a member of the faculty of both the Department of Economics and the Transportation Center at Northwestern University since 1986. I earned a bachelor's degree in economics from the University of Sheffield in 1981 and a Ph.D. from the School of Economic Studies/Institute for Transport Studies at the University of Leeds in 1984. Prior to joining Northwestern I was a consultant for Booz, Allen & Hamilton in their public transportation practice in London. In 1988-89 I was a visiting professor in the transportation group at the School of Commerce of the University of British Columbia.

I. QUALIFICATIONS

My research deals with urban transportation, and the analysis of safety regulation and safety performance. In the past ten years, my work has primarily dealt with transportation safety, most recently in the railroad industry. I am currently completing a book on the economics of safety regulation of railroads which will be published by Kluwer Academic Publishers of Boston during 1998. I have also written on the theory of safety regulation including a paper to be published in the forthcoming *Handbook of Transportation Economics* from the Brookings Institution.

Previously I have worked on safety in other modes of transportation. I was co-principal investigator in a five-year project that evaluated federal programs to enforce safety regulations in the motor carrier industry. Papers from that project have been published in *Accident Analysis and Prevention*, *The Logistics and Transportation Review*, *Risk Analysis*, and the *Journal of Transport Economics and Policy*. I have also written a paper on the requirements for double-hulls on oil tankers which was published in *Maritime Policy and Management*. I also investigated airline pilots' perceptions of safety-related job risks, the effect of airline deregulation on automobile fatalities, and the economics of safety inspections of aging aircraft. I was the coordinator for a June 1987 conference at Northwestern University on the impacts of

economic deregulation on airline and trucking safety, and co-editor of a book based on the conference, *Transportation Safety in an Age of Deregulation*, published in 1989 by the Oxford University Press.

Most of this work has been funded by the United States Department of Transportation through their University Transportation Centers program, and through the Federal Aviation Administration. My research has been funded almost continually by the federal government for the past ten years. As an addendum I have listed my publications in the economics of safety.

I am a member of the Chartered Institute of Transport, the Royal Economic Society, and the American Economic Association. I serve on the Program Committee of the World Conference on Transport Research with responsibilities for sessions on safety analysis and policy, and on the organizing committee of the Chicago Metropolitan Conference on Public Transportation Research.

II. INTRODUCTION AND SUMMARY OF FINDINGS

I have been asked by CSX Transportation Inc. (CSX) and the Norfolk Southern Railway Company (NS) to submit this rebuttal verified statement addressing the Preliminary Comments of the United States Department of Transportation ("DOT-3") filed in the Surface Transportation Board's (STB's) proceeding captioned *CSX Corporation and CSX Transportation, Inc., Norfolk Southern Corporation and Norfolk Southern Railway Company -- Control and Operating Leases/Agreements -- Conrail Inc. and Consolidated Rail Corporation, F.D. 33388* (henceforth the "Transaction"). In particular, CSX and NS have asked me to testify regarding issues raised in the Verified Statement of Edward R. English, Director of the Office of Safety Assurance & Compliance, Federal Railroad Administration, which was submitted with the DOT's filing of October 17, 1997 (referred to henceforth as the "FRA Statement")

The FRA Statement raises the issue of possible short-run safety consequences that may arise during the months in which CSX and NS are integrating the operations of Conrail. The FRA's comments are grounded in specific short-run safety problems encountered in the recent mergers of the Burlington Northern with the Santa Fe, and (especially) the merger of the Union Pacific with the Chicago and North Western and the Southern Pacific.

The FRA acknowledges at page 17 that it thinks that CSX and NS are in a better position than the western railroads to make a safe transition. However, FRA nonetheless recommends that the STB require CSX and NS to prepare written Safety Integration Plans (SIPs) to deal with the transition period. I understand the SIPs have been completed in consultation with FRA and others, and submitted to the STB. This should allow STB to focus on the longer-term safety implications of the Transaction.

After reviewing recent trends in railroad safety, and comparing accident rates at individual railroads, my statement concludes that these longer-term safety implications appear to be positive for two reasons. First, assuming the safety performance of CSX and NS spreads to Conrail, it is likely that accident and casualty rates could be reduced by the order of 30-60%. Second, if the amount of switching can be reduced by the Transaction (as should be the case), there will be considerable safety benefits given the disproportionate number of collisions, derailments and employee injuries sustained in switching operations.

A third longer-term benefit, which I do not address in detail in this rebuttal statement because it is detailed in CSX's and NS's primary application, would arise from traffic diversions from trucks. In the CSX and NS *Environmental Report* (volume 6A at page 76) is a calculation that diversion of traffic from trucks to rail would result in a reduction of 21 fatal highway crashes, with the saving of at least 21 lives. To put this number in context, the highway savings are at least twice the number of railroad employees killed in collisions and derailments in the *entire* railroad industry in 1996. This would more than offset the additional accidents on the railroads caused by the carriage of more traffic.

III. RECENT TRENDS IN RAILROAD SAFETY

To the layperson the popular image of railroad safety is of spectacular train wrecks and burning tank cars, coupled with the suspicion that the frequency of these events has been increasing. However, the reality is much different.

In 1996 1,039 people were killed and 12,558 sustained injuries on the railroads. As can be seen in Figure IPS-1 these casualties are primarily of three types. The first are fatalities sustained in rail-highway grade crossing accidents, the second are trespasser fatalities at places

away from highway grade crossings, and the third are employee injuries of which the vast majority do not involve a moving train.

Figure IPS-1: Number of Fatalities and Injuries by Type of Person 1996

	Fatalities	Injuries
Employees or contractors	42 (4.0%)	9635 (76.7%)
Highway users at grade crossings	487 (46.9%)	1505 (12.0%)
Trespassers not at grade crossings	471 (45.3%)	474 (3.8%)
Non-trespassers (public lawfully on the railroad / adjacent to the railroad)	27 (2.6%)	431 (3.4%)
Passengers on trains	12 (1.2%)	513 (4.1%)
TOTAL	1039	12558

Source: Federal Railroad Administration, *Accident/Incident Bulletin No. 165.*

In Figure IPS-2 are shown historical trends for the three predominant casualty types since 1960. The numbers of fatalities are shown as a rate relative to exposure. The three measures shown are:

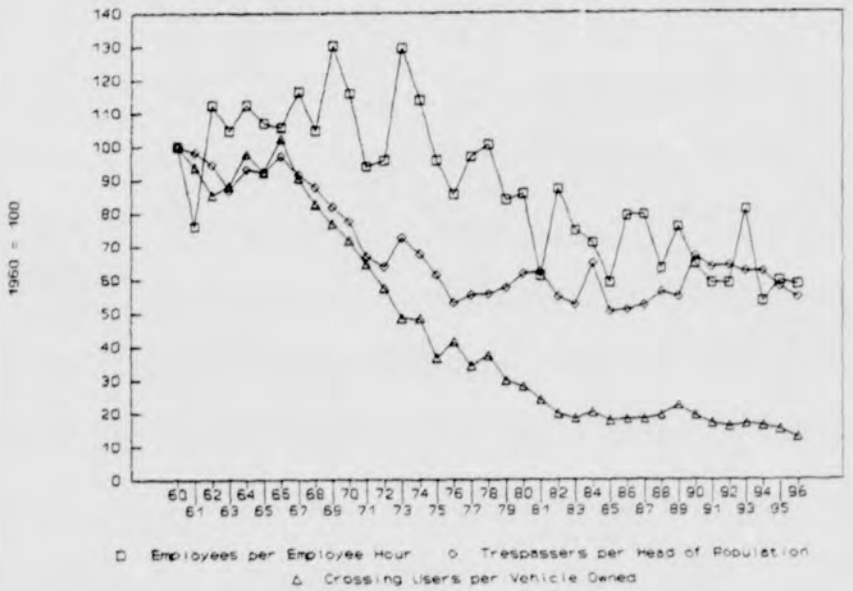
- annual employee fatalities per employee hour (injuries could not be used because of a change in reporting requirements in 1975),
- annual trespasser fatalities away from highway crossings per head of population, and
- annual grade crossing fatalities per highway vehicle registered.[1]

All of the casualty rates are shown as an index with the value for 1960 set equal to 100.

The casualty rates for crossings have recorded the most impressive improvements falling rapidly since 1967, so that the risk is now less than a fifth of what it was in 1960. This improvement has been assisted since 1973 by a federal government program to equip crossings with active warning devices such as flashing lights and gates. The trespasser casualty rates also

[1] Sources: Federal Railroad Administration *Accident/Incident Bulletin*; Federal Highway Administration *Highway Statistics;* Department of Commerce *Statistical Abstract of the United States*.

Figure IPS-2 Fatality Rates since 1960



started to decline rapidly after 1967 but leveled out after 197[illegible] at about 40% below the fatality rate in 1960. If anything, there may be a slight upward trend in recent years. Trespasser fatalities are typically single adult males who have consumed a substantial amount of alcohol.[2] Employee casualty rates increased by 30% during the 1960s. They only started to decline in 1973. The subsequent improvement has been substantial such that the fatality rate is now half of what it was in the early 1970s.

The effect of the improvement in risk is shown in Figure IPS-3 which shows the annual number of railroad fatalities for 1960, 1970, 1980, 1990, and then 1994 through 1996. The number of annual fatalities is now less than half what it was in 1960 and 1970. The number of fatalities fell the fastest during the 1970s, but the annual fatality toll has continued to decline since 1980. In 1996 the number of fatalities is 25% less than in 1980. As can be seen in Figure IPS-3 the major source of the reduced fatalities is the greatly improved safety at highway grade crossings, although employee fatalities have shown a considerable improvement as well. The

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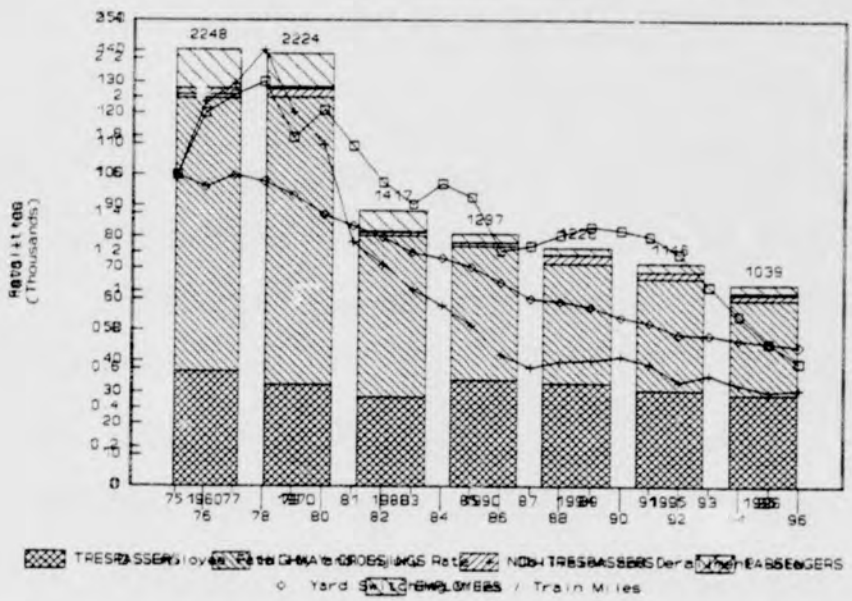
[2] Andrew Pelletier, "Deaths Among Railroad Trespassers: The Role of Alcohol in Fatal Injuries," *Journal of the American Medical Association*, vol. 277 (April 2, 1997), pp. 1064-1066.

number of trespasser fatalities has remained reasonably constant and now represents a substantial proportion of the annual death toll.

Recent safety trends are further investigated in Figure IPS-4 which covers the period since 1975, and shows data on collisions and derailments (which have only been measured on a consistent basis since 1975) per train mile in addition to the employee fatality and injury rate per employee hour. Data are shown as an index with 1975 set equal to 100. The rate of collisions and derailments increased until 1979, and then fell substantially, such that it is now only a quarter of the rate in the late 1970s.

In the 1960s the railroads were in considerable financial difficulties and it is widely believed that standards of maintenance were reduced which led to an increase in collisions and derailments and employee injuries. The worsening safety in the 1960s lead to the *Federal Railroad Safety Act* of 1970, the first substantial change in railroad safety regulation in sixty years. Despite the new regulations which dealt primarily with track maintenance, collisions and derailments did not decline until the economic deregulation of the industry in 1980. With the



deregulation of the industry by the *Staggers Act* of 1980, the financial health of the industry improved and railroads were able to substantially increase their expenditures on track and equipment.

However, much of the improvement in collisions and derailments and employee injuries has also come from a change in the way railroads handle traffic. Traffic is increasingly handled in unit trains and there is much less switching of cars. As can be seen in Figure IPS-4, the proportion of train miles that are represented by yard and switching operations has fallen by half, from 30% to close to 13%, in the past twenty years. As 74% of collisions and 59% of derailments occur in yards and sidings, it is therefore not surprising that the rate of collisions and derailments has fallen in recent years.[3]

IV. COMPARISON OF ACCIDENT RATES OF INDIVIDUAL RAILROADS

Railroads only really have sole control over the frequency of collisions and derailments and employee fatalities and injuries. Trespassing is primarily an urban problem and the rates of trespassing fatalities for individual railroads depend on the geographic location of the railroad. Likewise, while railroads (including the three railroads at issue here) have active public information safety programs, grade-crossing accidents are also largely out of the hands of railroad managements. The grade-crossing problem is primarily rural. While installation of active warning devices is an effective method of improving safety at crossings, decisions on where to install such devices are largely in the hands of State highway authorities. The funding of such installations is heavily dependent of monies distributed by the Federal Department of Transportation through the *Section 130* program.

Figure IPS-5 shows the rate of collisions and derailments per million train miles, and the rate of employee fatalities and injuries per million employee hours in 1996 for Conrail, CSX, NS and for all Class I railroads. The FRA Statement conveys similar data for 1991-1996 in its Figure 1.1 at page 4. It is immediately noticeable that Conrail has collision and derailment and employee casualty rates higher than the average for Class I railroads, while both CSX and NS have lower than average rates. The magnitude of the differences between Conrail and CSX and

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[3] Sources: Federal Railroad Administration *Accident/Incident Bulletin No. 165*, Table 10.

NS is quite substantial. Conrail's collision and derailment rate is twice that of CSX or NS. CSX has an employee casualty rate than is 30% below Conrail's, and NS's is 65% below Conrail's.

Figure IPS-5: Comparison of Accident Rates 1996

	Conrail	CSX	Norfolk Southern	All Class I
Collisions and Derailments per Million Train Miles	3.74	1.80	2.01	2.93
Employee Fatalities and Lost-Day Injuries per Million Employee Hours	11.86	8.49	4.12	9.40
Yard Miles / Total Train Miles	18.0%	15.4%	15.3%	12.8%

Source: Federal Railroad Administration, *Accident / Incident Bulletin No. 165*

So what can explain these differences? Clearly there could be some geographical or climatic differences that have an effect. Conrail also engages in more switching than CSX or NS. As shown in Figure IPS-5, 18% of Conrail's train miles are conducted in yards compared with 15.4% and 15.3% at CSX and NS respectively. Any statistical analysis would suggest that the differences in the amount of switching cannot fully explain the higher safety levels at CSX and NS. There must be differences in CSX and NS's approach to safety which account for the difference.

My analysis has focused on two measures of safety *outputs*: collisions and derailments, and employee injuries. With respect to these measures, CSX and NS have superior performance. This is not to say that there may not be aspects of Conrail's approach to safety that are superlative, especially given the unique characteristics of Conrail's operating environment. I understand that CSX and NS in their Safety Integration Plans intend to adopt

a "best practice" approach when the existing safety programs of Conrail are compared with their own programs.

V. LONGER-TERM SAFETY BENEFITS OF THE TRANSACTION

To my mind there are two significant safety benefits from the Transaction. The first is that Conrail's operations will be taken over by two railroads who have the lowest accident rates in the industry, whereas Conrail has rates worse than average for the Class I railroad industry. If the safety practices and programs of NS and CSX can spread to Conrail then it is likely that accident and casualty rates could be reduced by the order of 30-60%, based on a comparison of the casualty rates of the three railroads in 1996. It is highly likely that the safety practices of CSX and NS will predominate given that the absorbed operations of Conrail will represent a minority of the operations of the post-transaction CSX and NS.[4]

To put these improvements in context, Conrail suffered 171 collisions and derailments and 509 employee fatalities or lost-workday injuries in 1996. Assuming that Conrail's operations are split roughly 40%/60% between CSX and NS, and that the safety rates of CSX and NS shown in Figure IPS-5 apply to the acquired Conrail operations then one would expect that the annual number of collisions and derailments would fall by 83 to a total of 88.[5] Similarly, annual employee fatalities and lost-workday injuries should fall by 257 to a total of 252.

The FRA Statement addresses this issue cursorily at pages 15-16. NS is acknowledged by the FRA as having a low accident rate. Yet rather than acknowledging that this will lead to

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[4] Assuming Conrail's existing 21,000 employees are split 60%/40% between NS and CSX, the existing Conrail employees will represent approximately 35% and 23% of the work force of the enlarged NS and CSX respectively.

[5] CSX and NS in their *Environmental Report* (Volume 6A at page 75) calculate that accidents would decline by 71 each year. CSX and NS argue that a major economic benefit of the Acquisition is the increased amount of railroad traffic resulting from improved single-line service offered to some shippers. CSX and NS acknowledge that the traffic growth will lead to 19 additional railroad accidents each year in their *Environmental Report* (volume 6A at page 75). This increase should be more than compensated for by a diversion of traffic from trucks and the consequent reduction in highway fatalities referred to in section II.

safety improvements on Conrail, the FRA dismiss the benefits by claiming that NS is "provincial" and has a strong management safety culture. The FRA cautions that these strong tendencies may clash with the culture at Conrail and lead to diminished safety. I draw the opposite conclusion. I believe that the safety culture of NS and CSX would take precedence at Conrail, and consequently its accident rate will improve.

The second safety benefit comes from the ability of NS and CSX to offer single-line service to some customers who are shipping their goods between the northeastern United States and the south. Much attention has been given to the service advantages of single-line routing. However, there are important safety benefits from single-line service as well. As can be seen in Figure IPS-4, much of the improved safety on the railroads in the past twenty years has come from the elimination of switching operations, including interchange, where a disproportionate number of collisions, derailments and employee injuries occur. Thus if the amount of switching relative to volume can be reduced by the Transaction, safety should be enhanced.

CSX and NS have adduced evidence that switching will in fact be reduced. For example, NS's Rail Traffic Diversion Study indicates that creation of the NS/Penn Lines system (NS lines plus Conrail lines to be allocated to NS) alone will extend single-line service to an additional 245,000 traffic units annually.[6] CSX's traffic forecasts predict that the Transaction will reduce the number of annual interchange handlings by 376,300.[7] Finally, integration of terminals at common points would tend to reduce switching and improve safety.

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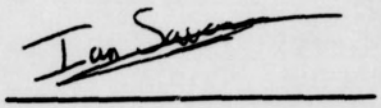
[6] Verified statement of John H. Williams (volume 2B at page 68).

[7] Verified Statement of John C. Klick (volume 1 at pages 439-440).

VERIFICATION

I, Ian P. Savage, verify under penalty of perjury that the forgoing statement is true and correct. Further, I certify that I am qualified and authorized to file this statement.

Executed on December 9, 1997.



Ian P. Savage

APPENDIX A

SAFETY PUBLICATIONS OF IAN P. SAVAGE

A. Books

Savage, Ian (forthcoming). *The Economics of Railroad Safety*. Boston: Kluwer Academic Publishers.

Moses, Leon N. & Ian Savage (eds.) (1989). *Transportation Safety in an Age of Deregulation*. New York: Oxford University Press.

B. Contributions to Books

Savage, Ian (forthcoming). The economics of commercial transportation safety. In Gómez-Ibáñez, José, William B. Tye and Clifford Winston (Eds.) *Transportation Economics, Policy and Management: A Survey in Honor of John R. Meyer*. Washington DC.: Brookings Institution.

Savage, Ian (forthcoming). Aviation deregulation and safety in the United States: the evidence after twenty years. In Gaudry, Marc and Robert Mayes (Eds.) *Taking Stock of Air Liberalization*. Boston: Kluwer Academic Publishers.

Moses, Leon N. & Ian Savage (1993). Characteristics of motor carriers of hazardous materials. In Saccomanno, Frank F. and Keith Cassidy (eds.) *Transportation of Dangerous Goods: Assessing the Risks*. Waterloo, Ontario: University of Waterloo, Institute for Risk Research.

Moses, Leon N. & Ian Savage (1993). Annual license fees and other charges for road transportation of hazardous materials. In Moses, Leon N. and Dan Lindstrom (eds.) *Transportation of Hazardous Materials: Issues in Law, Social Science, and Engineering*. Boston: Kluwer Academic Publishers.

Panzar, John C. & Ian Savage (1989). Regulation, deregulation and safety: an economic analysis. In Moses, Leon N. and Ian Savage (eds.), *Transportation Safety in an Age of Deregulation*. New York: Oxford University Press.

C. Journal Articles

Moses, Leon N. & Ian Savage (1997). A cost-benefit analysis of United States motor carrier safety programs. *Journal of Transport Economics and Policy* 31(1):51-67.

Moses, Leon N. & Ian Savage (1996). Identifying dangerous trucking firms. *Risk Analysis* 16(3):351-358.

Brown, R. Scott & Ian Savage (1996). The economics of double-hulled tankers. *Maritime Policy and Management* 23(2):167-175.

Moses, Leon N. & Ian Savage (1994). The effect of firm characteristics on truck accidents. *Accident Analysis and Prevention* 26(2):173-179.

Savage, Ian (1993). Demographic influences on risk perceptions. *Risk Analysis* 13(4):313-420.

Savage, Ian (1993). An empirical investigation into the effect of psychological perceptions on the willingness-to-pay to reduce risk. *Journal of Risk and Uncertainty* 6(1):75-90.

Savage, Ian (1993). The price of saving lives. *Developing Railways 1993* (A Railway Gazette International Yearbook) 23-24.

Moses, Leon N. & Ian Savage (1992). The effectiveness of motor carrier safety audits. *Accident Analysis and Prevention* 24(5):479-496.

Bylow, Lance F. & Ian Savage (1991). The effect of airline deregulation on automobile fatalities. *Accident Analysis and Prevention* 23(5):443-452.

Savage, Ian (1991). Psychological features affecting valuation of life. *Economics Letters* 35(4):379-383.

Moses, Leon N. & Ian Savage (1990). Aviation deregulation and safety: theory and evidence. *Journal of Transport Economics and Policy* 24(2):171-188.

Moses, Leon N. & Ian Savage (1989). The effect of airline pilot characteristics on perceptions of job safety risks. *Journal of Risk and Uncertainty* 2(4):335-351.

Moses, Leon N. & Ian Savage (1988). Air safety in the age of deregulation. *Issues in Science and Technology* 4(3):31-36.

Savage, Ian (1984). Safety in the deregulated bus industry. *Traffic Engineering and Control* 25(11):564-565.

VERIFIED STATEMENT

OF

D. W. SEALE

NS VICE PRESIDENT, MERCHANDISE MARKETING

My name is D. W. Seale. I am Vice President-Merchandise Marketing, Norfolk Southern Corporation, Norfolk, VA. I am the same D. W. Seale who submitted a verified statement previously in this proceeding. That statement is contained in Volume 2B of the Application.

The purpose of this statement is to rebut certain market impact and competition statements submitted in the Responsive Application of the Wheeling and Lake Erie Railway Company. ("WLE") This statement is also intended to set forth offers of settlement made by NS to various Ohio limestone and aggregate shippers.

WLE Overstates NS Market Dominance

WLE has portrayed Norfolk Southern as having an overwhelming market dominance after the Conrail transaction within the region where WLE operates. WLE has also indicated that they believe that NS will siphon a large portion of the traffic from WLE's traffic base through NS' gain of CR's current customer access within the region served by WLE. In their rebuttal verified statements, James W. McClellan

and John H. Williams have addressed the fact that where shippers have alternative rail transportation options, a failure of WLE will not lead to a concurrent loss of essential service that could not be remedied with minimal modification to the region's existing rail network. Notwithstanding the question of whether WLE truly provides essential service, I believe that WLE has overstated NS' market position given the proposed division of Conrail operations.

CSX is already a vigorous competitor in many of the markets, such as western Pennsylvania, where WLE and CR currently operate. As discussed in John Williams' statement, although NS will not need WLE to connect to some stations because of NS' assumption of certain CR lines, "both NS and CSX have worked with WLE to generate rail traffic." NS will still work with WLE penetrate CSX markets like Akron, OH. The need will still remain for CSX to use WLE as a connection to areas they do not reach now and will not reach after the transaction, such as Canton, OH. Thus it will be commercially advantageous for CSX to form an alliance with WLE to compete against NS. Contrary to WLE President Larry Parsons' assertion, a WLE/CSX alliance will provide competitive alternatives for shippers, just as NS or CSX often work with WLE to compete against CR today.

Geographically in the map titled "Post Acquisition of Conrail by Norfolk Southern," WLE has represented several lines that will convey to CSX as being operated by Norfolk Southern post-transaction, thus overstating WLE's claims of NS dominance. Specifically, these lines are Berea, OH to Crestline, OH, Crestline, OH to Columbus, OH, Crestline, OH through Lima, OH and Ft. Wayne, OH to Chicago, IL, Galion, OH through Muncie, IN to East St. Louis, IL, and Columbus, OH

through Ridgeway, OH and Dunkirk, OH to Toledo, OH. These inaccurate representations overstate the geographic position of an expanded NS and cast further doubt of WLE's claim of market dominance by NS.

Packaged Service Is a Benefit to Shippers

Larry Parsons contends that an expanded NS network is anti-competitive because NS is able to offer package rates and service to a shipper with multiple locations that could enable NS to win business against WLE even when WLE may have a superior rate and service on an individual move. Contrary to Mr. Parsons' contention, package bids are often driven by competitive forces and shipper demands for fewer carriers and are pro-competitive. In my Verified Statement in the NS/CSX Application for Control of Conrail, I discussed the value of a network:

> Increasingly, automotive manufacturers consolidate large segments of their business and then ask carriers to compete by offering a package of rates and services for the traffic they handle. In general, automotive companies are seeking greater network solutions that aid them in reducing costs and improving efficiencies across the entire supply chain. Carriers that can directly access a greater number of assembly plants, parts vendors, and destination rail ramps can respond to this challenge more effectively.

While I explained this directly in relation to the automotive industry, shipper demand for sophisticated rate and service packages is increasing in all of our commodity groups. Larry Parsons' attempts to equate such overall service packages as a forced exercise of "market power" by large rail carriers on helpless customers,

when in fact the "packaging" of their business occurs entirely at the shipper's discretion.

Despite the fact that rail accounts for only 26% of iron and steel transportation in the US according to 1995 figures from Reebie Associates, Mr. Parsons quotes George Bokelberg, a former executive of US Steel, as saying, "NS will be the largest railroad for steel mills and their products." Mr. Parsons then adds in his own editorial comment, "why would US Steel dare oppose NS and support WLE." In reality, shippers often want to be able to conduct business more effectively and efficiently by dealing with one carrier within the competitive environment just as, for example, automotive producers desire to conduct business with a few quality providers. It is the way business is conducted today. Mergers and acquisitions allow rail carriers to be more "truck-like" by offering superior overall service and rate packages.

Weirton Steel is an example of a customer whose transportation issues were able to be addressed by a rail transportation package. Weirton's facility in Weirton, WV was built as a facility local to Conrail and remains so today; thus, NS' assumption of service to their plant after the transaction did not represent an issue of reduction in competitive options. But, Weirton Steel did have concerns over how their future transportation needs would be met after the culmination of the Conrail acquisition. NS worked with Weirton to review and address their concerns formulating a new rate and service package to become effective post-transaction. Weirton is not a party to WLE's responsive application. In fact, when Weirton was

satisfied that their transportation needs would be met by an expanded NS, Weirton Steel issued a letter, that has been filed with the Board, in support of the NS/CSX acquisition of CR.

2 to 1 Shippers

In his Verified Statement, Larry Parsons of WLE has requested "trackage rights and commercial access to Reserve Iron & Metal" as a 2 to 1 shipper. Reserve Iron & Metal is a shipper located at 4431 West 130th Street in Cleveland, OH. This facility is directly served by both Conrail and CSX and is open to switching on both carriers. After the transaction, the facility will retain direct service by CSX, and Norfolk Southern will assume the direct access that Conrail has now. In addition, the facility will remain open to switching for other carriers that reach Cleveland. Thus, Reserve Iron & Steel is not a 2 to 1 shipper, and WLE's rationale for additional access is false.

Stone Producers

Several stone producers have submitted comments expressing concerns about how Norfolk Southern and CSX will move their traffic following the transaction. Norfolk Southern and CSX have both agreed to continue to perform existing contracts for all shippers for the duration of those contracts. While it is generally true that short haul movement of stone is extremely truck competitive, and single line synergies can make it easier to keep such traffic moving by rail, joint line movement

of stone can and does work in many cases. Rail carriers can and do work together in joint line movements to simulate single line service for shippers, using operational mechanisms such as run through locomotives and the pooling of cars to ensure equipment availability and capture as many operational efficiencies as possible. For instance, Norfolk Southern has been successfully helping Sandusky Crushed Stone serve new markets in a joint line move with Conrail from NS origins at Parkertown, OH to Conrail destinations at Twinsburg, OH using a combination of private and railroad-supplied equipment and using run through power. Similar packages can be crafted for other Ohio stone shippers who wish to ship stone over joint line routes. In his Rebuttal Verified Statement, John Friedmann has outlined the operational difficulties inherent in the conditions suggested by WLE. The forced intrusion of a third party such as suggested by the WLE would only exacerbate a complex operational situation leading to potential long term deterioration in service.

Settlement Offers to Various Stone Shippers

Martin Marietta Materials, Inc. and National Lime & Stone Co.

Both NS and CSX worked diligently to provide competitive rates, service and car supply to Martin Marietta Materials, Inc. (MMM) concerning movements of aggregates from MMM's [[ ]]] Ohio facility, and to National Lime and Stone Company (NLS) regarding shipments from its [[[ ]]] Ohio facility. In each case, our proposals were rejected. The primary reason for their rejection of our offer was that, because of our uncertainty about the profit levels of these former CR

moves, we were reluctant to agree to contracts extended beyond 1999. Notwithstanding the marginal profitability of the rates, we advised both NLS and MMM of our willingness to contract with both of them through 1999. Both MMM and NLS requested 10-20 year commitments, to which neither NS nor CSX was willing to agree without access to Conrail cost data.

In my opinion, aggregates shippers on the new CSX likely will, in the long run, readjust their market focus to customers located on CSX. Similarly, aggregates customers on the new NS will likely readjust their purchasing to focus on shippers located on NS. In one case, this is already occurring. A Conrail customer at [[[ ]]] Ohio has already begun to receive 75 car unit trains of aggregates from [[[ ]]] Ohio, an NS origin point.

Wyandot Dolomite

Wyandot Dolomite ("Wyandot") has only one receiver on Conrail, which will be located on NS after the transaction. NS Strategic Planning offered W&LE access to several new NS aggregates receivers, including Wyandot's receiver. Even though NS advised Wyandot that W&LE could handle their traffic single line, they were not satisfied. Wyandot officials remarked that they already were giving W&LE too much of their business. Wyandot also stated they were concerned about the weak financial condition of the W&LE.

Redland (Ohio)

Redland, another Ohio aggregates shipper, is currently served by Conrail (on a line which will become a CSX line post-transaction). It is also served by the Northern Ohio and Western Railway (NOW). Even after NS extended a commitment to Redland for attractive joint line NS-NOW rates to compete with the CSX rates, Redland would not support the transaction.

VERIFICATION

Donald W. Seale, states under penalty of perjury that he is Vice President-Merchandise Marketing for Norfolk Southern Corporation and Norfolk Southern Railway Company, Norfolk, Virginia, that he is authorized to file and verify the foregoing rebuttal verified statement in STB Finance Docket No. 33388 on behalf of the applicants, that he has carefully examined all the statements in the foregoing verified statement, that he has knowledge of the facts and matters stated therein, and that all representations set forth therein are true and correct to the best of his knowledge, information and belief.

Donald W. Seale

Dated 12/9/97

REBUTTAL VERIFIED STATEMENT OF GERALD E. VANINETTI

BACKGROUND AND QUALIFICATIONS

My name is Gerald E. Vaninetti. I am a Principal of Resource Data International, Inc. ("RDI"), with offices located in Boulder, Colorado. A statement of my background and qualifications is included as Exhibit GEV-1 to this rebuttal verified statement.

My rebuttal verified statement addresses concerns raised by Indianapolis Power & Light Co. (IP&L), Indiana Southern Railroad (ISRR), and the Department of Justice (DOJ) (collectively referred to as "IP&L et al.") concerning the impact of the proposed acquisition transaction on rail competition for coal shipments in Indianapolis.

SUMMARY & CONCLUSIONS

My analysis of transportation competition in the Indiana coal industry differs from many of the contentions made by IP&L et al. and supports the Applicants' proposed acquisition of Conrail. My evaluation is based not only on my analysis of data and materials provided in discovery, but on my on-site experience and studies regarding rail/truck competition in the Indiana coal industry. The logistics of Indiana coal shipments are indicated in Maps 1 and 2. On the basis of my experience and studies, I conclude the following:

1. Truck competition is an unusually effective competitive lever in disciplining rail rates for Indiana coal shipments due to the relatively short distances involved (78 miles on average) and the lower costs of loading and unloading trucks (which may offset as much as $2/ton of the trucking cost). This is manifest in the balance in market shares for truck and rail shipments, the high percentage of joint-line rail hauls involving Indiana coal, and IP&L's success in playing truck against rail (see below). IP&L et al. have made little mention of this important aspect of the Indiana coal transportation industry.

2. IP&L has been unusually effective in using the threat of truck competition to discipline its rail rates to all four of its coal-fired power plants. IP&L's threat to use trucks for its post-1996 coal deliveries to IP&L-Stout caused INRD to cut its rate by about 20% in order to effectively compete with truck rates, which may have been $2.00 per ton higher. [[

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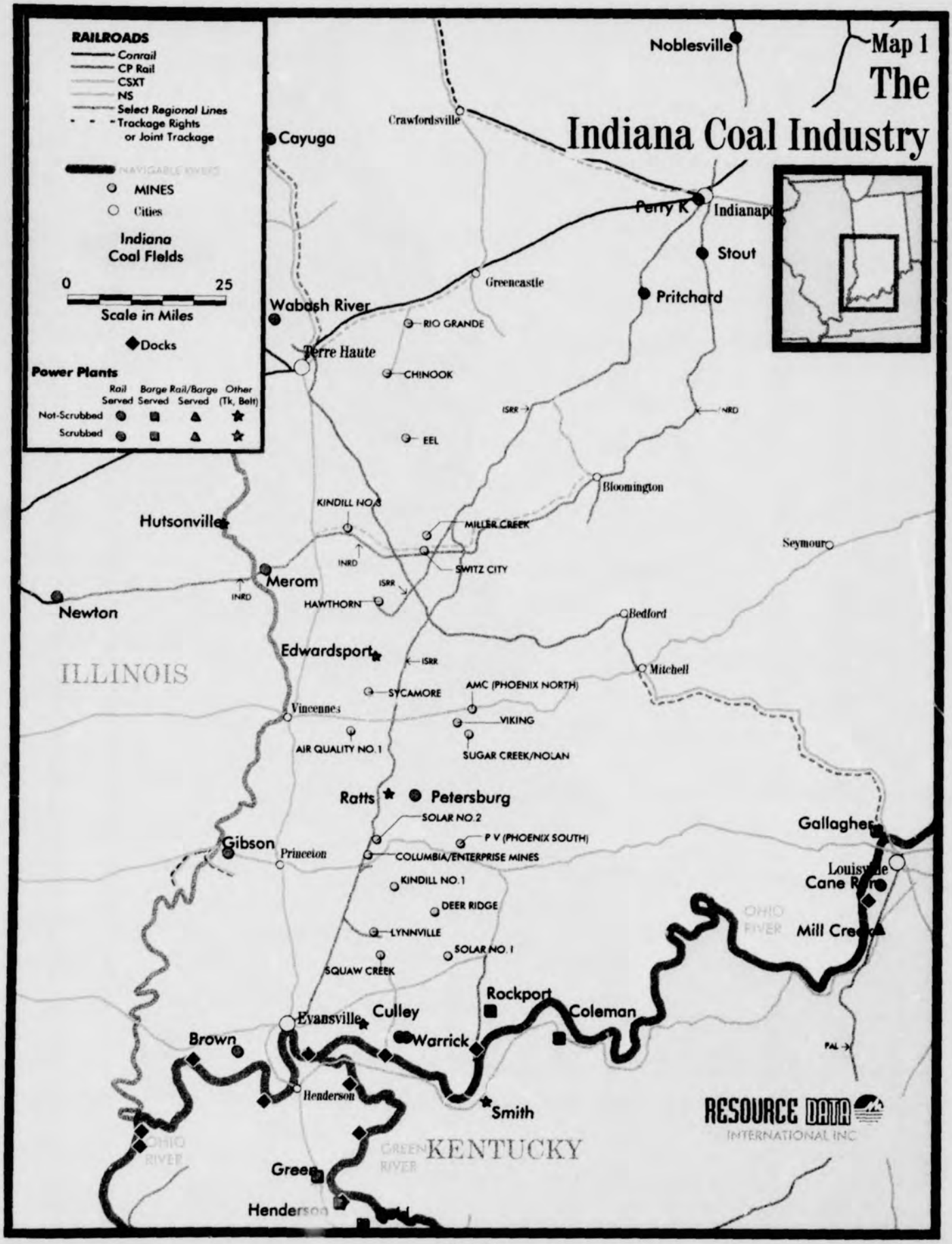
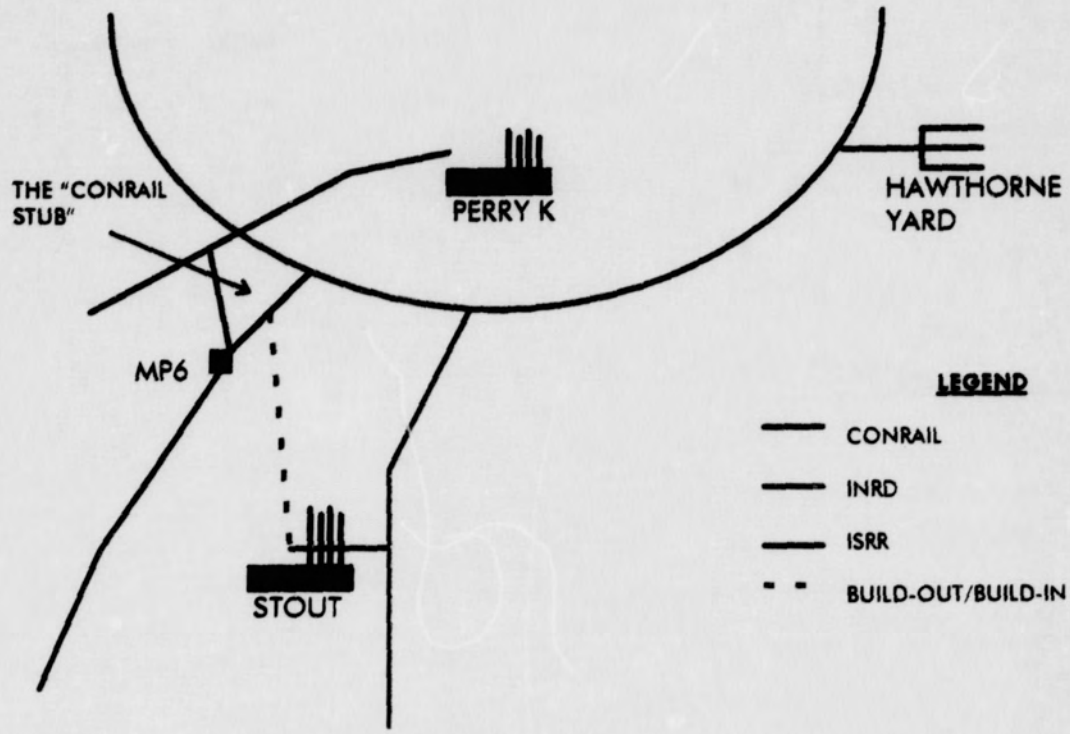

Map 1
The
Indiana Coal Industry
RAILROADS
Conrail
CP Rail
CSXT
NS
Select Regional Lines
Trackage Rights or Joint Trackage
NAVIGABLE RIVERS
MINES
Cities
Indiana Coal Fields
0
25
Scale in Miles
Docks
Power Plants
Rail Served
Barge Served
Rail/Barge Served
Other (Tk, Belt)
Not-Scrubbed
Scrubbed
Noblesville
Crawfordsville
Cayuga
Perry K
Indianapo
Stout
Greencastle
Pritchard
Wabash River
RIO GRANDE
Terre Haute
CHINOOK
ISRR
NRD
EEL
Bloomington
KINDILL NO.2
Hutsonville
MILLER CREEK
INRD
SWITZ CITY
Seymour
Merom
ISRR
INRD
HAWTHORN
Newton
Bedford
Edwardsport
ISRR
Mitchell
ILLINOIS
SYCAMORE
AMC (PHOENIX NORTH)
Vincennes
VIKING
AIR QUALITY NO.1
SUGAR CREEK/NOLAN
Ratts
Petersburg
SOLAR NO.2
Gallagher
P V (PHOENIX SOUTH)
Gibson
Princeton
COLUMBIA/ENTERPRISE MINES
Louisville
Cane Run
KINDILL NO.1
DEER RIDGE
OHIO RIVER
Mill Creek
LYNNVILLE
SOLAR NO.1
SQUAW CREEK
Rockport
Evansville
Culley
Coleman
Brown
Warrick
PAL
Henderson
Smith
RESOURCE DATA INTERNATIONAL INC
OHIO RIVER
GREEN RIVER
KENTUCKY
Green
Henderson

MAP 2
INDIANAPOLIS DETAIL: ROUTES TO IPL



3. Since 1995 (and possibly earlier), Conrail's role in the Indiana coal market role in the Indiana coal market has been limited to nominal shipments to exclusively-served IP&L-Perry K and as a short bridge carrier involving no more than 10% of the coal requirements for IP&L-Stout. This latter shipping alternative has not been utilized by IP&L since 1996 – presumably due to the superior service and more competitive rates offered by INRD. Therefore, I conclude that Conrail has not contributed to rail competition – a view substantially in conflict with IP&L et al.'s contention that Conrail has contributed to balanced rail competition for coal shipments in Indianapolis.

4. Although ISRR would have the Board believe that it will suffer the loss of $1.5 million in annual revenues as a result of the proposed transaction, ISRR has already lost the lion's share of this business [[[ ]]] due to market forces currently in effect in the Indiana coal industry – and due to its inability to compete on competitive movements involving Conrail. Ultimately, such potential losses involve only a small portion of ISRR's business with IP&L (despite its unfounded contention that it will lose its largest customer), since the majority of its revenues derive from its business with other IP&L plants which it serves on an exclusive basis and with other shippers of Indiana coal (see below). Further, ISRR will lose coal transportation revenues as a result of Perry K's partial conversion to natural gas.

5. [[[

]]] Although it currently serves IP&L-Petersburg and IP&L-Pritchard on an exclusive basis and has "favored" access to IP&L-Perry K via Conrail, its testimony before the Board exposes its designs on improving its access to all four IP&L plants, improving and extending its routings which could potentially involve Western coal deliveries, and [[[

]]]. These measures would constitute a material enhancement of its current rights at the expense of the rights currently held by other carriers which serve the Indiana coal industry, including CSX and INRD.

6. IP&L's internal and external power supply options may provide it with the ability to discipline its rail rates to its Stout and Perry K plants – due to the availability of power from its other power plants (which operate at moderate to low capacity factors) and from its interconnections with AEP, CINERGY, Hoosier, and SIGECO (which provide it with access to competitively-priced power throughout the East Central Area Reliability Council ("ECAR") region).

7. IP&L's testimony before the Indiana Utility Regulatory Commission (IURC) for environmental compliance involving the exclusive use of Indiana coal linked to a nearly $240 million rate-based expenditure for scrubber installations is inconsistent with its testimony before the Board regarding the potential for its use of non-Indiana coal to meet unspecified "environmental obligations." If anything, additional environmental controls would tend to *decrease* the potential for external coal at IP&L's plants. Therefore, I conclude that, from an environmental perspective, Western coal is not likely to be used in IP&L's coal-fired plants.

8. The economics of Western coal deliveries from mines located more than 1,250 miles from IP&L in competition with locally-mined Indiana coal are insufficient to justify consideration of Western coal today or for the foreseeable future – unless rail rates quoted to IP&L in 1996

[1] ISRR 1996 Revenues from IPL Traffic, ISRK 000150 (Highly Confidential) (Included in Volume 3).

can be decreased dramatically (a very unlikely scenario). IP&L's testimony to the IURC regarding the operational and cost impacts of using non-Indiana coal at boilers designed for Indiana coal is additional confirmation of the inapplicability of Western coal use at IP&L's coal-fired plants – particularly for PRB coal. Therefore, I conclude that, from an operational and economic perspective, it would be very unlikely for IP&L to use Western coal for its coal-fired plants.

9. IP&L et al. have disparaged the Applicants' proposal to impose a system-wide trackage rights fee of 29¢ per car mile and have proposed an alternate fee of 16¢ per car mile. [[[

]]]

TRUCK COMPETITION DISCIPLINES RAIL RATES

During my eight years as Vice President of Business Development for Savage Industries (the largest coal trucking firm in the U.S.), I developed a keen appreciation of competition between truck and rail transportation. I found that for hauls of generally less than 100 miles, coal transportation by truck is a effective competitor to rail transportation in most regions of the country, including Indiana. This is particularly true when the costs of loading and unloading are taken into consideration, since rail loading and unloading is usually more expensive and inflexible than truck loading and unloading. The flexibility afforded by truck transportation and the differential in loading and unloading costs can sometimes offset an apparent advantage of more than $1 per ton in direct transportation costs.

My national and regional studies of rail rates indicate that rail rates for coal hauls of less than 100 miles cannot be considered along with rail rates for longer hauls, since rail rates are "disciplined" by competition with truck deliveries for hauls of less than 100 miles. By way of example, my 1994 evaluation of Conrail's rail rates for coal shipments determined that the lack of consistency in rail rates for hauls of less than 100 miles "can be attributed to competition with truck transportation".[3]

My evaluation of the 24 million tons (MMT) of Indiana coal shipped to utilities in 1996 indicates that the average haul distance is only 78 miles and that truck and rail are the dominant transportation modes (Figure 1). As such, it is evident that rail/truck competition is widespread

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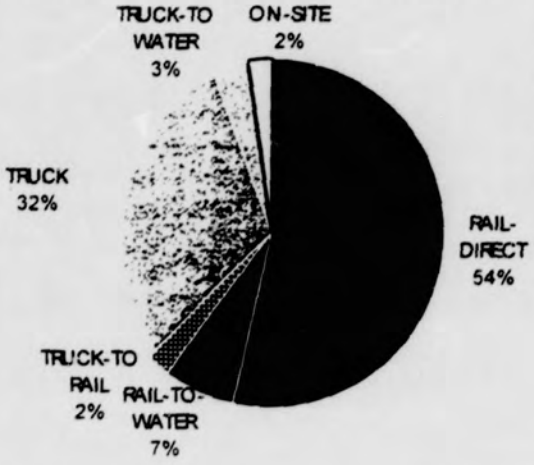
[2] [[[

]]]

in the Indiana coal industry, particularly for the 19 MMT purchased by utilities for plants located within the state of Indiana (see Maps 1 and 2).

FIGURE 1
INDIANA COAL TRANSPORTATION TO UTILITIES, 1996



MODE	TONS (000)	PERCENT
RAIL-DIRECT	12,853	53%
RAIL-TO-WATER	1,632	7%
TRUCK-TO-RAIL	500	2%
TRUCK	7,771	32%
TRUCK-TO-WATER	840	3%
ON-SITE	505	2%
	24,102	100%

NOTE: AN ADDITIONAL 3 MMT IS SHIPPED RAIL-DIRECT TO ALCOA

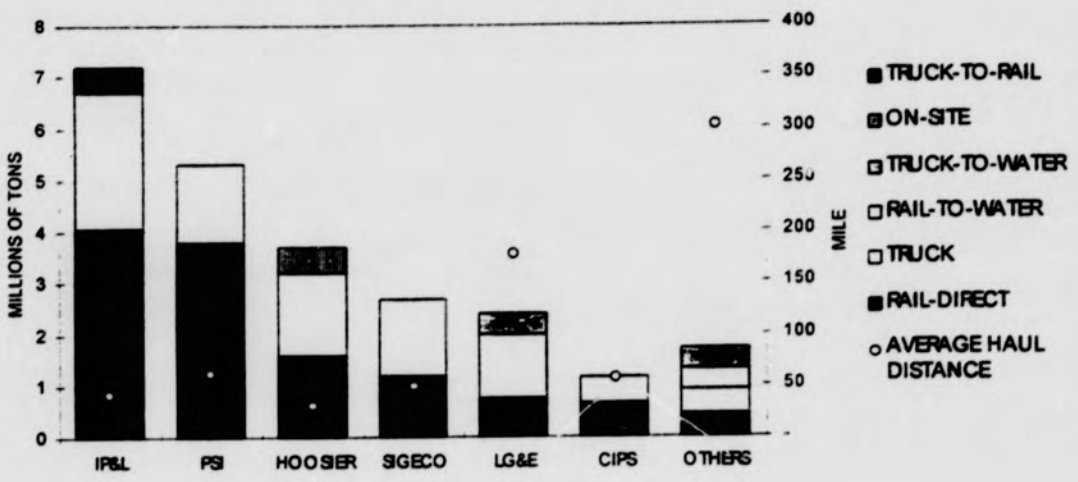
SOURCE: COALDAT®

Truck/rail competition is also evident in the delivery modes used by the major utility shippers of Indiana coal (Figure 2). As shown, IP&L and other in-state shippers avail themselves of both truck and rail deliveries and that haul distances are relatively short. As the largest shipper of Indiana coal at more than 7 MMT per year and an average haul distance of 43 miles, IP&L is unusually well positioned to take advantage of rail/truck competition. Its efforts and successes in this regard are demonstrated by a shipment portfolio in which both truck and rail deliveries play important roles. [[[

]]]

[3] GEV-2 at 48 and Figure 11.

FIGURE 2
TRANSPORTATION MODES FOR MAJOR UTILITY SHIPPERS OF INDIANA COAL, 1996



SOURCE: COALDAT®

My on-site experience in the Indiana coal trucking industry between 1988 and 1993 confirms the presence of strong truck/rail competition. This was further confirmed in 1993 when I was retained by CSX to provide them with information regarding Indiana coal trucking rates so that they could assess rail/truck competition. [[[

]]]

It is my understanding that IP&L used the threat of truck-direct competition in disciplining INRD's rail rates for coal shipments to its Stout Plant from Black Beauty's Farmersburg Mine (using trucks supplied by Black Beauty's affiliated company GIBCO Trucking).[5] This threat caused INRD to reduce its rates by 20% to effectively compete with truck deliveries which amounted to a total rail rate about $2.00 per ton less than the truck rate. Id. [[[

]]]

[5] See ISRR Projected Carloads, ISRR 000314 (Highly Confidential) (Included in Volume 3).

Finally, IP&L Witness Crowley understates the transportation options available to IP&L-Stout and IP&L-Perry K.[6] In addition to avoiding a discussion of the potent competition afforded by direct truck deliveries to these plants, Crowley avoids mention of the integral role currently played by CP Rail (Soo Line) in two-line movements to IP&L-Stout (as well as other carriers which originate Indiana coal including NS and the Algers, Winslow and Western Railroad [AWW]). As a consequence, his claim that "CSX will control both effective transportation options to Perry K" misstates the facts and the unmistakable role of truck competition in disciplining rail rates to IP&L- Perry K.[7]

In summary, I conclude that the threat of both rail and truck competition at plants generally located within 100 miles of the Indiana coal fields provides receivers of Indiana coal, including IP&L, with unusually competitive coal transportation options and that such competition effectively disciplines rail rates. IP&L is especially well positioned to take advantage of rail/truck competition and has effectively demonstrated its ability to discipline rail rates to its Stout Plant by threatening to avail itself of truck transportation.

IP&L's POWER SUPPLY OPTIONS MAY BE USED TO DISCIPLINE ITS RAIL RATES

IP&L has a diversity of power supply options at its disposal to discipline rail rates for shipments of Indiana coal as well as coal from other source regions. These options include internal dispatch from its four coal-fired power plants and purchasing power from other utilities via its direct interconnections with AEP, CINERGY, Hoosier, and SIGECO and their respective interconnections with "second wheel" utilities (Table 1). The use of these options to discipline rail rates was discussed by DOJ Witness Woodward.[8]

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[5] See Hoback RVS.
[6] Crowley VS at 5, 7.
[7] Id. at 6.
[8] Woodward VS at 10-14.

TABLE 1
IP&L'S TRANSMISSION INTERCONNECTIONS

FIRST WHEEL UTILITIES		SECOND WHEEL UTILITIES			
NO.	UTILITY	NO.	UTILITY	NO.	UTILITY
1	AEP	1	ALLEGHENY POWER	12	ILLINOIS POWER
2	CINERGY	2	AM. MUNICIPAL POWER	13	IPALCO
3	HOOSIER	3	BIG RIVERS	14	KENTUCKY UTILITIES
4	SIGECO	4	CAROLINA POWER	15	LG&EE
		5	CENTERIOR	16	MI ELEC POOL COOR CT
		6	CIPSCO	17	NIPSCO
		7	COMED	18	OHED
		8	DAYTON	19	OVEC
		9	DUKE POWER	20	TVA
		10	DUQUESNE	21	VEPCO
		11	E. KY POWER		

SOURCE: POWERDAT®

IP&L's internal dispatch options include generation from any of its four coal-fired power plants at times when such plants have excess generating capacity (Table 2). Since none of IP&L's plants are highly utilized (as indicated by their moderate to low capacity factors), excess generating capacity is undoubtedly available for considerable periods of time. At these times, the availability of excess generation capacity may be used to discipline rail rates for carriers that serve IP&L. For instance, generation could be increased at ISRR-served Petersburg or Pritchard to put pressure on INRD's deliveries to Stout and vice-versa. This scenario is plausible since the delivered price of coal at Petersburg and Pritchard is less than the delivered price of coal at Stout and Petersburg's power production costs are among the lowest of coal-fired plants within the ECAR region.

TABLE 2
FUEL AND GENERATION INFORMATION FOR IP&L'S COAL-FIRED PLANTS, 1996

	INSTALLED MW		GENERATION	CAPACITY	HEAT	AVE HAUL	1996 COAL PURCHASES			
	TOTAL	SCRUB	(MWH)	FACTOR	RATE	DISTANCE	TONS (000)	BTU	SO2	¢/MMBTU
PETERSBURG	1,873	1,873	10,867	66%	10,375	23	5,312	11,129	4.51	92.23
STOUT	698	-	2,959	48%	10,447	106	1,312	11,173	2.29	112.77
PRITCHARD	302	-	738	28%	11,633	61	338	11,295	2.19	107.92
PERRY K	20	-	N/A	N/A	N/A	108	225	N/A	N/A	N/A
	2,873	1,873				43	7,187			

SOURCE: COALDAT® AND POWERDAT®

The opening of the transmission grid resulting from utility deregulation has provided utilities with a potent new tool to discipline rail rates: coal-by-wire. In IP&L's situation, it could make the case to its rail carriers that more competitive rail rates will be required to allow it to compete for power sales. Absent such rates and power sales, the rail carriers will lose revenues which may have otherwise been available. Conversely, IP&L may wish to avail itself of a particularly liquid power market by virtue of its interconnections with utilities within ECAR (see

Table 1). IP&L can threaten to reduce generation at its rail-served plants to take advantage of competitive energy prices available from the grid. This too would pressure railroads to provide more competitive rates to retain existing business.

Although DOJ Witness Woodward accurately describes the effectiveness of dispatch and power purchase options in disciplining rail rates, he discounts the applicability of these options for IP&L[9] – apparently solely on the basis of his interview with IP&L personnel where he was informed that "the overall costs of the network and the other stations are so high that IP&L could not use either of these alternatives to prevent the Indiana Railroad from raising the price of transportation to the Stout plant." This conclusion is apparently not based on any quantitative information or independent analysis. Such a conclusion is not consistent with my analysis, which indicates that IP&L has several power supply options that may be used to discipline its rail rates.

CONRAIL HAS A NEGLIGIBLE ROLE IN THE INDIANA COAL INDUSTRY

Rail/truck competition and the plethora of rail carriers which serve the Indiana coal industry results in multiple rail delivery combinations and "balanced rail competition"[10] involving the seven railroads which originate Indiana coal (Table 3). Such balanced rail competition is evident in the unusually low percentage of single-line hauls (53%). Were there not balanced rail competition in the Indiana coal industry, one would expect to see a substantially higher percentage of single-line hauls than the 53% evident in 1996 rail shipments of Indiana coal to utilities.

[9] DOJ-1, Woodward VS at 19.
[10] IPL-3 at 7, 13, 32, 34; IPL-3, Weaver VS at 4-5.

TABLE 3
RAIL SHIPMENTS OF INDIANA COAL TO UTILITIES, 1996

TERMINATING CARRIER	TONS BY ORIGINATING CARRIER (000 TONS)							TOTAL	TERMINATONS SINGLE-LINE
	CPRS	ISRR	AWW	CSX	INRD	YDRR	NS		
CSX	2,484	133	817	1,550	-	-	-	4,984	31%
ISRR	-	2,920	540	-	-	-	-	3,460	84%
INRD*	742	574	-	-	944	-	-	2,260	42%
CPRS	1,498	-	-	-	345	-	-	1,844	81%
NS	-	380	490	-	-	130	377	1,377	27%
YDRR	-	-	58	-	-	896	-	953	94%
CONRAIL	-	225	-	-	-	-	-	225	0%
BRC	176	-	-	-	-	-	-	176	0%
UP	130	-	-	-	-	-	-	130	0%
GWWR	-	-	-	51	-	-	-	51	0%
WC	12	-	-	-	-	-	-	12	0%
TOTAL	5,043	4,232	1,904	1,602	1,289	1,025	377	15,472	53%
ORIGINS % SINGLE-LINE	30%	69%	0%	97%	73%	87%	100%	53%	

* INCLUDES 158,000 TONS ROUTED ON ISRR-CR - INRD (IP&L-STOUT)
NOTE: SINGLE-LINE SHIPMENTS OF 3 MMT ON YDRR TO ALCOA NOT INCLUDED
SOURCE: COALDAT® AND INDUSTRY SOURCES

The limited extent to which Conrail participates in and contributes to balanced rail competition in the Indiana coal industry is limited to its short-haul responsibilities as a bridge carrier for IP&L-Stout and as a destination carrier for IP&L-Perry K[11] (Conrail's portion of each of these movements is less than 6 miles). In 1996, these movements involved 158,000 tons to IP&L-Stout and about 225,000 tons to IP&L-Perry K. Since 1996, IP&L-Stout has not received any shipments involving Conrail. [[[

]]]

Conrail's role as a short bridge carrier between ISRR and INRD for shipments to IP&L-Stout is a substantially inferior alternative to competition with two-line hauls involving INRD or truck competition – from both economic and operational perspectives. This situation is evident in 1996 rail shipments of Indiana coal to IP&L-Stout in which only 28% of the 574,000 tons originated by ISRR was handled by Conrail, with the remainder interchanged with INRD at Switz City.[12] Were routings involving Conrail competitive, then a substantially higher percentage of ISRR's inter-line traffic to IP&L-Stout would have been routed on Conrail in 1996 and shipments involving Conrail would have not been completely suspended since 1996.

[11] Perry K., which is being converted to gas-firing, has substantially reduced its coal burn since 1996.

Therefore, the proposed transaction is not expected to affect the rail competition that currently exists in the Indiana coal industry. If anything, the transaction has the potential for enhancing the non-existent competition demonstrated by Conrail.

A BUILD-OUT TO CONRAIL WILL NOT ENHANCE COMPETITION

IP&L's last minute efforts[13] to compile information to legitimize a wholly speculative build-out from its Stout Plant involving Conrail at costs in the range of [[[ ]]] does not make sense in light of Conrail's limited or non-existent role in the Indiana coal industry. Why would IP&L consider expenditures of this magnitude to gain access to a carrier which has shown no interest in expanding its role in the Indiana coal industry and whose traditional role has not lead to meaningful competition – particularly when such a build-out would not materially improve on routings to IP&L's Stout Plant?

IP&L witness Crowley is erroneous in his contention that INRD's charges for delivering Conrail shipments to IP&L-Stout are influenced by the threat of [[ ]]] build-out to Conrail.[14] To the extent to which INRD's charges are influenced by competition, there can be no doubt that the threat of truck competition is the only competitive alternative that provides such influence. If the build-out option was considered to be viable by IP&L, then surely it would have investigated build-out economics prior to the end of 1997.

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[12] Two-line haul shipments on Conrail-INRD from Peabody's Hawthorn Mine were subsequently converted into a three-line haul on ISRR-Conrail-INRD, resulting from the sale of certain Conrail trackage to ISRR.

[13] [[[ ]]]

[14] IPL-3 at 19 n.5, 26.

ISRR WILL NOT BE ADVERSELY AFFECTED BY THE PROPOSED TRANSACTION

In 1992, ISRR acquired Conrail's coal transportation franchise in Indiana which consisted of trackage from Evansville to Indianapolis (Map 1). Such franchise included interchange rights with connecting carriers (AWW, NS, Conrail, CP Rail, CSX, and INRD), origination rights to Indiana mines formerly served by Conrail, and exclusive destination rights to IP&L's Pritchard and Petersburg Plants. ISRR did not acquire the rights to serve IP&L-Perry K from Conrail.

[[[

[15]]]] As such, ISRR's testimony before the Board is intentionally misleading by suggesting that "the transaction proposed by CSXT and NSR will result in ISRR losing its largest customer" when in reality, the vast majority of its revenues from IP&L are from its movements to plants which are exclusively served by ISRR and therefore, not subject to the proposed transaction.[16] [[[

]]][17]

[[[
TABLE 4

SOURCE: ISRR Bates No. 000220-000225 (Highly Confidential).
]]]

[15] ISRR 000225 (Highly Confidential) (Exhibit GEV-5).
[16] Neumann VS at 4.
[17] ISRR 000223-24 (Highly Confidential) (Exhibit GEV-5) ISRR 000232 (Exhibit GEV-6).

Data concerning 1996 coal shipments to utilities indicate that ISRR was the second largest originator and second largest terminator of Indiana coal (Table 3). Although 69% of its originations were handled on a single-line basis, 84% of its terminations were single-line hauls involving its own origins. This would indicate that ISRR may have a tendency to favor its own origins where it is the destination carrier (i. e., IP&L-Petersburg and IP&L-Pritchard).

ISRR contends that $1.5 million of its 1996 revenues are at risk at IP&L-Stout and IP&L-Perry K due to the proposed acquisition of Conrail by the Applicants.[18] Ongoing competition within the Indiana coal industry belies this contention, because ISRR has already lost IP&L-Stout shipments to a two-line haul via CP Rail-INRD [[[

]]] – due to ISRR's inability to compete, not due to the proposed transaction. This displacement also contradicts two of ISRR's other contentions,[19] as follows:

- "CSXT will have no incentive to assist ISRR and undoubtedly will favor its affiliate." Assessment: Clearly this is not the case, since CP Rail, not CSX, displaced ISRR as the originating carrier – despite the fact that both CSX and CP Rail had an equivalent potential to build-in to the Farmersburg Mine from which the coal originates.

- "Even though IPL's two plants are not located on the ISRR, ISRR has remained competitive for coal traffic moving to those two facilities with the cooperation and assistance of CRC." Assessment: Since 158,000 tons of the tons displaced at IP&L-Stout since 1996 had been interchanged with Conrail, one must conclude that ISRR-Conrail routings are not competitive.

This second contention is further disputed by the fact that nearly three-quarters of the 574,000 tons originated by ISRR which were delivered to IP&L-Stout in 1996 were interchanged with INRD at Switz City rather than with Conrail at Indianapolis. Presumably, the economics and/or operational aspects of ISRR-INRD routing were more favorable to IP&L than the ISRR-Conrail-INRD routing. [[[

]]][20]

Together, this evidence suggests that routings to IP&L-Stout involving Conrail are not economically or operationally viable and that Conrail has not contributed to transportation

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[18] Neumann VS at 4.
[19] Id.
[20] Letter from Richard L. Neumann to Doug Greer, Mar. 24, 1994, ISRR 000248 (Highly Confidential) (Included in Volume 3).

competition for coal deliveries to IP&L-Stout. This is underscored by IP&L's use of truck competition to discipline rail rates for shipments terminated on INRD, rather than threatening to use Conrail or a build-out to Conrail as a competitive alternative.

[[[

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IP&L's ENVIRONMENTAL COMPLIANCE PLANS DO NOT CONTEMPLATE THE USE OF NON-INDIANA COAL

Earlier this decade, IP&L went to great lengths to justify the nearly $240 million installation of scrubbers at the first two units at its Petersburg Plant for environmental compliance. IP&L's approved and implemented environmental compliance plan involves scrubbing all four units at its Petersburg Plant and the use of lower sulfur Indiana coal at its Stout and Pritchard Plants.

[21] Memorandum from Phil Wilzbacher to Jim Bearden, ISRR 000148-49 (Highly Confidential) (Included in Volume 3).

IP&L's testimony before the Indiana Utility Regulatory Commission (IURC) in support of its environmental compliance plans included a reference to its strong reliance on Indiana coal to the exclusion of coals from external coal supply regions – with coal from the Powder River Basin (PRB) all but eliminated from consideration due to the resulting operating and cost impacts of using sub-bituminous coal in boilers designed for bituminous coal (see materials from IP&L's testimony to IURC presented in GEV-3). IP&L has touted its long-standing commitment to Indiana coal by indicating that it is the only Indiana utility that has purchased 100% of its coal from Indiana.

IP&L's testimony to IURC succinctly defines IP&L's views in this regard (see GEV-3):

> Testimony Abstract from John E. Haselden: "Low cost Indiana coal remains IPL's primary fuel under IPL's Environmental Compliance Plan. IPL's Plan should enable IPL to continue to have low coal costs. IPL's Plan avoids high transportation costs, expenses and other expenditures which would be required in order for IPL's generating stations which were designed to burn Illinois Basin coal to burn coals from other regions."
>
> Testimony Abstract for James J. Youmans: "[S]witching to subbituminous coal from the Powder River Basin affects many plant systems to the point of requiring major modifications, and is likely to result in a unit derate due to slagging and furnace sizing issues. The cost of compliance using gas co-firing was not competitive with other compliance plans for IPL."

IP&L's new found interest in Western coal reflected in its testimony before the Board is inconsistent with its long-stated commitment to Indiana coal and disparagement of coal from external coal supply regions, particularly PRB coal. Materials submitted by IP&L to the IURC contend that emission allowance prices would have to approach $1,620 to justify consideration of PRB coal use (GEV-3). For reference, current emission allowance prices of $100 are projected to remain flat in the short-term and are not projected to exceed $263 by 2015[22] – prices that obviate the consideration of PRB coal as a compliance option.

IP&L is expected to continue to attain environmental compliance over time by the use of scrubbing and lower sulfur Indiana coal supplemented, when necessary, with the conventional use of emission allowances traded on the open market. Although other options including gas co-firing, switching to lower sulfur coal, curtailment of generation, and the installation of additional scrubbers are available to IP&L. IP&L is expected to purchase emission allowances to offset any

[22] Emission allowance price forecast from *RDI's Outlook for Coal and Competing Fuels (1996/1997)*

emissions which exceed its EPA-mandated limits. This view is consistent with IP&L's testimony with the IURC and inconsistent with IP&L's testimony before the Board.

Notwithstanding the above, IP&L et al.'s testimony before the Board contends that it "*may* be required to purchase low-sulfur coal from outside Indiana in the future" in order to comply with unspecified environmental obligations that may be imposed on IP&L (emphasis added). The contemplation of "possibles" does not warrant Board intervention in IP&L's coal transportation alternatives, particularly when it is well understood in the industry that the effective thrust of future environmental obligations would be to retrofit plants with additional pollution control technology – a scenario which would actually *decrease* the potential of switching to external coal sources. In other words, compliance with future environmental regulations is unlikely to be met by switching coals.

Further, IP&L Witness Weaver's contention that "EPA's recently proposed ozone and particulate regulations and EPA's recent proposal to reduce nitrogen oxide emissions may accelerate IPL's need to buy western compliance coal" is without merit, since low-sulfur "compliance" coal would not contribute to compliance with nitrogen oxide and particulate regulations.[23] Simply stated, the imposition of additional environmental controls would tend to *increase* the likelihood of IP&L continuing with 100% Indiana coal use and *decrease* the potential for switching to coal from external coal supply regions. IP&L would be more likely to buy Indiana coal to offset the cost of installing additional environmental controls rather than more expensive external coal, as these controls would have to be installed regardless of coal source region.

WESTERN COAL IS NOT A COST-EFFECTIVE OPTION FOR IP&L

Western coal is not now and is unlikely to become a cost-effective supply of coal for IP&L for two major reasons: (1) the inability of coal transported more than 1,250 miles to compete effectively with locally-mined Indiana coal and (2) the incompatibility of Western coal (particularly PRB sub-bituminous coal) in IP&L's boilers which were designed to accommodate Indiana coal (see GEV-3).

[23] Weaver VS at 17-18.

Regarding the first point, the 1996 delivered cost of Indiana coal at IP&L-Stout was $1.08/mmBtu ($23.60/ton) – a value which is consistent with its current costs. These costs were compared with costs and coal quality for coal from representative sub-bituminous (PRB) and bituminous Western (Colorado) sources to derive the rail rate necessary for such coals to be competitive with Indiana coal and remain in compliance with environmental regulations – in 1996 and in 2010 (Table 5). These calculations take into account the value of the differences in heating value and SO_2 content between the competing coals over time and the resulting impact on combustion efficiency. [[[

]]] If one takes into account the value of the lost generation capacity resulting from the use of PRB coal in a boiler designed for Indiana coal, the substantial economic advantage of Indiana coal in competition with Western coal is further improved.

[24] Memorandum from P.A. Cummings to M.A. Weaver, Sept. 10, 1996, IPL-P-00361-to-00362 (Included in Volume 3).

TABLE 5
RECENT AND FUTURE IP&L-STOUT FUEL SUPPLY ECONOMICS

	INDIANA COAL	POWDER RIVER BASIN	WESTERN BITUMINOUS
BTU	11,173	8,800	11,900
SO2	2.29	0.60	0.87
RAIL DISTANCE (MILES)	106	1,280	1,380
SO2 PENALTIES (¢/MMBTU)			
1996 @$100	11.4	3.0	4.4
2010 @$179	20.5	5.4	7.8
ADJ. DELIVERED COST (¢/MMBTU)			
1996	119.4	119.4	119.4
2010	107.6	107.6	107.6
COAL PRICE (¢/MMBTU)			
1996	87.0	23.0	65.0
2010	66.1	31.3	66.9
NET-BACK RAIL COST ($/TON)			
1996	BASE	$16.97	$12.95
2010	BASE	$13.43	$9.69

Given the differential in rail rates and the unlikely possibility of a substantial reduction in rail rates from Western coal source, I conclude that Western coal is nowhere near competitive with Indiana coal now or for the foreseeable future. IP&L arrived at a similar conclusion in September of 1996, as follows:

> "Needless to say, these [rail] rates will preclude any use of PRB coal by IPL. Therefore, unless these railroads are going to substantially reduce these rates, I see no reason to continue internal or external discussions pertaining to PRB coal."[25]

This view is also consistent with a statement in the August 12, 1996 edition of Clean Air Compliance Review pertaining to IP&L's consideration of a test burn of Western coal at Stout, with which I agree, as follows:

> "Transportation costs alone will likely render PRB coals infeasible as a long term supply option, insisted a skeptical PRB producer. 'Those plants are practically sitting in the middle of the coal fields,' he said. 'They can truck the coal there.'"[26]

On the basis of the foregoing, I conclude that there are no realistic future scenarios of environmental compliance or changes in competitive coal and rail rates which would cause Western coal use at IP&L-Stout to be cost-effective – regardless of the disposition of Conrail.

[25] Memorandum from P.A. Cummings to M.A. Weaver, July 30, 1996, IPL-P-00384 (Included in Volume 3).

In regards to the second point, the operational and cost impacts of using non-design coal in IP&L's boilers which were designed for bituminous Indiana coal can be substantial, as was pointed out in IP&L's testimony before the IURC in 1992 (see GEV-3). The capital cost impacts of retrofiting IP&L-Stout's boilers to accommodate coals from external coal sources, including Western coal, that were submitted to IURC are summarized as follows:[27]

Illinois Basin Low Sulfur Coal: $15/kW x 698,000 kW = $10.47 million
Central App. Low Sulfur Coal: $25/kW x 698,000 kW = $17.45 million
Central App. Compliance Coal: $25/kW x 698,000 kW = $17.45 million
Colorado Coal: $25/kW x 698,000 kW = $17.45 million
Powder River Basin Coal: $70/kW x 698,000 kW = $48.86 million

Information revealed in IP&L's submitted testimony to IURC are summarized below from information compiled in GEV-3:

1. IP&L did not solicit coal supply proposals from PRB coal suppliers because it decided that "subituminous coal was not suitable for the boilers in question."

2. IP&L provided IURC with a long list of operational and design problems that would result from the use of Western low-sulfur coal at IP&L-Stout. The plant modifications required to accommodate coals from the various external coal supply regions are summarized on page 5-10, Part I, Table 5-3, reproduced in GEV-3.

3. Studies of the suitability of various coals for its power plants by IP&L and its consultants (Stone and Webster) caused them to conclude that " switching to subituminous coal from the Powder River Basin affects all plant systems to the point of requiring major modifications, and is likely to result in a unit derate due to slagging and furnace sizing issues."

Together, the delivered costs and plant retrofit/operational issues involved in the use of Western coal effectively preclude the realistic consideration of Western coal at any point in the future for IP&L – regardless of the disposition of Conrail. It is noteworthy that despite IP&L's conclusion that PRB coal use is not economically feasible and that the operational and cost impacts of PRB coal use are substantial for its boilers which were designed for Indiana coal, IP&L has presented conflicting testimony to the Board which suggests that Western PRB coal use is an option which must be enhanced by Board intervention.

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[26] Clean Air Compliance Review, Aug. 12, 1996 at 6, IPL-P-00379 (GEV-7).
[27] See GEV-3 at 5-11, Part I, Table 5-4.

IP&L WILL NOT BE HARMED

My analysis of 1996 transportation competition conclusively demonstrates that although there is balanced rail competition and particularly effective rail/truck competition involving Indiana coal shipments in Indianapolis and for IP&L, Conrail does not meaningfully participate in or contribute to such competition – despite IP&L et al.'s unsupported contention to the contrary.[28] If anything, Conrail's role in the Indiana coal industry and in IP&L's coal movements has diminished over time and is now effectively restricted to its involvement in a plant which is exclusively served by Conrail (IP&L-Perry K) – a plant that has recently curtailed its coal burn.

I conclude that the proposed transaction will not diminish existing competition for coal shipments in Indianapolis and for IP&L. Rather, the proposed transaction is likely to maintain or enhance existing transportation competition.

DOJ's ANALYSIS IS INCORRECT

DOJ's analysis of IP&L's situation is based on several incorrect assumptions. These are addressed in the following paragraphs.

DOJ contends that "90% of [the coal delivered to IP&L-Stout] in 1996 was originated and delivered by Indiana Railroad" thereby implying that INRD is positioned to influence competition at IP&L-Stout.[29] In actuality, 50% of IP&L-Stout's coal originated from non-INRD origins including 44% from ISRR origins – a situation which indicates INRD's widespread participation in joint-line movements and the potent competition afforded by truck deliveries.

DOJ contends that because Conrail was involved as a bridge carrier for about 10% of the tons shipped to IP&L-Stout in 1996, that it has demonstrated that it offers a competitive alternative to direct deliveries on INRD.[30] Subsequent events (truck competition and CP Rail-INRD routings) have effectively eliminated shipments to IP&L-Stout involving Conrail. My studies indicate that coal delivery options involving Conrail are not sufficiently attractive from an economic or operational perspective to be considered as legitimate competitive options for

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[28] "Indianapolis today has balanced competition between Conrail and CSX/Indiana Rail Road, and IPL seeks only to preserve that balanced competition." Id. at 6.
[29] DOJ-1 at 8; Woodward VS at 8.
[30] DOJ-1 at 8.

IP&L Stout.

DOJ Witness Woodward[31] indicates that "the threat of a build-out has, according to IP&L, served as an effective means of ensuring cooperation between the Indiana Railroad and Conrail so that Conrail is a competitive alternative to the Indiana Railroad." As described throughout my Verified Statement, this is simply not the case. The build-out option is a very recently contrived concept. More accurately, the threat of truck competition has been the primary (if not sole) lever in disciplining IP&L's rail rates.

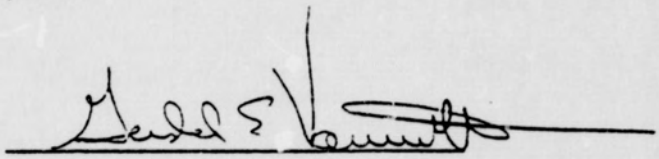
IP&L's Knight stated that IP&L entered into its current rail transportation contract with INRD because INRD's rail rates were competitive with truck. Knight Dep. at 14. Contrary to DOJ witness Woodward, Knight stated that "[t]his was not something two railroads were going head-to-head on." Id. at 15.

Finally, DOJ Witness Woodward contends that "competition at IP&L's Stout plant can be maintained by increasing the competitiveness of NS to the level currently provided by Conrail." Since competition afforded by Conrail has not been demonstrated and is currently non-existent, there is no reason to improve or extend the rights granted to NS in this proposed transaction.

[31] Woodward VS at 18.
[32] Id. at 24.

VERIFICATION

I, Gerald E. Vaninetti, verify under penalty of perjury that the foregoing is true and correct. Further, I certify that I am qualified and authorized to file this Verified Statement. Executed on December 9, 1997.



Gerald E. Vaninetti

Gerald E. Vaninetti, Principal

Mr. Vaninetti, as Principal with RDI, specializes in the strategic, contractual, and analytical aspects of coal and transportation markets for the domestic coal industry. He heads up RDI's Coal Consulting Practice. His clients include transportation companies, utilities, coal companies, independent power producers, and financial institutions.

Mr. Vaninetti has more than 25 years of experience in the coal industry. His career has spanned the technical and business aspects of the industry while in the employ of a utility (10 years), an international mining consulting firm (4 years), a national transportation company (8 years), and RDI since 1993. He has extensive on-site experience in all major US coal fields, at more than 100 utility power plants, and at numerous coal transloading terminals. His experience includes studies and projects directed at most of the major rail and barge lines for the primary U.S. coal fields. He specializes in coal and transportation markets and associated pricing, contracting, fuel supply evaluation, "due diligence," and strategic analysis issues.

Mr. Vaninetti's experience includes the formulation, negotiation, and administration of coal supply and transportation contracts. He has developed and implemented coal procurement strategies, conducted fuel supply evaluations, evaluated coal and transportation contracts, assessed fuel management programs, participated in fuel audits, and executed "due diligence" evaluations for coal producers, utilities, financial institutions, and coal transporters. Mr. Vaninetti has provided testimony as an expert witness in various litigation and arbitration proceedings. These include cases before the ICC and Surface Transportation Board regarding the UP/SP Merger and individual shipper disputes.

He has published several articles, made numerous presentations, and has actively served as a member of numerous industry and trade organizations including EPRI (Coal Quality Committee), National Coal Association (Transportation Committee), Western Coal Council, Mississippi Valley Coal Council, and Lexington Coal Exchange. He has served in executive positions with the latter three organizations. He is the lead author for RDI's monthly *Market Watch* column published in COAL AGE magazine. He is the primary author of *RDI's Coal Transportation Market Study (1996)* and *RDI's Illinois Basin Coal Study (1994)* and was the primary investigator for Salomon Brothers' 1997 study, "*Utility Deregulation's Impact on the Railroads.*"

RDI was founded in 1981 and is a database and economic consulting firm that specializes in the economics and markets for coal, coal transportation, and utility power sales. RDI was recently acquired by Pearson PLC – the publisher of *Financial Times* and *The Economist*. RDI's clients include most of the major utilities, coal companies, and transportation companies in the domestic coal industry. These clients are responsible for more than 80% of the coal transported and sold and more than 80% of the power generated in the U.S.

RDI maintains and publishes commercially available databases on electric power generation, fuel purchases, and coal transportation that are widely used within the electric utility and transportation industries, particularly in the areas of market studies, competitive analyses, forecasting, and mergers and acquisitions. These databases include POWERdat® (data regarding generation and power sales) and COALdat® (data regarding the procurement and transportation of coal for use in electricity generation and for exports). The information in these databases is derived from public sources, such as reports that electric utilities are required by law to file with federal and state regulatory agencies, as well as input from industry and RDI's independent studies.

RDI provides expert consulting services to a wide range of clients, including utilities, railroads, coal companies, and financial institutions in the areas of strategic planning, acquisition support, fuel supply and market analysis, contract assessment, transportation analysis, price forecasting and litigation support.

Taking transport to a higher plane

In the 1980s the coal transportation industry in the US underwent a fundamental transition from cost-based pricing to market-based pricing, and began to play a critical role in delimiting markets, prices and trading levels of coal. In this report Gerald E. Vaninetti and Michael S. McKevitt of Resource Data International show how, in the 1990s, factors such as environmental compliance, deregulation of the utility market and the increasing importance of transportation marketing are affecting trading patterns and coal market boundaries across America.

The coal industry changed from a sellers' market to a buyers' market in the early 1980s, due to imbalances in supply and demand for coal in utility markets. However, the transportation segment of the coal industry lagged behind this transition despite the stage having been set for it with the passage of the Staggers Act in 1980. The evolution from regulated, cost-based pricing to deregulated, market-based pricing has gained widespread acceptance only within the past few years and has resulted in major changes in coal markets. However, this evolution has not been uniform, as captive shippers are locally without options to obtain market-based pricing and some carriers enjoy market dominance in select regions of the country.

Changes in the marketplace for coal transportation services are likely to be accelerated with the deregulation of the coal industry's biggest customer, the utility industry.

Other factors influencing change include the industry's consolidation, competition between carriers and with alternative fuels, compliance with the Clean Air Act Amendments (CAAA), improvements in transportation productivity and equipment utilisation, and the contraction of the US coal export industry.

The intent of this paper is to define emerging market trends which are likely to influence the coal transportation industry, to review current coal distribution patterns and document coal transportation pricing practices. In addition, we will attempt to document the dominant role that transportation marketing has assumed in the distribution of coal from remotely-sited coal sources and in changing national markets for coal.

Coal markets

The domestic coal industry is beset by radical structural changes in the make-up of utility markets, brought on by competition from non-traditional source regions and compliance with the CAAA. Fuel switching from high sulphur local coals to competitively priced low sulphur and compliance coals from other source regions will result in considerable displacements of local coals. These displacements will result in significant imbalances in supply and demand for coals from the different coal source regions, although overall growth in total coal demand is expected to increase at a consistent rate.

The timing for these displacements coincides with the implementation of Phases I and II of the CAAA, as illustrated in Figure 1. The demand for high sulphur utility coal will decrease dramatically in 1995 as most of the affected Phase I power plants switch to a 2.5 lbs. SO_2/mmBtu standard.

The demand for low sulphur utility coal will be affected similarly at the implementation of Phase II of the CAAA in 2000 when a 1.2 lbs. SO_2/mmBtu standard is applied. A window of opportunity is expected to be available for low sulphur coals in the 1995 to 2000 time frame, although many utilities are expected to switch directly to compliance coals in 1995 and bank emission credits for Phase II of the CAAA.

The primary changes in coal demand will occur in the Northern Appalachia and Illinois Basin coal fields, as those high sulphur coals are displaced by low sulphur and compliance coals from Central Appalachia and the Powder River Basin (PRB), respectively (Figure 2). Although

Figure 1: Domestic Utility Coal Demand – Figures 1, 2, 3 and 5 are sourced from RDI's Outlook for Coal and Competing Fuels, Fall 1993.

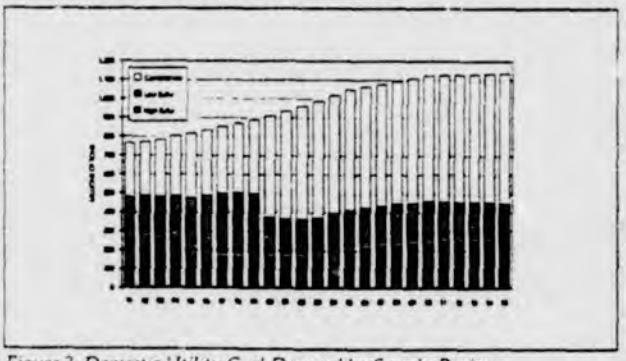


Figure 2: Domestic Utility Coal Demand by Supply Region

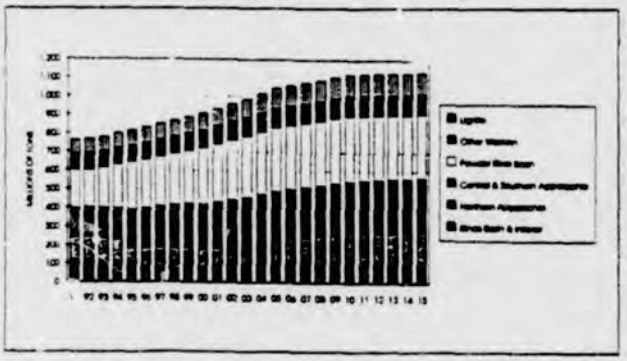
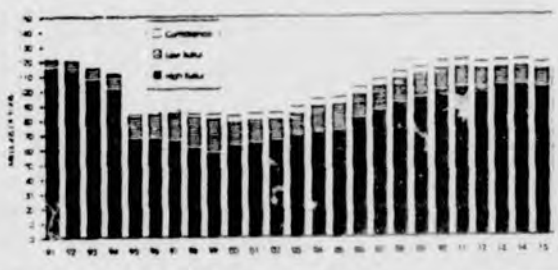


Figure 3: Domestic Utility Coal Demand from the Illinois Basin



growth in demand for PRB coals is projected to be consistent, the demand for Central Appalachian coals is expected to be explosive. Demand for high sulphur coals is likely to increase after 2000 at a rate consistent with overall growth in utility demand and primarily for new coal-fired plants.

The changes expected for the Illinois Basin coal industry will be unprecedented, as utility demand for such coals will decrease from about 120Mta to less than 85Mta in 1995 (Figure 3). The majority of the Illinois Basin displacements are likely to be in markets traditionally dominated by Illinois coal mines, as only 33 per cent of such coal is currently consumed in plants equipped with scrubbers (Figure 4).

Impacts in the Indiana and Western Kentucky coal industries will not be as severe, since 52 per cent and 69 per cent (respectively) of those coals are supplied to scrubbed plants. Numerous unscrubbed power plants have already switched to non-Illinois Basin coals and several major Illinois Basin mines, producing about 13Mta, have been closed in recent months.

The Illinois Basin is emerging as the primary US battleground between local coals and external coal source regions, brought about by competition and fuel switching. Current coal distribution patterns indicate that low sulphur and compliance coals from the PRB and Central Appalachia are poised to dominate traditional Illinois Basin coal markets (Figure 5). PRB coals currently enjoy a dominant position up to the Mississippi River and maintain fringe and isolated markets within traditional Illinois Basin market areas along the Ohio and Mississippi Rivers.

Central Appalachian coals dominate to the Indiana - Ohio border and also maintain several isolated and fringe markets within traditional Illinois Basin market areas. Delivered spot prices for the PRB coals are particularly competitive throughout most traditional Illinois Basin market areas, and Central Appalachia coals are competitive along the Ohio River within Illinois Basin market areas.

Early displacements of Illinois Basin coals with compliance coals occurred throughout Wisconsin in 1993 to comply with state-imposed Phase II requirements. The two compliance strategies which have emerged in Wisconsin may be indicative of the compliance strategies which will be adopted throughout traditional Illinois Basin market areas in 2000, particularly as load growth occurs and capacity factors increase. These strategies are focused on avoiding derating of power stations, and involve the blending of PRB coal with Central Appalachia coals in 75:25 blends, or exclusive use of high Btu, compliance coals from the West or from Central Appalachia.

FIGURE 4
MIDWESTERN COAL MARKETS (1993)

Coal transportation

The EIA and NCA track coal transportation and distribution statistics which suggest that the dominant mode of coal transportation is by rail (Figure 6). Data for 1991 indicate that about 60 per cent of all deliveries were by rail, with the remainder of deliveries shared by barge, conveyor belt/slurry, and truck transportation modes. However, these statistics are somewhat misleading as many coal movements are multi-modal and involve a transloading step prior to delivery to the marketplace.

Information for the Kentucky coal industry illustrates the differences between origination transportation modes and destination transportation modes (Figure 7). Although coal deliveries from Kentucky mines to the marketplace essentially mirror national distribution statistics, only

Figure 5: Illinois Basin Coal Use

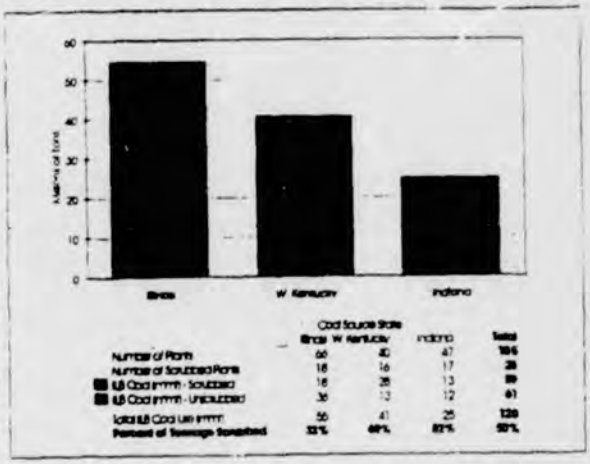
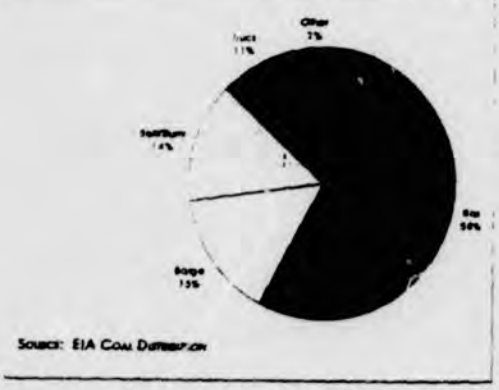


Figure 6: US Coal Transportation Destinations, 1991



Source: EIA Coal Distribution

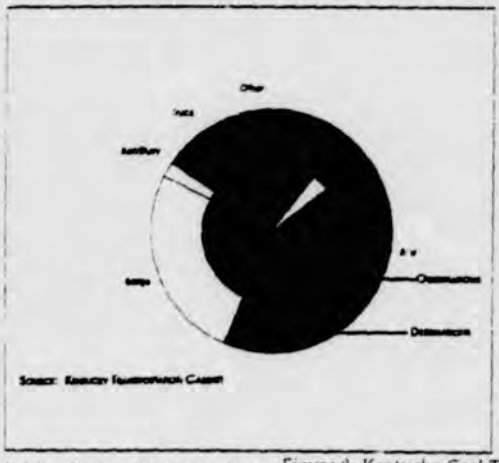
about 11 per cent of shipments are direct rail shipments. The remaining 89 per cent of the 130Mta of coal produced in Kentucky is involved in transloading operations (truck-to-rail, truck-to-barge, belt-to-barge). The dominant origination transportation mode for the Kentucky coal industry is by truck, with a 78 per cent market share.

The percentages of Kentucky coal originated by truck vary between the Illinois Basin and Central Appalachia components of the industry (Figure 8). Truck shipments in Western Kentucky are primarily to barge-loading facilities, although truck-to-rail and direct deliveries to consumers have large market shares. The vast majority of truck shipments in Eastern Kentucky are to truck-to-rail facilities with only nominal quantities involved in truck-to-barge movements and direct deliveries to consumers.

The proportion of direct shipments vs. transloaded shipments vary across the country. Direct rail movements are common from Western and Midwestern sources as many mines are served directly by rail, particularly in the PRB. Direct rail shipments are also common from underground mines in Central and Northern Appalachia. Direct truck movements are common within the coal fields particularly in the states of Indiana, Illinois, Western Kentucky, Ohio, Pennsylvania, and Utah, and to a lesser extent, in Eastern Kentucky, West Virginia and Colorado. Direct barge shipments are generally restricted to Western Kentucky.

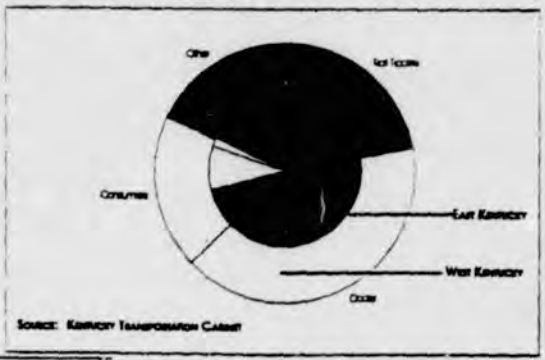
Transloading comprises a major part of the coal industries in Central and Northern Appalachia and the Illinois Basin. Truck-to-rail movements are probably the most prevalent form of transloading and are found throughout all coal fields, but are particularly common from surface mines in Central and Northern Appalachia. Truck-to-barge movements are common within the Illinois Basin as well as portions of the Central and Northern Appalachia coal industries located near navigable rivers. Rail-to-barge transloading operations are very common in the Illinois Basin, particularly from Illinois mines, and from Central and Northern Appalachian coal mines. More than 60 active barge loading facilities serve the Central Appalachia and Illinois Basin coal industries (Table 1). Barge transloading fees typically range from $0.50 per ton to $1.50 per ton for direct dump and blend/storage/dump services, respectively.

Figure 7: Kentucky Coal Transportation, 1990



Source: Kentucky Transportation Cabinet

Figure 8: Kentucky Coal Truck Shipment Destinations



Source: Kentucky Transportation Cabinet

Sources of pricing data

Some of the most closely-guarded information in the coal industry is coal transportation pricing. The reporting of such information is required by only a few state regulatory commissions, the ICC, and FERC. Access to this information is generally restricted, although portions of the data are available through obscure public sources, filings, and savings. As a consequence, most industry analysts utilise cost-based models to derive estimates of transportation rates. Although such models are useful, coal transportation has evolved from cost-based pricing to market-based pricing, which eliminates the usefulness of such models in many instances.

RDI has developed a Coal Transportation Database to track monthly coal transportation pric-

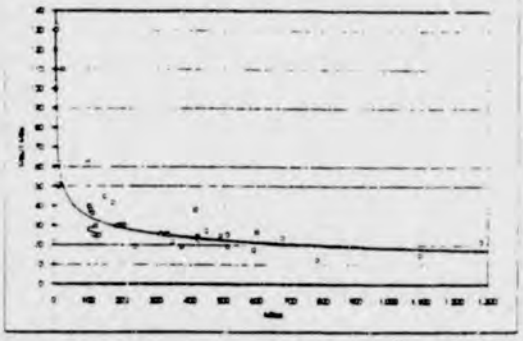
TABLE 1
MID-AMERICAN BARGE TRANSLOADING FACILITIES (ACTIVE)

Region Served	River System	No. of Docks	Annual Tonnage (mmtpy) Throughput	Capacity	Delivery or Handling Mode — Primary	Secondary	Remarks
Central Appalachia	Big Sandy	12	19.0	33.9	Truck	Rail (NS)	
	Kanawha	14	15.7	34.6	Truck	Rail (CSX, CR)	
	Ohio	9	19.6	39.2	Rail (CSX, NS)	Truck	Ground storage only locally available
Sub-total		35	54.3	107.7			
Illinois Basin	Green	6	11.3	24.7	Truck	Belt	
	Kaskaskia	1	4.1	5.0	Rail (Pavon)		
	Ohio	16	28.6	86.1	Rail*	Truck	10 mmtpy of PRB coal
	Mississippi	5	10.5	23.5	Rail**	Truck	6 mmtpy of western coals
	Tennessee	1	11.0	20.0	Rail (PAL)	Barge	some western coal
Sub-total		29	66.6	128.3			
TOTALS		64	119.9	236.0			

* IC, CSX, NS, PS, BN, Hartwetown, and IN H-Rail
** UP, SP, CR, IC and ATSF

ing for more than 1400 coal movements to the 460 coal-fired power plants for which FERC 423 data are available. It incorporates information from a myriad of public and private sources, including information from ICC waybill reports and other public sources that are difficult to obtain and interpret. The database also incorporates estimates and escalations based on AAR models and indices, market intelligence, other known movements, and statistical models of actual rates.

Figure 9: Rate Curve For Illinois Central Railroad



Information in the Transportation Database applies to all major coal transportation modes including rail, barge, and truck as well as to transloading facilities (rail-to-barge, truck-to-barge, and truck-to-rail). Routings, mileage, carriers involved, and tonnages are documented as well as the parties involved in all transactions.

Market pricing

Information from RDI's Coal Transportation Database has been used to compile market pricing trends for the major transportation modes. These trends are best evaluated using statistical analysis in comparing mils/ton-mile with mileage. Individual data points are plotted and a regression analysis curve fit is applied. An example of this methodology is presented for hauls involving the Illinois Central Railroad (Figure 9). As shown, the "rate curve" decreases with the length of the haul. Rate curves for each carrier are similar but vary in shape and position to reflect the market pricing trends for each carrier. The position and shape of the rate curve and the scatter of data points varies between carriers and are dependent upon operating characteristics, the number of carriers involved, car ownership, train sizes, car capacities, tonnage, the availability of back-hauls, and competition.

Figure 10: Illinois Basin Transportation Rate Curves

Transportation rate curves developed for the Illinois Basin coal industry illustrate typical competitive differences between the major transportation modes found throughout the domestic coal industry (Figure 10). Rail and barge rates are significantly less than truck rates, but trucks compete effectively within 100 miles when the costs of loading and unloading are included in the economic evaluation. The truck rate curve is more competitive with rail and barge in those areas where truck payloads are larger than those allowed in the Illinois Basin.

Competition between and within transportation modes affects carriers' rate curves as illustrated in Conrail's rates (Figure 11). Close inspection of the data suggests at least two populations of data points:

(1) relatively consistent data for hauls in excess of 100 miles and

(2) considerable scatter in the data for hauls of less than 100 miles.

This can be attributed to competition with truck transportation for hauls of less than 100 miles. The effect of inclusion of the sub-100 mile hauls is revealed in the differences in the rate curves for the two populations of data. Therefore, a more accurate representation of rail rate curves should exclude rate data for sub-100 mile hauls.

The effect of the number of carriers involved in a rail movement is reflected in rail rates (Figure 12). Another example from the Illinois Basin indicates that single-line hauls are more competitively priced than are multiple-line hauls. Similar relationships can be demonstrated locally for differences in rail car ownership.

Rail rate curves have been developed for the ten major coal hauling railroads and separated into "Eastern" and "Western" populations (Figures 13 and 14). In most cases, the rate curves are for single line hauls. However, for those carriers where there is insufficient single line haul data to develop significant rate curves, multiple-line haul rate curves involving those carriers have been used.

Eastern carriers are defined herein as those rail carriers with primary operations in the East and/or Midwest. The rate curves for these carriers illustrate the relative position between carriers and the market pricing practices for each carrier (Figure 13). Conrail's rate curve is the highest for the sub-400 mile hauls and the Norfolk Southern's rate curve is the highest for the hauls in excess of 400 miles. The lowest rate curves are for the Illinois Central for sub-400 mile hauls and for CP Rail for hauls in excess of 400 miles.

Figure 11: Rate Curves for Conrail

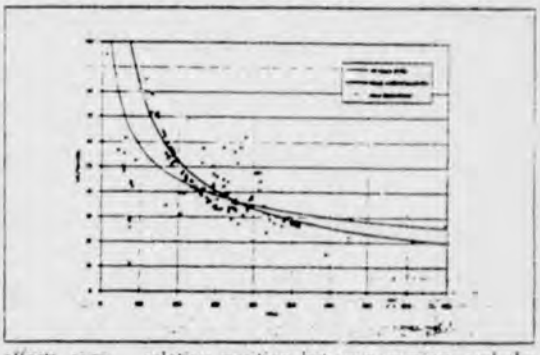
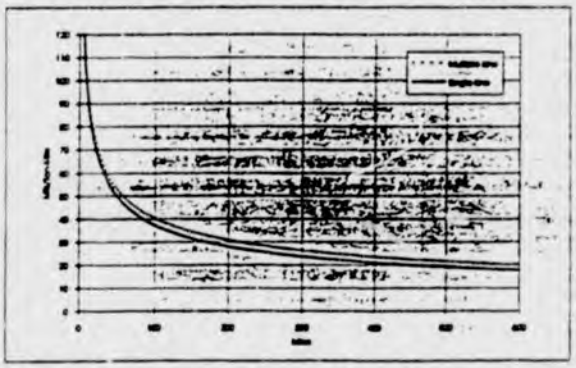


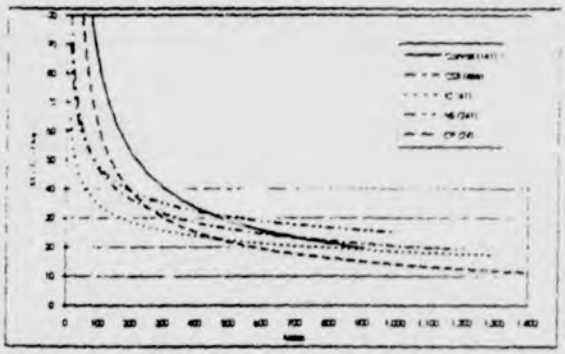
Figure 12: Rate Curves for Illinois Basin Rail Carriers



The "Western" carriers includes all of the rail carriers not included in the Eastern population as well as CP Rail which operates both in the Midwest and the West. The position of the Western rate curves is generally lower than the rate curves for the Eastern carriers, reflecting the differences in terrain, train sizes, average car capacities, and car ownership between regions as well as profound differences in market pricing philoso-

phies (Figure 14). The Western rate curves are lowest for the carriers serving the PRB, although the SP-DRGW's rates have recently approached the PRB rate curves in order to make Colorado and Utah coal competitive in the Midwest. The limited number of rate data points for the Santa Fe Railroad suggests that its rate curve is the highest in the region.

Figure 13. Rate Curves for Eastern Rail Carriers



Forecast and analysis

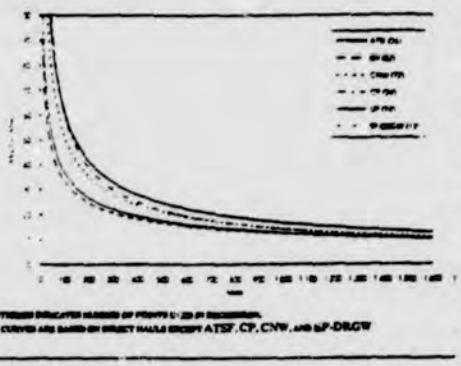
The differences in operations and market pricing philosophies between the Eastern and Western rail carriers is pronounced and is reflected in the rate curves. The rate curves for the Western carriers have dropped considerably in recent years and has caused Western coals, particularly PRB coals, to become competitive in Midwestern markets traditionally served by other coal source regions. Such reductions have positioned Western compliance and low sulphur coals to displace considerable quantities of Illinois Basin coals, purely on the basis of delivered price.

Current delivered prices for spot coal into Midwestern markets suggests a consistent 40¢/mmBtu differential between PRB and Central Appalachian coals, with the latter coals the higher priced. Although some of this differential can be explained by differences in mining costs, differences in transportation pricing between Western and Eastern carriers contributes to the differential.

Expected growth in demand for compliance and low sulphur coals from the different source regions will be largely controlled by transportation rates from those regions. The progressive growth in PRB and other Western coal demand is primarily a result of displacing coals from traditional Illinois Basin markets afforded by the competitive rail rates available from Western carriers. As a consequence, there will be continued pressure to maintain competition and increase shipments from Western sources.

The explosive growth in demand expected for compliance and low sulphur coals from Central Appalachia is primarily focused on displacing high sulphur Northern and Central Appalachian coals. Eastern carriers will enjoy continued market dominance in these traditional Eastern markets, and therefore, little pressure will develop to improvetransportation rates except in those instances where utilities can take advantage of multi-modal shipments of Western or Import coals to develop "transportation diversity" and competition. However, the explosive demand expected for Central Appalachia coals will place considerable pressure on rail carriers to increase shipments and productivity.

Figure 14: Rate Curves For Western Rail Carriers.



It is unlikely that Central Appalachian coals will displace significant quantities of coals in traditional Illinois Basin markets because of the generally uncompetitive nature of the delivered prices of these coals. The only significant market penetration in the Illinois Basin available to Central Appalachian coals will be for utilities which cannot afford the derates associated with sub-bituminous PRB coals and those power plants located on navigable rivers where rail-to-barge and truck-to-barge multimodal shipments can compete with Western ones.

Summary

The coal transportation industry has played an integral role in determining coal markets, particularly in recent years, as the industry has evolved from cost-based pricing to market-based pricing. Aggressive pricing by Western rail carriers has caused extensive changes in coal marketing patterns in the Midwest. Multi-modal barge deliveries of Western and Appalachian coals have also played a significant, though lesser, role in changing coal markets. Eastern rail carriers have generally lagged in their aggressive pursuit of new coal markets and, to date, few changes in coal markets have been realised.

The historic dominant role of transportation in shaping markets for coal will continue into the future as the utility industry contends with the effects of CAAA compliance and deregulation and as the coal industry contends with regional coal displacements and major imbalances in supply and demand. The dominance of rail transportation in defining coal distribution patterns is expected to continue with major growth in demand expected from Western and Central Appalachian compliance and low sulphur coal sources. Barge and truck transportation will continue to be regionally and locally important and multi-modal movements involving barge deliveries are likely to become more important, particularly in displacing coals from traditional Illinois Basin markets.

Transportation rates are expected to continue to decline in response to new technology, produtivity improvements, and competition. The transition from cost-based pricing to market-based price will continue and, coupled with utility CAAA compliance strategies, will result in wholesale changes in traditional high sulphur coal markets. The market price differentials evident in the rate curves for Eastern and Western carriers is likely to be narrowed in markets where competition between transportation carriers and modes is available. However, the differential will probably be maintained in markets where carriers maintain market dominance.

GEV-3

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN RE THE MATTER OF THE PETITION OF INDIANAPOLIS POWER & LIGHT COMPANY FOR REVIEW AND APPROVAL OF ITS ENVIRONMENTAL COMPLIANCE PLAN AND THE COSTS AND EXPENSES ASSOCIATED THEREWITH PURSUANT TO IND. CODE § 8-1-27-1 et seq., FOR APPROVAL TO TREAT COSTS EXPENDED FOR THE DEVELOPMENT AND IMPLEMENTATION OF ITS ENVIRONMENTAL COMPLIANCE PLANS AS QUALIFIED POLLUTION CONTROL PROPERTY UNDER IND. CODE § 8-1-2-6.6, AND FOR APPROVAL OF RATEMAKING TREATMENT THEREFOR.	CAUSE NO. 39437

PETITIONER'S SUBMISSION OF PREFILED TESTIMONY AND EXHIBITS

VOLUME II

(1) Petitioner's Exhibit JEH -- consisting of the testimony of John E. Haselden, including Exhibits JEH-1 through JEH-4, inclusive.

(2) Petitioner's Exhibit WFF -- consisting of the testimony of William F. Frazier, including Exhibits WFF-1 through WFF-7, inclusive.

Petitioner's Exhibit JEH
I.U.R.C. Cause No. 39437

INDIANAPOLIS POWER & LIGHT COMPANY
ENVIRONMENTAL COMPLIANCE PROCEEDING

JOHN E. HASELDEN
DIRECTOR - FUEL SUPPLY

DIRECT TESTIMONY
ON
COAL PRICE FORECASTS

SPONSORING
PETITIONER'S EXHIBITS JEH-1 THROUGH JEH-4

PRE-FILING DATE: FRIDAY, JULY 31, 1992
PUBLIC HEARING DATE: WEDNESDAY, OCTOBER 21, 1992

John E. Haselden

Testimony Abstract

Low cost Indiana coal remains IPL's primary fuel under IPL's Environmental Compliance Plan. IPL's Plan should enable IPL to continue to have low coal costs. IPL's Plan avoids high transportation costs, expenses and other expenditures which would be required in order for IPL's generating stations which were designed to burn Illinois Basin coal to burn coals from other regions.

Q32. Why were producers in other coal producing regions not sent the RFP?

(a) It was decided prior to issuing the RFP that subbituminous coal was not suitable for the boilers in question and was therefore not included in the RFP. Technical assessments of the impact of various types and quality of coals on boiler performance are addressed in Mr. J.J. Youmans' testimony. Bituminous western coal was found to not offer any advantages because of the poor transportation logistics. Appalachian sources were also not specifically solicited because it was expected that Illinois Basin sources would be more numerous and competitively priced than has turned out to be the case. However, a number of producers in Appalachia did respond to the RFP and the best proposals were used in the forecasts.

Q33. Please describe the results of the solicitation relative to Illinois Basin supplies.

(a) Based on the proposals received, the availability of compliance and low sulfur coal in the Illinois Basin is much less than expected. Of the 17 mines listed in Table 3-4 of the EVA report (see Petitioner's Exhibit JEH-2, page 1), only seven were represented in proposals and four of those could not meet specifications for sulfur or chlorine. This left three potential suppliers of which only one is an existing mine. Proposals were received from two

PETITIONER'S EXHIBIT JJY
IURC CAUSE NO. 39437

INDIANAPOLIS POWER & LIGHT COMPANY
ENVIRONMENTAL COMPLIANCE PROCEEDING

JAMES J. YOUMANS
PROJECT ENGINEER
STONE & WEBSTER ENGINEERING CORPORATION

DIRECT TESTIMONY
ON
TECHNICAL DETAILS, COMPLIANCE OPTIONS
COST ESTIMATES AND IMPLEMENTATION SCHEDULE

SPONSORING
PETITIONER'S EXHIBITS JJY-1 THROUGH JJY-8

PRE-FILING DATE: FRIDAY, JULY 31, 1992
PUBLIC HEARING DATE: WEDNESDAY, OCTOBER 21, 1992

James J. Youmans

Testimony Abstract

The estimated cost of IPL's Plan is reasonable. Wet limestone scrubber technology is the best FGD process for Petersburg Units 1 and 2. The selected scrubbers have an SO_2 removal capability which exceeds the requirements for Petersburg Units 1 and 2 for both Phase I and Phase II of the CAAA. This means additional SO_2 emission allowances may be conserved. Switching to subbituminous coal from the Powder River Basin affects many plant systems to the point of requiring major modifications, and is likely to result in a unit derate due to slagging and furnace sizing issues. The cost of compliance using gas co-firing is not competitive with other compliance plans for IPL.

The implementation schedule for IPL's Plan includes Commission approval by May, 1993, the date by which the release for fabrication of the scrubber must be given to achieve the January 1, 1996 commercial operation date. Field work for the project is scheduled to start on May 1, 1993. The scrubber vendor construction is to start May 1, 1994 and is expected to be physically complete by July 15, 1995. A period for testing is necessary to achieve commercial operation by January 1, 1996.

components exposed to the ash. The melting point of ash affects the furnace sizing requirements to meet a given rating, the number of boiler cleaning devices (sootblowers) required and the lateral spacing of the boiler tubes to prevent plugging and subsequent damage to the boiler. The chemical constituents of ash affect the potential for deposit buildup in the furnace (Slagging), deposit buildup in the back pass of the boiler (fouling) and the propensity for wear (pulverizer and coal transport lines) and erosion (boiler tubes).

- Sulfur

SO_2 emissions levels vary directly with the sulfur content of the coal and affect electrostatic precipitator (ESP) performance by changing the electrical resistivity of the ash. An ESP is a pollution control device that removes ash (smoke) from stack gas. The ESP operates by imparting an electrical change to the ash particles which are then attracted to a collection plate of opposite change. The electrical characteristics of the ash from low sulfur fuels make them harder to collect.

Q29: Please describe the nature of the operating problems caused by a switch to a lower sulfur coal.

(a) The severity of operating problems caused by a switch to low sulfur coal, is a function of the margins that exist within boiler systems, and the source(s) of the low sulfur coal.

Generally, a number of Eastern and Midwestern low sulfur coals have characteristics that are similar to the high sulfur Midwestern coals. These similarities mean that switching between these fuels can often be accomplished with minimum operating problems. The major impact is likely to be reduced ESP collection efficiency, due to the increase in ash resistivity and reduced pulverizer performance due to the coal being harder to grind.

Switching to Subituminous coals, including those from the Powder River Basin in Wyoming and Montana, impacts boiler systems much more significantly. The Heating value of these coals can be 30 percent lower and the moisture content two to three times greater than for the midwestern coal. Also, the fuel is very dusty and prone to spontaneous combustion. Finally the ash characteristics increase the potential for slagging and fouling in the boiler.

The high moisture content can result in a 3 - 4 percent reduction in boiler efficiency. Also, the high moisture usually results in insufficient air temperature to maintain adequate pulverizer outlet temperature. For a given output, more coal is required because of the lower heating valve. Often the capacity of the pulverizer system and ash handling system is not sufficient to handle the increased flow.

The slagging potential of the ash tends to increase with subituminous coals and the ash mass flow could be higher and the melting temperatures lower. These factors can cause problems in a small furnace designed for Eastern or Midwestern

fuels by coating the furnace walls with slag, increasing steam temperature and plugging ash handling equipment. The ash from subituminous coals is also more prone to fouling, which is a tendency to stick to boiler tubes in the convection section of a boiler. Increased slagging and fouling often limit the load at which a boiler will run continuously with these fuels.

The coal storage and coal handling facilities often require significant modification because of increased coal volume, dustiness ar fire potential of subituminous coals.

Q30: Mr. Youmans, can you identify Petitioner's Exhibit No. JJY-1?

(a) Yes.; This is an illustration, prepared by SWEC's Fuel Specialist, that depicts the typical effect of coal rank on relative furnace size, based on constant heat input. This illustration shows why a boiler load limitation is sometimes incurred with fuel switching. It is very difficult (and usually economically impossible) to increase the furnace size of an existing boiler. Therefore, fuel input must be reduced if a lower rank coal is to be burned successfully in a boiler designed for a better coal.

Q31: Please describe Petitioner's Exhibit JJY-2.

(a) This exhibit shows the power plant components most affected by fuel switching.

Q32: As a part of the analysis SWEC conducted of the IPL generating units, did SWEC consider the effects of different coal on the components and system listed on Petitioner's Exhibit No. JJY-2?

(a) Yes; during the preliminary screening analysis the effect of six possible candidate coal supplies on these systems was considered. During the system-wide evaluation, a more detailed study of these systems was done for three different coals.

Q33: For the screening analysis, what modifications did SWEC consider for the IPL plants?

(a) Petitioner's Exhibit JJY-3 shows a table of modifications required for each fuel considered.

Q34: What conclusions do you draw from this exhibit?

(a) For each of the coals considered as possible candidates for coal switching, the preliminary technical screening analysis resulted in a projected scope of modifications to the plants. Because of the similarity between the existing coal supplies and the Illinois Basin Medium and Low Sulfur coals, minimum impact to the plant resulted. Conversely, switching to subituminous coal from the Powder River Basin affects all plant systems to the point of requiring major modifications, and is likely to result in a unit derate due to slagging and furnace sizing issues.

Q35: What is meant by "Natural Gas Co-firing" as a means of SO_2 compliance?

(a) Pipeline quality natural gas used in homes, industry and power plants has almost no sulfur content and therefore produces minute amounts of SO_2 when burned. Therefore, a power plant that burns coal, which contains sulfur, can reduce SO_2 emissions by replacing some of the coal with natural gas. SO_2 emissions will be reduced in direct proportion to the amount of gas fired. For purposes of the screening analysis we have assumed 20 percent natural gas firing.

Q36: What effect does natural gas co-firing have on power plants?

(a) Firing of up to 20 percent natural gas with coal in the same boiler does not have any significant detrimental effects on boiler operation. The addition of gas firing will result in a small reduction in auxiliary power requirements that will be more than offset by a decrease in boiler efficiency. The fuel required per unit of electrical power generated (net heat rate) will increase. Firing of two fuels in the same boiler also requires more complicated controls, metering systems and safety systems compared with a single fuel.

Q37: What changes to IPL plants would be required for natural gas co-firing?

(a) The screening analysis considered the addition of gas firing capability for all IPL Phase I affected units. None of IPL's coal fired generating units presently have natural gas piped to the station. Therefore, new gas pipelines would be required starting at an existing gas main. All of these affected units have ABB Combustion Engineering tangentially fired boilers. Gas firing capability would be added to these boiler by adding gas nozzles in the upper burner compartments. The existing coal nozzles would stay in place. Each unit would require a gas

pressure regulating and metering station and gas piping from this station to the new gas burners. Additional control hardware and software would be required for both the combustion control and burner safety systems.

Q38: Mr. Youmans, if IPL makes the modifications recommended by SWEC, in your opinion, would IPL be able to co-fire natural gas?

(a) The addition of gas firing of an existing coal fired unit is, technically, a very straight forward project. The capital cost is low and the risk of unforeseen problems developing is low. The viability of this option depends primarily on the cost of the premium gas fuel. As shown by Witness Frazier's testimony, the cost of compliance using gas co-firing was not competitive with other compliance plans for IPL. The estimated cost of natural gas delivered to IPL's plants is discussed by Witness Haselden.

Q39: Does IPL presently have scrubbers installed on any of its units?

(a) Yes, IPL has wet limestone FGDS operating on its Petersburg Units 3 and 4. Both these scrubber facilities are designed to meet a stack gas emission limit of 1.2 pounds of SO_2 per million Btu. This limit was in effect at the time these units were designed and built.

Q40: Did SWEC consider upgrading these scrubbers as a means of SO_2 compliance.

(a) Yes, SWEC did consider upgrading the existing scrubbers as a means of SO_2 compliance. FGDS upgrades were initially considered for both Petersburg Units 3 and 4. This option was not considered viable for Unit No. 3 because of unit

SCREENING ANALYSIS
PRELIMINARY ASSESSMENT OF PLANT MODIFICATIONS REQUIRED FOR FUEL SWITCHING

Coal Supply	Plant Modifications [1]
Illinois Basin Medium and Low Sulfur Coal	Electrostatic Precipitator Upgrades, Flue Gas Conditioning
Central App. Low Sulfur Coal	Electrostatic Precipitator Upgrades, Flue Gas Conditioning, Pulverizer Upgrades
Central App. Compliance Coal	Electrostatic Precipitator Upgrades, Flue Gas Conditioning, Pulverizer Upgrades
Colorado Coal (Western Bituminous)	Electrostatic Precipitator Upgrades, Flue Gas Conditioning, Pulverizer Upgrades
Powder River Basin Coal	Electrostatic Precipitator Upgrades or Baghouse Retrofits, Pulverizer Upgrades, Coal Handling, Increased Derate, Increased Forced Outage Rate

Note:

1. These modifications will be required for all IPL coal fired units that switch. Also, all coals would require coal handling upgrades for scenarios where two coal supplies would be used at a station (e.g. Petersburg Units 1 & 2 switched to low sulfur coal and Units 3 & 4, which are scrubbed units, receive high sulfur coal).

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

IN RE THE MATTER OF THE PETITION OF INDIANAPOLIS POWER & LIGHT COMPANY FOR REVIEW AND APPROVAL OF ITS ENVIRONMENTAL COMPLIANCE PLAN AND THE COSTS AND EXPENSES ASSOCIATED THEREWITH PURSUANT TO IND. CODE § 8-1-27-1 et seq., FOR APPROVAL TO TREAT COSTS EXPENDED FOR THE DEVELOPMENT AND IMPLEMENTATION OF ITS ENVIRONMENTAL COMPLIANCE PLANS AS QUALIFIED POLLUTION CONTROL PROPERTY UNDER IND. CODE § 8-1-2-6.6, AND FOR APPROVAL OF RATEMAKING TREATMENT THEREFOR.

CAUSE NO. 39437

PETITIONER'S SUBMISSION OF CORRECTIONS TO PREFILED TESTIMONY OF JAMES J. YOUMANS AND ROBERT A. MCKNIGHT

Petitioner Indianapolis Power & Light Company ("Petitioner"), by counsel, hereby submits Petitioner's corrections to the prefiled testimony of James J. Youmans and Robert A. McKnight. The affected exhibit to Mr. Youmans' testimony, Exhibit JJY-9 was prefiled in this Cause on October 7, 1992. Mr. McKnight's testimony was prefiled in this Cause on August 31, 1992. In support hereof, IPL states:

1. In the Prehearing Conference Order in this cause entered on June 10, 1992, the Commission provided in paragraph 9 that "[a]ny corrections to prefiled testimony, exhibits or reports should be made as soon as possible after discovery of a need to make such corrections."

2. The column headings for the second, third, and fourth columns to Petitioner's Exhibit JJY-9 incorrectly state cost as "($Millions)." The second line of these column headings should instead read "($Thousands)." Mr. Youmans will correct the official copy of the testimony at the hearing in this Cause.

3. In addition, the updated cost estimates reflected in Exhibit JJY-9 have slightly impacted the prefiled testimony of Robert A. McKnight. The costs to be updated and to be stated in Exhibit RAM-1, Table 4, Page 19, are as follows:

SO_2 Compliance	
Petersburg 1 & 2	222.7
NOx Compliance	
Petersburg 1 & 2	17.3
Petersburg 3	9.0
Petersburg 4	9.1

These revised estimates do not materially differ from the estimates set forth in IPL's prefiling.

4. Attached hereto is a copy of the revised Exhibit RAM-1, Table 4.

WHEREFORE, Petitioner requests that the Commission accept the corrections to the prefiled testimony of James J. Youmans and Robert A. McKnight.

Respectfully submitted,

Richard E. Deer, No. 4455-98

Michael G. Banta, No. 4078-49

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Attorneys for Petitioner
Indianapolis Power & Light Company

CERTIFICATE OF SERVICE

The undersigned attorney hereby certifies that a copy of the foregoing document has been served this 16th day of October, 1992, by hand delivery to the Office of Utility Consumer Counselor, Indiana Government Center, Room N501, 100 N. Senate Avenue, Indianapolis, Indiana, 46204-2208, and by placing same in the United States mail, first class, postage prepaid addressed to:

John F. Wickes, Jr.
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NKK00737

PETITIONER'S EXHIBIT WFF
IURC CAUSE NO. 39437

INDIANAPOLIS POWER & LIGHT COMPANY
ENVIRONMENTAL COMPLIANCE PROCEEDING

WILLIAM F. FRAZIER
SENIOR PRINCIPAL ENVIRONMENTAL ENGINEER
STONE & WEBSTER ENGINEERING CORPORATION

DIRECT TESTIMONY
ON
CLEAN AIR ACT AMENDMENTS OF 1990, REGULATIONS AND EVALUATION OF ENVIRONMENTAL COMPLIANCE OPTIONS

SPONSORING
PETITIONER'S EXHIBITS WFF-1 THROUGH WFF-7

PRE-FILING DATE: FRIDAY, JULY 31, 1992
PUBLIC HEARING DATE: WEDNESDAY, OCTOBER 21, 1992

William F. Frazier

Testimony Abstract

Stone & Webster Engineering Corporation ("SWEC") evaluated compliance plans for IPL to assist IPL in preparing its Environmental Compliance Plan. The process initially considered a large number of strategies and then systematically reduced them in number by increasingly more detailed analysis. SWEC considered technical options, including scrubbing, coal switching or blending, gas co-firing and coal cleaning; generating system planning strategies, including demand side management, replacement of existing generating capacity, purchase power, emissions constrained dispatch, and repowering or retrofits; and the SO_2 allowance market.

Among other things, the evaluation indicates that implementation of technology options at the Petersburg station should proceed prior to implementation of options elsewhere on IPL's system. The evaluation also indicates that more cost effective reductions of SO_2 occur when both Petersburg Units 1 and 2 are scrubbed. Scrubbing both Petersburg 1 and 2 provides IPL with greater flexibility to operate its generating system without requiring additional actions to remain in compliance with the CAAA. It also provides IPL with the greatest degree of control over future operations and their cost. The scrubber plans have the greatest degree of self-reliance for compliance and are based on known technology and established markets. Plans that scrub Petersburg 1 and 2 in Phase I have the lowest cumulative present worth of revenue requirements, provide IPL with greater fuel procurement flexibility than other plans and do not require IPL to shift to out-of-state coal.

	Unit	Technology (see key at end of Table)	SO_2 Reduction (tons/yr)	Average Cost Effectiveness (Level $/ton SO_2 Removed)*	Marginal Cost Effectiveness (Level $/ton SO_2 Removed)*
1	Pritchard 3, 4, 5, 6	SWE	4,610	1,480	1,480
2	Pritchard 3, 4, 5, 6	SWD	4,610	1,480	1,480
3	Pritchard 3, 4, 5, 6	SWB	2,340	1,570	***
4	Pritchard 3, 4, 5, 6	SWF	4,610	2,230	***
5	Pritchard 3, 4, 5, 6	SWC	2,340	2,400	***
6	Pritchard 3, 4, 5, 6	NGC	1,680	1,750	***
7	Stout 7	FGD	23,500	720	720
8	Stout 5, 6, 7	SWE	16,800	990	990
9	Stout 5, 6, 7	SWD	16,800	1,080	***
10	Stout 5, 6, 7	SWB	9,400	1,170	***
11	Stout 5, 6, 7	SWC	9,400	1,500	***
12	Stout 5, 6, 7	SWF	16,800	1,620	***
13	Stout 5, 6, 7	NCG	5,800	1,580	***

14 Key:

15 FGD - Forced Oxidation, Wet Limestone, Gypsum
16 FGDU - Flue Gas Desulfurization Upgrade (Dibasic Acid Addition)
17 SWA - Switch to Illinois Basin Medium Sulfur Coal, 2.5 lb SO_2/MBtu
18 SWB - Switch to Illinois Basin Low Sulfur Coal, 1.6 lb SO_2/MBtu
19 SWC - Switch to Central Appl. Low Sulfur Coal, 1.6 lb SO_2/MBtu
20 SWD - Switch to Central Appl Compliance Coal, 1.0 lb SO_2/MBtu
21 SWE - Switch to Colorado Coal, 1.0 lb SO_2/MBtu
22 SWF - Switch to Powder River Basin Coal, 1.0 lb SO_2/MBtu
23 NGC - Natural Gas Co-firing

24 * 1991 dollars levelized over the period 1995-2020. Fuel price projections based on EVA Coal
25 Supply Option Report (1). The cost effectiveness values for FGD options do not include the
26 benefit of extension, bonus and transfer allowances provided for FGD installations prior to
27 January 1, 1997.
28 ** Eliminated from marginal cost calculation because this option has a higher annual cost than
29 other options with greater or equal SO_2 reduction.
30 *** Eliminated from marginal cost calculation because this option has less SO_2 reduction than
31 the lowest marginal cost option for this unit.

(VART03 VRB)

TABLE 4

COST OF
CAAA IMPLEMENTATION MEASURES

Unit	Cost [1] ($ Millions)
SO_2 Compliance	
H.T. Pritchard 1 & 2	0
H.T. Pritchard 3-6	Note 2
E.W. Stout 3 & 4	0
E.W. Stout 5-7	Note 2
Petersburg 1 & 2	222.7
Petersburg 4	0.7
NO x Compliance	
H.T. Pritchard 3	1.4[4]
H.T. Pritchard 4	1.7[4]
H.T. Pritchard 5	1.9[4]
H.T. Pritchard 6	2.7
E.W. Stout 5, 6, & 7	11.3
Petersburg 1 & 2	17.3
Petersburg 3	9.0
Petersburg 4	9.1
CEMS Compliance	
H.T. Pritchard 1-6	2.4
E.W. Stout 3-7	3.3[4]
Petersburg 1-4	1.7

Table 5-3

Screening Analysis
Preliminary Assessment of Plant Modifications
Required for Fuel Switching

Coal Supply	Plant Modifications *
Illinois Basin Medium and Low Sulfur Coal	Electrostatic Precipitator Upgrades **, Flue Gas Conditioning
Central App. Low Sulfur Coal	Electrostatic Precipitator Upgrades **, Flue Gas Conditioning, Mill Upgrades
Central App. Compliance Coal	Electrostatic Precipitator Upgrades, Flue Gas Conditioning, Mill Upgrades
Colorado Coal (Western Bituminous)	Electrostatic Precipitator Upgrades, Flue Gas Conditioning, Mill Upgrades
Powder River Basin Coal	Electrostatic Precipitator Upgrades or Baghouse Retrofits, Mill Upgrades, Coal Handling Upgrades, Increased Derate, Increased Forced Outage Rate

* All coals would require coal handling upgrades for scenarios where two coal supplies would be used at a station (e.g., Petersburg Units 1 & 2 switched to low sulfur coal and Units 3 & 4, which are scrubbed units, receive high sulfur coal).

** ESP modifications may not be required for Petersburg Unit 2.

Table 5-4

Screening Analysis
Capital Cost Estimates and SO_2 Reductions for Alternative Fuels

Alternative Fuel	Reduction in Existing SO_2 Emission Rates (%)			Capital Costs (1991 $/kW)				
	Petersburg	Pritchard	Stout	Petersburg Unit 1	Petersburg Unit 2	Petersburg Units 1 & 2	Pritchard 3, 4, 5, 6	Stout 5, 6, 7
Illinois Basin Medium Sulfur Coal	46	NA	NA	20	10	10	NA	NA
Illinois Basin Low Sulfur Coal	65	28	32	35	20	15	15	15
Central App. Low Sulfur Coal	65	28	32	45	30	25	25	25
Central App. Compliance Coal	78	55	58	45	30	25	25	25
Colorado Coal	78	55	58	45	30	25	25	25
Powder River Basin Coal	78	55	58	85	70	70	70	70
Natural Gas Co-fire (20%)	20	20	20	5	5	5	5	5

P-553

Table 5-5

Preliminary Screening Analysis
Unit/Technology Cost Effectiveness Evaluation Results

Unit	Technology (see key at end of Table)	SO_2 Reduction (tons/yr)	Average Cost Effectiveness (Level $/ton SO_2 Removed)*	Marginal Cost Effectiveness (Level $/ton SO_2 Removed)*
Petersburg 1	SWA	17,500	330	330
Petersburg 1	FGD	36,400	370	410
Petersburg 1	SWB	25,000	390	530
Petersburg 1	SWE	30,000	500	**
Petersburg 1	SWF	30,000	510	**
Petersburg 1	SWC	25,000	510	**
Petersburg 1	SWD	30,000	520	**
Petersburg 1	NGC	7,700	890	***
Petersburg 2	SWA	27,800	320	320
Petersburg 2	SWB	39,700	380	520
Petersburg 2	FGD	57,900	390	460
Petersburg 2	SWC	39,700	490	**
Petersburg 2	SWE	47,700	490	**
Petersburg 2	SWD	47,700	510	**
Petersburg 2	SWF	47,700	510	**
Petersburg 2	NGC	12,200	890	***
Petersburg 1 & 2	SWA	45,300	320	320
Petersburg 1 & 2	FGD	94,300	330	340
Petersburg 1 & 2	SWB	64,700	370	490
Petersburg 1 & 2	SWC	64,700	490	**
Petersburg 1 & 2	SWE	77,700	490	**
Petersburg 1 & 2	SWD	77,700	500	**
Petersburg 1 & 2	SWF	77,700	510	**
Petersburg 1 & 2	NGC	19,800	890	***

Table 5-5 (Cont)

Unit	Technology (see key at end of Table)	SO_2 Reduction (tons/yr)	Average Cost Effectiveness (Level $/ton SO_2 Removed)*	Marginal Cost Effectiveness (Level $/ton SO_2 Removed)*
Petersburg 4	FGDU	7,000	115	115
Pritchard 3, 4, 5, 6	SWE	4,610	1,480	1,480
Pritchard 3, 4, 5, 6	SWD	4,610	1,480	1,480
Pritchard 3, 4, 5, 6	SWB	2,340	1,570	***
Pritchard 3, 4, 5, 6	SWF	4,610	2,230	***
Pritchard 3, 4, 5, 6	SWC	2,340	2,400	***
Pritchard 3, 4, 5, 6	NGC	1,680	1,750	***
Stout 7	FGD	23,500	720	720
Stout 5, 6, 7	SWE	16,800	990	990
Stout 5, 6, 7	SWD	16,800	1,080	***
Stout 5, 6, 7	SWB	9,400	1,170	***
Stout 5, 6, 7	SWC	9,400	1,500	***
Stout 5, 6, 7	SWF	16,800	1,620	***
Stout 5, 6, 7	NCG	5,800	1,580	***

Key:

FGD - Forced Oxidation, Wet Limestone, Gypsum
FGDU - Flue Gas Desulfurization Upgrade (Dibasic Acid Addition)
SWA - Switch to Illinois Basin Medium Sulfur Coal, 2.5 lb SO_2/MBtu
SWB - Switch to Illinois Basin Low Sulfur Coal, 1.6 lb SO_2/MBtu
SWC - Switch to Central Appl. Low Sulfur Coal, 1.6 lb SO_2/MBtu
SWD - Switch to Central Appl Compliance Coal, 1.0 lb SO_2/MBtu
SWE - Switch to Colorado Coal, 1.0 lb SO_2/MBtu
SWF - Switch to Powder River Basin Coal, 1.0 lb SO_2/MBtu
NGC - Natural Gas Co-firing

* 1991 dollars levelized over the period 1995-2020. Fuel price projections based on EVA Coal Supply Option Report (1). The cost effectiveness values for FGD options do not include the benefit of incentive allowances provided for FGD installations prior to January 1, 1997.

** Eliminated from marginal cost calculation because this option has a higher annual cost than other options with greater or equal SO_2 reduction.

*** Eliminated from marginal cost calculation because this option has less SO_2 reduction than the lowest marginal cost option for this unit.

February 20, 1992
Rev. July 30, 1992

NAL REPORT

FUEL SWITCHING EVALUATIONS FOR

PETERSBURG UNITS 1 & 2 AND E. W. STOUT UNITS 5, 6, & 7 STATIONS

INDIANAPOLIS POWER & LIGHT COMPANY

TABLE OF CONTENTS

SECTION I
INTRODUCTION

This report has been divided into two separate sections, one for Petersburg Station, and one for Stout Station.

Each section is further broken down to three major subsections, as follows:

1.0 Illinois Basin Coal
2.0 Central Appalachian Coal
3.0 Powder River Basin Coal

Within each subsection, the discussion sequentially addresses the impact of switching to low sulfur coal on common plant systems, and then each affected unit.

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SECTION III - STOUT STATION

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SECTION III APPENDIX

3.0 100 % POWDER RIVER BASIN WESTERN SUBITUMINOUS COAL DISCUSSION

3.1 Common Systems

3.1.1 Coal Yard

3.1.1.1 Methodology and Parameters Evaluated

The predicted effects of handling Power River Basin (PRB) coal in the coal yard were developed from an interview with Plant Operations, the Predicted Performance Summary and the Coal Reclaim and Conveyor System Reliability Improvement Study done for IPL by SWEC in 1988.

The focus of the evaluation centered on:

- Stockpile Capacity
- Train Deliveries
- Belt Capacity
- Existing Handling System Problems

3.1.1.2 Stockpile Capacity

The available information indicates that switching to PRB coal will not reduce the existing stockpile capacity to any great extent. SWEC recommends live storage be provided by storage silos of 64 hours duration. The silos would be of the mass flow type providing first in-first out flow. The location of the silos and associated conveying systems will reduce storage to the north and northeast of the existing reclaim hopper.

Dead storage, for emergency use only, is provided in a compacted pile.

This pile must be laid down in shallow lifts and must be heavily compacted with dozers and scrapers. The pile must be monitored with infrared detection devices to discover any thermal hot spots which must be removed, extinguished and recompacted. Live storage is provided for a weekend of 64 hours duration. The handling capacity is designed to operate for two shifts per day six days per week with reclaim on two shifts per day seven days per week.

3.1.1.3 Train Deliveries

Assuming that the units are base loaded, 100 ton 100 railcar unit trains will be required six days a week. Use of the existing unloading system, without any upgrading of equipment, will require 12.5 hours to unload the unit train. This assumption does not allow time for the switching of empty railcars for loaded railcars. Frozen railcar deliveries and use of the car thaw system will increase the unloading time required .

3.1.1.4 Belt Capacity

Use of the existing belt conveyor system, without modifications, will require bunkering for 10.75 hours per day. Load reductions maybe required if an equipment failure occurs and is not easily repaired.

3.1.1.5 Existing Handling System Conditions

The use of PRB coal at Stout Station will require major system modifications, many of them have been identified in our 1988 study.

PRB coal, because of its reactive and dusty nature, requires special handling to avoid spontaneous combustion and dust explosions. The chutes, storage hoppers, silos, storage bunkers, and other coal handling equipment should be designed to be self cleaning with steep valley angles so that the coal will not accumulate. Dust collection must be well designed and maintained.

Much of the existing coal handling system is not suitable to handle PRB coal and requires upgrading. Many chutes and hoppers need redesign, skirting must be extended and maintained, dust collection hoods added, belt scrapers added, belts should have vulcanized splices and washdown troughs and sumps and pumps added. Spillage from belts and other coal handling equipment must be contained and cleaned up immediately. Piles of coal spillage will be a severe fire hazard if not cleaned up daily. Fire protection has to be added with detection devices, sprinkler systems, and fire pumps.

SWEC estimates the cost of adding silos and new conveyors to be approximately $8,000,000-$10,000,000. None of the existing problem modifications are included in the cost estimate.

3.2 Stout Units 5 & 6 Systems

3.2.1 Pulverizer System

3.2.2.1 Methodology and Parameters Evaluated

The effects of switching coal on the coal feed and pulverizer systems are influenced from many parameters. Coal rank, moisture, HHV and Hardgrove grindability index are the most important factors. Conversion to Powder River Basin coal is expected to cause significant impact to the existing capability of the feeder/pulverizer system to meet full load requirements. The four RPS - 613 pulverizers, as configured, will allow approximately 80 % of full boiler operation with this coal, at fineness, with one pulverizer out-of-service for maintenance. The existing air heater will provide approximately 640°F primary air temperature to the pulverizers. This temperature will allow for high moisture coal and still maintain the minimum 140°F pulverizer outlet air temperature, which is considered adequate for adequate coal drying and transport.

To maintain full load capability, <u>without</u> one spare mill available for maintenance, allowing for wear, requires an increase in pulverizer size to model RPS - 723 mills. The scope of modifications, include;

- New RPS - 723 pulverizers (5).
- Exhausters (5) with motor drives.
- Coal feeders (5).
- Air ducts (w/ air control dampers).
- Foundations.
- CO_2 inerting system.
- Electrical breakers upgrade.
- Controls.
- Raw coal piping modifications.
- Isolation gates (Raw coal, burner lines).
- Burner lines (w/ supports).
- New Burners.

Carbon Dioxide (CO_2) has been chosen to provide inerting and fire protection for the pulverizers at this facility. A new low pressure CO_2 system will be connected to all pulverizer units.

The CO_2 is stored under pressure in a liquid form in a refrigerated storage tank at 300 psi and 0°F. When a pulverizer trips, the CO_2 may be discharged to the pulverizer by either an automatic valves from a signal panel or by an operator for manual discharge. Liquid CO_2 is discharged by a master valve, and expands to a gaseous form, to be introduced into the mill through hot air inlets plus other injection points.

A summary of the predicted pulverizer performance and recommended modifications with PRB coal is tabulated in Table A-5. The engineering order-of-magnitude capital cost estimate for these modifications including demolition is $9.6 million.

3.2.2 Boiler Evaluation

3.2.2.1 Methodology and Parameters Evaluated

The predicted effects of converting the boilers to a compliance low sulfur, Subituminous coal were developed from a number of sources. The prediction of impact on boiler performance originated with SWEC and the use of computer programs to estimate combustion constituents quantities, boiler efficiency, and slagging and fouling indices. A summary is presented in Table A-6.

The viability of conversion and the effects of coal switching on boiler operation was also estimated from information gathered in an interview with Plant Operations and experience with this boiler design.

The level of this review is considered sufficient to provide representative performance/operation information. The results later served as the basis for estimating the scope of modifications required, within the tolerance specified, to maintain the boiler MCR. This evaluation, however, does not include a rigorous analysis on the probability of reaching and maintaining full load rating, given the coal property and characteristic variations that could occur with Subituminous coals from the Powder River Basin (PRB). It is not intended to be a final scope of work, as Stone & Webster Engineering Corp. recommends a detailed evaluation and a long term test burn to demonstrate the combined impact of using this coal prior to making a commitment to it.

The focus of the evaluation centered on factors having the potential to result in derating of Unit capacity, and the equipment modifications required to prevent derating. The specific factors, are:

- Burner operation
- Furnace slagging and furnace exit gas temperature
- Convection pass fouling
- Fly ash erosion

3.2.2.2 Burner Operation

The information available indicates that the existing burners will require conversion, possibly to low NO_x type. The likelihood of unacceptable burner operation with this coal is considered high if the burners are

not replaced. The factors related to burner heat input and burner zone heat release, coal V.M. content and ash content are well within the acceptable range to effect a proper replacement.

3.2.2.3 Furnace Performance & Furnace Exit Gas Temperature

The potential for furnace slagging is the same or slightly increased from the Lynnville coal due to the lower furnace emissivity and the Med/High slagging index with the PRB coal. Given the relatively low heat release values, which is consistent with the low ash fusion temperatures of the original design coal, the number of deslaggers installed in this region and the predicted rise in FEGT, initial indications are that furnace control can still be maintained with operating changes without the need for major modifications, but, potentially resulting in a periodic 10 % load derate.

A consequent effect of variations in furnace performance is the impact on steam/metal temperatures and spray attemporator capacities. The available data suggests that no potential problems related to this exists if furnace conditions are maintained.

3.2.2.4 Convection Pass Fouling

The fouling potential is not increased with this coal. However, the combination of increased slagging resulting from lapses in sootblowing, changes in coal characteristics and the historical tendency to have high temperature ash corrosion on the furnace arch could increase the deposition rate in the high temperature zones of the convection pass. The recommendation is to not add retractable sootblower coverage in the zones exceeding 1500 degrees F at this time.

3.2.2.5 Fly Ash Erosion

Although fly ash erosion is not a threat to performance, it is a factor which could seriously affect long term reliability and maintenance requirements. Erosion is a function of many parameters. However, flue as velocity is considered a key factor as erosion rate is a 2.5 - 3 power function of this parameter. Since the maximum flue gas velocity is predicted to be 3 % higher than with the base coal, the erosion index is the same or slightly, and the overall ash quantity is lower, tube life should not be deleteriously affected with the PRB coal.

3.2.3 Fans

3.2.3.1 Methodology and Parameters Evaluated

Forced Draft Fans

The existing forced draft fans are considered adequate for MCR operation with this coal. This, however, does not consider the possible addition of low NO_x burners, which may require additional static head.

The conversion to Powder River Basin coal results in virtually the same flow and static head requirements that exists with the current high sulfur coals being burned. This, therefore, does not jeopardize exceeding the existing fan margins.

Induced Draft Fans

Similar to the situation with the Forced Draft Fans, the flue gas flow and pressure requirements are expected to be approximately three percent higher than with the high sulfur coal. Refer Table A-6. The flue gas temperature is also expected to rise slightly, which increases the volumetric flow rate by approximately seven percent. Even with this rise, the actual fan performance indicates the fan flow, head and temperature margins are not jeopardized.

3.2.4 Electrostatic Precipitator

3.2.4.1 Methodology and Parameters Evaluated

Please refer to SubSection 1.2.4.1. of Section III, which includes the discussion related to Power River Basin coals.

3.2.5 Ash Handling

3.2.5.1 Methodology and Parameters Evaluated

The fly ash handling system is classified as a wet type, supplied by Allen Sherman Hoff.

The conversion to Powder River Basin coal does not pose a potential problem to reliable operation with ample water supply. The ash has significantly more calcium, which tends to make it more cementatious, however, the quantity is significantly less than with the Lynnville coal.

3.2.5.2 Ash Handling/Pond Effluent

The present system sluices the bottom and fly ash to an ash pond adjacent to the Plant. Changing the coal source will not affect the handling of the bottom ash and the effluent will not likely require additional treatment prior to discharge.

3.3 Stout Unit 7 Systems

3.3.1 Pulverizer System

3.3.1.1 Methodology and Parameters Evaluated

The effects of switching coal on the coal feed and pulverizer systems are influenced from many parameters. Coal rank, moisture, HHV and Hardgrove grindability index are the most important factors. Conversion to Powder River Basin coal is expected to cause significant impact to the existing capability of the feeder/pulverizer system to meet full load requirements. The five RPS - 823 pulverizers, as configured, will allow approximately 75 % of full boiler operation with this coal, at fineness, with one pulverizer out-of-service for maintenance. The existing air heater will provide approximately 650°F primary air temperature to the pulverizers. This temperature will allow for high moisture coal and still maintain the minimum 140°F pulverizer outlet air temperature, which is considered adequate for adequate coal drying and transport.

To maintain full load capability, <u>without</u> one spare mill available for maintenance, allowing for wear, requires an increase in pulverizer size to model RPS - 883 mills. The scope of modifications, include;

- New RPS - 883 pulverizers (5).
- Exhausters (5) with motor drives.
- Coal feeders (5).
- Air ducts (w/ air control dampers).
- Foundations.
- CO_2 inerting system.
- Electrical breakers upgrade.
- Controls.
- Raw coal piping modifications.
- Isolation gates (Raw coal, burner lines).
- Burner lines (w/ supports).
- New Burners.

Carbon Dioxide (CO_2 has been chosen to provide inerting and fire protection for the pulverizers at this facility. A new low pressure CO_2 system will be connected to all pulverizer units.

The CO_2 is stored under pressure in a liquid form in a refrigerated storage tank at 300 psi and 0°F. When a pulverizer trips, the CO_2 may be discharged to the pulverizer by either an automatic valves from

a signal panel or by an operator for manual discharge. Liquid CO_2 is discharged by a master valve, and expands to a gaseous form, to be introduced into the mill through hot air inlets plus other injection points.

A summary of the predicted pulverizer performance and recommended modifications with PRB coal is tabulated in Table A-7. The engineering order-of-magnitude capital cost estimate for these modifications including demolition is $30.5 million.

3.3.2 Boiler Evaluation

3.3.2.1 Methodology and Parameters Evaluated

The predicted effects of converting the boilers to a compliance low sulfur, Subituminous coal were developed from a number of sources. The prediction of impact on boiler performance originated with SWEC and the use of computer programs to estimate combustion constituents quantities, boiler efficiency, and slagging and fouling indices. A summary is presented in Table A-8.

The viability of conversion and the effects of coal switching on boiler operation was also estimated from information gathered in an interview with Plant Operations and experience with this boiler design.

The level of this review is considered sufficient to provide representative performance/operation information. The results later served as the basis for estimating the scope of modifications required, within the tolerance specified, to maintain the boiler MCR. This evaluation, however, does not include a rigorous analysis on the probability of reaching and maintaining full load rating, given the coal property and characteristic variations that could occur with Subituminous coals from the Powder River Basin (PRB). It is not intended to be a final scope of work, as Stone & Webster Engineering Corp. recommends a detailed evaluation and a long term test burn to demonstrate the combined impact of using this coal prior to making a commitment to it.

The focus of the evaluation centered on factors having the potential to result in derating of Unit capacity, and the equipment modifications required to prevent derating. The specific factors, are:

- Burner operation
- Furnace slagging and furnace exit gas temperature
- Convection pass fouling
- Fly ash erosion

3.3.2.2 Burner Operation

The information available indicates that the existing burners will require conversion, possibly to low NO_x type.

The likelihood of unacceptable burner operation with this coal is considered high if the burners are not replaced. The factors related to burner heat input and burner zone heat release, coal V.M. content and ash content are well within the acceptable range to effect a proper replacement.

3.3.2.3 Furnace Performance & Furnace Exit Gas Temperature

The potential for furnace slagging is the same or slightly increased from the base coals due to the lower furnace emissivity and the Med/High slagging index with the PRB coal. Given the relatively low heat release values, which is consistent with the low ash fusion temperatures of the original design coal, the number of deslaggers installed in this region and the predicted rise in FEGT, initial indications are that furnace control can still be maintained with operating changes without the need for major modifications, but, potentially resulting in a periodic 15-20 % load derate.

A consequent effect of variations in furnace performance is the impact on steam/metal temperatures and spray attemporator capacities. The available data suggests that no potential problems related to this exists if furnace conditions are maintained.

3.3.2.4 Convection Pass Fouling

The fouling potential is not increased with this coal. However, the combination of increased slagging resulting from lapses in sootblowing, changes in coal characteristics and the historical tendency to have high temperature ash corrosion on the furnace arch could increase the deposition rate in the high temperature zones of the convection pass. The recommendation is to not add retractable sootblower coverage in the zones exceeding 1500 degrees F at this time.

3.3.2.5 Fly Ash Erosion

Although fly ash erosion is not a threat to performance, it is a factor which could seriously affect long term reliability and maintenance requirements.

Erosion is a function of many parameters. However, flue gas velocity is considered a key factor as erosion rate is a 2.5 - 3 power function of this parameter. Since the maximum flue gas velocity is

predicted to be 3 % higher than with the base coal, the erosion index is the same or slightly, and the overall ash quantity is lower, tube life should not be deleteriously affected with the PRB coal.

3.3.3 Fans

3.3.3.1 Methodology and Parameters Evaluated

Forced Draft Fans

The existing forced draft fans are considered adequate for MCR operation with this coal. This, however, does not consider the possible addition of low NO_x burners, which may require additional static head.

The conversion to Powder River Basin coal results in virtually the same flow and static head requirements that exists with the current high sulfur coals being burned. This, therefore, does not jeopardize exceeding the existing fan margins.

Induced Draft Fans

Similar to the situation with the Forced Draft Fans, the flue gas flow and pressure requirements are expected to be approximately three percent higher than with the high sulfur coal. Refer Table A-8. The flue gas temperature is also expected to rise slightly, which increases the volumetric flow rate by approximately seven percent. Even with this rise, the actual fan performance indicates the fan flow, head and temperature margins are not jeopardized.

3.3.4 Electrostatic Precipitator

3.3.4.1 Methodology and Parameters Evaluated

See SubSection 1.3.4.1 of Section III, which includes the discussion related to Powder River Basin Coal.

3.3.5 Ash Handling

3.3.5.1 Methodology and Parameters Evaluated

The fly ash handling system is classified as a wet type, supplied by Allen Sherman Hoff.

The conversion to Powder River Basin coal does not pose a potential problem to reliable operation with ample water supply. The ash has significantly more calcium, which tends to make it more cementatious, however, the quantity is significantly less than with the Lynnville coal.

3.3.5.2 Ash Handling/Pond Effluent

The present system sluices the bottom and fly ash to an ash pond adjacent to the Plant. Changing the coal source will not affect the handling of the bottom ash and the effluent will not likely require additional treatment prior to discharge.

TABLE A-5
Stout 5 & 6
Comparative Pulverizer Performance and Required Modifications

	Stout 5 & 6	Stout 5 & 6	Stout 5 & 6	Stout 5 & 6
BOILER MANUFACTURER	CE	CE	CE	CE
BOILER SIZE (STEAM FLOW), LB/HR	750,000	750,000	750,000	750,000
COAL TYPE	Lynnville	ILL. BASIN	CENTRAL APP.	POWDER RIVER BASIN
BOILER EFFICIENCY, %	86.66	87.09	88.07	84.0%
FIRING RATE @ MCR, LB/HR	92,626	88,151	80,854	118,370
COAL GRINDABILITY, HGI	55	54	45	53
COAL MOISTURE, %	13.00	13.00	7.00	27.20
COAL HEATING VALUE, BTU/LB	11,000	11,500	12,400	8,874
AIR HEATER TEMP., °F	38	588	588	620
EXISTING PULVERIZER SIZE, MODEL NO.	RPS - 613	RPS - 613	RPS - 613	RPS - 613
NUMBER OF PULVERIZERS EXISTING	4	4	4	4
ADJUSTED BASE CAPACITY OF PULVERIZER, LB/HR	32,208	31,877	28,000	31,828
CE CAPACITY ADJUSTMENT FOR WEAR	10.00	10.00	10.00	10.00
NUMBER OF PULVERIZERS REQUIRED ADJUSTED FOR WEAR	3.19	3.07	3.21	4.13
NEW PULVERIZER SIZE, MODEL NO	NA	NA	NA	NA
NEW BASE CAPACITY OF PULVERIZER ADJUSTED FOR 10% WEAR, LB/HR	NA	NA	NA	NA
NEW PULVERIZERS REQ. (ADJUSTED FOR WEAR)	NA	NA	NA	NA
PULVERIZER DESIGN INLET AIR TEMP. REQ. FOR ≈140F MILL OUTLET TEMP.	NA	NA	NA	NA
PULVERIZER PA FLOW PER NEW PULV.	NA	NA	NA	173,600
NEW PULVERIZER MOTOR	NA	NA	NA	YES
NEW HOT/COLD AIR DUCT	NA	NA	NA	YES
AIR TEMPERATURE RESTRICTIONS	NA	NA	NA	YES
SILO REQUIREMENTS	NA	NA	NA	YES
FEEDER REQUIREMENTS	NA	NA	NA	YES
FOUNDATIONS REQUIREMENTS	NA	NA	NA	YES
DEMOLITION REQUIREMENTS	NA	NA	NA	YES
RAW COAL PIPING	NA	NA	NA	YES
ISOLATION VALVES	NA	NA	NA	YES
CO_2 INERTING SYSTEM	NA	NA	NA	YES

	Stout 5 & 6	Stout 5 & 6	Stout 5 & 6	Stout 5 & 6
PIPING				
VALVING				
CONTROLS MODIFICATIONS	NA	NA	NA	YES
ELECTRICAL WIRING	NA	NA	NA	YES