L. S. Rathbun September 18, 1981 Page Three

During October I will be collecting the information necessary to make a recommendation for Tri-State to pursue one or two of the alternatives that seem to best provide Tri-State with some means of handling the coal fines problem.

Any additional suggestion you may have identifying other alternatives will be appreciated and incorporated into the study.

### WMS/if

xc: P. M. Anderson

O. D. Adams

M. D. Burke

M. N. Kelley

A. Roeger III J. T. Wooten

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# TEXAS (6) EASTERN

### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun

CO/DIV: Synfuels

FROM:

W. M. Scriber

DATE:

March 3, 1982

SUBJECT: Sized Product Request to the Coal Suppliers

In an effort to explore various alternatives that will keep the Tri-State plant in a fines balanced position, I have recently requested our potential coal suppliers to access their willingness and ability to sell Tri-State a specified sized product.

More specifically, the suppliers were requested to address two scenarios 1) sell Tri-State a raw coal product whose size balance is at least equal to 30% fine (<½") and 70% coarse coal 2) sell Tri-State a raw coal product whose size is at least equal to 15% fine (<½") and 85% coarse coal. The suppliers were requested to be innovative in their development of a response and to assume that, although not binding, their response will be a serious indication of their ability to provide a sized product when contracting terms are negotiated.

The following nine suppliers were requested to respond to the sized product request:

group all have given an indication that they are willing to provide a sized product. Six of the companies have replied with a specific price requirement and are preparing a response. rovided a very weak response i.e., all prices for washed, raw, 30% sized and 15% sized were \$38.00/T. Please recall that for several reasons as notified last week that their reserve was ranked rather low during the reserve evaluation exercise.

As you refer to Attachment 1 which provides the detail and assumptions of individual responses to the sized product request you will see that the premium for a 30% - 70% mix varies from \_\_\_\_\_\_\_ to a Likewise, looking at the

15% - 85% mix

three companies yet to respond will all fall within the premium ranges previously established.

Given the positive responses submitted by the coal suppliers indicating their ability to sell a sized product to Tri-State, it is my intention to continue developing this approach as a viable alternative to develop a fines balanced coal supply for the plant.

xc: P. M. Anderson

M. D. Burke

M. N. Kelley

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IS SUBJECT TO THE RESTRICTION OF THE
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### ATTACHNENT A

Tri-State Jynfuels
Sized Product Response (
from Coal Suppliers

Premium required to supply a sized product \$/T

Supplier --Base Price-Supplier \$/T
Reserve Raw Mashed

30% Fine 70% Coarse Premium / Price 15% Fine 85% Coarse Premium / Price

Comments

Peabody Henderson Alston 1E Alston 1W Martwich Kaskaskia

Zeigler Tamaroa

AMAX Delta Denmark

P & M Henderson Sebree

Freeman United Okawville

01d Ben Dehlgren

\*Raw price req

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Page 2 Dt 2

Tri-State Synfuels
Sized Product Response
from Coal Suppliers

Premium required to supply a sized product \$/T

--Base Price--\$/T Raw Washed

30% Fine 70% Coarse Premium / Price 15% Fine 85% Coarse Premium / Price

'Comments

flapco White County

Supplier

Reserve

Consol

Gibson

Towhead Island

Island Creek Hamilton #2 Highland Elk Creek Fies #9 Crescent

\* Raw price requested or estimated.

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# TEXAS ⊚ EASTERN

TO:

L. S. Rathbun

FROM:

W. M. Scriber

### INTEROFFICE CORRESPONDENCE

CO/DIV: Synfuels

DATE:

March 19, 1982

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# TEXAS ()

### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun

CO/DIV: Synfuels

FROM:

W. M. Scriber

DATE: January 21, 1982

SUBJECT: Status - Sized Product Request

Contact has been made with eight of the nine remaining coal suppliers requesting a sized coal product on a 15% and 30% fine coal (less than  $\frac{1}{2}$ ") basis. All have responded positively, to varying degrees, to this request.

The attached Exhibit A reviews the suppliers general comments.

Bill

WMS/ca.

xc: M. D. Burke W. N. Shoff

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## Exhibit A

# RESPONSE BY COAL SUPPLIERS TO SIZED PRODUCT REQUEST

Supplier	Contact	Counents
AMAX	George Galey	
CONSOL	Jack Dailey	
-	Jack Dailey	
/ 'EEMAN UNITED	Dick Brooks	
	Dick Biooks	
ISLAND CREEK	Jerry Booher	
TOURS ONLER	derig sooner	·
MADOO		•
MAPCO	Ken Eastwood	
		USE OR CUSCLOBACE OF REPORT DATA IS SUPLICE TO THE RESIDENCE ON THE INSTITUTE PACE AT THE FRONT OF THIS REPORT
OLD BEN	Henry Martin	
PEABODY	Greg Wickstra	
PITTSBURG & MIDWAY	Bill Dix	•
ZEIGLER	Mack Shumate Dick Freeman	;

## TEXAS ( **EASTERN**

### INTEROFFICE CORRESPONDENCE

TO:

Distribution\*

CO/DIV: Synfuels

FROM:

L. S. Rathbun

DATE: January 8, 1982

SUBJECT: "Excess Fines" Disposition

Attached is a copy of the letter that was sent to utility companies regarding their potential interest in Tri-State's "excess fines". A list of the utility companies that are to receive this letter is also attached.

LSR/ca

\*P. M. Anderson

M. D. Burke M. N. Kelley W. M. Scriber

xc: W. N. Shoff

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## TRI-STATE SYNFUELS COMPANY

Linda S. Rathbun Manager - Project Development

January 8, 1982

Mr. G. Blackmore Executive Vice President American Electric Power Service Corp. 161 W. Main Street Lancaster, OH 43130

Dear Mr. Blackmore:

As you are probably aware, Tri-State Synfuels Company (a joint venture between subsidiaries of Texas Eastern Corporation and Texas Gas Transmission Corporation) is designing and planning to construct a major coal gasification/liquefaction plant near Henderson, Kentucky. The decision to construct should be made within the next two years, with plant start-up scheduled for 1988.

The underground mining methods employed by most of our potential Illinois Basin coal suppliers generate from 30-50% material which is less than one-quarter inch in size ("fines"). This level of fines may be greater than Tri-State is able to use in its boilers and Lurgi gasifiers. There are a number of opportunities available to us for the utilization of these fines. Three of these could be of interest to you: (1) the possibility of Tri-State using the fines to generate more electricity than it needs and selling the power to local utilities; (2) the possibility of building a cogeneration facility with a local utility company (a facility large enough to utilize all the fines but with steam and electricity generating capacity greater than Tri-State's requirements); and, (3) the sale of the excess fines to local utilities to meet their own coal supply needs for existing or planned generating plants.

We are currently evaluating these and other opportunities for possible disposition. I would like to discuss the potential of AEP's interest in these possibilities.

I will call you next week to discuss your general interest and to determine whether a meeting to discuss the matter might be appropriate.

Sincerely yours.

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P.O. BOX 2521 HOUSTON, TEXAS 77001 (715) 789-5422

Mr. G. Blackmore Executive Vice President American Electric Power Service Corp. 161 W. Main Street Lancaster, OH 43130

Mr. S. T. Botts
Director, Fuel Procurement
Kentucky Utilities Co.
One Quality Street
Lexington, KY 40507

Mr. R. F. Burkard Vice General Manager Energy Supply Big Rivers Electric Corp. 201 Third Street F. O. Box 24 Henderson, KY 42420

Hr. L. T. Clevenger
Exec. Vice President & General Manager
Southern lilinois Power Cooperative
Box 255, Route 4
Marion, Ill 62959

Mr. H. S. Fox Director, Fossil & Hydro Power Tennessee Valley Authority 716 EB 11th & Market Chattanooga, TN 37401

(

(

Mr. W. E. George Vice President, Power Public Service Company of Indiana, Inc. 1000 East Main Street Plainfield, IN 46168

Mr. D. W. Knight
Asst. Vice President, Fuel Supply
Indianapolis Power & Light Co.
25 Monument Circle
P. O. Box 1595-B
Indianapolis, IN 46206

Kr. H. N. McGinnis
Vice President, Operations
Louisville Gas and Electric Co.
P. O. Box 32010
311 W. Chestnut Street
Louisville, KY 40232

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### TRI-STATE SYNFUELS ADDRESS LIST

Mr. J. P. Pace General Manager Owensboro Municipal Utilities 115 East 4th Street Owensboro, KY 42301

Mr. B. Perry
Manager
Henderson Municipal Power & Light
Fifth & Water Street
P. O. Box 8
Henderson, KY 42420

Mr. Virgil E. Peterson
Executive Vice President
& General Manager
Hoosier Energy Division
Indiana Statewide Rec, Inc.
P. O. Box 908
Bloomington, IN 47402

Mr. G. A. Rice President Electric Energy, Inc. P. O. Box 165 Joppa, Ill 62953

Mr. J. A. Vanmeter Director, Power Production Southern Indiana Gas and Electric Co. 20-24 N.W. Fourth Street Evansville, IN 47741

Mr. A. H. Warnke Vice President Power Supply Central Illinois Public Service 607 East Adams Street Springfield, IN 62701

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EASTERN

P. M. Anderson M. D. Burke

FROM: L. S. Rathbun

INTEROFFICE CORRESPONDENCE

CO/DIV: Synfue1s

DATE: March 16, 1982

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P. M. Anderson M. D. Burke March 16, 1982 Page three

## LSR/ca

xc: J. M. Hossack J. E. Jones M. N. Kelley W. M. Scriber

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## TEXAS ( **EASTERN**

### INTEROFFICE CORRESPONDENCE

TO:

Distribution\*

CO/DIV: Synfuels

FROM:

L. S. Rathbun W

DATE:

March 3, 1982

SUBJECT: Meeting with Big Rivers Electric Corp.

This is to confirm our meeting with Big Rivers Electric Corp. at 8:30, March 10 in their Henderson offices.

The meeting was set up through Paul Schmitz, Vice General Manager of Finance but also attending will be:

W. H. Thorpe, General Manager
B. S. (Scott) Reed, Vice General Manager of Engineering Floyd Mitchell, Manager of Production

The purpose of the meeting is to explore, in a general sense, possible arrangements between Tri-State and Big Rivers regarding coal supply (i.e., fines disposition) and electric generation (i.e., possible cogeneration or purchase of power).

more will follow if we can scare some up

Attached is some background information on Big Rivers.

LSR/ca attachments

\*M. D. Burke J. E. Jones

M. N. Kelley

xc: P. M. Anderson

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		EXISTING PLANTS				EXISTING PLANTS				•	PLANNED PLANTS			
Nep Loc		Capacity '	Annual Coal Consumption Tons (000)	Quality (Jan '8))	Location	Source of <u>Coal</u>	Price Paid \$/Ton (Jan '81)	Ca 	pacity KWI	Coal Consumption	Location	Start up Date		
	BIG RIVERS ELECTRIC CORP.					•								
KY1	Reid (Owned by Henderson 1,2,3 Hunic. Operated by Big Rivers Elec.)	370	1,110	wt% Sulf 2.35 Btu/1b. 11,400	Sebree: Kentucky	Kentucky Indiana		class	hy					
KYZ	Green 1,2	480	1,440	wt% Sulf 4.21 Btu/1b. 10,900	Sebree: Kentucky	Kentucky		,						
KY7	Coleman 1,2,3	522	1,566	wt% Sulf 2.28 Btu/1b 11,200	Hawesville, Kentucky	Kentucky Ohio Indiana								
KYB	D. B. Wilson 1.2							8	80	2,640		1984 1986		

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### BURAL ELECTRIC COOPERATIVE SYSTEMS

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## company correspondence

### **TEXAS GAS**



**DEVELOPMENT CORPORATION** 

to Mr. D. L. Newberry

from M. N. Kelley WNK

Hendrix | Gregory

Morettee | March 11, 1982 | March 11,

subject:

. . . .

Tri-State Synfuels Project
Meeting with Big Rivers

On March 10, Rathbun, Kelley, and J. E. Jones (KDOE) met with Big Rivers Electric Corporation to discuss their interest in purchasing excess coal fines from Tri-State.

Highlights:

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Mr. D. L. Newberry March 11, 1982 Page 2

c - J. W. MacKenzie H. D. Jones E. Taliaferro File 21-020-18

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TO SUSSILIBRIES OF THE RESERVE OF THE REPORT OF THIS REPORT



BIG RIVERS ELECTRIC CORPORATION / P. O. BOX 24, HENDERSON, KY. 42420 / Telephone 502-827-2561

Serving Western Kentucky

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Linda S. Rethben Manager - Project Development

## TRI-STATESYNFUELSCOMPANY

April 23, 1982

LSR/ca

xc: M. D. Burke M. N. Kelley

> USE ON DISCLUBING OF REPORT BASIS 25 SURVEY TO THE RESTRICTION ON THE

# Coal Handle y System

Assumer : (1) 30 % of total coul, law de 4 14" material ("fines") (3) 5% Additional fines are generated between time coul enters plant boundary" (Conveyed Coal Enters plant boundary" when conveyer actually crosses onto plant site (D. railed coal "laters plant foundary" when it is put onto the Conveyor Coming from the coal unloading facility rive Storage = total loal squared ( = Coarse coal (max = 70% of F) ( + ( ) = fine cral ( max = 30 % of ( ) Therefore, to be in "fines balance," (2) = 50% of (R) : Notume of Thwhend Coal purchased (i.e., "fines" coal) (4) = wolume by non-Towhead tral purchased (B) +(D) (65)(E) + (.75)(G) =

\* still contains some livel of fines (> % than acceptable to huigi)

2/1/82

company correspondence

TEXAS GAS

**−**₩

**DEVELOPMENT**CORPORATION

MICHAEL D. BURKE

to Mr. M. N. Kelley

date December 9, 1981

from P. A. Fedde

subject:

### Coal Preparation Diagram - Tri-State Plant

Attached is a diagram of a method for handling coal for the Tri-State plant that will minimize fines and yet reject rock and mine gob that will arrive with the coal. A rotary breaker at the plant under Tri-State control will insure rejection of rock and hard material such as "sulfur balls." A breaker at the mine is needed to reject large rock and shale pieces.

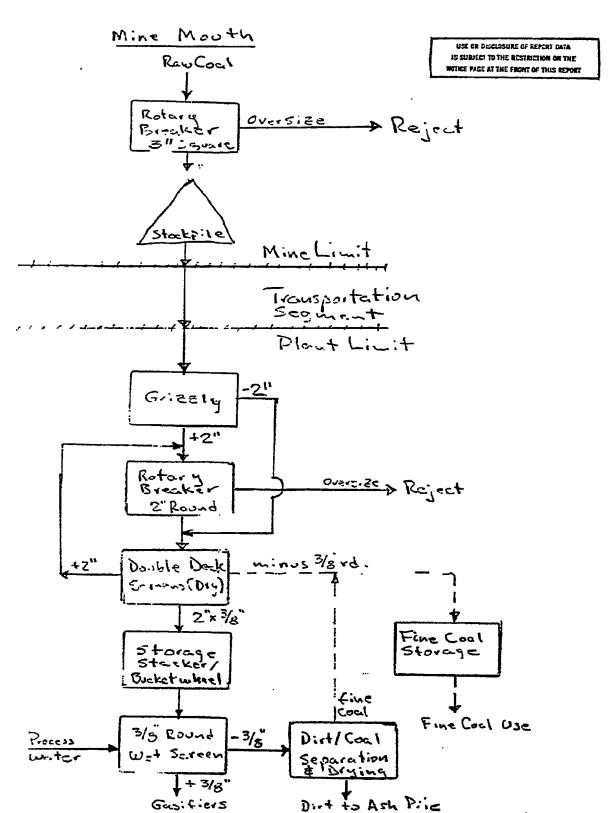
A wet screening operation immediately before the coal is transported to the gasifier bunker facilitates rejection of any gob that might have been mixed with the coal. This scheme should permit delivery of coal of rather constant specifications to the gasifiers. I plan to discuss our coal preparation problems with other experts in the industry to be able to help with the Tri-State design.

vl

c: Dr. Anton Roeger
Mr. M. D. Burke

USE OR DISCUSSURE OF REPORT BUTCH IS SUBJECT TO THE RESTRICTION ON THE MOTICE PAGE AT THE FRONT OF THIS REPORT Tri- State Coal Preparation Scheme

P.A. Fedde 12-7-81



earlier Lurgi tests. Ultimately, however, a range of high and low values of the coal characteristics of 13 of these candidate reserves was established and used to set the design parameters. These ranges were given to both Lurgi and Fluor for their respective design work. Following are exhibits which help document this process:

- o Exhibit X-Q: Lurgi meeting notes.
- o Exhibit X-R: Memos describing the statistical support of the range.
- Exhibit X-S: Quality characteristics of the reserves analyzed.
- o Exhibit X-T: Correspondence with Lurgi regarding design ranges.

### 3.7 COAL CONTRACTING

The following exhibits document the information gathered to assist Tri-State in developing its contracting position and draft contract:

- o Exhibit X-U: Discussion memo of coal contracting terms.
- O Appendix, Exhibit XIX-F-3, Coal Suppliers Section: List of coal contracts available from Washington Service Bureau (noted contracts are on file in Tri-State's files).
- o W. M. Scriber attended a coal contracting seminar presented by Coal Outlook in Denver on October 26 & 27, 1981. A copy of the presentation and handouts is available in Tri-State files.
- O A Zinder-Neris Coal contracting seminar was held for Texas Eastern Synfuels and Texas Gas Synfuels in Houston on December 3, 1981. A copy of the presentation and handouts is available in Tri-State files.
- O Appendix, Exhibit XIX-F-4, Coal Suppliers section: A sample coal contract.

#### 3.8 COAL TRANSPORTATION

Only preliminary discussions were held in the area of coal transportation. Following are exhibits which document Tri-State's activity regarding railroad and barge options for transporting coal feedstock:

### **AGENDA** Tri-State Synfuels Project Coal Design Parameters Meeting December 1, 1981

Participants: Tri-State, Lurgi, Fluor & Sasol representatives.

••

Objective: To determine coal specifications for Lurgi performance guarantees; to determine coal specifications for gasifier design; and to develop guidelines to be used in the evaluation of the costs and probable performance of the coal reserves currently being evaluated as potential suppliers to Tri-State.

Agenda Item	Participant(s)
<ol> <li>Discussion of seven "design coals" and how they will be used to establish the gasifier design.</li> </ol>	Tri-State & Lurgi
. Should we specify tested coals for gasifier design or can we give a range on all coal quality characteristics instead?	
. Should we choose seven "design coals" if we will actually have fewer coals to gasify?	
Differences in the "design coals" and the reserves we are actually considering to purchase.	
II. Discussion of the relationship of "design coals" to Lurgi performance guarantees.	Tri-State & Lurgi
. Determination of design parameters for performance	

- guarantees.
- . Description of and timing for design information to be submitted by Lurgi to Tri-State (for input into Fluor work program).
- III. Discussion of specific coal characteristics and how they affect gasifier design, cost and operation; and acceptable ranges for these characteristics and variations within the ranges.

A77

- . Btu
- . Ash
- . Fixed Carbon
- . Chlorine
- . Oxygen
- . Free Swelling Index
- . Ash Fusion temperatures
- IV. Discussion of coal characteristics which cause steam & oxygen consumption to vary.

Lurgi

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V. Determination of either seven "design coals" or ranges for coal characteristics for design purposes.

Tri-State

VI. Review of coal reserves being considered by Tri-State, elimination of unacceptable coals (given results of V, above), and ranking of remaining reserves.

Lurgi, Sasol,

& Fluor

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### INTEROFFICE CORRESPONDENCE

TO:

Distribution\*

CO/DIV: Synfuels

FROM:

W. M. Scriber

DATE:

December 21, 1981

SUBJECT: Draft of Notes from Lurgi/Sasol Coal Design Meeting

Attached is the first draft of the subject meeting notes. Please return your comments to me by January 1, 1982, for the final rewrite.

WMS/ca

\*0. D. Adams
P. M. Anderson
M. D. Burke
M. N. Kelley
L. S. Rathbun

A. Roeger

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### Major Conclusions and Observations from the Coal Design Meeting

December 1, 1981 1 Houston Center Building Conference Room 45A

### ATTENDEES:

<u>Lurgi:</u>

Peter Herbert - Manager Coal Gasification Karl Cleve - Project Manager

<u>Sasol:</u>
Jos Ingram - Technical Manager Consulting
Tol Jooste - Water Chemist

Fluor:

Bob Cates - Supervisor Process Engineering Jim Hammond - Manager Process Steve Kremenik - Lead Process Engineer John Kruse - Project Director

TE/TG/TS Paul Anderson Mike Burke Paul Fedde Howard Homeyer **Bob Jones** Marc Kelley David Longshore Linda Rathbun Tony Roeger Bill Scriber

Jack Wooten

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## TEXAS ( **EASTERN**

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**CENTRAL FILES** 

INTEROFFICE CORRESPONDENCE

TO.

Distribution\*

CO/DIV: Synfuels

FROM:

L. S. Rathbun

DATE: January 13, 1982

SUBJECT: Statistical Analysis of Selected Coal Reserves

Bill Scriber and I have evaluated and rated the thirty-three coal reserves which have been offered as sources of supply to the Tri-State Project. In this process we eliminated seven reserves and rated an additional seven as low potential. Thus there are only nineteen reserves which we recommend Tri-State continue to evaluate and consider as sources of supply. (See my memo of January 13, 1982 on this subject.)

Attached is a memo from Bill Shoff which presents an analysis of the high, low, average and standard deviations of the coal quality characteristics of these nineteen reserves. Because some of the reserves are offered on a washed basis, two separate analyses were conducted: one on the washed coals and one on the raw coals. These analyses were conducted to assist us in setting realistic design ranges for the Lurgi gasifiers based on the coals we ultimately will be purchasing.

Also presented for general reference is a similar analysis of the thirteen coals tested by Lurgi plus the Sasoi test coal and two Towhead Island samples. This analysis should not have any bearing on our setting of gasifier design ranges.

On Friday at 10:00 in the Tri-State conference in \*e will discuss the ranges presented in the attached memo and determine the appropriateness of setting design ranges at this time.

LSR/ca attachment

\*O. D. Adams

P. M. Anderson

M. D. Burke

A. de Leon

J. M. Hossack

R. A. Jones

M. N. Kelley

A. Roeger

xc: W. M. Scriber W. N. Shoff

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# TEXAS () EASTERN

#### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun/W. M. Scriber

CO/DIV: Synfuels

FROM:

W. N. Shoff

DATE:

January 13, 1982

SUBJECT: Statistical Analysis for Coal Reserves and Test Coals

Attached is the statistical analysis for the nineteen selected coal reserves, and the sixteen test coals.

Reserves were offered as washed, raw, or both. Of the nineteen selected reserves, ten are raw and nine are washed. These were grouped together and a statistical analysis was done on each group.

The supply coal characteristics were weighted according to each reserve's percentage of the likely total production. The tables present the actual high/low sample values as a range, along with the weighted mean. Statistically, ±2s (two standard deviations) should encompass 95.5% of the possible values (assuming a normal distribution) and 68.3% of the values should fall between ±1s (one standard deviation). These values were calculated and are presented.

For comparison, separate averages, standard deviations, and high/low ranges were calculated for the 13 Lurgi test coal, plus the Sasol test coal, and the two Towhead Island samples. These test coals were not weighted.

The nineteen selected coal reserves, their production, and weights are attached for reference. The test coals and their sources are also attached.

WNS/ca attachments

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### COAL RESERVES IN CATEGORY I AND II WHICH ARE OFFERED AS RAW COAL

Reserve #	Reserve Name Company County/State Seam	Production (MMTon)	Weight
3R	Alston 1E Peabody Ohio/KY KY #9	<b>1.3</b>	8.074 -
5R	Hartwich Peabody Muhlenberg/KY KY #9	1.3	8.074
15	Henderson P&M Henderson/KY KY #9	1.2	7.453
16	Sebree P&M Webster/KY KY#9	1.2	7.453
6	Kaskaskia Peabody St. Clair/IL IL #6	4.2	<b>26.087</b>
7	Warrick Peabody Warrick/IL IL #5	1.0	6.211
10	Tamaroa Zeigler Perry/IL IL #6	2.0	12.422
1	Henderson Peabody Henderson/KY KY #9	2.6	16.149
4	Alston 1W Peabody Muhlenberg/KY	. <u>1.3</u> 16.1	8.074 100.0
	KY #9	Left to recognit	WNS

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# COAL RESERVES IN CATEGORY I AND II WHICH ARE OFFERED AS WASHED COAL

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Reserve #	Reserve Name Company County/State Seam	Production (HMTon)	<u>Weight</u>
17	Okamville Freeman United Washington/IL IL #6	1.8	10.465
20	White County Hapco White/IL IL #5 & #6	3.0	17.442
24	Francisco Consol Gibson/IN IN #5	1.8	10.465
25	Qaktown Consol Knox/IN IN #5	1.9	11.046
27	Hamilton #2 Island Creek Union/KY KY #9	0.8	4.651
28	Highland Island Creek Union/KY KY #9	0.8	4.651
12	Denmark AMAX Perry/IL IL #6	3.0	17.442
31	Elk Creek Island Creek Hopkins/KY KY #9	1.3	7.558
32	Fies #9 Island Creek Hopkins/KY KY #9	0.8	4.651
33	Crescent Island Creek Muhlenberg/KY KY #9	2.0 17.2	11.628 100.0 MMS 01/13/82

### STATISTICAL ANALYSIS OF TEST COAL CHARACTERISTICS

	LOW	-28	<u>-1s</u>	HEAM	+15	<u>+2s</u>	натн	
BTU - AS RECEIVED	8161	7927	9058	10189	11320	11320	11962	. 1131
BTU - MAF	13716	13723	13973	14223	14473	14723	14707	250
PROXIMATE - AS RECEIVED								
. MOISTURE . ASH . YOLATILE . FIXED CARBON	4.60 11.30 26.80 30.90	4.21 7.34 26.20 28.74	6.51 13.29 29.23 34.29	8.81 19.64 32.26 39.84	11.11 25.19 35.29 45.39	13,41 31,14 38,32 50,94	11.60 30.90 37.00 48.70	2.30 5.95 3.03 5.55
ULTIMATE - AS RECEIVED								
MOISTURE CARBON HYDROGEN MITROGEN CHLORINE SULFUR ASH OXYGEN	4.60 44.94 3.28 .69 .01 1.10 11.30 4.48	4.21 43.75 3.20 .57 .00 1.18 7.34 3.11	6.51 49.90 3.57 .82 .02 2.32 13.29 4.94	8.81 56.21 3.94 1.07 .099 3.46 19.64 6.77	11.11 62.44 4.31 1.32 .17 4.60 25.19 8.60	13.41 68.67 4.68 1.57 .23 5.74 31.14	11.60 65.70 4.70 1.56 .23 4.72 30.90 11.32	2.30 6.23 .37 .25 .07 1.14 5.95 1.83
FREE SWELLING INDEX	1.00	0,80	1,93	3.06	4.19	5.32	5.00	1.13
CAKING INDEX	10.50	10.17	11.93	13.69	15.45	17.21	16.50	1.76
ASH FUSION (REDUCING) 10 H = N (SOFTENING) H = NM (HENISPHERE) FLUID	2000 1976 1994 2220	1944 1904 1950 2131	2003 2023 2072 2242	2062 2142 2194 2353	2121 2261 2316 2464	2180 2380 2438 2575	2190 2460 . 2510 2700	59 119 122 111
ASH FUSION ( OXIDIZING)  10 H = W (SOFTENING) H = WW (HENISPHERE) FLUID	2150 2201 2300 2400	2122 2126 2247 2349	2202 2242 2336 2425	2262 2358 2425 2501	2352 2474 2514 2577	2442 2590 2603 2653	2460 2700 2700 2700	80 116 89 76

s = standard deviation

WKS 01/13/82

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STATISTICAL AMALYSIS

OF COAL SUPPLY CHARACTERISTICS

	LON	-21	<u>-1s</u>	HEAN	+19	+25	HIGH	· <u> </u>
STU - AS RECEIVED	9170	8629	9378	9927	10476	11026	11150	549
	13826	13650	1.3930	14210	14490	14770	14668	280
410 - 100								
PROXIMATE - MOISTURE ASH VOLATILE FIXED CARBON	7.40	7.71	9.27	10.83	12.39	13.95	12.70	1.56
	15.60	15.39	17.32	19.25	21.18	23.11	22.20	1.93
	27.60	25.91	27.59	29.27	30.95	32.63	33.90	1.68
	37.90	36.65	38.65	40.65	42.65	44.65	- 43.20	2.00
ULTIMATE - MOISTURE CARBON HYDROGEN HITROGEN CHLORINE SULFUR ASM OXYGEN	7.40 52.29 3.67 .77 .009 3.71 15.60 4.10	7.71 50.84 3.50 .69 .01 3.75 .39	9.27 53.04 3.70 .84 .06 3.90 17.32 4.25	10.83 55.24 3.69 .99 .11 4.05 19.25 5.25	12.39 57.44 4.08 1.16 4.20 21.18 6.24	13.95 59.64 4.27 1.29 .20 4.35 23.11 7.23	12.70 59.87 4.26 1.18 .17 4.20 22.20	1.56 2.20 .19 .15 .05 .15 1.93
FREE SHELLING INDEX	2.00	1.12	1.66	2.60	3.34	4.08	4.00	.74
ASH FUSION (REPUCING) ID II U (SOFTENING) H = UM (HEMISPHERE) FLUID	1900	1907	1933	1959	1985	2011	2035	26
	2010	1976	2012	2049	2085	2121	2095	36
	2045	2014	2052	2069	2127	2165	2145	38
	2160	2118	2174	2229	2285	2301	2365	56
ASM FUSION (OXIDIZING)  ID  N - W (SOFTENING)  N - Y N (MEMISPHENE)  FLUIO	2215	2164	2236	2309	2381	2453	2445	72
	2330	2264	2334	2405	2475	2545	2550	70
	2370	2310	2378	2446	2514	2582	2570	68
	2466	2436	2484	2532	26 <b>80</b>	2628	2620	48

s - standard deviation

WIS 01/13/02

STATISTICAL ANALYSIS
OF COAL SUPPLY CHARACTERISTICS

WASHED COAL

BTU - AS RECEIVED STU - MAF PROXIMATE (AS RECEIVED)	10613 14051	-2s 10550 13972	-1s 10980 14201	<u>HEAN</u> 11410 14430	+1s 11840 14659	+2s 12269 14887	HIGH 12126 14603	430 229
MOISTURE     ASH     VOLATILE     FIXED CARBON  ULTIMATE (AS RECEIVED)	8.60	8.63	10.61	12.59	14.57	16.55	15.50	1.98
	7.50	7.28	7.82	8.37	8.92	9.47	9.00	.55
	34.50	33.74	34.81	35.88	36.95	38.02	37.30	1.07
	40.20	39.32	41.22	43.12	45.02	46.92	46.00	1.90
MOISTURE CARBON HYDROGEN HITROGEN CHLORINE SULFUR ASH OXYGEN FREE SMELLING INDEX  ASH FUSION (REDUCING)	8.60	8.63	10.61	12.59	14.57	16.55	15.50	1.98
	59.96	57.67	60.34	63.01	65.68	68.35	66.99	2.67
	4.33	4.26	4.36	4.46	4.56	4.66	4.63	.10
	.95	.93	1.05	1.17	1.29	1.41	1.29	.12
	.04	.00	.06	.15	.24	.33	.31	.09
	2.69	2.46	2.66	2.86	3.06	3.26	3.30	.20
	7.50	7.27	7.82	8.37	8.92	9.47	9.00	.55
	5.33	5.18	6.29	7.40	8.51	9.62	8.44	1.11
. ID . H = W (SOFTEHING) . H = ¼ W (HEMISPHERE) . FLUID ASH FUSION (OXIDIZING)	1900 2000 2075 2220	1887 1983 2043 2166	1930 2047 2103 2243	1973 2111 2163 2320	2016 2175 2222 2396	2059 2239 2202 2473	2031 2180 2249 2405	43 64 60 77
. IO	2000	2010	2134	2258	2383	2507	2345	124
. H = W (SOFTENING)	2150	2163	2276	2389	2502	2615	2470	113
. H = ¼ W (HEMISPHERE)	2230	2230	2338	2446	2554	2672	2510	108
. FLUID	2400	2406	2473	2540	2607	2674	2600	67

s - standard deviation

WHS 01/13/82

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# TEXAS () EASTERN

#### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun

CO/DIV: Synfuels

FROM:

W. N. Shoff WS

DATE: February 1, 1982

SUBJECT: Statistical Analysis of Coal Characteristics: New Reserve Base

Two additional raw coals have been added to the group of coal reserves used as the basis for gasifier design ranges. As you can remember, statistical analysis of coal characteristics was originally prepared using the nine raw reserves that fell in categories I and II (LSR memo January 13, 1982).

At the meeting of January 15, it was decided to look more closely at the local Kentucky coals. Two reserves that were not included in the original raw analysis were added because of their relative proximity to the Tri-State site.

The two additional raw coals and the statistical analysis that includes them are attached (Table 1, Table 2 respectively). Both reserves are Island Creek. The Highland reserve has a high percentage of sulfur (4.96%) but is only 15 miles from the plant site. It is adjacent to and partially overlaps the Towhead Island reserve. The Crescent reserve has a slightly high sulfur percentage (4.43) and is 58 miles southeast of Henderson.

WNS/ca

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Table 1

Reserve Name Company County/State	Highland Island Creek Union/KY	Crescent Island Creek Muhlenberg/KY
Mining (New/Old) Seam # of Mines Annual Capacity Mining Method Recoverable Reserves	New KY #9 2 @ .4MMT Cont. 39MMT	New KY #9 2 @ 1.OMMT Cont, Cov, LW 68MMT
Transportation Mileage Mode(s) Origin	15 Rail Truck	58 Rail Barge
Quality Btu - as received - Dry - MAF	9,908 10,557 14,549	10,512 11,445 14,499
Proximate (Raw/Washed) Moisture Ash Volatile Fixed Carbon TOTAL	RAW 6.1% 25.8 32.0 36.1 100.0%	RAW 8.3% 19.3 33.2 . 39.3 100.0%
Sulfur	4.96%	4.43%
Chlorine	0.15%	0.06%
Oxygen	5.4%	4.8%
FSI	3	3
Hardgrove / % Moist.	55/NS	57/NS
Ash Fusion (Reducing)  ID  H = W (Softening)  H = ½W (Hemispherical)  Fluid	2,000 2,180 2,240 2,360	2,010 2,180 2,220 2,360
Ash Fusion (Oxidizing)  ID  H = W (Softening)  H = ½ W (Hemispherical)  Fluid	2,300 2,430 2,470 2,540	2,270 2,420 2,460 2,560
F.O.B. Mine Price	N/A	N/A

USE OR CISCLOSURE OF REPORT DATA IS SUBJECT TO THE RESERVENCES ON THE MOTICE PAGE AT THE FRONT OF THIS REPORT TABLE 2

			Tabl TRI-STATE	SYNFUELS	EXHIB	IT X-S	WMS - 2
Reserve Home Company County/State	(1) Henderson Peabody Henderson/KY	(2) Panama Peabody Henderson/KY	(3) Alston BE Peabody Ohlo/KY	OAL RESERVES  (4) Alston IN Peabody Hullenberg/KY	(5) Herlwich Peabody Huhlenberg/KY	(6) Kaskaskia Peabody St. Clair/it.	(7) Harrick Peabody Harrick/III
Mining (New/Old) Seam # of Hines Annual Capacity Hining Hethod Recoverable Reserves							},
Transportation Hileage Hode(s)							1 1
Origin							
Quality BTU - As Received - Dry - MAF							
Proximate (Raw/Hashed) Holsture Ash Yolatile Fixed Carbon TOTAL							
Sulfur							
Chierine							
Oxygen							
fSt							
Hardgrove/X Hoist							i i i i i i i i i i i i i i i i i i i
Ash Fusion (Reducing) ID H = W(Softening) H = Y W(hemispherical) Fluid							USE ON DISCUSSINE OF REPERT BAIL IS SUBJULY TO THE RECEIVED ON THE ROTICE PAGE AT THE FRANT OF THIS BEY
Ash Fusion (Oxidizing) 10 H = W (Softening) H = 5 V(hemispherical) 7 luid							INC ALXIDOTION ON THE THE ALXIDOTION ON THE THE FRONT OF THIS REPORT

F.O.B. Hine Price

(13)
Cave Coat
P & H
Williamson/IL

(12) Denmark AMAX Perry/1L

Table .

	Table 1								
#	TRI-STATE SYNFUELS CANDIDATE COAL RESERVES (9) (10) (11)								
Reserve Hame Company County/State	M. Vanderburg Peabody Vanderburg/IN	S. Yanderburg Peabody Glbson/IN	Pasey Peabody Posey/111	Pasey Peabody Posey/IN	Tamaroa Zeigler Perry/IL	Delta AMAX Williamson/IL			
Hining New/Old Seam # of Mines Annual Capacity Hining Method Recoverable Reserves									
Transportation Rileage Rode(s)									
Origin									
Quality BIU - As Received - Dry - MAF									
Presidente (Rese/Mashed)  Hotsture Ash Volatite Fixed Carbon TOTAL  Sulfur Chierine									

Hardgrove/% Hols

Ash Fusion (Reducting)
ID
H = W(Seftening)
H = W (Memispherical)
Fluid

Ash Fusion (Oxidizing)
10
H = W(Softoning)
H = 1, W(hemispherical)
Fluid

F.O.B. Hime Price

(20) White County Mapes White/IL

## Table 1

# TRI-STATE SYNFUELS CANDIDATE COAL RESERVES

Reserve Hame Company County/State	(14) Bekaven P & H Union/KY	(15) Henderson P 8 H Henderson/KY	(16) Sebree P & !! Webster/KY	(17) Okawrille Freeman United Hashington/IL	(18) Dehleren Old Ren Dehleren/IL	(19) Greenup Arco Greenup/IL
Mining New/Old Seam F of Mines Annual Capacity Mining Method Recoverable Reserves						
Transportation Hileage Hode(s)						
Origin						
Quality BTU - As Received - Dry - MAF						
<u>Pronimate</u> (Row/Hashed) Holsture Ash Volatile Fixed Carbon TOTAL						
Sulfer		•				•
Chierine						
Ox <del>ygen</del>		*				
FSI						
Hardgrove/S Moist  Ash Fusien (Reducing) 10 H = W(Softening) H • 'b W(hemispherical Fluid	)					
Ash Fusion Oxidizing) ID H = W{Softening} H = 1/2 W{hemispherical} Fluid	1)					

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F.O.B. Hine Price

(27) Hemilton #2 Island Creek Union/NY

Table .

TRI-STATE SYNFUELS

			CANDIDATE	COAL RESERV	ES '	
# Reserve Hame Company County/State	(21) Gibson Mepco Gibson/IM	(22) Pasey Hapco Posey/IN	(23) Hillsbore Consol Monteumery/IL	(24) Francisco Consol Gibson/III	(25) Bektown Consul Knox/III	(26) Hamilton #1 Island Creek Union/KY
Mining New/Old Seem F of Mines Annual Capacity Mining Method Recoverable Reserves						
Transportation Hileage Hode(s)						
Origin						
Quality 510 - As Received - Dry - MF						
Presinate (Raw/Heshed) Roisture Ash Yolatile Fined Carbon TOTAL						
Sulfur						
Chlorino						
Baygen						
FSI		•				
Mardgreve/A Moist <u>Ash Fusion (Reducing)</u> H -M(Seftening) H - h H(hemispherical)  Fluid						
Ach Fusion (Onidizing) IV H = W(Sertening) H = 1, W(hemispherical) Fluid						

F.O.B. Mine Price

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#### TRI-STATE SYNFUELS CANDIDATE COAL RESERVES

```
(32)
                                                                                                                     (31)
                                                                                          (30)
                                                              (29)
                                       (28)
                                                                                                                                              Fles 19
                                                                                                                   Elk Creek
Island Creek
Hopkins/KY
                                                                                    Providence Field
Island Creek
                                                           Providence #1
                                                                                                                                            Island Creek
                                  Highland
Island Creek
Reserve Here
                                                            Island Creek
                                                                                                                                             Hopk ins/KY
                                                                                         Webster/KY
Company
County/State
                                                             Webster/KY
                                  Union/KY
Transportation
Mileage
Mode(s)
    Origin
  Quality
BTU - As Received
- Dry
- SWF
 Proximate (Rev/Noshed)
    Ash
Volatile
Fixed Carbon
TOTAL
     Sulfur
      Chlorine
      Охучен
      F31
      Hardgrave / Moist.
   Asia Fusion (Reducing)
ID
H *WSoftening)
H * 1, W(hemispherical)
Fluid
    Ash Pusten (Oxidizing)
      H = N(Softening)
H = 1 N(hemispherical)
Fluid
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(33)

Crescent Island Creek

Muhlenberg/KY

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F.O.B. Hine Price

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FEB - 4 1982

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CENTRAL FILES

INTEROFFICE CORRESPONDENCE

TO:

Mr. M. D. Burke

CO/DIV: Synfuels

FROM:

Anton Roeger, III

DATE:

February 3, 1982

SUBJECT: Tri-State Synfuels Project

Gasification Coal Property Ranges and Qualitative Impact on Plant Design

The ranges of certain supply coal properties are needed by Lurgi to develop limiting or critical flow rates of gases, solids and liquids. These selected data are provided Fluor in addition to the design (normal) data for development of equipment sizes or modules.

The purpose is to ensure that the plant can produce the required specification methane and M-Gasoline output on a stream-day basis from an input coal quality and quantity specified by Tri-State.

Attached is a summary of the coal quality and critical maximum or minimum data needed by Lurgi. The plant impact is also described.

Please advise if you need any further information.

jf Attachment

1

xc: w/attach.

- P. M. Anderson
- O. D. Adams
- L. S. Rathbun J. T. Wooten

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AR 2/03/82

### CRITICAL LURGI COAL DATA REQUIREMENTS

PROPERTY

MINIMUM MAXIMUM

IMPACTS (LFTH-0065)

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# TRI-STATESYNFUELSCOMPANY

Linda S. Rathbun Managar - Project Dovelopment

February 4, 1982

Mr. Karl Cleve LURGI KOHLE UND MINERALDELTECHNIK GMBH Bockenheimer Landstrasse 42 Postfach 11 91 81 D-600 Frankfurt am Main 1 Federal Republic of Germany

> Re: Gasifier Design Ranges Ref. No. THLF-0080

#### Dear Karl:

Attached are the ranges of coal characteristics to be used for gasifier design purposes. As can be seen, we are furnishing you with minimum and maximum ranges, although we understand that in most instances only one is used in establishing design parameters. No range is currently included for Fischer Assay but we will telex one to you later this week or early next week.

The "design coal" is shown only for reference and is meant to represent the coal on which the Sasol, large-scale coal test was run and upon which Lurgi is developing its material and heat balances. The actual design of the Tri-State plant should be set by the minimum and maximum characteristics since these represent the coals Tri-State will choose its supply from. Accordingly, if the value of the "design coal" is greater or less than the maximum or minimum, use the maximum or minimum since these values are representative of the coal we will actually be purchasing.

The referenced design coal is CT&E's analysis of the coarse cut (i.e., greater than is inch) of the coal used in the Sasol, large-scale coal test. We understand that there is still some confusion over which analysis of this coal is and should be used as representative of the "design coal" but this should not affect the ranges sent to you herewithin. If not resolved earlier, Mike Burke plans on discussing this with you during his upcoming trip to Frankfurt.

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MOTHER PACE AT THE FRONT OF THIS REPORT

Mr. Karl Cleve Page 2 February 4, 1982

If any of these ranges are particularly wide in Lurgi's view and/or have a substantial effect on the cost of the gasifier and other equipment, please let me know. Our ranges were set based on the many coal properties offered to the Tri-State Project; and, if we could significantly lower costs of the gasifiers by narrowing our design range, we might want to do this. I am not proposing to do this since this would limit the number of coal properties which we could consider but it might not be significant.

If you have any question, please give me a call.

L. S. Rathbun

#### LSR/ca

xc: P. M. Anderson

M. D. Burke

A. Roeger

bxc: O. D. Adams

A. de Leon

J. M. Hossack

R. A. Jones

M. N. Kelley

D. C. Longshore

W. M. Scriber

W. N. Shoff /

HIST OR SECTIONARY OF SELECT MAZA IS SUBJECT TO THE RESTRICTION OR THE NOTICE PAGE AT THE FRONT OF THIS REPORT

#### CASIFIER DESIGN RANGES FOR LURGI

Minimum Design Maximum For Design Coal\* For Design BTU - As received MAF Proximate - As received - Hoisture - Ash - Volatile - Fixed Carbon **Intimate** - As received - Moisture " - Carbon - Hydrogen - Nitrogen - Chlorine - Sulfur - Ash - Oxygen - 7 'e Swelling Index Ash Fusion (Reducing) ID H = H# = # Fluid Ash Fusion (Oxidizing) ID H = H H = W

Caking Index (Damm Method)

#### Modified Fischer Assay\*\*

011

Water

Residue

Sas & Loss

Note: Percentages on maximum and minimums will not add up to 190% because each was set independently for each characteristic.

Sample TG-17 (coarse cut of large scale coal test coal) as analyzed by CT&E for Tri-State. Calculated by CT&E - Does not include gas liquor

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NOTICE PAGE AT THE FRONT OF THIS REPORT

LSR 02/01/82

# TEXAS ( ISTERN Francision Constant - Lungie F.E.-Lungie

	2/5/82	TIME	TELETYPE NO. 41236-330 LG D
O:		D MINERALOETECHNICK CMBH · ERAL REPUBLIC OF GERMANY	CHARGE NO.

TEXT:

SUBJECT: TRI-STATE SYNFUELS PROJECT

COAL REACTIVITIES AND FISCHER TARS

NO. TALF-0083

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FEB - 8 1982

INCLUDED HEREWITH IS A LIST SHOWING LURGI REACTIVITIES AND FISCHER TARS
WHICH WILL COMPLETE THE TRANSMITTAL OF COAL DATA FOR THE GASIFICATION
DESIGN RANGES SENT IN THLF-0080.

THE FISCHER TARS HAVE BEEN REPORTED FROM TWO SOURCES - LURGI AND CT&E.

PLEASE NOTE THE DIFFERENT REPORTING BASES WHEN YOU SELECT THE MAXIMUM.

PLEASE ADVISE IF YOU NEED ANY OTHER DATA.

BEST REGARDS.

ANTON ROEGER, III

TEXAS EASTERN SYNFUELS

bxc: P. M. Anderson

M. D. Burke

O. D. Adams

L. S. Rathbun

J. T. Wooten

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#### REACTIVITY AND FISCHER TAR

TEX.EASTERN LURGIFLETH DESIGNATION REPORT NO. FISCHER TAR **CURGI** SASOL LURGI(b) MINE REACTIVITY <u>0:-</u>

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CT&E ANALYSIS ON MODIFIED FISCHER ASSAY, AS RECEIVED BASIS. URGI ANALYSIS ON AIR-DRIED BASIS. LOARSE SAMPLE CHLY.



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FEB 17 1982

**CENTRAL FILES** 

TRI-STATESYNFUELSCOMPANY

Linda S. Rathban Managur - Project Development

February 16, 1982

T.E.-Lurge

Mr. Karl Cleve LURGI KOHLE UND MINERALOELTECHNIK GMBH Bockenheimer Landstrasse 42 Postfach 11 91 81 D-600 Frankfurt am Main 1 Federal Republic of Germany

Re: Tri-State Synfuels Project

Ultimate Analyses Ref. No. THLF-0085

#### Dear Karl:

Per your discussion with Tony Roeger, following are the ultimate analyses for the three coals which best match the maximum design range for Chlorine, Nitrogen and Sulfur, independently. Since our maxima were set based on a statistical analysis of the coals we may purchase, no specific coal necessarily matches the maximum perfectly. These analyses are on an as-received basis. It is my understanding that you need these on a DAF basis and that you will convert them to such.

(1) Ultimate analysis for coal which best matches the maximum for chlorine (Peabody #6 Kaskaskia coal); percent by weight, as received basis:

Moisture	12.7
Carbon	53.34
Hydrogen	3.75
Nitrogen	<b>.9</b> 6
Chlorine	.17
Sulfur	4.02
Ash	21.0
Oxygen	4.1

USE OR DISCLOSURE OF REPORT BAZA IS SUBJECT TO THE RESTRICTION ON THE WIDNES PAGE AT THE PROMIT OF THIS REPORT (2) Ultimate analysis for coal which best matches the maximum for Nitrogen (Island Creek Crescent Coal); percent by weight, as received basis:

]

Moisture	8.15
Carbon	<b>57.7</b> 7
Hydrogen	4.1
Nitrogen	1.37
Chlorine	.06
Sulfur	4.43
Ash	19.33
Oxygen	4.79

(3) Ultimate analysis for coal which best matches the maximum for Sulfur (Island Creek Crescent Coal); percent by weight, as received basis:

Moisture	8.15
Carbon	<b>57.77</b>
Hydrogen	4.1
Nitrogen	1.37
Chlorine	.06
Sulfur	4.43
Ash	19.33
Oxygen	4.79

If you need further clarification, please call.

#### LSR/ca

xc: P. M. Anderson M. D. Burke R. A. Jones A. Roeger

bxc: O. D. Adams

J. M. Hossack M. N. Kelley

D. C. Longshore W. M. Scriber W. N. Shoff

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#### Synopsis and Comments from a Review of Coal Contracts

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#### Important Terms of Coal Contracts

- A. Term of supply agreement
  - Contracts vary in term from 3 to 25 years
  - Contracts contain options to extend life
- B. Delivery Schedules

1

- Annual volumes usually specified in tons
- Monthly or weekly delivered volumes to be equal
   Generally ± 5-10% variation in volume to be specified by buyer
- 4. Annual volumes to be specified in advance by buyer
- If seller cannot deliver for reasons other than force majeure, then seller picks up cost of other coal secured by buyer to keep plant operating at capacity.
- C. Source, Substitute, Point of Delivery, Title, Loading
  - 1. Seller specifies mine or mines and dedication of reserves sufficient to handle annual volume during contract term
  - 2. Seller usually has right to substitute coal if quality is acceptable and no change in cost
  - 3. Delivery to buyer is generally FOB loaded into the transportation means be it barge, train or truck at which point the title passes to the buyer. A conveyor situation had delivery and title change taking place at buyers live coal pile
  - Seller provides loading facilities and a turnaround time is specified
  - 5. Buyer usually provides transportation means of specified size and quantity.

#### D. Quality of Coal

- Important quality specifications are identified ie. size, calorific value, moisture, sulfur, chlorine and ash temperature
- Rejection points are also specified
- Usually quality averages of a barge load or train load or monthly deliveries are used to determine if coal exceeds rejection limits
- 4. If rejection limits are exceeded buyer may refuse to accept the coal or take the coal but withhold payment.
- Seller usually has time limit to resolve rejection coal problem after that a coal must be provided to buyer of acceptable quality and seller picks up any cost increase along with increase in transportation.

#### E. Base Price for Coal

- 1. Most contracts specify an initial base price FOB delivery point
- 2. Composition of base price is provided by cost group and mils per ton
- 3. Base cost covers seller costs plus profit

USE OR DISCLOSURE OF REPERT DATA
AS SUBJECT TO THE RESTRICTION ON THE
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4. Most contracts are base-price plus escalation

#### F. Base Price Revisions

. Components generally used for revision purposes follow

a. wages of employees represented by labor unions

- wages for those involved as administrative, supervisory, technical or clerical employees not represented by a labor union
- rates of payment to welfare or employee benefit funds contained in labor union agreements

d. insurance premium imposed by law or contract

e. all taxes excluding Federal Income Tax

- f. unit costs of materials, supplies, power, repairs and explosives
- g. laws, regulations and ordinances affecting cost of mining, producing, preparing and delivering coal

h. royalty payments

i. changes in stripping ratios if applicable

2. Changes in cost may be calculated by using various Consumer Price Indices or actual known costs divided by units of production

3. Examples of costs revisions are generally provided

4. Changes to reflect inflation or deflation

- a. Some contracts specify a change in the base price to reflect changes in items not mentioned above in items la through 1i.
- usually as a mil per ton value for every point change in, for instance, the wholesale price index from the base index value
- 5. The frequency of revisions allowed is specified say, two revisions/year

There are provisions to provide corrections for duplication of escalations

7. Seller must document in detail any base cost revisions and will be subject to approval by Buyer. If disagreement occurs then usually is referred to an independent CPA firm for opinion.

#### G. Weighing, Sampling and Analysis

1. Coal weighing takes place at point of delivery

2. Weights are avaialable for inspection by Buyer

3. Weights are tested periodically at expense of Seller

4. Bill of lading is prepared for each barge, train car or truck

5. Sampling done according to ASTM methods

- Usually 3 samples taken for Sell, Buyer and the third to be held or sent to independent lab
- H. Billing and Payment, Adjustment for Calorific Value

1. Billing to be specified, manu times twice per month

- Payment usually to be made by buyer, say 10 days following receipt of invoice.
- 3. Usually there is a calculation developed for price adjustment that recognizes a deviation from the specified calorific value.

#### I. Book and Records

 Both buyer and seller are required to maintain accurate records for all costs relating to operations.

Usually either party has the right to inspect the other parties book and records pertaining to cost factors utilized an computation of Base Price as Revised Base Price

3. Documentation must be provided for Base Price Revisions

4. Either party may request an audit by independent CPA firm

#### J. Force Majeure

- Covers wide range of events and protects both buyer and seller
- 2. Detail is provided as to what events are covered by Force Majeure

#### K. Gross Inequities

1. Gross Inequities are referred to as unusual economic conditions not contemplated by either party at the time of execution

Cross Inequities shall be corrected by mutual agreement

3. Does not relieve parties from continued performance of obligations

#### L. Arbitration

1. Arbitration clauses are frequently written into contracts

#### M. Successors and Assigns

 Contracts are binding upon successors
 Agreements may not be assigned by Seller or Buyer without written consent of other party except in special situations such as securing indebtedness incurred to perform per contract

or in the event or merger, acquisition, sale or divestiture

3. Assignee must assume in writing the obligations of the assignor

#### II. Critical Items in Tri-State Coal Contract

#### A. Limiting of fines generation

What alternatives does mine operator have

a. Mining Methods

b. Separating fines for other customers

2. Options to Tri-State

- a. Sell fines to utilities
- b. Maximum usage of fines in boilers and gasifiers

c. Pullitazation of firms

#### B. Specifications of Coal Quality

1. How important is calorific value

Free swelling index
 Caking tendancy
 Chlorine content

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- C. Take or Pay
  - Take or pay provision must be avoided
     Plant lead time and startup timing
- D. Retain Right to Sell Coal to Others
- E. Analysis Sampling

  - Analysis of coal must be prompt
     Short trip time from plant to mine by barge or train
     Must compare coal analysis against rejection points
- F. Others

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- O Exhibit X-V: Contacts with the Illinois Central Railroad (ICG).
- O Exhibit X-W: Contacts with the Louisville and Nashville Railroad (L & N).
- Exhibit X-X: Contacts with the American Commercial Barge Lines (ACBL).
- Exhibit X-Y: Request regarding the costs of leasing versus owning rail and barge equipment and the costs of maintenance.

#### 3.9 COAL SUPPLIER CONTACTS

A list of coal suppliers and Tri-State major contacts, title/position, mailing address, and phone numbers is presented in Exhibit X-Z.

# TEXAS () EASTERN

#### INTEROFFICE CORRESPONDENCE.

TO:

L. S. Rathbun

CO/Div: Synfuels

FROM:

W. M. Scriber

DATE:

July 24, 1981

SUBJECT:

INITIAL DISCUSSIONS WITH

ILLINOIS CENTRAL GULF RAILROAD

On Monday, July 20, I met with ICG representatives, Mr. Thomas G. Hoback, Director of Coal Marketing and Mr. L. H. Burleson, System Manager-Branch Line Programs, to discuss their plans for track abandonment and how this will impact the Tri-State plant. The following are points of interest discussed during the course of the meeting:

- ICG filed for abandonment of track from West Henderson milepost 16.0 through milepost 97.25 at Princeton in April of this year. ICG estimates that the maximum time required to secure a final ruling would place the decision for abandonment being made in the courts during the 4th quarter of 1982.
- In 1980 a total of 951 railroad cars either originated or terminated on the section of track to be abandoned and there was no coal moved at all. The ICG is incurring approximately a \$200M per year loss to provide service on this trackage.
- The physical condition of this trackage is far below standard. The rails are of light stock and were never intended to support coal traffic. ICG has apparently done little in the way of preventive maintenance and as a result bad ties are common and much of the ballast has eroded. ICG estimates that to restore the track to carry unit coal trains will cost approximately \$250M to \$500 M per mile.
- Two solutions to the abandonment problem exist and Tri-State should pursue both as identified below:
  - 1) ICG has agreed to amend the abandonment filing to reflect that trackage from milepost 16.0 to the plant site will be retained by ICG as "side trackage" through 1983 at a minimum. Following a decision by Tri-State to begin construction ICG estimates a time requirement of two work seasons (April through October) to develop

the trackage to a standard required to carry unit coal trains. To start this amendment process, Tri-State must send to ICG a letter requesting same, stating that rail service is critical to the plant for construction, feedstock and product movement and for these reasons the ICG should consider providing service to the plant.

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> ICG mentioned they have had negotiating sessions with Pyro Mining which is a subsidiary of R. L. Burns Corp. in Evansville, Indiana, regarding purchase by Pyro of a large portion of the subject trackage. 2) Tri-State should approach Pyro to determine their specific intentions as this trackage would provide plant access from a southerly direction.

Overall, ICG appears to be receptive to our project and willing to work with Tri-State to arrive at a mutually agreeable solution to this abandonment problem.

WMS/1f

xc: O. D. Adams
P. M. Anderson
M. D. Burke

D. C. Longshore M. N. Kelley Tri-State File

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## TRI-STATESYNFUELSCOMPANY

Paul M. Anderson Project Director

July 27, 1981

Mr. L. H. Burleson System Manager - Branch Line Programs Illinois Central Gulf Railroad 233 N. Michigan Avenue Chicago, Illinois 60601

Dear Mr. Burleson:

During the week I have had discussions with Mr. Bill Scriber in which he conveyed the important points of the conversations you both had along with Mr. Thomas Hoback in your offices on July 20.

As I understand the situation, Illinois Central Gulf Railroad has filed with the ICC to abandon trackage from Milepost 16.0 in West Henderson, Kentucky to Milepost 97.25 near Princeton, Kentucky. I would like to share with you my concern with this filing since this section of ICG's track in fact crosses the southeastern section of the tract of land where the Tri-State Synfuels plant is to be constructed. To this date we have proceeded with project development assuming that rail transportation would be a critical element in Tri-State's transportation scheme, not only for movement of coal supply but also construction equipment and materials and finished product movement following plant start-up. Although I have little information with which to estimate the volume of rail traffic generated during construction and then operation, I can say that Fluor Engineering is designing the coal receiving/handling equipment assuming that approximately one to three million tons per year of coal will be moved to the plant by rail.

You can now see why Tri-State is interested in maintaining a source of rail transportation to the plant site and as such I am requesting that Illinois Central Gulf consider amending their abandonment filing to retain the trackage which passes through the plant site, as highlighted in blue on the attached map. In referencing the map please note that the tract of land which Tri-State is negotiating to purchase is outlined in red. Eventually, we may amend the boundaries of this site somewhat, but the basic location will remain unchanged.

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Mr. L. H. Burleson Page 2 July 27, 1981

I am assuming this will convey sufficient information for you to begin amendment procedures to your filing; in the event more support is needed, please do not hesitate to call Bill Scriber or myself for any additional data you may require.

Your attention to this matter is most appreciated.

Sincerely,

1. Maladan.

PMA/WMS:ca

Attachment

xc: T. G. Hoback - Illinois Central Gulf

W. M. Scriber

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An IC Industries Company

Illinois Central Gulf Railroad Two Illinois Center 233 North Michigan Avenue Chicago, IL. 60601 (312) 565 1600

July 28, 1981

Mr. William M. Sciber Resource Coordinator Tri-State Synfuels Company P. O. Box 2521 Houston, TX 77001

Dear Mr. Sciber:

Thank you very much for your letter advising of the formation of the Tri-State Synfuels Company which will construct a synthethic fuels plant in Henderson County, KY.

For your information, I am enclosing a copy of the Illinois Central Gulf Railroad's system map and a smaller map showing the general location of the coal mines we serve along with a corresponding list of the coal companies. I hope this information will be helpful to you and if there is anything further that we can be doing to be of assistance, please do not hesitate to let us know.

Kindest regards.

Sincerely,

J. Neubauer

Vice President - Coal

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PMA Distribution 8/3/81:

TS File ( 2 copies)

M. D. Burke M. N. Kelley L. S. Rathbun W. M. Scriber



An IC Industries Company

Minais Centrel Guif Relirend Two Illinois Center 233 North Mishigen Avenue Chicago, H. 80801 3121 565 1800

July 31, 1981

Mr. Paul M. Anderson Project Director Tri-State Synfuels Company P. O. Box 2521 Houston, TX 77001

Dear Mr. Anderson:

Ċ

This has reference to your letter of July 27, 1981 concerning the Tri-State Synfuels plant to be constructed adjacent to the ICG line proposed for abandonment south of West Henderson, KY. We certainly recognize the need for preservation of rail access to the plant site.

As I discussed with Mr. Scriber in our July 20, 1981 meeting, ICG will retain the necessary track south of Milepost 16 in order that service can be provided to the Synfuels plant site. Since that meeting, I have determined that the retention of approximately three miles of track to Milepost 19 will provide rail access to the plant.

We will advise the Interstate Commerce Commission that if abandonment authority for the line between Milepost 16 at West Henderson and Milepost 97.25 near Princeton is granted, the ICG will not exercise its Certificate for the three-mile segment between Milepost 16 and Milepost 19, pending a determination as to construction of the Synfuels plant. I understand from Mr. Scriber that the timetable for a decision on construction is mid-1983.

Very truly yours,

& J. Kullson

L. H. Burleson

System Manager - Branch Line Programs

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## TRI-STATESYNFUELSCOMPANY

Paul M. Anderson Project Director

August 12, 1981

Mr. L. H. Burleson System Manager - Branch Line Programs Illinois Central Gulf Railroad Two Illinois Center 233 North Michigan Avenue Chicago, Illinois 60601

Dear Mr. Burleson:

In reference to your letter of July 31, 1981, I would like to express my appreciation for your decision to retain trackage to the Tri-State plant site in Henderson County, Kentucky.

As the Tri-State project progresses during the coming months Mr. Bill Scriber will be continuing discussions with Illinois Central Gulf to insure that both ICG and Tri-State coordinate their activities in this area of mutual interest.

Once again thank you for your interest in the Tri-State Synfuels Project.

Sincerely.

Molnden

PMA/WMS:ca

xc: W. M. Scriber

bxc: M. D. Burke

M. N. Kelley L. S. Rathbun Tri-State File

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# THE FAMILY LINES SYSTEM

908 West Broadway Louisville, Nankasky 40203

WILLIAM P. SHOEMAKER
Assistant Vice President
Coal Traffic - Development

June 10, 1981

Mailing Address: P. O. Sun 2000 Lautentile, ICY 4000

Mr. W. M. Scriber Resource Coordinator Tri-State Synfuels Company P. O. Box 2521 Houston, Texas 77001

Dear Mr. Scriber:

Mr. Nall asked that I respond to your letter of June 2 requesting certain information regarding the LEN Railroad rail operations in the Tri-State area where your proposed synthetic fuels plant is to be located.

Enclosed is a Family Lines System Map which has an inset depicting the Western Kentucky coal field's proximity to Henderson. The straight-line map of the Evansville Division shows our existing coal shipping points and the coal producers for those points. Unit train shipping points are marked by an asterisk.

Our Pricing Section does not develop general rate schedules for coal movements, but instead determines rates for specific movements, utilizing such factors as: (1) annual tonnage shipped; (2) origin to destination distance and routing; (3) size train; (4) size cars; (5) car ownership; (6) origin loading/ destination unloading time; (7) number of crews used; (8) weighing of cars; (9) and whether track has to be constructed or upgraded. Since your proposed plant site is located on the Illinois Central Gulf Railroad, an arrangement would need to be worked out by our Managements to allow for LEN service. Questions concerning rates for specific coal movements should be directed to Mr. R. L. Sharp, Director, Coal Pricing, telephone 502/587-5669 here in Louisville.

As general information, I have also enclosed a copy of LGN Served Rail-Barge Unloading Facilities; Guidelines for Development of Fast-Load Facilities; and Specifications for Coal Loading Tracks.

We appreciate the Tri-State Project Status Report and look forward to working with you in the future with the hope of providing LEN transportation for your plant's coal requirements.

Please do not hesitate to call me if you have need of additional information.

Sincerely,

W.P. Shoemaker

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Assistant Vice President Coal Traffic - Development

# TEXAS **⊘** EASTERN

#### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun

CO/DIV: Synfuels

FROM:

W. M. Scriber

DATE:

October 22, 1981

SUBJECT: Louisville and Nashville Railroad

I have just talked with William P. Shoemaker, Assistant Vice President - Coal Traffic Development for the L & N Railroad in Louisville, Kentucky. I mentioned to Mr. Shoemaker that Larry Cullen had suggested that L & N and ICG were discussing L & N's access rights to the Tri-State plant.

It was pointed out that Larry Cullen had been in contact with Mr. Shoemaker but that no contact by L & N had been made with ICG. In fact, Shoemaker was curious to the status of our project as to whether it was still viable or not. Following an explanation of the stability of the Tri-State project I suggested to Mr. Shoemaker that we might stop by for a visit in early November, he was very interested in having us come by and felt that this would be a good way for us to discuss L & N's involvement in the transportation scheme for Tri-State. Also, we will be covering at that time various information that would be needed by L & N to give us an estimate on the transportation cost from the coal mine delivered to Tri-State.

I ended the conversation by telling Mr. Shoemaker I would be back in contact when our travel plans were firmed up.

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## TEXAS ( **EASTERN**

#### INTEROFFICE CORRESPONDENCE

TO:

L. S. Rathbun

CO/DIV: Synfuels

FROM:

W. M. Scriber

DATE: March 17, 1982

SUBJECT: Scheduled meeting with American Commercial Barge Lines

A meeting has been scheduled for Monday, March 22, 9:00 a.m. with ACBL in Jeffersonville, Indiana. Dean Jones of Texas Gas will be joining us and will pick us up at approximately 8:30 a.m., Monday and we will ride with him over to the ACBL office. At this point we are scheduled to meet with Mike Hagan of ACBL.

I have asked Dean to request that ACBL provide us with a general overview of the barge transportation industry. Part of our efforts will be to learn as much about the ins and outs of moving coal by barge as possible. Also, I will be providing ACBL with specific origin and destination points for our potential coal movements.

WMS/ca

xc: M. D. Burke

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# TRI-STATE SYNFUELS BARGE TRANSPORTATION ALTERNATIVES DESTINATION FOR ALL ALTERNATIVES IS TRI-STATE PLANT DOCK OHIO RIVER MM 808

Alternative Number	Approximate Origin	Estimated Annual Tonnage
3	Green River MP 76.7	r
4	Green River MP 85.9	<b>←</b> 1.3 mmtpy
4 5	Green River MP 85.2	
6 7	Kaskaskia R-near Fayetteville, IL	1.5-2.0 mmtpy
7	Yankeetown Dock-Ohio River	1.0 mmpty
10	Cora Dock-Mississippi River	1.0 mmpty
11	Shawneetown Dock-Ohio River	1.0 mmpty
15	Ohio River east of City of Henderson	1.2 mmpty
16	Green River 45 miles from Ohio River	1.2 mmpty
20	Ohio River-Mt. Vernon, Indiana	1.5 mmpty
27	Ohio River (at Isl. Crk. Ham. #1 load out)	0.7 mmtpy
28	Ohio River (at Isl. Crk. Ham. #1 load out)	0.8 mmtpy
33	Green River Approx. 90 miles from Ohio River	1.0 mmtpy

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### TRI-STATE SYNFUELS COMPANY

Linda S. Rethbun Manager - Project Development

March 12, 1982

Mr. Mark C. Hungerford PLM, Inc. 50 California Street San Francisco, CA 94111

#### Dear Mark:

Following up on our meeting in Denver, I have developed more specific information on Tri-State's coal and resultant railcar requirements.

Tri-State will consume between 3 and 5 million tons of coal per year (we are currently conducting studies aimed at optimizing the size of the plant). Because we have a somewhat captive reserve nearby from which we will purchase approximately half of our coal and which we will convey to the plant, roughly 1.5-2.5 million tons of coal will be purchased from mines which are served by rail. (Some of the coal sources we are evaluating are served by either barge or a rail/barge combination, but at this time we don't think that they will be our lowest cost sources of supply.) For the purpose of your analysis, you can assume that the total 1.5-2.5 million tons will come from one mine.

The coal mines we are considering are as close as 38 miles and as far as 156 miles from our plant by rail. We are located on a branch of the Illinois Central Gulf Railroad (ICG), just south of Henderson, Kentucky. Our better candidate coal reserves are located on either the L&N Railroad or ConRail. Therefore, all rail hauls will necessitate a "two-line haul" or at least a trackage rights agreement with the ICG.

All of the mines will have unit train loading facilities and we will be able to unload the same at our plant. Our design incorporates the use of bottom-dump railcars. I don't know how many cars we will require but given the distances and volumes above, please use your experienced judgment to estimate a likely volume. Also, we do not know how long the unit trains will be since some of the trains in this part of the country are around 55 cars instead of the traditional 100 cars. Please make an educated assumption on this issue also.

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Mr. Mark C. Hungerford March 12, 1982 Page Two

Given the above information, I would appreciate your estimates of the costs of leasing and maintaining railcars. Also, please address the options that are available to us. If the costs, conclusions, etc., are not particularly different for 1.5 or 2.5 million tons per year, just prepare them for the 1.5 million ton volume. As I said in Denver, I just need some general estimates of costs so we can make a preliminary recommendation of whether to buy or lease cars and whether to maintain them ourselves or contract with the railroads or someone like PLM. I would appreciate as much information as you have available at this time.

Please tell your staff not to hestitate to give me a call for any clarification they need. Thanks, Mark; and, I really enjoyed seeing you again in Denver. The conference was its usual excellent event—I hope it was a success from your viewpoint.

Regards.

LSR:psj

bcc: M. D. Burke

W. M. Scriber

J. M. Hossack

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# EXHIBIT X-Z CUAL SUPPLIERS

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	Telephone
EXXON COAL P.O. Box 2180 Houston, TX 77001	Bob Steffey* Jim de Masi	Account Executive New Development Mgr.	713-656-2340 713-656-5725
MAPCO 1800 S. Baltimore Tulsa, OK 74119	Randolph Jones	Gen. Manager Sales	918-584-4471
1110 Princeton Walk Marietta, GA 30067	Ken Fastwood*	Regional Sales Manager	404-977-2622
ARCO 555 Seventeenth St. Denver, CO 80202	Jim McAndrew* George Findling Chester Bowling	Mgr. Regional Coal Slaes Sr. Process Engineer Sr. Process Engineer	303-575-7842 303-575-7849 303-575-7732
CONOCO 4000 Brownsville Rd. Library, PA 15129	Frank Theodore George Wasson	Manager - Coal Utilization Research Engineer	412-831-6663 412-831-6671
,	John Burdette Timothy Walter	Chief Preparation Engineer Chief Reserve Evaluation	412-831-4000
	David Kritz	Engineer Dir. Environmental Permit	412-831-4475
ACT PROPERTY OF THE PROPERTY O		Reports	412-831-4533
	Bradford Owen Nelson Solow	Manager Environmental Reports Project Engineer	412-831-4030

# EXHIBIT X-Z 3 COAL SUPPLIERS

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	<u>Telephone</u>
Peabody 301 N. Memorial Drive St. Louis, MO 63102	John Smith Gregg Hickstra* Thomas Koetting Robert Griffith	VP - Marketing Ngr Market Development VP - Marketing Services Dir. Customer Service & Utilization	314-342-3400 314-342-3400 314-342-3400 314-342-3400
Pittsburg & Midway 1720 S. Bellaire St. Denver, CO 80222	Bill Dix*	Mgr. Market Development	303-759-6870
	Fred Gatewood	Dir. Underground Mining Proj.	303-759-6752
CONSOL Consol Plaza Pittsburgh, PA 15241	Bob Atwater C. J. Hyers Ron Marcum Buddy Beach William Corder Bob Pusateri	Sr. VP Domestic Steam Sales Ex. VP Sales Dir. Underground Mining Proj. VP Environmental Affairs Asst. VP Technical Mktg. Dist. Sales Mgr Pittsburgh	412-831-4530 412-831-4601 412-831-4365
2400 E. Devon Avenue	John Dailey*	Gen. Sales Manager	312-298-1655
Des Plaines, IL 60018	William Rieland	Dist. Sales Mor Midwest	312-298-1655
AMAX	Gary Root  George Galey Jim McConnell  Use on disclosure of nercest data 18 SUBJECT TO THE RESTAICTION ON THE NOTICE FYCE AS THE FRONT OF THIS REPORT	Dir. Domestic Market Devel.	317-266-3444
105 S. Meridian St.		Ngr. Market Development	317-266 2705
Indianapolis, IN 46225		Mar. Market Development-East	317-266-2590

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# EXHIBIT X-Z COAL SUPPLIERS

# MAJOR CONTACTS

Company & Address	Individue!	Title/Position	Telephone
Zeigler 2700 River Road Des Plaines, IL 60018	Dick Freeman* Hack Shumate Titke Reilly	VP - Sales Sr. VP - Eng. & Planning President	312-299-1980 312-299-1980 312-299-1980
Kerr-McGee Oklahoma City, OK 73125	Les Thompson*	VP - Marketing	405-270-2626
Island Creek P. O. Box 12029 Lexington, KY 40579	Jerry Booher	VP - Sales	606-223-3636
9745 E. Hampden Avenue Sufte 300, Denver, CO 80231	Jack Combes* Larry Muskopf	Mestern Sales Manager Asst. Sales Manager	303-751-0172 303-751-0172
Freeman United 300 W. Washington St. Chicago, IL 60606	Dick Brooks* Larry Cullen Theodore Bean	Sr. VP - Mktg. & Sales VP - Sales Director of Marketing	312-263-2800 312-263-2800 312-263-2800
01d Ben 69 W. Washington St. Chicago, IL 60602	Hank flanting Hanley Williams Use on Disconting of Reform DATA 125 SUBJECT TO THE MEDIUM OF THE MEDIUM OF THE MEDIUM OF THE MEDIUM OF THE MEDIUM	Mgr. Domestic Sales Vice President	312-332-2360 312-332-2360

# EXHIBIT X-Z COAL SUPPLIERS

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	<u>Telephone</u>
P. O. Box 312 Evansville, IN	Timothy Logan Terry Sale	Sales Manager	812-424-9000 812-424-9000
R. L. Burns Corp. 653 S. Hebron Ave. Evansville, IN 47715	George Rumsey	Marketing Manager	812-473-0121
Sahara Coal 332 S. Michigan Ave. Chicago, IL 60604	John Sams	Sales Manager	312-427-4373
Inland Steel 30 W. Monroe Street Chicago, IL 60603	Terry Burton Frederick Croban	Mgr. Coal Raw Materials Corporate Energy Coordinator	312-346-0300 312-346-0300

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# EXHIBIT X-Z Coal Transportation

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	Telephone
1111nois Central Gulf 233 N. Michigan Avenue Chicago, IL 60601	Tom Poback	Director Coal Marketing	312-565-1600
L & N Railroad Co. Louisville, KY	Ira Bell	Gen. Manager Transportation	502-587-5356
The Family Lines System  908 W. Broadway, Rm 400 Louisville, KY 40203	M. Shoemaker Larry Downey	Asst. VP Coal Traffic Devel. Mgr. Coal Traffic Devel.	502-587-5697 502-587-5394
Federal Barge Lines, Inc. 7501 S. Broadway St. Louis, MO 63111	Richard Kienitz	VP - Coal Sales	314-638-9500
Conrail 700 Walnut Street Cincinnati, OH 45202	Daniel Hoffman	Coal Sales Manager	513-563-5247
330 Meadowfern Dr. Houston, TX 77067	Paul Talkington	Sales Manager	713-537-9661

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# Coal Transportation

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	<u>Telephone</u>
American Commercial Barge Line Co.  Box 610 Jeffersonville, IN 47130	Michael Hagan John McCurdy Bryan Bashore	VP - Sales Director Coal Sales Mgr. Export Coal Sales	812-288-0238 812-288-0375 812-288-1631
P. O. Box 22708 St. Louis, MO 63147	James White	VP - Operations	314-389-1500

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# EXHIBIT X-Z COAL CONSULTANTS

# MAJOR CONTACTS

Company & Address	Individual	Title/Position	<u>Telephone</u>
Paul Weir Commany 20 N. Wacker Dr. Chicago, IL 60606	Martial Corriveau		312-346-0275
A. T. Kearney One Lincoln Centre Suite 580 5400 LBJ Freeway Dallas, TX 75240	Vic Churchward	Principal	214-386-8150
Syn-tech 22600 B. Lambert St. Suite 802 El Toro, CA 92630	Tom Atkins		714-951-6812
699 Prince Street Alexandria, VA 22313	Bud Field		703-683-5049
80 Bacon Street Waltham, MA 02154	Lou Petrovic		617-894-6724
PLM Inc. 50 California Street San Francisco, CA 94111	Mark C. Hungerford	President	415-989-1860

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### EXHIBIT X-Z

# T.E. SYNFUELS CENTRAL FILES

# Critical/Important Items

### Coal Supply

<u>File</u> Number	Item/Description	Proprietary/Confidential  If yes, by whom *
G-1.1.0 1.1.1 1.1.2 1.1.3 1.1.4 1.1.5 1.1.6 1.1.7 1.1.8 1.1.9 1.1.10 1.1.11 1.1.12 1.1.13 1.1.14 1.1.15 1.1.16 1.1.17 1.1.18	Coal Supplier Correspondence/Presentations AMAX Coal Co. ARCO Coal Co. Black Beauty Coal Co. Consolidation Coal Co. Exxon Coal USA Inc. Freeman United Coal Mining Co. Inland Steel Co. Island Creek Coal Sales Co. Kerr-McGee Coal Corp. MAPCO Coal Inc. Old Ben Coal Co. R. L. Burns/Pyro Mining Sahara Coal Co. Inc. Peabody Coal Co. Pittsburg & Midway Coal Mining Co. Zeigler Coal Co.	
1.1.19 1.2.0 1.3.0 1.4.0 1.5.0 1.5.1 1.5.2 1.6.0 1.6.1 1.6.3 1.7.0	Large Scale Coal Test/Lurgi Correspondence Small Sample Coal Test/Lurgi Correspondence Gasifier Design Ranges/Lurgi Correspondence Coal Transportation Correspondence Railroads Barge Lines Feedstock in Fines Balance Correspondence with Utilities Purchase Sized Product from Supplier Briquetting/Pelletizing Evaluation of Proposed Reserves	

USE OR DISCUSURE OF EEPOP DATA
AS SUBJECT TO THE RESTRICTION ON THE
NOTICE PAGE AT THE FRONT OF THIS REPORT

<sup>\*</sup> Tri-State, T.E., T.G., Fluor, Lurgi, Sasol

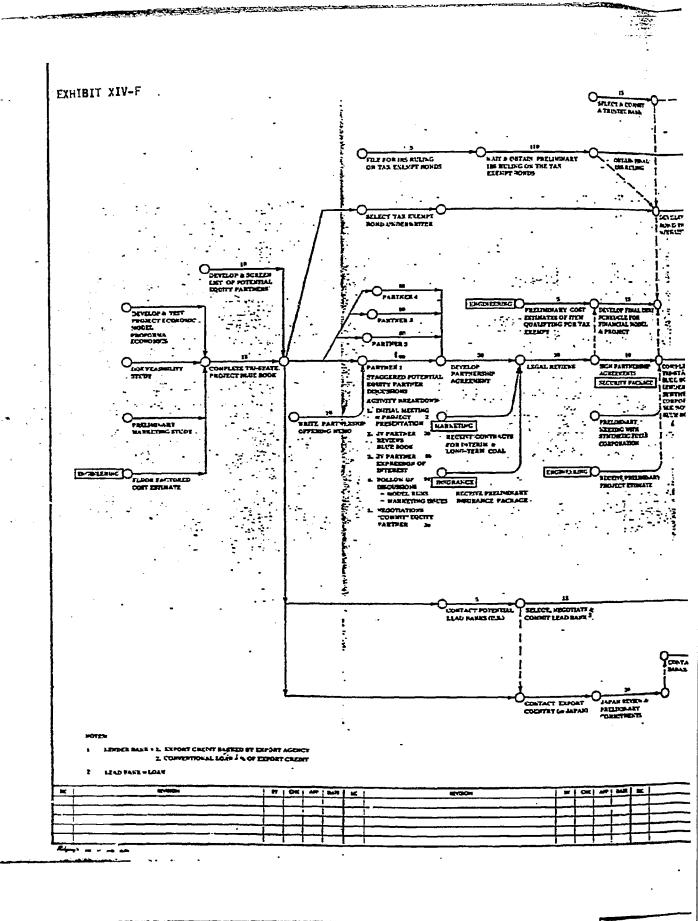
EXHIBIT X-Z

# COAL SUPPLY PRODUCTS 1 MAJOR REFERENCE DOCUMENTS\*

	Item	Description	<u>Author</u>	Date	Location	Utility**
(1)	Keystone Coal Industry Manual	Coal reserves, mines, etc.	McGraw Hill	Yearly	Library	. 2
(2)	Coal Week, Coal Age	General coal market activity	McGraw Hill	Weekly/Monthly	Library routes	2
(3)	National Coal Assn. data	Misc. coal statistics	National Coai Association	Periodic	R W Arrington routes	2
(4)	Washington Service Bureau Coal Contracts	Copies of coal contracts executed by potential suppliers to Tri-State	N.A.	Various	Tri-State Files	3
(5)	Map of Illinois Basin Coal Holdings	Major reserve blocks held in Illinois Coal Basin	Paul Weir Co.	1981	Tri-State Files	2

USE OR DISCLOSURE OF ACPCAL DATA
13 SUBJECT TO THE RESIDENCES ON THE
MOTICE PACE AT THE FRONT OF THIS REPORT

<sup>\*</sup> Reports, maps papers, reference/research groups, schedules \*\* Utility 3 - very important, 2 - useful, 1 - questionable value



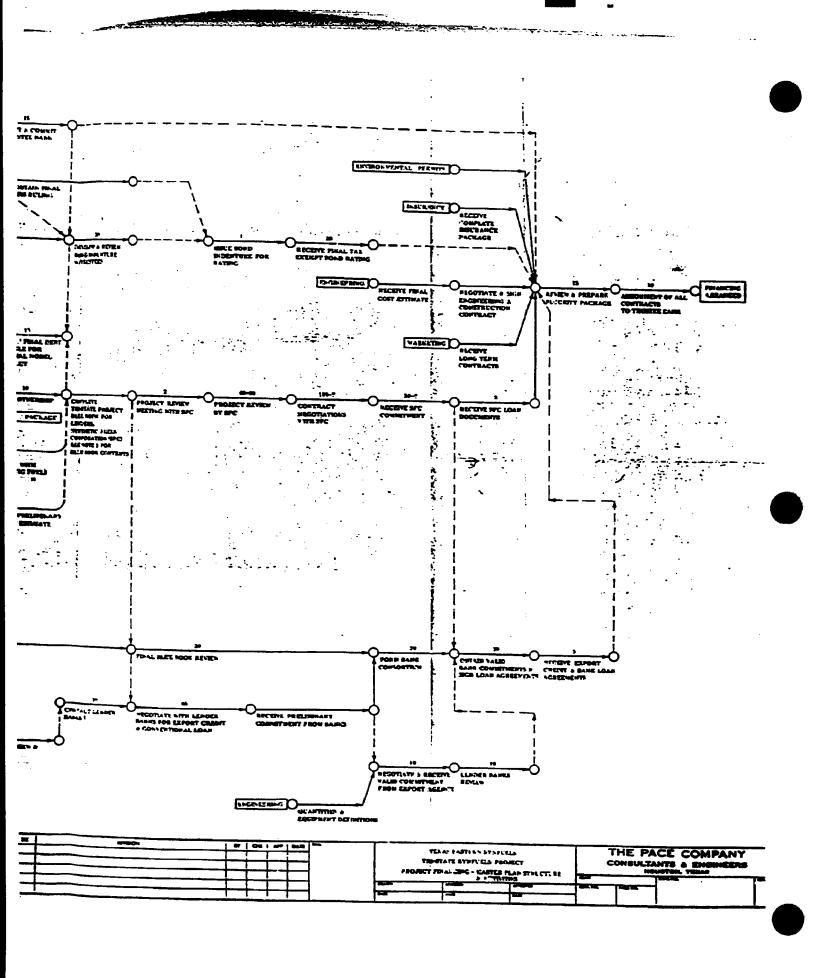


TABLE II

COMPARISON OF FLUOR AND CHEM SYSTEMS PRICE FORECAST FOR PRODUCTS

(Real Growth)  FLUOR'S		1982 CURRENT PRICES	Low	1985 <u>Average</u>	High	Low	1990 - <u>Average</u>	His
≠ SNG (DISTILLATE)	c/MM8tu	550	477.5	583.7	795.9	527.8	£44.4	878.
+ SMG (NATURAL GAS)	c/MBtu	550	599	732.1	998.3	964.6	1,179.0	1,607.
GASOLINE (PREMIUM UNL.)	¢/Gal	106	99.8	112.5	134.8	110.1	124.2	148.
MAPHTHA	¢/Gal	94	85	94	106	85	94	106
ISOBUTANE	¢/62]	60	60.1	65.0	72.1	<b>29.7</b>	76 ·	83.
PHENOLS	e/Lb	38	21.9	41.5		25.3	48.1	
SULFUR	\$/Ton	125	56.5	117.7	131.8	51.1	105.4	119.
APPONTA	\$/Ton	190	164	207.6	240.4	190	240.7	278.
LPG (PROPANE)	c/Gal	45	41	45	54	41	45	54
CRUDE OIL	\$/861	34.90	31.20	37	42.30	34.40	4C.90	46.
FUEL OIL	¢/6a1	66	56.7	<b>58</b>	<b>89.4</b>	59.6	71.5	84.
CHEN SYSTEMS								
SNG	c/HHBtu			500			700 -	
GASOLINE (PREMIUM UNL.)	e/Gal			123.3			132.6	
MAPHTHA	c/Gal			117.5			124.5	
ISOGUTANE	c/Gal			83.2			97.1	
PHENOLS	¢/Lb			38.8			45.3	
SULFUR	3/Ton			87.2			105.4	
APPIONIA	\$/Ton			211.3			339.8	
LPG (PROPANE)	c/Gal			67.4			80.6	
CRUDE OIL	e/Bbi			40.85			45.70	
FUEL CIL	¢/Gal			75			102	

\*SNG as substitute for distillate
\*\*SNG as substitute for natural gas

TABLE II

R AND CHEM SYSTEMS PRICE FORECAST FOR PRODUCTS OF TRI-STATE'S CASE "7R"

 High_	Low	1990 - <u>Average</u>	<u>High</u>	Low	1995 	<u> High</u>	Low	2000 <u>Average</u>	High
795.9 998.3 134.8 106 72.1 131.0 240.4 54 42.30 80.4	527.8 964.6 110.1 85 59.7 25.3 51.1 190 41 34.40 59.6	644.4 1,179.0 124.2 94 76 48.1 106.4 240.7 45 40.90 71.5	878.7 1,607.7 148.8 106 83.6 119.1 272.7 54 46.70 84.5	611.2 1,118 127.7 98.5 73.2 28.0 56.4 190 45.3 39.90 69.1	747.1 1,366.7 144 109 80 53.2 117.4 240.7 49.7 47.40 82.9	1,018.7 1,863.8 172.5 122.9 87.9 131.5 278.7 59.6 54.20	708.5 1,296.4 148 114.2 77 30.9 62.2 190 50 46.30 80.1	866 1,584 167 126,3 84 58,7 129,6 240,7 54,9 55,00 96,1	1,180.9 2,160.6 200 142.5 92.4 145.2 278.7 65.8 62.80 113.8
		700 132.6 124.5 97.1 45.3 105.4 339.8 80.6 45.70			750 140.5 131.5 102.1 50 122.2 355 85.7 48.48 110.5			795 148.1 138.6 107.5 54.6 140 373 90.7 52.52 118.1	

MRS 02/08/82

TABLE III

COMPARISON OF FLUOR AND CHEM SYSTEMS PRICE FORECAST FOR PRODUCTS OF TRI-S'

### CURRENT DOLLARS

FLUOR		1982 CURRENT PRICES	Low	1985 Average	<u>High</u>	Low	1990 Average	High_	. <del>.</del>
*SNG (DISTILLATE) **SNG (NATURAL SAS) GASOLINE (PREMIUM UNL.) MAPHTHA I SOBUTANE PHENOLS SULFUR AMMONIA LPG (PROPAME) CRUGE DIL FUEL DIL	c/MBtu c/MBtu c/Gal c/Gal c/Gal c/Gal c/Sal c/Lb S/Ton S/Ton c/Gal S/8bl c/Gal	550 550 106 94 60 38 125 190 45 34.90	615.4 758.3 128.6 110.1 77.3 28.1 73.5 210.7 53.1 40.19 73.2	752.2 926.8 145 121.7 84.3 53.4 153.1 267 58.3 47.60 87.9	1,025.7 1,264 173.3 137.3 92.73 171.5 309.1 69.9 54.56 103.8	1,037 1,809.6 217 169.4 136.2 49.5 103 371.4 81.7 67.75	1.267.5 2,211.8 244.3 187.3 148.6 94.1 214.8 470.4 89.7 80.35 141.5	1,728.4 3,016 292.7 211.2 163.4 240.5 544.7 107.6 91.94 167.2	1.6 2,- 2 2 1 5 1
CHEM SYSTEMS  SAG GASOLINE (PREMIUM UNL.) MAPHTHA I SOBUTANE PHENOLS SULFUR AMMONIA LPG (PROPANE) CRUDE OIL FUEL OIL	c/regtu c/Gal c/Gal c/Gal c/Lb S/Ton S/Ton c/Gal \$/8bl ¢/Gal			769 189.6 180.7 128.0 59.7 134.1 325 103.7 62.68 115.4			1.478.7 292.7 274.8 214.3 135.5 232.6 749.9 177.9 100.86 209.6		

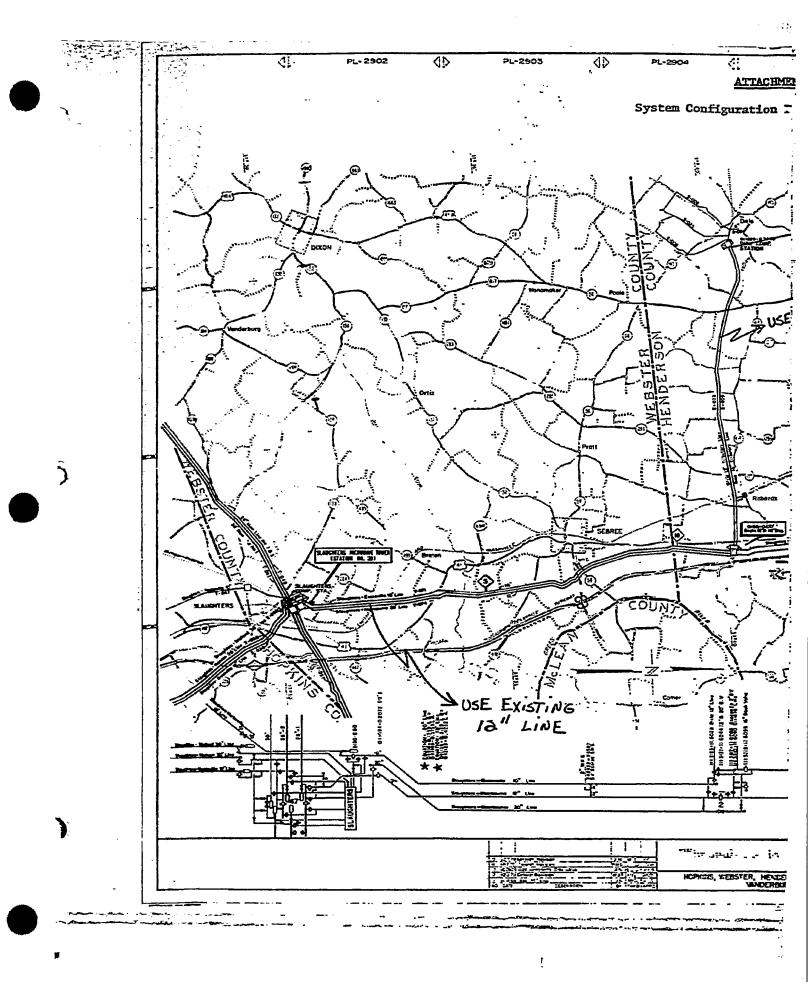
<sup>\*</sup> SNG as a substitute for distillate \*\* SNG as a substitute for natural gas

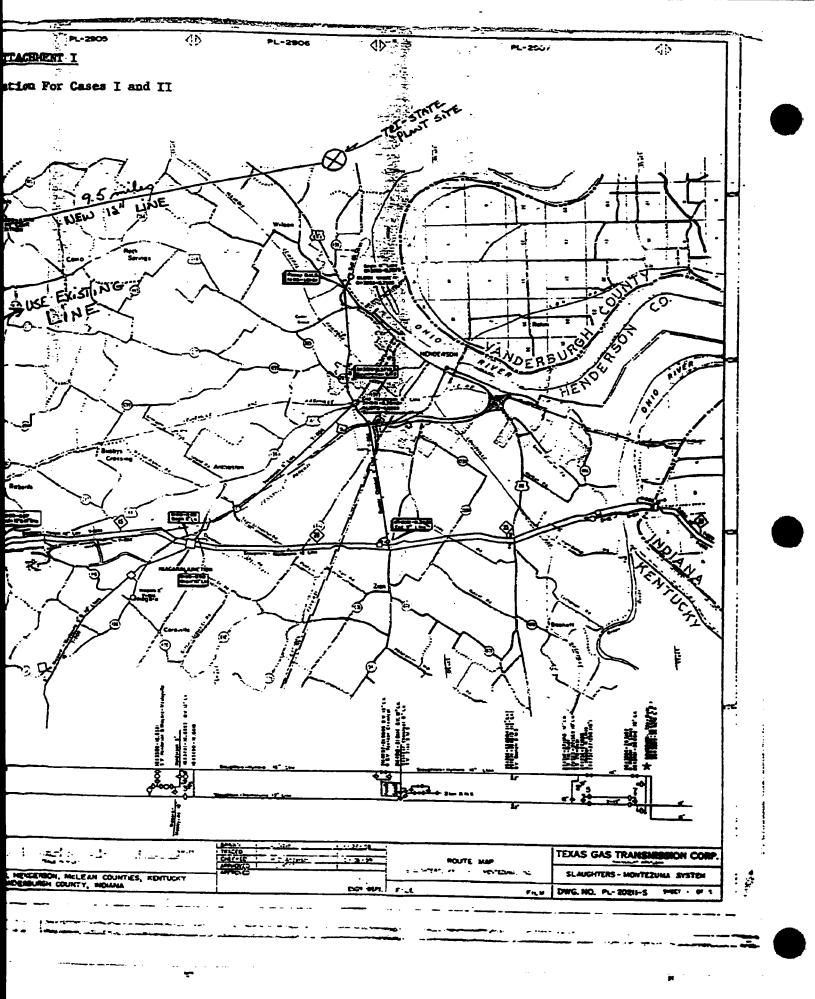
TABLE III

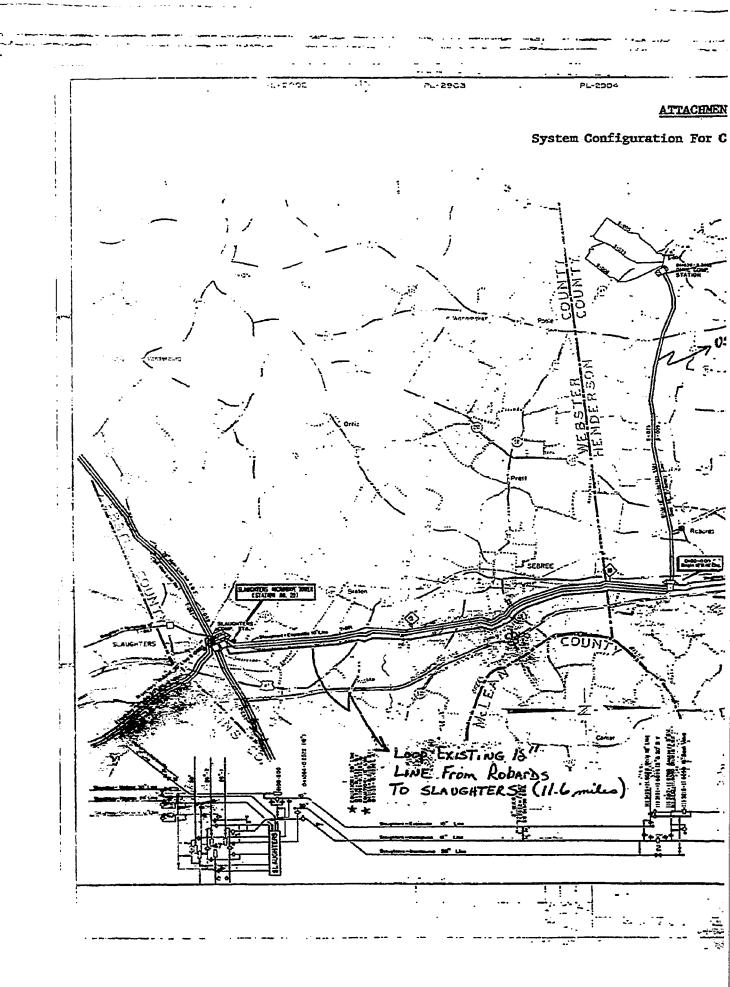
CHEM SYSTEMS PRICE FORECAST FOR PRODUCTS OF TRI-STATE'S CASE "7R"

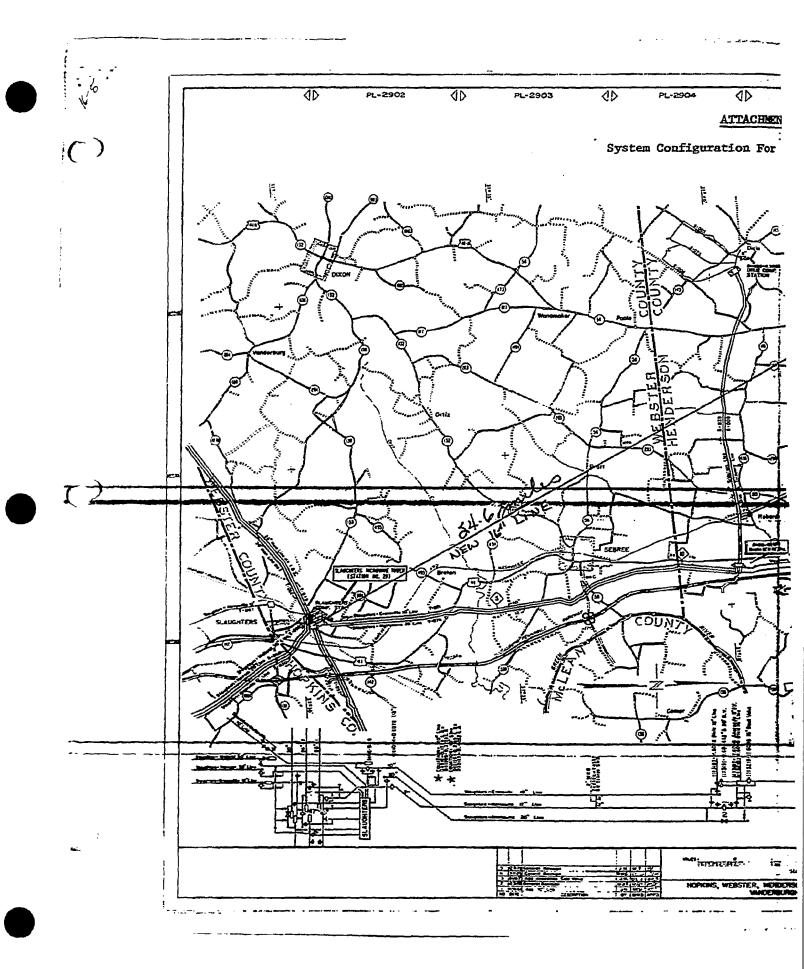
					1995	_			
<u>High</u>	Low	Average	Hi gh	Low	Average	<u>High</u>	Low	Average	High
1,025.7	1,037	1,267.5	1,728.4	1,670.2	2,041.3	2,783.6	2,690	3,287	4,483
1,264	1,809.6	2,211.8	3,016	2,914.4	3,562.1	4.857	4,094	5,736	. 7,823
173.3	217	244.3	292.7	348.8	393.4	471.4	562	634	759
137.3	169.4	187.3	211.2	272.8	301.7	340.2	439	486	548
<b>92.</b> 73	136.2	148.6	163.4	200	218.3	240.1	294	321	353
	49.5	94.1		76.2	144.8		117	223	
171.5	103	214.8	240.5	158.6	330.5	370	244	509	569
<b>309</b> . 1	371.4	470.4	544.7	521	659.8	764	731	925	1,071
69.9	81.7	89.7	107.6	125.7	138	165.5	193	212	255
54.56	67.75	80.35	91.94	109.12	129.40	148.03	175.56	208.32	238.56
103.8	118	141.5	167.2	189.9	227.5	269_3	306	367	434
		1,478.7			2.220.4			3,219	
		292.7			424.5			599.7	
		274.8			397.5			561.2	
		214.3			308.4			435.3	
		135.5			151.1			221.1	
		232.6			369.2			<b>566.9</b>	
		749.9			1,072.5			1,513.9	
		177.9			258.9			367.2	
		100.86			146.45			211.36	
		<b>209</b> .6			302.1			425.1	
								-	

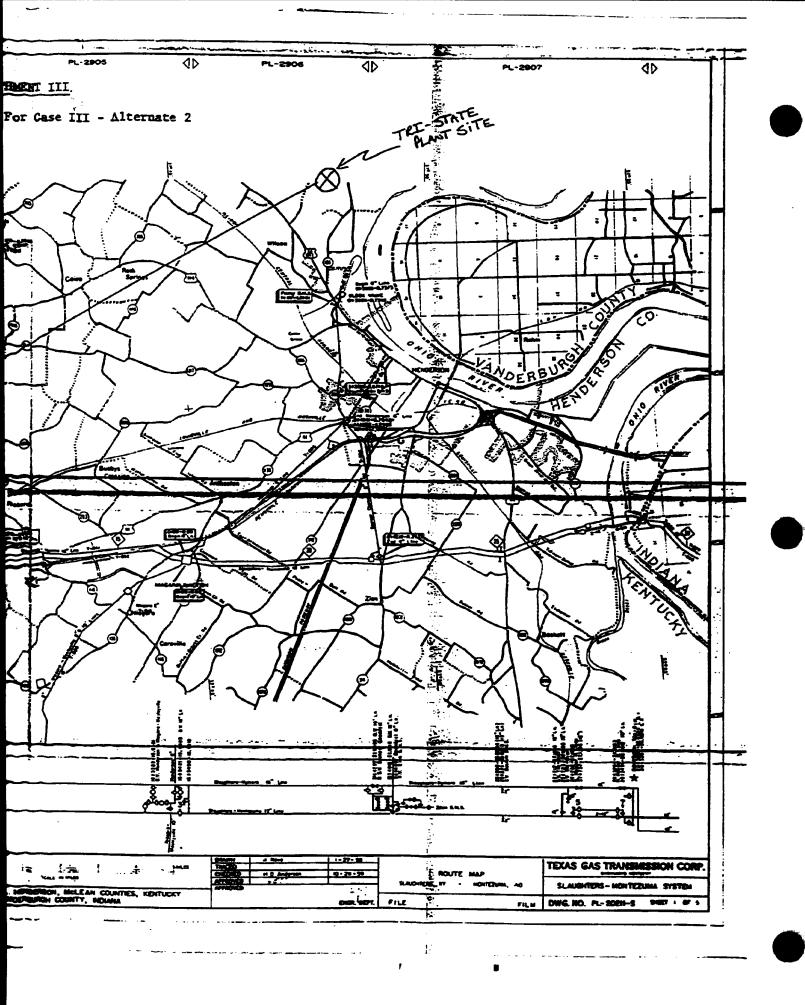
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_	•	]	0	3	6	9	1 Yr	3 6	9	2Yr	3
7	Surface Acquisition .	1	_	1	•		1	1 1	- 1		
	Surface Acquisition						7		ŀ		1
1	Shaft & Sinne Coests										<b>-•</b>
1	Shaft & Slope Const Mine Development										
	R.R. Trackage (Lead and Yard)	}									
	Surface Facilities and Atlandant Buildings	ļ									
	Underground Equipment	1				<u> </u>	Ţ				
ļ	Miscellaneous Equipment	4	1								
	Environmental Statement and Permitting										
	`vnnect Slope & Shaft	Works Doys	Raw Tons Per Day				•				
6	First Unit	1	1						~		
T	Second Unit							1 1			
	Third Unit							11			
	Fourth Unit							1			
- [	Fifth Unit	120	4500				<b> </b>				
			4300.								
-			•								

NO. 22 MINE FOR TRI-STATE SYNFUELS COMPANY 6 9 5m 3 6

FUELS COMPANY

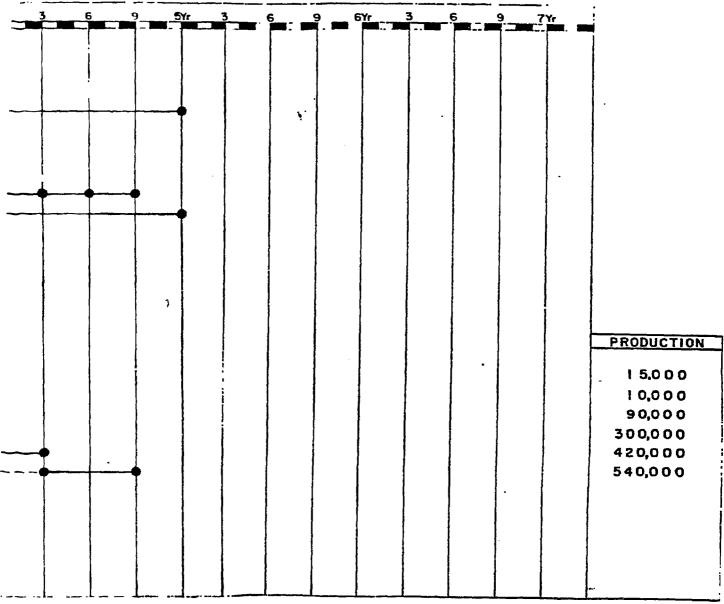
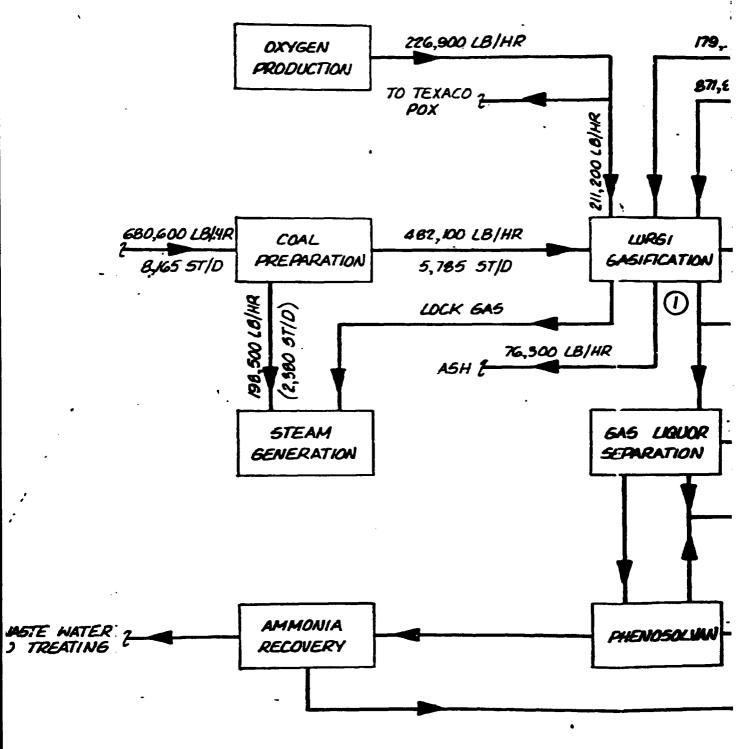
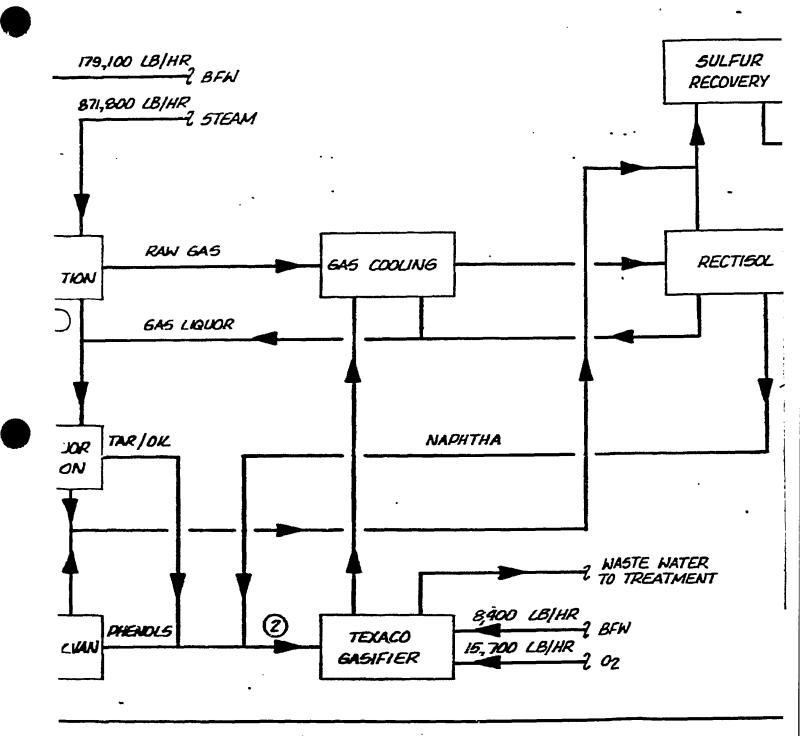
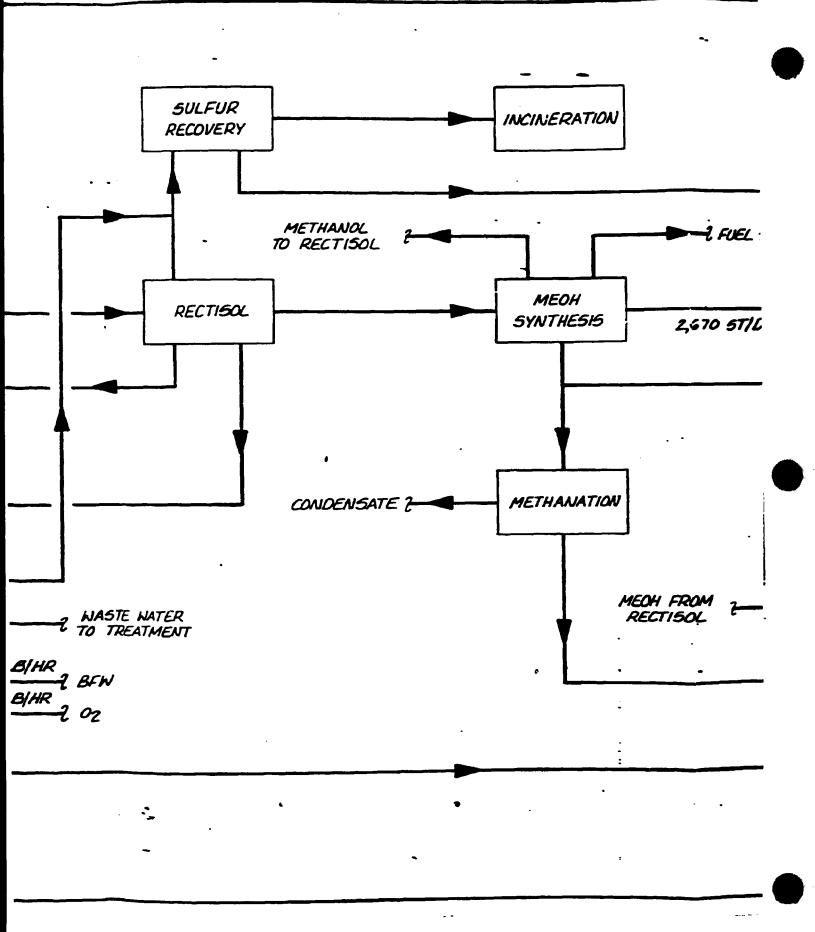


Table 3



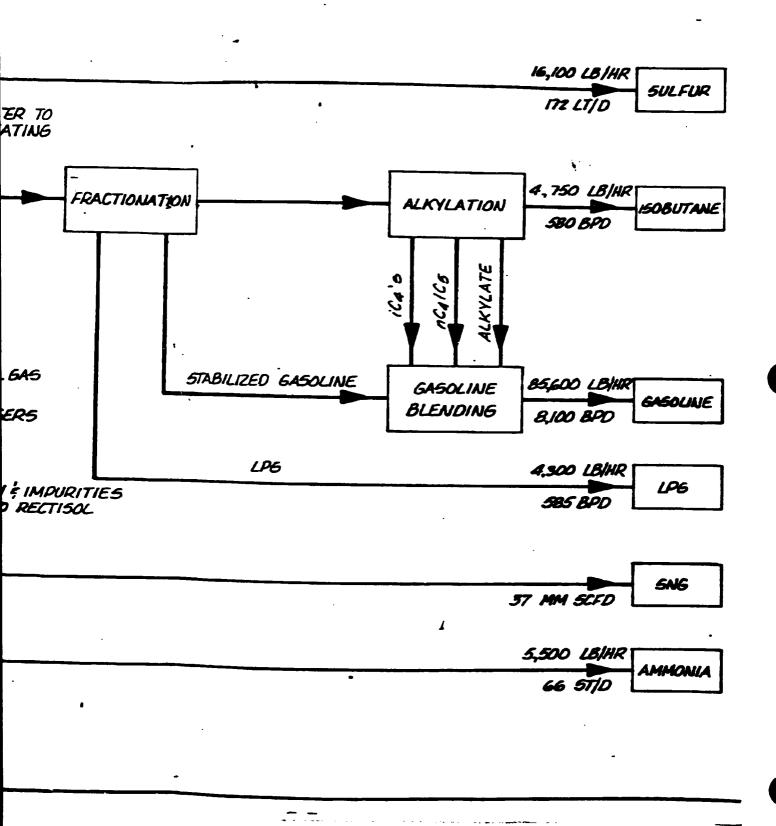
- (1) IN GASIFIERS, 9 OPERATING, 3 SPARE
- 2 19,100 LB/HR





SNG PURIFICATION MEDH & IMPURITIES TO RECTISOL

MEOH FROM RECTISOL

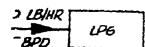


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NOTE:

I ALL RATES ARE ON A CALENDAR DAY BASIS."



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TRI-STATE SYNFUELS PROJECT

T.KING

BLOCK FLOW DIAGRAM

CASE 13 - COAL TO GASOLINE

QUARTER SIZE PLANT

855504 -00-R-046

0 2-22-82

### Tri-State Synfuels Coal Quality Characteristics for Statistical Analysis

3R 5R 15 16 6 Alston 1E Martwich Henderson Kaskaskia **Warrick** RAW COALS Sebree

BTU - As received MAF

### Proximate - As received

- Moisture
- Ash
- Volatile
- Fixed Carbon

# <u>Ultimate - As received</u> - Moisture

- Carbon
- Hydrogen
- Nitrogen
- Chlorine
- Sulfur
- Ash
- Oxygen

### Free Swelling Index

### Ash Fusion (Reducing)

ID H = W

H = 14W

Fluid

# sh fusion (Oxidizing)

TD

H = W

H = 34 Fluid

MAL OR PARCHAGUES OF REPORT SAID. AR MANAGE TO THE ACCUMINGUISM ON THE

MINES FIRE AT THE PERSON OF THES REPORT

EXHIBIT X-S

Tri-State Synfuels Coal Quality Characteristics for Statistical Analysis

J

16 6 7 10 1 4 28R 33R son Sebree Kaskaskia Warrick Tamaroa Henderson Alston 1W Highland Crescent

\*

Table 2
MEAN & STANDARD DEVIATIONS OF 11 RAW COALS: HIME ORIGINAL

	2s	<u>-1s</u>	ITEAH	+15
BTU - As received	8,912	9,450	9,988	10,526
HAF	13,688	13,969	14,250	14,531
Proximate - As received				
- Hoisture	6.59	8.47	10.35	12.2
- Ash	15.1	17.32	9.54	21.~
- Volatile	25.8	27.8	29.81	31.
- Fixed Carbon	<b>36.</b> 11	38.21	40.31	42.
Ultimate - As received				
- Moisture	6.59	8.47	10.35	12.2
- Carbon	50.84	53.11	<b>55.38</b>	57.6
- Hydrogen	3.54	3.74	3. <b>9</b> 3	4.
- Nitrogen	.644	.837	1.03	1.2
- Chlorine	.007	. 055	. 103	•
- Sulfur	3.63	<b>3.88</b>	4.13	4.:
- Ash	15.1	17.32	19.54	21
- Oxygen	3.45	4.36	5.27	6.1
Free Swelling Index	1.26	. 1.96	2.66	3.:
Ash Fusion (Reducing)				
10	1,908	1,937	1,966	1,995
H = W	1,952	2,010	2,068	2,126
H = 1/14	1,990	2,050	2,110	2,170
Fluid	2,108	2,178	2,248	2,318
Ash Fusion (Oxidizing)				
ID	2,168	2,236	2,304	2,372
H = H	2,277	2,342	2,407	2,472
H = 15M	2,322	2,385	2 <b>,44</b> 8	2,511
Fluid	2,445	2,490	2,535	2,580

Table 2

S OF 11 RAW COALS: NINE ORIGINALS PLUS #28R AND #33R

	I TEAH	+15	+2\$	<u> </u>
	9,988	10,526	11,064	538
	14,250	14,531	14,812	281
47	10.35	12.23	14.11	1.88
32	9.54	21.76	23.98	2.22
8	29.81	31.83	33.85	2.02
21	40.31	42.41	44.51	2.1
47	10.35	12.23	14.11	1.88
11	55.38	57.65	59.92	2.27
.74	3.93	4.12	4.31	.194
.837	1.03	1.22	1.42	.193
.055	.103	.15	.20	.084
.88	4.13	4.38	4.63	.25
.32	19.54	21.76	23.98	2.22
.36	5.27	6.18	7.09	.91
,	1,966	1,995	2,024	2º
	2,068	2,126	2,184	5'
	2,110	2,170	2,230	60
	2,248	2,318	2,388	70
6 2 5	2,304 2,407 2,448 2,535	2,372 2,472 2,511 2,580	2,440 2,537 2,574 2,625 Use on describence of nei- ts state of the restrict of more your at the feature of	HE SECTION 1
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### EXHIBIT X-L

### Plan for Assessing Fines Disposition Optic

### Options for Fines Disposition

- A. Obtain commitment from coal suppliers of their willingness to supply a 20% fines product, premium for doing such
- B. Determine interest of utilities in area in (a) buying electricity from Tri-State, (b) building a cogeneration plant, or (c) buying fines
- C. Determine whether briquetting or pelletizing has any real technical or economic potential
- D. Decide whether A, B or C appear to be feasible and whether Tri-State can and should consider them as options; eliminate or pursue
- E. Consider substituting alternative gasifiers which will accept fines for a portion of the Lurgi gasifiers

"Could possibly be January 31, 1982 if WMS' priorities are also cleared and we are willing to rely mainly on options & not really be able to "check out" at all.

### Action

- 1. LSR & WMS to call all supplibut serious response in writ:
- 2. Meet with consultant to get
- 1. LSR write letters to utiliti-
- 2. LSR call utilities
- 3. LSR meet with utilities if ne
- 1. MMS follow up on contacts all as possible; use A. Roeger an for technical assistance a

1. Adams and staff plus Fluor to

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### EXHIBIT X-L

# an for Assessing Fines Disposition Options

	Action	Timing
1.	LSR & WMS to call all suppliers and request a non-binding	
2.	but serious response in writing Meet with consultant to get their estimate of ability & cost	by Jan. 31, 1982
2.	LSR write letters to utilities LSR call utilities LSR meet with utilities if necessary	by Jan. 8, 1982 by Jan. 15, 1982 Jan. 15-31, 1982
1.	WMS follow up on contacts already made & obtain as firm data as possible; use A. Roeger and Adams' staff where appropriate for technical assistance - also possibly a day or two of Weirco	by Feb. 31, 1982*
		by Jan. 31, 1982 and Feb. 31, 1982*
1.	Adams and staff plus Fluor to evaluate & estimate costs	beginning Mar. 1, 1982

LSR 01/06/82

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