

Bankston Creek Collieries Mine # 6

Sahara Coal Co. Mine # 6

SAHARA COAL CO.
MINE # 6 (Strip)

Mine Index

Mine Index No. 638

County No. 724

Coal Report No. S-1

HERRIN

h g f e d c b a	Sec. 29	T. 9 S. R. 5 E. Index No. ■
6 7 6 5 4 3 2 1		

SALINE COUNTY



E. J. J.

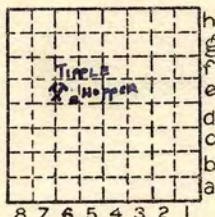
Location and Elevation Data

Location: Exact Approximate
 (Approximate only if no trace of record of original exists)
 Location by Bankston Crk. Coal Co. map
 Date 3/21/38 Notebook No. _____ Page _____
 Looseleaf ref. _____
 Map files No. _____

Description of Location

Position in sec., $\frac{1}{4}$ sec., 40 acres

_____ feet from North line
Hopper - 3400
Tipple - 3885 feet from East line
Hopper - 2700
Tipple - 2875 feet from South line
 _____ feet from West line



Sec. 29

T	N.
9	S.
R	E.
	W.

Other description: _____

Farm _____

No. _____

Company Bankston Crk
Coll.No. 6County No. 724Elevation 422 ft.By E. J. J.

Method: Level, transit, alidade, hand level

T.M. (Pd. elev. near here)

Elevation of _____

Height of point above ground _____

Date _____ Notebook _____ P. _____

Looseleaf ref. _____

Map files No. _____

Description of item: (drill hole, mine, etc.) Tipple - strip mineCounty Saline

Quadrangle

273Index No. 0929.E6



(Sheets)

COAL PRODUCTION

(Sheet 1)

NO.	Period						Tons	
	Mo.	Day	Year	Mo.	Day	Year		
						1936		
1	1	1	1936	12	31	1936	1938	09
1	1	1	1937	12	31	1937	651	906
S-1	1	1	1938	12	31	1938	719	729
						1939	754	910
						1940	818	939
S-1	1	1	1941	12	31	1941	824	997
S-1	1	1	1942	12-31	1942		581	558
						1943	595	835
						1944	458	752
						1945	487	831
						1946	473	932
						1947	504	139
						1948	495	862
						1949	478	649
						50	355	888
						51	322	436
						52	267	691
						53	392	169
						1954	454	051
						1955	603	573
						1956	690	322
						1957	594	624
						1958	630	911
						1959	639	757
						1960	651	489

SUMMARIES

No.	to	No.			
S-1	1/36 thru	12/60	13	643	759

Railroad, Wagon, Idle, Abandoned Strip

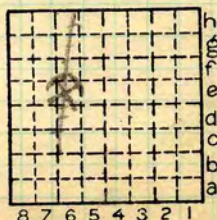
IDENTIFICATION

S-1

County No. 724 Coal No. 6

Quad Harrisbrg Part 3

County Saline



Sec. 29

T. 9 S.

R. 5 E.

Index No.

0929- E6

COAL MINE—PRODUCTION

Sahara # 6

(Sheets) COAL PRODUCTION (Sheet)

Period			Tons		
Mo.	Day	Year	Mo.	Day	Year
		1961		687	863
		1962		712	086
		1963		832	178
		1964		998	517
		1965	1	029	444
		1966	1	036	185
		1967	1	095	034
		1968	1	059	629
		1969		947	879
		1970		855	443
		1971		909	593
		1972		951	296
		1973		887	578
		1974		993	881
		1975		830	728
		1976		830	308
		1977		677	938
		1978		520	907
		1979		819	579
		1980		569	065
		1981		444	551
		1982		444	064
		1983		461	194
		1984		543	759

SAHARA COAL CO.
MINE NO. 6

SUMMARIES

No. to No.

1961 thru 1984

19 138 699

1936 thru 1984

32 782 458

Railroad, Wagon, Strip, Idle, Abandoned Strip

Sec. 29

IDENTIFICATION

County No. 724

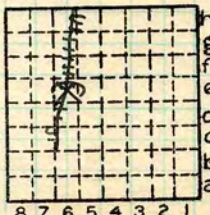
Coal No.

Coal Report No. S-1

□ 6

Quad. Harrisburg

County Saline


 T. 9 S.
 R. 5 E.
 Index No.

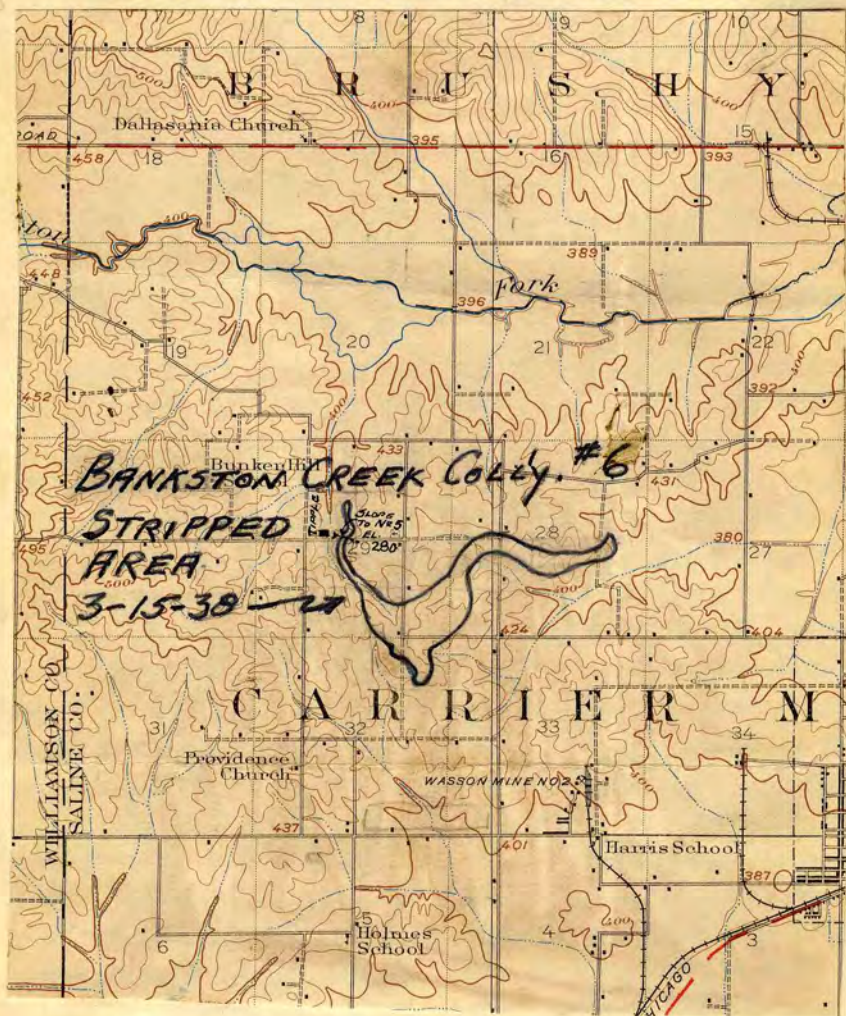
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COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA

PRODUCTION FIGURES

Sahara Coal Co. Mine No. 6	<u>Year</u>	<u>Tonnage</u>
	1985	471,943
	1986	485,882
	1987	526,061
	1988	586,331
	1989	511,092
	1990	
	1991	
:	1992	
	1993	

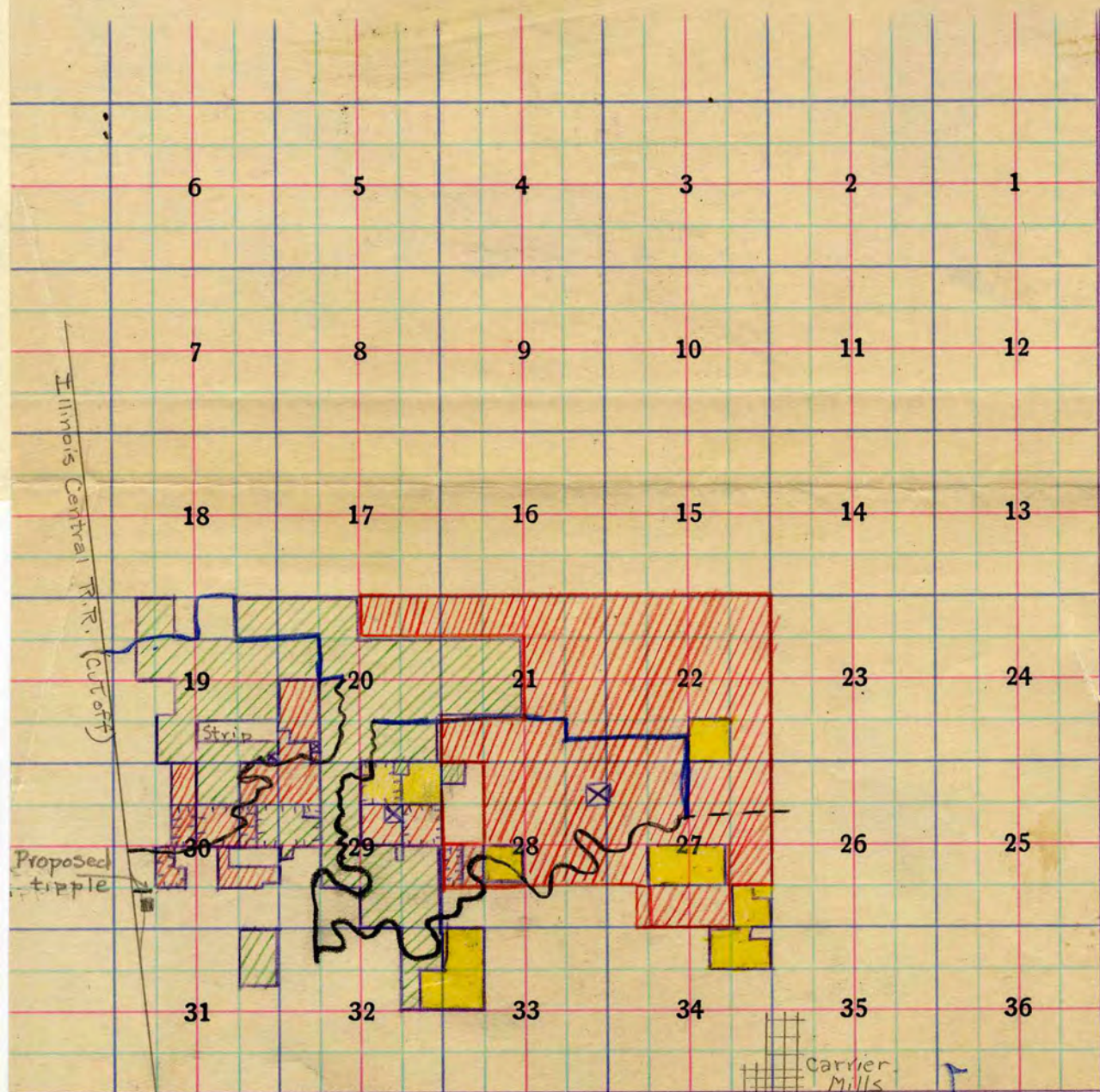


Rec'd. from Bottomley March 1938

TOWNSHIP PLAT

#6 Strip Coal O'Gara Coal Co.

Township 9 S Range 5 E Saline County.



- #6 coal owned
- #6 coal by tract 276 J.S. Lewis lease
- #6 coal owned - Old leases
- Surface owned (not checked)
- #6 outcrop
- 60' depth limit



SALINE Co

Apr '81

Well Location Sheet
ILLINOIS STATE GEOLOGICAL SURVEY
Urbana, Illinois

Company name.....*SAHARA #6*.....
Farm name.....*95 58.*..... Number of acres.....
Well number.....

Plot # 32 LOCATION

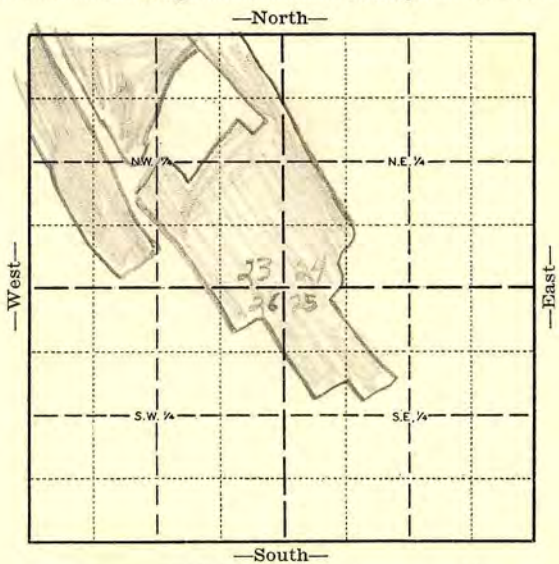
Section..... Township..... Range..... County.....

Location within the section

Distances from quarter section lines:

.....feet from North line
.....feet from East line
.....feet from South line
.....feet from West line

(Indicate distances from lines on plat)



Scale: 1 inch=2,000 feet (Smallest squares, 10 acres)

STATUS OF WELL

(Check the following information which pertains to the well)

Location made ☐ Date..... Drilling ☐ Depth..... Date.....
Moving in rig ☐ Date..... Shut down ☐ Depth..... Date.....
Rig on ground ☐ Date..... Completed ☐ Depth..... Date.....
Abandoned ☐ Depth..... Date.....

REMARKS.....
From DUNE MAP MB.

SIGNED.....

ADDRESS.....

ILLINOIS GEOLOGICAL SURVEY, URBANA

Sample #2

Sahara Mine 6
200'W of #3 Ramp

Sec. 19-9S-5E
Saline County

Logged by Gluskoter and Smith, November 10, 1964

No. 6 Coal Description

Total Thickness - 4'8"

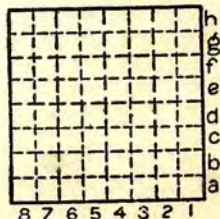
~~Feet and Thickness~~

0' - 4"	Coal, normally bright banded, much calcite and pyrite on cleat, top part very bright.
4" - 4½"	Shale, gray, coaly, <u>omitted</u> from sample.
4½" - 10 3/4"	Coal, normally bright banded, much calcite, some pyrite on cleat.
10 3/4" - 11½"	Pyrite lenticular, variable thickness includes some coal, <u>omitted</u> from sample.
11½" - 26½"	Coal, normally bright banded, much calcite on vertical fractures, bony coal from 1'3½" to 1'3¼", soft fusain lenses under ½" thick at 1'5½" - 1'8" - 1'11½".
26½" - 37½"	Coal, normally bright banded, calcite and pyrite on vertical fractures, fusain-pyrite beds under ½" thick at 2'2" - 2'5½" - 2'8½" - 2'11½".
37½" - 38"	Shale, soft gray, "Blue Band", <u>Excluded</u>
38" - 42"	Coal, normally bright banded, mineralized fusain band at 3'5".
42" - 46½"	Coal, dirty, bony, pyrite lense 1/8" thick at 44".
46½" - 47½"	Shale, dark gray, coaly, <u>Excluded</u> .
47½" - 56"	Coal, normally bright banded, much pyrite on vertical fractures. Coaly

By HJG & WHS Date 11-10-64

Quad. Part.

County



Sec. 19
T. 9 N.
R. 5 E.
W.

ILLINOIS GEOLOGICAL SURVEY, URBANA

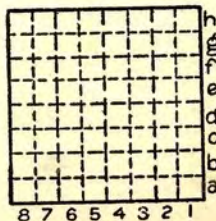
Sample #2

shale lenses $1/8'' - 1/4''$ thick at $48\frac{1}{2}$
and $49\frac{1}{2}$. Thin pyrite stringer at $53''$.

By HJG & WHS Date 11-10-64

Quad. Part.

County.



Sec.

T.	N.
	S.
R.	E.
	W.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Sample #1

Sahara Mine 6
300'E, No. 3 Ramp

in Sec 19 95 SE.
Saline County

Logged by Gluskoter and Smith, November 10, 1964

No. 6 Coal Description

Total thickness - 4'7"

INCHES

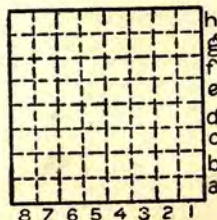
Feet and tenths

0' - 25"	Coal, normally bright banded, except in top few inches which is wide banded. Abundant clacite on cleat faces, pyrite on cleat faces, (much pyrite in region adjacent to channel in the interval from 6" to 9"), at 1'5 3/4" there is a 1/8" soft fusain lense and another at 1'7 1/4" and 1'8 1/2" below top. (<u>A 1/2" bony shale band 2 1/2" below top was omitted</u>).
25" - 35"	Coal, normally bright banded, 1/8 to 1/4 bony band at top, calcite and pyrite on vertical fractures, 1/16 pyrite band at 2'4 3/4".
35" - 35 1/2"	Shale, gray, carbonaceous, soft, lenticular, widens into 2" pyritic lenses laterally, (<u>"Blue Band" - omitted from sample.</u>)
35 1/2" - 55"	Coal, normally bright banded, calcite and pyrite on vertical fractures, not as abundant as above. A 1/16" pyrite band at 46 1/2".

By HJG & WHS Date 11-10-64

Quad. Part.

County



Sec.

T.	N.
R.	S.
	E.
	W.

Illinois State Geological Survey

Sahara Coal Co. #6

Saline County

23-9S-5E

Mine Index No. 638

County No. 724

Described by R B Nance July, 1969

Note: chemical analysis was run on a composite of all three face channel samples

Face channel Sample #1 - location: 23-9S-5E,
220'S NE/c SW/4 NE/4 NE/4

Roof of #6 coal not seen

Coal - Herrin (#6) Detail description

0-13" - Coal - normally bright banded, approximately 70% vitrain bands up to $\frac{1}{4}$ " thick, abundant pyrite on cleat faces up to $\frac{1}{8}$ " thick, some calcite on vertical fractures

13-13 $\frac{5}{8}$ " Pyrite band - bony and with vitrain bands (excluded from sample)

13 $\frac{5}{8}$ -21" Coal - normally bright banded, approximately 50% vitrain bands up to $\frac{1}{4}$ " thick, calcite and pyrite along with some kaolinite on vertical fractures

21-21 $\frac{3}{4}$ " Coal - $\frac{1}{16}$ " bony interlaminated with thin vitrain bands

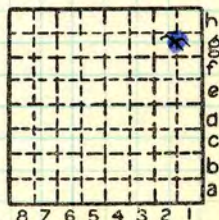
21 $\frac{3}{4}$ -22" Shale - medium gray, upper and lower $\frac{1}{16}$ " consists of pyrite

(Note: 21-22" excluded from sample)

By _____ Date _____

Quadrangle _____

County Saline Sec. 23 T 9S R 5E



Page 2

- 22-26 3/4" Coal - normally bright banded, some pyrite and calcite on vertical fractures
- 26 3/4-27 1/8" Shale - medium gray, very thin, coaly bands (excluded from sample)
- 27 1/8-31" Coal - normally bright banded, contains 1/16" medium gray shale band 3/4" from bottom, some pyrite on vertical fractures
- 31-31 7/8" Shale (blue band?) - medium gray, dense, somewhat pyritized (excluded from sample)
- 31 7/8-32 1/8" Coal - bony
- 32 1/8-32 3/4" Coal - normally bright banded with some very thin shaly bands
- 32 3/4-37 1/2" Coal - normally bright banded, a few thin bony bands, calcite and kaolinite on cleat faces
- 37 1/2-39" Coal - bony with 20% thin vitrain bands
- 39-40 1/2" Coal - normally bright banded, approximately 80% vitrain bands, some kaolinite on cleat faces
- 40 1/2-42" - Fusain bands up to 1/4" thick, somewhat mineralized with pyrite and interlaminated with thin vitrain bands
- 42-44" Coal - normally bright banded, approximately 80% vitrain bands
- 44-46 1/4" Coal - normally bright banded, approximately 60% vitrain bands up to 3/8" thick, contains several (approximately 5%) inter-laminations of medium gray calcareous shale which may contain some calcified wood, material in bands up to 1/4" thick
- 46 1/4-50" Coal - normally bright banded, approx-

Page 3

imately 80% vitrain bands with very thin but prominent fusain bands
50-50 $\frac{1}{2}$ " Pyrite band (excluded from sample)
Claystone (seatrock) - medium dark gray with abundant carbonaceous root material

Face channel Sample #2 location: 23-9S-5E
120'S, 240'W, NE/c SW/4 NE/4 NE/4

Roof of #6 coal not observed
Coal - Herrin #6 Detail description
0-30" Coal - normally bright banded, abundant pyrite along vertical fractures
30-35" Coal - normally bright banded with 5% very thin pyrite bands
35-36" Coal - bony
36-37" Pyrite band - with thin bony lenses (excluded from sample)
37-41" Coal - normally bright banded, about 20% thin bony bands
41-42 $\frac{1}{2}$ " Coal - bony with thin vitrain lenses
42 $\frac{1}{2}$ -46 $\frac{1}{2}$ " Coal - normally bright banded, predominantly vitrain
46 $\frac{1}{2}$ -47 $\frac{3}{4}$ " Coal -- normally bright banded, predominantly vitrain, $\frac{1}{4}$ " vitrain bands inter-laminated with bony coal and shale bands up to $\frac{1}{4}$ " thick
47 $\frac{3}{4}$ -51" Coal - normally bright banded, predominantly vitrain
Claystone (seatrock) - medium dark gray, abundant carbonaceous root material

Face channel Sample #3 location: 23-9S-5E
30°S, 20°E, NW/4 SW/4 NE/4 NE/4

Shale (roof of #6 coal) 0- black, "slaty", fairly well-laminated

Coal - Herrin #6 Detail description

0-1" Coal - very bony (medium dark gray) with thin vitrain bands

1-7" Coal - normally bright banded, abundant pyrite on cleat faces

7-7 $\frac{1}{4}$ " Fusain - soft, bony

7 $\frac{1}{4}$ -16" Coal - normally bright banded, calcite on cleat faces, small amount of pyrite

16-16 $\frac{1}{4}$ " Fusain - bony, mineralized with calcite

16 $\frac{1}{4}$ -23 $\frac{1}{4}$ " Coal - normally bright banded, prominent 1/8" fusain bands, slightly mineralized with both pyrite and calcite

23 $\frac{1}{4}$ -23 7/8" Coal - bony

23 7/8-24 $\frac{1}{4}$ " Pyrite lense - with 1/8" vitrain bands (excluded from sample)

24 $\frac{1}{4}$ -29" Coal - normally bright banded, 10% thin bony bands, kaolinite on vertical fractures, contains a few very thin pyrite laminae

29-29 3/16" Shale - medium gray, interlaminated with dark gray bony coal somewhat mineralized with pyrite

29 3/16-31" Coal - normally bright banded, some kaolinite on cleat faces

31-31 3/8" Pyrite lense - (excluded from sample)

31 3/8-32 3/4" Coal - normally bright banded, 15% very thin bony bands

32 3/4-33 $\frac{1}{4}$ " Bony coal - very argillaceous, medium

Page 5

dark gray (excluded from sample)

33 $\frac{1}{4}$ -35 $\frac{1}{4}$ " Coal - normally bright banded, 20% very thin bony bands, a few very thin pyrite lenses

35 $\frac{1}{4}$ -35 $\frac{1}{2}$ " Fusain - soft with thin vitrain lenses

35 $\frac{1}{2}$ -40 $\frac{1}{2}$ " Coal - approximately 60% bony bands, vitrain bands up to $\frac{1}{2}$ " thick

40 $\frac{1}{2}$ -42 $\frac{1}{2}$ " Coal - normally bright banded, approximate 15% bony bands

42 $\frac{1}{2}$ -43 $\frac{1}{4}$ " Pyrite lense - pinches out into thin shale and bone bands (excluded from sample)

43 $\frac{1}{4}$ -46 $\frac{1}{2}$ " Coal - normally bright banded, with 30% $\frac{1}{4}$ " lenses of pyrite and bony coal to medium gray shale

46 $\frac{1}{2}$ -49 $\frac{1}{2}$ " Coal - normally bright banded, predominantly fusain, kaolinite on vetical fractures

Claystone (seatrock) - medium gray to medium dark gray, abundant carbonaceous root material

Sahara #6 Coal Mine

Saline County S.29-9S-5E, #6 coal

Location in mine S.23-9S-5E

Heinz H. Damberger and Hermann W. Pfefferkorn

September 29, 1969

1) Coal Balls

(a) Morphology: bodies of about 3 to 5 inches diameter occur in #6 coal, are composed of many coal balls, separated by streaks of bituminous coal, near top also of shale; coal balls have varying shape, spherical, rotational ellipsoidal, and lenticular; lenticular coal balls are usually concentrated in several horizons, \pm parallel to bedding of coal; size of coal balls within "big body" (of coal balls) averaging 3 to 20", the larger ones being mostly the lenticularly shaped coal balls.

Up to 15 to 30 meters away from center of "big body" (mega-coal ball) single coal balls are found with a preferred orientation along bedding planes of coal in decreasing frequency away from "mega-coal ball." Lenticular and ellipsoidal coal balls predominate in that zone.

(b) Composition: predominantly calcite, pyrite mainly in isolated coal balls checked in 3 localities. Between coal balls both normal bituminous coal and mineralized coal was observed, near top of coal also some shale.

Plant remains over 90% secondary wood and periderm.

(c) Frequency: 400-500 meter distance (3 locations seen) between "mega-coal balls."

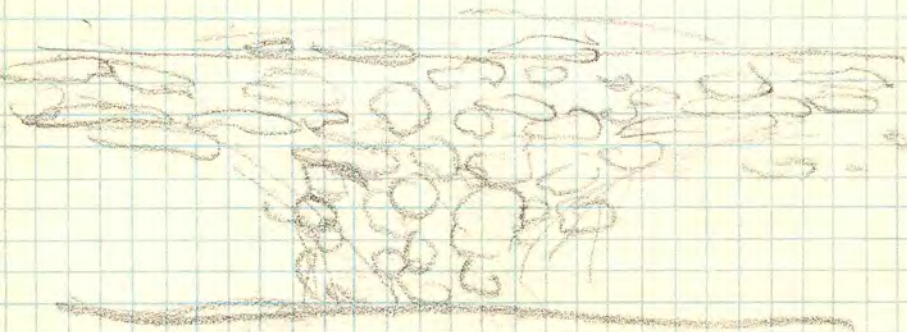
(d) Compaction/thickness: Thickness of "mega-coal balls" zone appr. 20% thicker than adjacent normal coal. In zone where coal balls are not in contact to each other, thickness of coal seems to be not changed at all. In one case for one single coal ball a difference in compaction of 2:1 (coal: coal ball) was estimated.

p.s. by HHD: I had the impression that the lenticular coal balls spread further laterally in the upper part of the seam and were also more frequent (see sketch).

2) No determinable compression plant fossils in roof shale found.

3) Slips - earthquake indications: hardly any positive indications, some small slips, nothing like in Fidelity No. 11 Mine and other mines further west and northwest.

Samples: (1) Coal for vitrain analysis (coalification)
(2) Coal ball samples for Ro (rank) determination near coal balls (Ro influenced?) (3) Column sample of coal near coal ball area (1 inch from next coal ball, taken by H. Pfefferkorn on Oct. 5, 1969)



Sahara C. Co. Mine No. 6, Face Channel Sample #1

7 ft. thickness 4'10", exact top not exposed.

Detailed log of coal

- 0-13 Coal - Normally bright banded, discontinuous zone of pyritic nodules up to 1" thick, 4" from top - excluded from sample. Calcite, some kaol. and minor pyrite on vertical fractures.
- 13-14 Fusain, soft.
- 14-30 Coal - Normally bright banded, minor kaolinite and pyrite on vertical fracture.
- 30-30½ Fusain, soft, partly pyritized.
- 30½-36½ Coal - Normally bright banded, calcareous on vertical cracks.
- 36½-36 $\frac{3}{4}$ Pyrite lens.
- 36 $\frac{3}{4}$ -40 Coal - Normally bright banded, calcareous and some kaolinite on vertical fractures.
- 40-40½ Shale - Gray, carbonaceous
- 40½-41½ Coal - Normally bright banded
- 41½-43 $\frac{3}{4}$ Shale - Gray, poorly laminated. Contains above face pyrite nodules up to one inch. Excluded from sample
- 43 $\frac{3}{4}$ -47½ Coal - Normally bright banded
- 47½-49 Shale - Dark gray. Excluded from sample.
Coal - Normally bright banded along face, contains fairly wide vertical fractures with pyrite. + $\frac{1}{2}$ " shale band 4" from base.
Floor is claystone gray with carbonaceous rootlets (normal underclay)

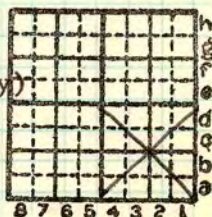
M. E. Hopkins

underclay)

By W. Olsson Date 7-19-70

Quadrangle Harrisburg 7½

County Saline Sec. 24 T 9S R 5E

1320 ft. east of incline. Incline is 2.1 mi. east of carrier *MENS* road

Illinois State Geological Survey
Sahara C. C., Face Channel Sample #2

Total thickness 4'11"

Immediate roof not visible.

In highwall 501 to 1, Brereton

Limestone appears to be ~ 6' thick.

- 0-8" Coal - Normally bright banded, calcareous, some pyrite - on vertical fractures.
- 8-8 3/8 Shale, gray, pyritic.
- 8 3/8-24 Coal - Normally bright banded, calcite dominate on vertical fracture, but occasional wide tract contain much pyrite.
- 24-25 1/4 Pyrite nodule - Excellent. EXCLUDED
- 25 1/4-41 1/4 Coal - Normally bright banded, several thin fusain layers which along face may thicken to 1/2" + calcareous, some kaolinite on vertical fracture, some pyrite on fractures.
- 41 1/4-43 Shale and bony coal, pyritic in some zones, Excellent. EXCLUDED
- 43-48 Coal - Normally bright banded, minor calcareous and kaolinite or vertical fracture.
- 48-49 Shale, Excellent. EXCLUDED
- 49-56 Coal - Normally bright banded, occasionally through pyrite band (1/16M) EXCLUDED
- 56-57 Shale, with some interbedded coal, Excellent.
- 57-59 Coal - Normally bright banded.

Floor is gray underclay.

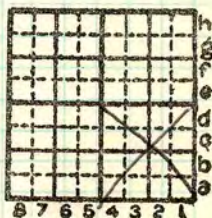
M. E. Hopkins

By W. Olsson Date 7-19-70

Quadrangle Harrisburg 7 1/2

County Saline Sec. 24 T. 9S R. 5E

560' east of sample #1



Sahara C. C., Face Channel Sample #3

Total thickness 57" (4'9")

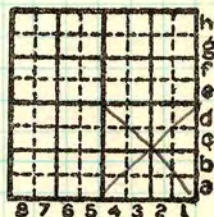
- 0-9 Coal - Normally bright banded, calcareous, some kaolinite, some pyrite on vertical fracture.
- 9-9½ Shale - Occuring as discontinued bed - light gray.
- 9½-31 Coal - Normally bright banded, calcareous and some pyrite on vertical fracture, several thin fusain bands.
- 31-31½ Shale - Dark gray, very carbonaceous, almost a boney coal.
- 31½-36 Coal - Normally bright banded, calcareous, some pyrite on vertical fracture.
- 36-36½ Pyrite band
- 36½-40 Coal - Normally bright banded, occasional thin parting.
- 40-42 Shale - Boney coal and a few thin vitrain bands.
EXCL.
- 42-46 Coal - Several vitrain bands but many thin boney bands.
- 46-49 Shale - Dark gray, hard, carbonaceous, several thin vitrain bands.
- 49-57 Coal - Normally bright banded several boney bands, several thin shale bands in bottom 3 inches
underlain by gray underclay

By M. E. Hopkins
W. Olsson Date 7-19-70

Quadrangle Harrisburg 7½

County Saline Sec. 24 T. 9S R. 5E

100' west of incline, 1420' W. of sample 1



Sahara No. 6 Coal Mine

Saline County, Sec. 29-9S-5E, No. 6 Coal

Location in mine Sec. 24-9S-5E

Hermann W. Pfefferkorn and Kenneth R. Cope

November 17, 1970

1) Samples taken:

- a) Coal: Face channel sample for palynological investigations.
- b) Coal: Column sample for palynological and petrographical investigations; seam thickness: 1.25 m
Sample taken about 10 m away from sheet-like occurrence of coal balls and about 60 m from mega coal.
- c) Coal: Piece on top of mega coal ball directly under marine limestone.
- d) Limestone with goniatite from top of mega coal ball.
- e) Marine limestone in coal.
- f) Coal balls with marine limestone.
- g) Coal balls with fusain layers.
- h) Other coal balls.

2) Sandstone below underclay of Jamestown Coal in the highwall. Sandstone is about 1.5 m thick and divided into two benches. It contains trace fossils on the lower surface and Stigmaria in situ in the upper part. The radiating appendices are quite obvious.

3) Coal Balls in the No. 6 Coal.

- a) Occurrence: Two mega coal balls lie close together, one of which is broken up. They form bumps in the mine road and the seam and are quite obvious. About 70 m to the west is a sheet-like occurrence approximately 40 m wide in which coal balls occur only in

the top 15 cm of the seam nearly continuously.

- b) Fusain: Fusain layers are present in coal balls from both localities. The fusain fragments are uncompressed and make up about 40% of the coal ball. In the mega coal ball the top layer seems to be affected and one deeper layer. Samples of the coal balls and the correlated fusain layer in the coal were taken.
- c) , Top of mega coal ball: The surface of the coal or the coal balls is highly irregular. It is directly overlain by a marine limestone (goniatite) the lower part of which contains plant fragments. The limestone in turn is overlain by the black shale with light colored thin calcareous bands. The limestone can form quite irregular nodules and be interrupted by argillations biocalcarenite and shale. The light colored layers in the black shale are only found in the lower part of it. The black shale is at least 1.0 m thick on top of the mega coal ball.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Sahara Coal Company, Mine #6
Highwall DescriptionThick ~~Wk~~

≈3'	0-3' - <u>Limestone</u> - <u>Piasa Ls.</u>
1.5'	3-4.5' - <u>Shale</u> - Weathers brownish gray.
9-10'	4.5-14' - <u>Shale</u> - Dark gray to black, well bedded.
2'	14-16' - <u>Coal</u> - Blocky " <u>Danville #7</u> ".
2'	16-18' - <u>Claystone</u> - Gray.
7'	18-25' - <u>Shale</u> - Possibly silty.
0.2'	25-25.2' - <u>Coal</u> - Horizon.
3'	25.2-28.2' - <u>Sandstone</u> , or <u>Siltstone</u> , or silty <u>Shale</u> - Apparently hard, relatively massive.
.75'	28.2-28.95' - <u>Coal</u> - " <u>Allenby Coal</u> ".
1.5'	28.95-30.45' - <u>Claystone</u> - Medium gray.
4'	30.45-34.45' - <u>Limestone</u> - Weathered, pinkish, <u>Banikston Fork Ls.</u> nodular, fine grained, micritic.
1'	34.45-35.45' - <u>Shale</u> - Fissile, gray.
3'	35.45-38.45' - <u>Limestone</u> - Similar to above, but more massive. <u>Banikston Fork Ls.</u>
1.5'	38.45-38.95' - <u>Shale</u> - Dark gray, lenticular, silty.

By H.H.D. & W.J.N. ^{et al} Date 5/30/74

Quadrangle _____

County SalineSec. 33 or 24T. 9SR. 5W

h	+	+	+	+	+	+
g	+	+	+	+	+	+
f	+	+	+	+	+	+
e	+	+	+	+	+	+
d	+	+	+	+	+	+
c	+	+	+	+	+	+
b	+	+	+	+	+	+
a	+	+	+	+	+	+
	8	7	6	5	4	3

- 0.5' 53.75-54.25' - Shale - Almost black, crumbly.
0.1' 54.25-54.35' - Coal - "Jamestown C.".
0.7' 54.35-55.05' - Shale - Dark gray, weak, lower
contact grades into:
6.0' 55.05-61.05' - Limestone - Medium to dark gray,
fine grained, dense, hard, $\approx 1.5'$
thick beds. Brereton Ls.
0.8' 61.05-61.85' - Shale - Black to dark gray, weak
with rotten yellow and brown
patelus.

Top of #6 Coal

Sahara CC, #6 6/30/74

Desc. from Oldham (1980) M.S. Thesis

@ NENE Sec. 30 T. 9 S., R. 6 E. (in Sahara No 6 Mine)

See thesis in Coal Bibliography - desc. done '75-'77 period.

Simplified Description (coal vs. clayst. / bone ptings) only

Compiled
PJD 11/84

CU 0	Hor (Intervals)	Ft.	ANNA (Y. W. S.) roof
	1		
	2	.71'	
	3		.02 shale, pyritic
30.5	4	1	
	5	1.94'	
	6		
61.0	7	2	
	8		
	9	2.67'	
	10		.06 shale (B.B.?)
91.5	11	3.75'	
	12	.41'	.06 sh .05' sh (B.B.?)
	13	3.71'	.02 bone (interpreted by PJD)
122.0	14	4.08'	.35'
	15		.08 shale
135.0		.27'	
		U/C "shale"	

T = 4.43'



SAHARA COAL CO. MINE NO. 6 (Strip) SALINE COUNTY

Notes by John Nelson on visit with John Popp (I.S.G. S.) and Bob Gullic (Sahara) 9/15/77.

Most notes on this visit were taken by John Popp (which see).

In the main pit the overburden is being removed by "Big Red", a Marion 5761 shovel. The highwall exposes a good section from the No. 6 Coal, which is being mined, through the No. 7 Coal. See John Popp's notes for measured section.

The No. 6 Coal is exposed along a rib in the east half of the pit and is found to contain abundant pyrite lenses and nodules with rare calcareous coal ball material.

In the No. 1 incline to the west, solid masses of coal balls are exposed along the coal rib just west of the incline. Also two "islands" of coal were left unmined due to solid masses of coal balls. A third mass of coal balls is present in the uncovered coal about 1000 feet east of the incline. Here the top of the coal forms a strong hump and the coal is twice its normal thickness. We intend to revisit this part of the mine to sample coal balls and describe them in detail.

SAHARA COAL COMPANY -- No. 6 Surface Mine
Saline County
September 15, 1977

Notes by J. Popp on a visit with J. Nelson and Bob Gullic (Sahara engineer).

Prior to visiting the pit we met with Bob Gullic in the Harrisburg office where we were introduced to Eric Egli, the new Chief Engineer. Mr. Egli expressed a strong interest in learning more about the coal geology at Sahara's mines.

Our visit to the No. 6 pit was to inspect mining conditions and the geology. J. Nelson made the following geologic description of the highwall--the location of the haulage incline where we made the description is: 150°N, 1050°W, Sec. 19, 9S-5E, Saline County:

10'+ Surface, 2' topsoil, light gray and yellowish-brown mottled silty clay with carbonaceous rootlets, weathered shale or siltstone near base.

0.1' Smut band

5.0' Shale and siltstone, variegated, very deeply weathered, poorly bedded, with pockets of clay, occasional inclined smut streaks. Coal interlaminated in basal 0.1'.

0.8' Coal, Danville (No. 7) Coal (?), nbb, blocky, calcite and oxidized pyrite on cleat, thin partings of bone and fusain, interlaminated with clay at base. Grades into:

5.0' Claystone, greenish-black near top, grading to greenish-gray downward, soft, slickensided, upper 2'+ very carbonaceous with coalified rootlets. Lower 2' contains scattered limestone nodules and veinlets. Grades into:

- 8.5'± Limestone, Bankston Fork, light gray, fine grained, hard, massive to coarsely nodular, inclusions of greenish clay, several crystal-lined fractures and cavities. No fossils recognized. Sharp and uneven contact.
- 0.1' Shale, brownish-black, poorly laminated, very carbonaceous with small coaly particles.
- 30'+ Shale, Lawson, greenish-gray at top grading with in top 4' to medium gray, moderately hard and moderately well bedded, very silty, finely micaceous, finely carbonaceous. Contains thin sideritic banding in lower section. Grades into:
- 0.6' Limestone, Conant, dark gray, fine grained with coarse fossil debris, moderately hard and massive very argillaceous, carbonaceous. Contains fine pyrite. Fossils are shell and crinoid fragments and calcitic forams(?). Lower portion is shaly and carbonaceous. Sharp contact.
- 0.1' Coal, Jamestown, nbb, broken and dirty.
- 0.5' Claystone, greenish black, firm very carbonaceous, with coaly streaks and pyrite. Grades into:
- 5.0'± Limestone, Brereton, dark gray, very fine grained massive to coarsely nodular, numerous calcite fractures. Base not exposed.
- 1.0' (?) Shale, Anna, black, hard, smooth, fissile, well jointed, noted small amount clinging to top of coal.
- 4.5'± Coal, Herrin (No. 6), nbb, well cleated, blue band 1.1' above base and varying in thickness. Sulfur lenses present throughout the seam.
- 3.0'± Claystone, olive gray, poorly exposed in sump hole.

The No. 7 Coal is reported to be up to 2.5' thick but is not mined. It reportedly burns better than the No. 6 Coal. The Brereton Limestone appears to thin and come down almost to the coal at the east end of the pit. The Anna, if present, there is only a few inches thick.

At this portion of the pit we found a few poorly developed coal balls. Cleat directions are:

Face cleat: 035°, 050°, 055°, 063°, 061°, 050°

Butt cleat: 150°, 150°, 140°, 140°

Coal Ball Zone

Just east of the No. 2 Ramp were several coal ball pods exposed in the pit. The location of the base of the ramp is: 1450'N, 950'W, 24-9S-5E, Saline County.

We dug out a full channel colume and did not find coal balls below the blue band. The coal seam height has increased to 6' from the average 3.5 to 4.0'. The pod dimensions appear to be at least 60' wide along the rib. The coal balls vary insize from a small cherry or plum size to flattened units 2' or more in length. Because the coal is not shot before loading it appears the company has left little coal islands around the hard coal ball pods.

To the east a quarter mile or so is another pod of coal balls as indicated by the "hump" in the coal elevation.

SAHARA COAL CO. MINE NO. 6 (Strip) Saline County

Notes by John Nelson on visit with Tom Phillips, Mark Scheihing, Bill DiMichele and Bonnie DiMichele, 9/27/77.

Purpose of visit is extensive collecting of coal balls from the solid masses noted by John Popp and myself on our visit of 9/15/77. As stated in notes of that visit, there are four separate places where coal balls occupy the full height of the coal seam:

- (1) In the coal rib immediately west of the bottom of Incline # 2. (Site of V.S.#3) (not collected)
- (2) An "island" of coal left unmined, about 150 feet west of (1) matches by B. Di. + P.S.D.
Nelson says
(Site of V.S.#5) 10/6/77
was sampled 9/27 + 10/6 P.S.D.
- (3) A second unmined "island" about 200 feet west of (1)
- (4) In the coal rib about $\frac{1}{2}$ mile east of the base of the incline. This is the largest mass and it forms a prominent "hump" in the rib. (Site of V.S.#4)

The base of Incline # 2 is located approx. 1200' S, 1600' E of center Section 24, T. 9S, R. 5E, Saline County. See sketch map (over).

Sample Location 1 (V.S.#3)

This is the best of the four coal ball masses as far as ease of sampling is concerned. Coal balls occupy 50% or more of the seam along a 50-60' stretch and extend at least 10' back into the rib. This is difficult to judge due to debris on top of the coal. The depth of the mass very likely is equal to or greater than the width. It appears the shovel mined less than halfway into the coal balls.

Note that Sahara does not shoot their coal before loading. Normally the shovel is powerful enough to rip the coal out of the face. The coal also is loosened by the passage of "Big Red", the stripping shovel, over the rib. When solid masses of coal balls like this are encountered the loading shovel simply bypasses them.

The following is a description of the coal seam about 100' west of the coal ball mass and should represent the "normal" coal seam:

(2)

- 2.20' Coal, N.B.B., blocky, with very thin partings. Cleat trends 146-152° (face) and 032-055° (butt) the latter being poorly defined and quite variable. Abundant calcite and brassy-colored pyrite on cleat surfaces; also numerous pyrite-filled "goat beards". (Note: a "goat beard" is a set of closely-spaced vertical extension fractures such as is commonly seen along a slip or other disturbance in coal. It is distinct from normal cleat. The term "goat beard" was invented by H.-F. Krausse of the I.S.G.S., who thought that these fractures resembled the beard of a billy goat.)
- 0.07' Claystone, olive to dark gray, mottled, soft, smooth, highly carbonaceous with abundant plant debris. Varies in thickness. This may be the Blue Band.
- 0.80' Coal, N.B.B., similar to above but cleat appears more closely-spaced and butt cleat is more regular.
- 0.03' Claystone, similar to 0.07' band above, locally pyritic, varies in thickness.
- 0.30' Coal, similar to above, but appears somewhat shaly with numerous thin partings. Grades rapidly into:
- Claystone (floor), light olive gray, soft, sticky, carbonaceous.
- 3.40' Total Coal Seam. Less than true thickness, as some coal undoubtedly was removed from top during stripping; contact to roof not observed.

The two claystone bands appear to be fairly persistent throughout this area, though they vary in thickness. The upper, thicker one may represent the Blue Band. The bands appear to continue through the coal ball region but are deformed around the rock masses. In the coal ball region three or more clay bands may be present locally. In particular a lenticular band of fusain or black carbonaceous shale and coal intermixed occurs about 1.6'

above the floor in the coal ball zone. In one place 5 separate clay partings were observed. It is impossible to say if there is any genetic relationship between coal balls and clay partings.

The lowermost clay parting (described in measured section) is pressed toward the floor in the coal ball region and almost no coal balls occur below it. The higher bands are compressed and distorted as they pass between layers of coal balls. Where the supposed Blue Band runs beneath coal balls both it and the thin band near the floor are thinned and pressed toward the underclay. In many places clay bands are altered to pyrite or to coal-ball limestone within the coal ball zone.

The coal balls are small; most are less than 0.5' in diameter, and for the most part they occur as individuals rather than intergrown masses. Somewhat larger coal balls are found near the top of the seam. The rocks are arranged in rough layers or zones and are flattened parallel to coal bedding. Up to 75% of the seam is coal balls but all as closely spaced clumps, not solid masses as seen in Old Ben # 24.

The coal increases to twice its normal thickness—about 7 feet— in the center of the coal ball region. The immediate roof is not exposed due to slumping along the highwall. The nearest roof in place is black, fissile, well-jointed shale (Anna) about 500' to the east of the coal balls. Elsewhere along the highwall limestone lies directly on the coal. We would expect black shale or limestone roof over the coal balls, but this cannot be proven.

The floor under the coal balls appears no different from elsewhere. It is claystone, olive gray, mottled, soft, slickensided, smooth to finely silty, highly carbonaceous with abundant plant debris, and pyritic with occasional small hard pyrite nodules. No coal balls or other unusual features in the floor.

The highwall is not accessible for a measured section, and as reported above, the lower part is covered.

At the coal ball locality the highwall appears much the same as at the measured section of 9/15/77 except that the Lawson Shale appears to grade upward to a sandstone. The dark gray shale at the base gradually becomes finely interlaminated with light gray sandstone or siltstone, with parallel or ripple-marked laminations. This grades into sandstone, medium gray, fine-grained, very carbonaceous, micaceous, thinly laminated, with interlaminations of dark gray shale having abundant coarse plant debris. This sandstone is either parallel or ripple-laminated. It in turn gives way to sandstone, light gray fine to medium-grained, micaceous, and massive to faintly laminated. Where present the laminae appear distorted. Immediately above this sandstone is the Bankston Fork Limestone. (Note: This description made from pieces that had fallen off the highwall.)

East of Coal Ball Mass # 4 the lower part of the highwall is visible in a few places and stratigraphic changes noted. Locally the Brereton Limestone is thin or absent and the Jamestown Coal lies directly on the Anna Shale. The Conant Limestone in most places is dark, argillaceous limestone or calcareous shale, but locally masses of hard crystalline limestone appear. One apparent pod of Energy Shale some 6-8' thick was noted, sharply overlain by 1' of Anna Shale with Jamestown Coal above. The Energy Shale is gray, very soft, smooth, and mottled.

At the base of Incline No. 1, about $\frac{1}{2}$ mile NW of Incline No. 2, the Brereton Limestone forms a single massive bed about 5' thick directly on the coal or with only a few inches of dark shale below. The Jamestown Coal is represented by a zone of dark carbonaceous shale and small lenses of limestone directly above the Brereton. The Conant Limestone is not present. The coal seam is mostly under water at this location. A few loose coal balls were seen but none noted in place.

The total overburden is thinner here than at Incline No. 2 and the glacial drift lies on sandstone, the Bankston Fork Limestone having been eroded.

In the active pit, Incline No. 4, no changes were

noted from previous visit. Coal cleat measures at 150° face, 050-060° butt, the same as in the coal ball region

Coal balls are collected according to a procedure devised by Prof. Phillips (he and the other participants in this trip, other than myself, are from the Paleobotany Dept. of the University of Illinois). The face is cleaned and layers or "zones" of coal balls are picked out. Each zone is sprayed with a different color paint to mark it. In a full-seam exposure like this, ten or more zones are picked out. The face is then attacked with picks, sledge hammers, etc. and the coal balls from each color zone are bagged separately. Each time rock is removed the new face is painted to ensure proper collection from zones.

v.s. #3

Sample Locality No. 1 yielded about 40 bags, an average of 4 from each of 10 zones, weighing an average of 4 pounds each, for some 1600 pounds of coal balls. This material is to be taken to the Paleobotany labs, cut, polished, and peels made for statistical studies.

The purpose of collecting by zones is to determine changes in the flora from the base of the coal seam to the top. According to Prof. Phillips very significant changes have been noted within a coal seam collected in this manner.

9/28/77 Continue collecting coal balls at Sahara # 6.

Sample Locality No. 1 has been collected to our satisfaction so we move on to Locality 4, the largest mass of coal balls in the pit. This mass is 100 feet or more in diameter and forms a large hump in the rib. The loading shovel has bypassed the center of the coal ball area leaving the mass partially projecting from the rib. It appears that a large area will be left unmined and eventually buried in the spoils.

This is not as well disposed to sampling as was coal ball mass No. 1. We would like to take a section in the heart of the mass where coal balls are thickest, but this is impossible because this lies within the rib.

(6)

We are forced to attack the edges of the coal ball body and to take our sample along two benches; the main one at the edge of the rib and the second one above it toward the center of the mass.

This mass is much more solid than the previous one and 80-90% of the coal has been converted to rock. Along the lower bench the coal balls lie in lenticular layers up to a foot thick with thin coal partings between. A prominent 083° fracture system in the coal balls makes extraction easy along this lower bench. The zones are extracted in a series of steps and easily broken out by driving a chisel into the vertical fractures.

The upper bench of about 2 feet of coal balls is extremely difficult to sample. The masses are tightly intergrown with no fracture system to exploit. The layers are folded over, dipping away from the heart of the mass at up to 45°. This makes it necessary to batter away at the top of the zones rather than work in between coal partings. From some of the zones on this upper bench we removed less than half a sack of coal balls.

The lower 0.75' of the coal seam contains no coal balls.* There is a shale band 0.38' above the base, possibly the same one noted at Location 1. More shale or clay partings are found squeezed between the coal ball layers above.

We removed some 30 sacks, roughly 1200 pounds of material from this coal ball mass. As noted above the upper two feet or so were sparsely sampled.

A return visit is planned to sample from Coal Ball Masses # 2 and 3.

* few at initial site, but many small c.b.'s were taken from 2 zones/layers in the bottom. ^{1!} laterally: see Oct. 6 notes P.J.D.



"Big Red", the stripping shovel in the main pit of Sahara No. 6. Light-colored rock layer in right foreground is the Bankston Fork Limestone.

MA-31-005.tif

photo by J.N. 9/27/77



View from top of "Big Red", the stripping shovel,
looking eastward in pit at coal loading operation.

mn-31-006.tif

Photo by J.N. 10/6/77



View from top of Big Red looking westward in pit. Drills working on top of highwall in background near coal ball pods # 1,2, and 3. Coal ball pod # 4 is ^(v.s.#4) wide part of coal rib near center of photo, and if you look very closely you can see people working on it

mn-31-907.tif

Photo by J.N. 10/6/77

later V.S. #5
site P.S.D.



Coal ball pod # 1, looking roughly westward. Bonnie DiMichele is painting the layers, or zones of coal balls in different colors to distinguish them during collecting. Sample bags are laid out in foreground. (V.S. #3574)

mn. 31.002.418

photo by J.N

9/27/77



Bill and Bonnie DiMichele bagging part of the day's haul from coal ball pod # 1. (V.S. #3 site)

mn_31-009.tif

Photo by J.N. 9/27/77



Contorted mass of coal balls in loose block near
Po # 1. One of the layers of coal ball material has
been folded back upon itself twice, evidently while
still soft.

mn-31-010159

Photo by J.W. 9/27/77



Coal ball pod # 2, cleaned and painted. Most of the upper part of the seam consists of solid layers of limestone with only thin, contorted coal partings between.

(V.S. #5 site) P.D.

mn-31-011149

Photo by J.N. 10/6/77



View looking west in pit at Coal Ball Pod # 4. The large hump in the seam where the Survey truck is parked is caused by the solid mass of coal balls. The stripping shovel has bypassed the core of the coal ball mass, leaving a protrusion along the rib to the left.

(V.S. #4 site) P.I.D.

mn-31-012, 813

Photo by J.N. 9/27/77



Coal ball pod # 4 with face cleaned off and painted for collecting. Note the massive layers of rock in the lower part of the section.

(V.S. #4 site) P.J.D.

Left to right: Mark Scheihing, Bill DiMichele, Bonnie DiMichele, and Tom Phillips (back to camera)

mm-31-013 file

Photo by J.N. 9/27/77



View of upper part of highwall at Sahara No. 6 along incline where section was measured. The coal bed is either the Danville (No. 7) or the Allenby Coal (top of ruler; ruler 6 feet long.) It rests on greenish claystone above the Bankston Fork Limestone, the light-colored layer at the base of the ruler.

mn. 31.014, J. P.

Photo by J. N. 9/27/77

SAHARA COAL CO. MINE NO. 6 (Strip) SALINE COUNTY
10/6/77

Notes by John Nelson on visit with Tom Phillips, Phil DeMaris, Pete Johnson, Suzanne Costanza, and Bill DiMichele. DeMaris is with the I.S.G.S. and the others are from the U. of Ill. Botany Dept.

Purpose of visit is continued collecting of coal balls from massive pods in No. 6 Coal. See notes of 9/27-28 visit.

Mining activities are advancing toward the coal ball area. "Big Red" is just east of the No. 3 Incline, east of Coal Ball Mass # 4. The overburden drills are working on the highwall above Pods # 1, 2, and 3. The highwall has been shot between here and Pod # 4. ^{V.S. site}

We continue collecting from Pod # 4. We uncover the seam both east and west of last week's collecting section and attempt to trace coal ball zones laterally. These zones are marked with spray paint and collected. Less bulk is taken; about one bag for each zone along four traverses. We note that away from the main collecting section the coal balls decrease markedly. About 10 feet east only two zones out an original 12 are present, near the floor of the seam.

As noted last week, the coal balls in the main collecting section show prominent 083° fractures and a less distinct set trending $150-160^{\circ}$. Closer examination of the latter set suggests the possibility that they are tectonic and related to Cottage Grove faulting. They are not vertical, but dip about 70° east, and they occur either singly or in closely-spaced clusters. On a few slight displacement of the coal ball layers is visible (normal faulting). No definite slickensides, and no gouge.

These fractures are parallel with the face cleat in the coal away from the coal ball masses. They are also nearly parallel with the main direction of faulting as seen in underground mines in the No. 5 Coal near here. Unfortunately not enough is visible to make any definite statement. The highwall is badly slumped and no fractures can be seen in it.

(2)

Coal Ball Mass # 2, one of two "islands" left in mining, comes in for extensive collecting. A good face is cleared off, painted, and collected as explained last week. Coal balls occupy about 75% of the seam, all except the top and bottom of the seam:

- 0.95' Coal, N.B.B., blocky, calcite on cleat. (Scattered small individual coal balls. V.S. #5 independent desc. of Phillips' version) See other notes
- 0.35' Coal balls, fairly uniform dense layer.
- 1.95' Coal balls, nearly solid except for thin coaly partings dividing this into 6 layers or zones. Zones are lenticular.
- 0.1' Claystone, dark olive-gray, soft, smooth, carbonaceous; may be the Blue Band.
- 0.9' Coal balls, nearly solid, two lenticular zones.
- 0.6' Coal, N.B.B., with thin shale parting at top. Underclay.
- 4.85' total seam thickness.

The face was divided into 12 coal ball zones. West of here the seam is covered by debris. Eastward the coal balls become smaller and less numerous and concentrate in the middle part of the seam. No roof in place.

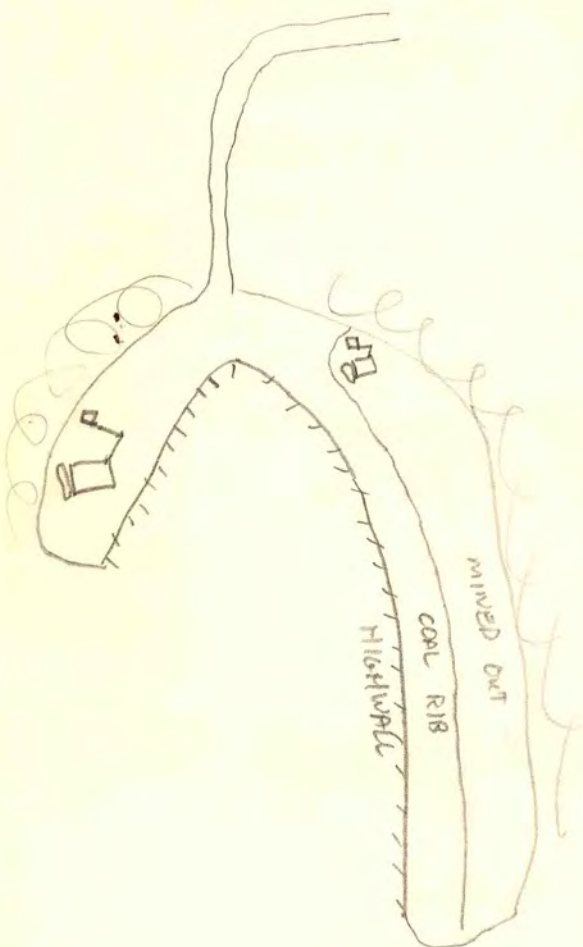
Coal Ball Mass # 3 is poorly situated and no material collected there. But I would say we took roughly a ton of coal balls from Mass # 2.

-950 PIT-

The 950 Pit is near Ledford, mostly in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sect. 31, 9S-5E. The pit is named for the Marion 950 shovel that is the prime mover of overburden.

As shown in sketch map (over) the pit is V-shaped with arms pointing northeast and southeast. The shovel is working in the southeast arm and coal is being loaded in the northeast arm.

The highwall is not accessible for a measured section but in general appears similar to that in the main pit except that the interval between the Brereton and Bankston Fork Limestones is thinner; about 20 feet.



(3)

The No. 7 (?) Coal is exposed as a smut streak at the top of the bedrock but the total bedrock thickness is less than in the main pit; about 40-50 feet here.

Near the tip of the northeast arm of the pit is a thin pod or lens of Energy Shale. The Anna and Brereton thin above the gray shale. Here about 2' gray shale, 2' Anna, and $1\frac{1}{2}$ ' Brereton. Nearby where Energy Shale pinches out the Anna is about 2' and the Brereton is 3-4' thick. Exposures of the lower part of the highwall are spotty.

No coal balls, faults, or other features of special interest.

Mine Notes - Sahara #6 strip, Saline co.

Trip: Oct 6, 1977 by (survey) P.
DeMaris, P. Johnson, J. Nelson,
(botanists) S. Constanza, B.
DiMichelle & T.L. Phillips

SEE ALSO Note + photos by Nelson.

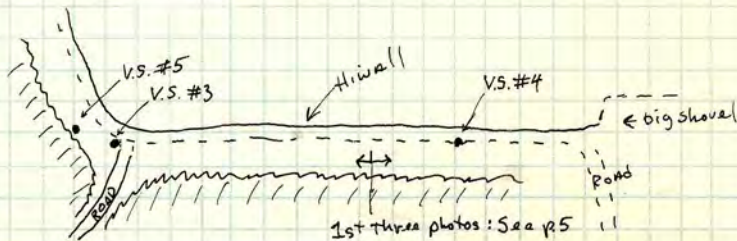
Coverage: Intro
V.S. #4 & vic.; coal desc. &
sample sites - map
Photos of V.S. sites #4 & #5
and others

Samples

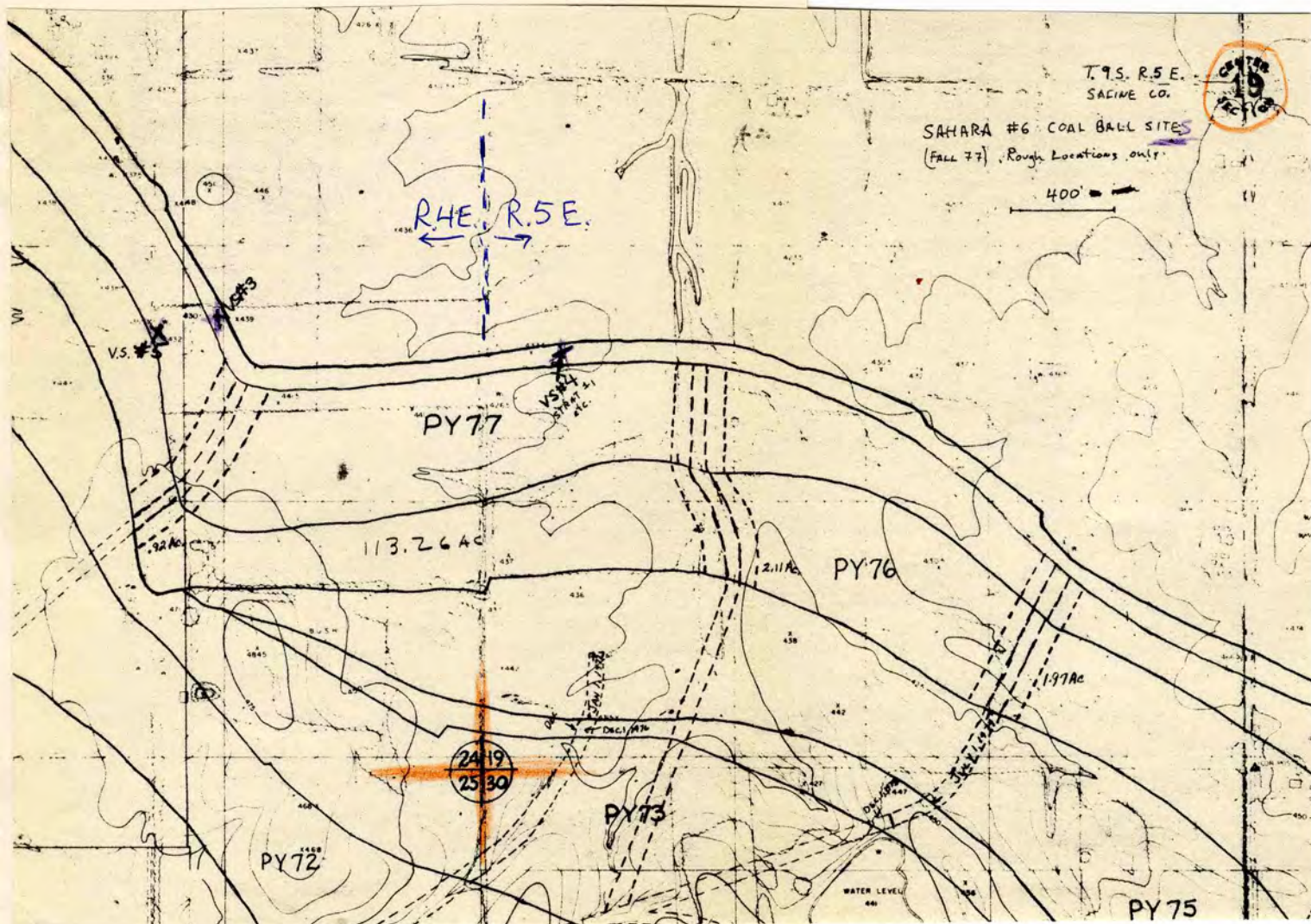
Appendix A; C.B. Profile at V.S. 5
" B " " " " 4

Introduction

This was the second sampling trip to this pit. Phillips wanted to resample at the V.S. 4 site to check lateral continuity of botanical horizons sampled on previous trip and to sample a third area; V.S. #5 resulted from this. We went down incline #2 into the main(?) pit, which is over a mile long (See map A). According to Nelson the roof is variable here; usually Anna with some thin gray sh. areas; Brereton is the roof locally, however. At V.S. #4 site I saw a min. of 3' of Brereton up several ft. above the top of the coal; Anna presence uncertain. The nearest remaining roof near V.S. #4 was Anna however (seen 150' W.) & this would be the best guess judging from experiences in Old Ben #24. Sketch map of my interpretation about site location and my initial three photos:



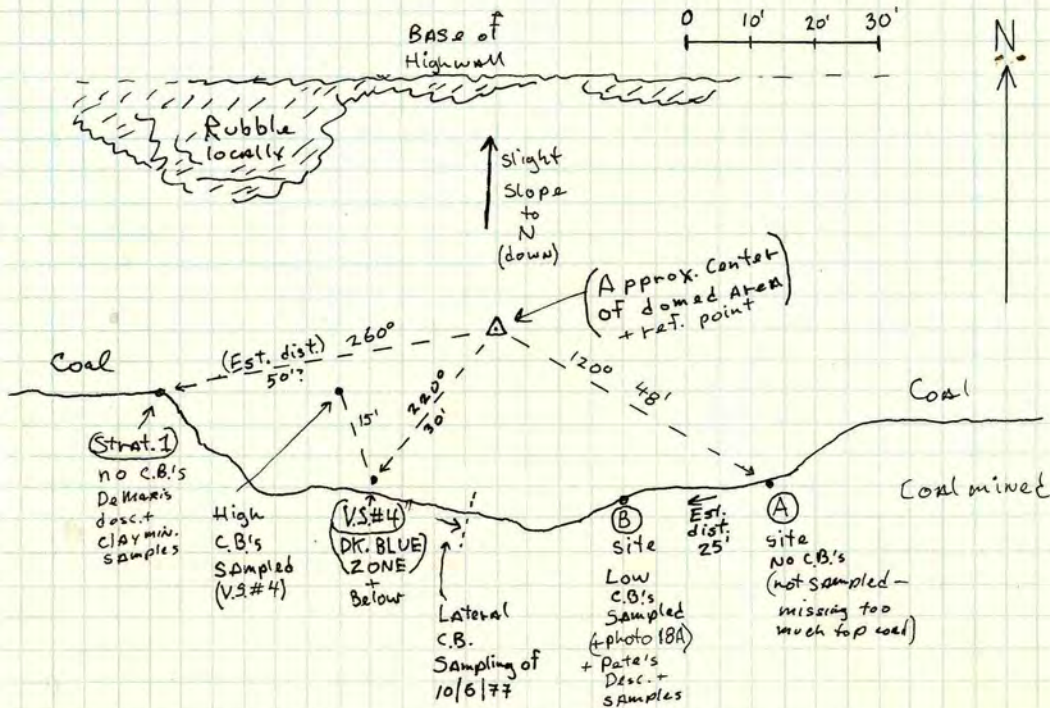
MAP A Rough Map of C.B. Sites
(Acc. to A 200' only)



p 2 of 11, plus map
and appendices

A crude plan map of V.S. #4 area was made to relate coal desc. & petrographic samples to coal ball samples:

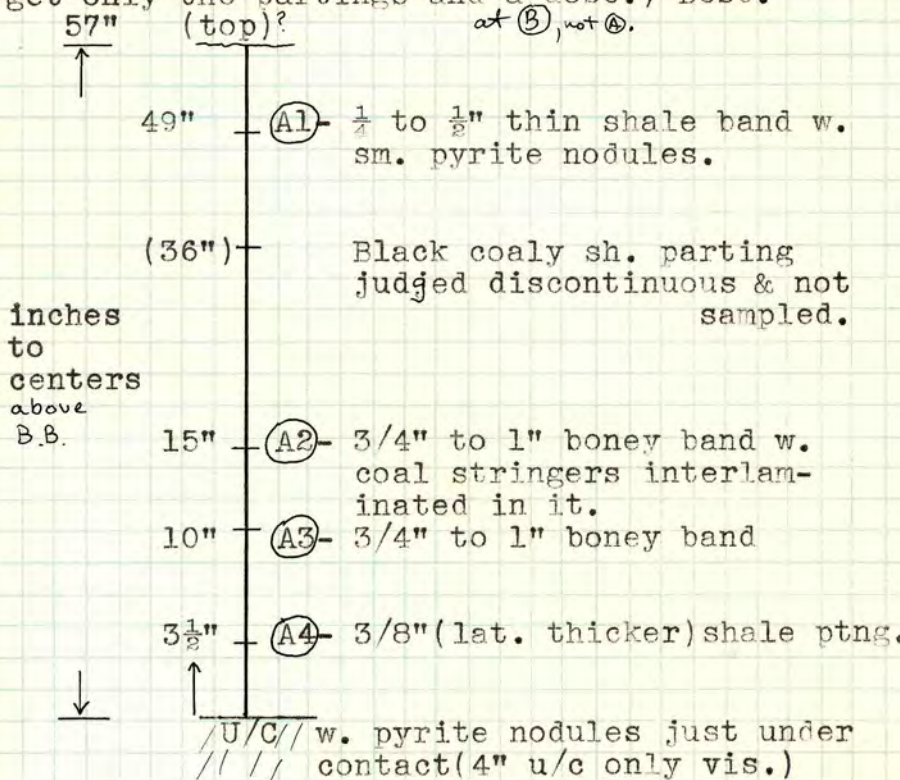
V.S. #4 & vic.



Judging from looks to E. + esp. to W. V.S. #4 Area is a topo. high, independent of C.B.'s.

p 3 of // , plus map
+ append.

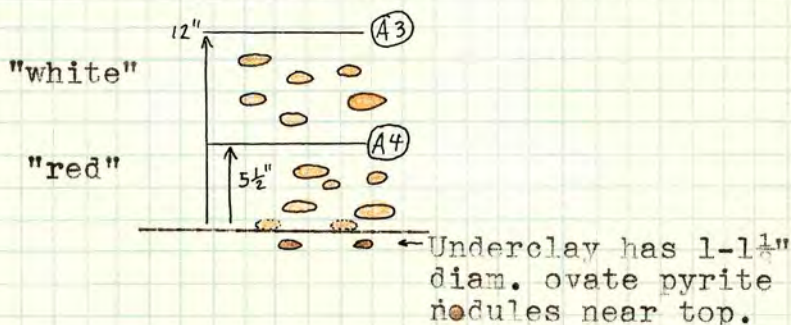
Strat 1 had a good coal exposure but no coal balls, and was just W. of the dense coal balls. By lateral checks we knew we had very little coal loss at the top: i.e. the thickness A1 to top matched a point about 150' W. where Anna roof remained. The measured 57" total is prob. within an inch of original full seam thickness. Since Johnson was to take a full block section of the coal I paid prime attention to the shale/clay partings for lateral correlation purposes (we hoped to sample coal & partings at A also but were to get only the partings and a desc.) Desc:



p 4 of //, plus map
+ appendices

Today DiMichelle is sampling laterally at V.S.#4. While I cleaned up site B for photography I noted very low C.B.'s here which I later sampled. Site B is about 30' E. of where the extensions of V.S. #4 were being taken, but w. of Site A where Pete Johnson was to take some samples. — he eventually sampled at (B).

In order to correlate (and check the plant material laterally) I sampled at the "1" level (White) and then below the (A4) band I colored the coal balls Red. Several of the "Red" zone C.B.'s which sat on the underclay had turned to mush, presumably with acid action on their calcite. Detail:



Photos

B&W photos and slides were taken on this trip by DeMaris (some printed here) and by DiMichelle (See T.L. Phillips). Nelson's photos from both trips are also useful. Prints not included (negs saved) as redundant are:

similar to:

"0"

3A, 5A, 9A

(7A rejected)

11A

14A

16A, 17A

20A, "21A"

"pre-0"

4A, 6A, 8A

10A, 12A

15A

18A

19A

p 5 of 4, plus
1 map + Appendixes



→
V.S. #4
site

SAHARA #6:

Pit - View toward E ^{toward} ~~Appendix~~ V.S. #4 site.

Neg. Oct. 6
1A 77



SAHARA #6:

Pit looking back W. toward trucks at bend in pit

Neg. Oct. 6
pre-"D" 77

MM-31-015, 718 - MM-31-012, 318



SAHARA #6: V.S. #5 - Nelson at work

Neg. Oct. 6
2A 77



SAHARA #6: Nelson - Respraying zones - layers

Neg. Oct. 6
4A 77

mn-31-017 tip - mn-31-018 tip



SAHARA #6: Constanza + Nelson at V.S. 5 site.

Neg. Oct. 6,
6A 77



SAHARA#6:

Neg. Oct. 6
8A 77

mm-31-019 fig - mm-31-020 fig



SAHARA #6: Coal Balls sorted by zone layer

Neg. Oct. 6,
10A 77



SAHARA #6: V.S. #5 site being sampled

Neg. Oct. 6
12A 77

M 31-021, Kip - m-31-022, #18

SAHARA #6

A1

Discont.
ptng. →

A2 →

A3 →

A4 →

4c →

Oct. 6



SAHARA #6: Strat. 1

Nag. Oct. 6,
15A? 77

SAHARA #6:

Oct. 6,
77



SAHARA #6: DiMichelle at V.S. #4 site. Nag. Oct. 6,
13A 77

Pg of 14,

mn-31.023.18 - mn-31.024.18

p10 of 11 plus 1 map



SAHARA #6: ^{W. of} Site A - close up of C.B. at Site B 1st. to Furnin Neg. 18A Oct. 6 77

MN-31-025-41P - MN-31-026-51P



SAHARA #6: Shovel

Neg 19A Oct. 6, 77

MOORE'S MODERN METHODS

p 11 of 11, plus 1 map
& appendixes

Samples

For coal samples & interpretation see notes by Johnson. Shale partings were sampled at Strat 1 (plus u/c) by myself and identical samples were taken by Johnson at

. In addition I took one parting sample at V.S. #5 between the yellow and dk. green zones which should correlate with the A2 parting always noted at VS #4 & vic. Clay min. will help to check this.

Analysis

(Appendixes follow)

Note:

Neq 18 A showing C.B. correlated laterally w. fusain
Also noted earlier in this pit by H. Pfefferkorn +
to Cope in 11/17/70 notes (preceding).

10/6/77

A

Sahara Vertical Section #5
Sahara Coal Company Mine No. 6

Herrin Coal Member

Vertical Profile of Coal Balls - Coal - Clastic Bands

Zone Number	Color	Thickness and Comments	w my Addition
Topmost 11	White	0.4 ft mostly coal with some coal balls (some of top coal probably missing)	
10	Purple	0.25 ft ^{4.45}	prob. very little
9	Dark Blue	0.3 ft	Poss. correlation ↓
8	Orange	0.35 ft ^{3.1}	
7.5	Gold	0.55 ft	
7	Pink	0.4 ft ^{3.0}	
6	Light Blue	0.3 ft	Thin Sh. Band. (unmatched)
5	Light Green	0.2 ft ^{2.3}	noted by DeMarino
4	Red	0.15 ft	
3	Yellow	0.35 ft	
● Clastic Shale	^{Band Wedge}	0.1 ft (thickest present)	→ A2 (Sampled AS Cross-Checker)
2	Dark Green	0.4 ft	
1	White	0.5 ft	→ This was site A9
● Thin Shale Band			→ Nelson Phillips +
Coal		0.6 ft	Constanza worked.
Underclay		4.85' a	(584)

V.S. # 3

- 1st

Sept 27-8

then V.S. # 4

V.S. #4 V.S. # 5

Oct 6

Murray

Murray

(B)

SAHARA VERTICAL SECTION No. 4

Herrin Coal

Sahara Coal Co. No. 6 Mine near Carrier Mills, Illinois

Zone No.	Color	Thickness (average-cm)	Range
15	Orange	30 cm	} Upper & lower parts of a single massive zone
14	Green	20 cm	
13	White	8 cm	
12	Purple	9 cm	
11	Dark Blue	4 cm	(+ 8 cm coal) (or) 3-4, up to 12 cm
10	Light Green	5+ cm	4-7 cm
9	Orange	9 cm	
8	Pink	11 cm	} partially contiguous, possibly one zone in some places
7	Light Blue	12 cm	
6	White	15 cm	} one massive zone that occasionally splits along a thin coal streak
5	Red	15 cm	
< 1 cm coal			
4	Orange	15 cm	
< 1 cm coal			
3	Yellow	14 cm	
2	Green	19 cm	
1	White	16 cm	(discrete coal balls, mostly coal)
Shale parting			
12 ± cm coal			
Underclay			
Average: 216 cm entire seam			
202 cm coal balls			

Prob.
(A4)

Prior to correction
and addition made
on Oct. 6, 77 trip
by D. Michelle + Dellmaris

Prob.
(A4)

Prior to correction
and addition made
on Oct. 6, 77 trip
by DiMichelle + DeMARis

adjacent seam without coal balls 1.3 - 1.48 meters

Notes by John Nelson on visit with Tom Phillips, Anne Raymond and Suzanne Costanza from the Botany Dept. at the Univ. of Illinois.

People from Botany Dept. came here to collect coal balls. We had no previous indication that any would be found, but decided to check because we were in the area to collect at the Eagle Surface Mine.

At the office Bob Gullic indicated that only the Western part of the main pit is in operation. The Ledford pit is now being filled. We went to the reclamation office to meet Les Siddig, who took us into the pit.

RAMP NO. 1 - SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ Sect. 24 T.9S-R.5E

RAMP NO. 2 - NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ " " "

RAMP NO. 3 - NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sect. 19 T.9S-R.6E

SEE AERIAL PHOTO IN FOLDER 6-207.

The rib of coal is continuously exposed for nearly a mile east from the loading shovel. At the shovel the coal is fresh, clean, and free of debris. Eastward the coal becomes progressively more oxidized and covered by sloughed debris, as it has lain exposed longer.

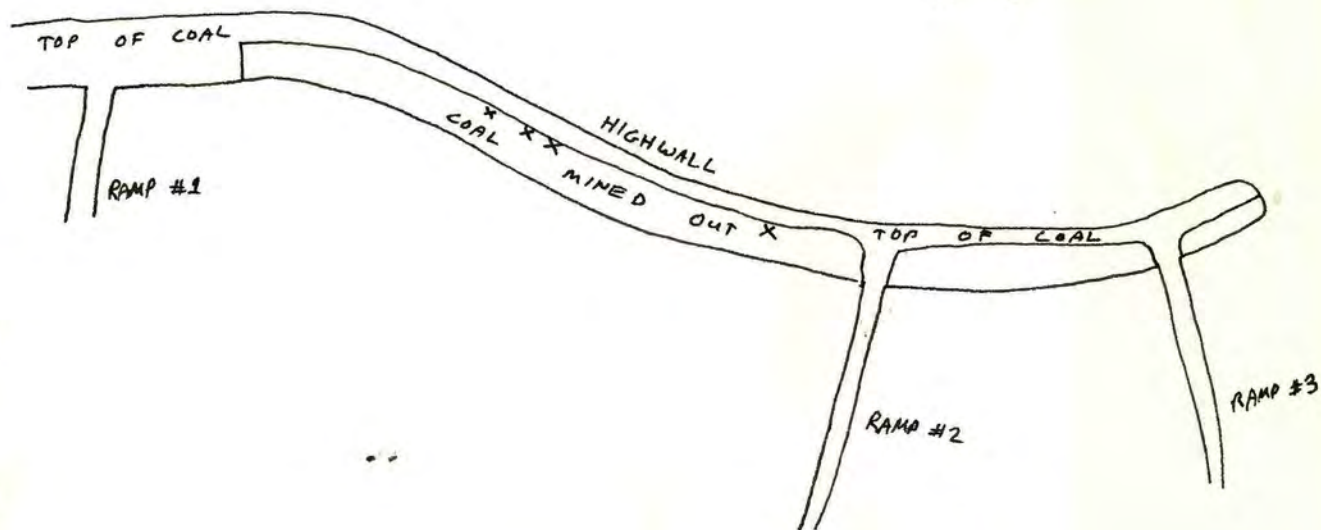
Measured Section No. 1- Coal seam about 500 feet east of loader:

- 0.83' Coal, N.B.B., blocky, excellent cleat, abundant calcite and some pyrite on cleats, one lens of pyrite 0.47' from top.
- 0.01' Fusain, discontinuous.
- 0.07' Coal, sim. to above.
- 0.01' Fusain, disc.
- 0.45' Coal, sim. to above; contains several prominent pyrite-filled vertical fractures.
- 0.01' Fusain, disc.
- 0.86' Coal, sim. to above.
- 0.01' Fusain, disc.



~ 1000'

x - Coal Balls



- 0.21' Coal, sim. to above.
- 0.01' Shale, dark gray to black, carbonaceous, fairly continuous but lenticular. Numerous lenses of pyrite along this layer.
- 0.26' Coal, N.B.B., with several interbeds of soft fusain up to 0.05' thick-these are very discontinuous and variable.
- 0.25' Coal, like that above shale.
- 0.02' Shale, very dark gray, carbonaceous, pyritic with many lenses of pyrite. Fairly continuous layer.
- 0.28' Coal, sim. to above.
- 0.03' Shale, dark gray, hard, very carbonaceous, appears to be a split of the Blue Band. Laterally this layer merges with the shale layer below.
- 0.07' Coal, bright and dull, finely interlaminated.
- 0.09' Shale, sim. to above, with a little pyrite.
- 0.32' Coal, subbright-banded, lacks calcite.
- 0.05' Shale, black, hard, carbonaceous.
- 0.48' Coal, N.B.B. but with less calcite than in upper part of seam; not much pyrite.
- 0.04' Shale, olive-black, fairly hard, carbonaceous.
- 0.27' Coal, sim. to last unit above.
- Claystone, olive-gray, soft, sticky.

Total thickness of seam is 4.63'.

Face cleat: 146°, 154°, 150°, 152°, 148°, 151°, 148°, 151°.
 Butt cleat: 069°, 080°, 071°, 067°, 071° (above Blue Band)
 052°, 066°, 054°, (below Blue Band)

This cleat is really well shown and easy to measure. Calcite on both face and butt cleats.

Just east of the measured section, a lenticular band of pyritic coal-ball material is present 1.15' below the top of the seam.

Pyrite is abundant in vertical extension fractures in the top foot or so of the seam. These fractures may also contain calcite.

The Blue Band is commonly observed to be split, as it was in the measured section. Occasionally thicker lenses of pyrite occur along it. The coal below the Blue Band consistently contains less calcite and pyrite than the coal above. (Possibly the Blue Band acted as a barrier to mineral-bearing solutions that came in from above.)

Clastic dike and slips observed in coal about 1000 feet east of loader. It strikes about 120° and dips to the southwest. The filling is very thin; dark gray clay, with abundant mineralization in the coal adjacent to the dike. This structure has the usual features of "clay-dike faults", including false drag and convergence of bedding near the dike. The fault steepens downward, and probably does not penetrate the floor.

Pod of coal balls about 100 feet east of clastic dike, 1100 feet east of loader. The exposed area is about 10 feet wide, and the coal balls occur mainly in the middle part of the seam. There are no coal balls in the upper foot or so, and only a few scattered ones below the Blue Band. The mass has a central core near the middle of the seam, where several large nodules are intergrown. Away from the core many individual balls, up to about the size of a football and roughly the same shape, occur. Coal balls below the Blue Band are heavily pyritized but those above are good brownish limestone that ought to have well-preserved plant remains. The coal around the nodules is deformed, both by folding and by slip planes.

Phillips et al. collected from this in bulk. It is their Vertical Section # 6 from this mine.

I cannot tell what kind of rock directly overlay the coal balls. At the nearest point of the highwall the following section was observed above the coal:

Lawson Shale, and overlying units (see later notes)
 0.5' Limestone, (Conant) argillaceous.
 0.1' Coal, N.B.B., (Jamestown).
 0.2' Claystone, black.
 1.5' Shale (Anna), black, fissile, with small concretions.
 6-7' Shale (Energy), dark gray, smooth, rather soft. Lower part covered.

This was seen about 30 feet from the coal balls. It is an apparent contradiction to the usual case, that coal balls are overlain by marine roof (black shale or limestone).

Measured Section No. 2 of coal about 20 feet west of coal balls:

0.68' Coal, N.B.B., blocky, good cleat, with abundant calcite. Prominent vertical fractures with pyrite; also a few very small lenses of pyrite noted. Noticeably more weathered than the coal in Section 1.
 0.01' Fusain, discontinuous; locally thicker than 0.01'.
 0.63' Coal, sim. to above, with abundant white calcite and some pyrite on cleats.
 0.14' Coal, fusain and bright-banded coal, inter-laminated in several short layers up to 0.02' thick.
 0.13' Coal, N.B.B., like uppermost unit.
 0.04' Fusain, soft, a lens that pinches out laterally.
 0.66' Coal, sim. to above, with a dull pyritic lens about 0.4' from top.

- 0.01' Shale, black, hard, carbonaceous, very pyritic.
- 0.56' Coal, sim. to above, with less calcite.
- 0.02' Shale, black, hard, well-laminated, very carbonaceous, with thin streaks of coal.
- 0.41' Coal, N.B.B., blocky, no calcite.
- 0.05' Shale, dark olive to black, hard, coaly-Blue Band.
- 0.41' Coal, as above, with pyrite in vertical fractures.
- 0.04' Shale, dark gray, hard, smooth, carbonaceous-split of Blue Band ?
- 0.37' Coal, N.B.B., thinly laminated with numerous layers of fusain and dark carbonaceous shale, a little calcite and pyrite present.
- Claystone, dark olive-gray, moderately soft, mottled, carbonaceous, with abundant plant debris, slightly silty.

Total thickness of seam 4.06'

More coal balls in the upper part of the seam 50-60 feet east of the first pod described. A thick layer of shale is seen directly beneath the coal balls, about a foot below the top of the coal. The shale is gray-black, hard, smooth, and well-laminated, containing tiny streaks of coal, and small lenses of pyrite. It reaches maximum thickness (0.09') just west of the main mass of coal balls, and pinches out to the east and west. The eastern end is near the eastern edge of the coal balls.

Another 10 feet to the east is the western edge of a large area with numerous coal balls. The nodules are seen along about 100 feet of the face. They occur in the upper 2/3 of the seam; none were noted below the Blue Band, although I should say that this lowermost part of the seam is not well exposed.

The coal balls range in size from less than an inch to about a foot; but most are quite small, only a few inches long. Some bands of coal-ball material, about an inch thick and up to several feet long, also are seen. The balls are not intergrown to any extent. Those in the lower part of the seam tend to be more pyritic than those higher up. Coal balls near the top are composed of good brownish limestone, often with calcite-filled fractures.

None of the areas of coal balls seen so far show any abnormal thickening of the seam. (In the past we have found solid masses of mineralized coal, up to twice the normal thickness of the seam).

Cleat measurements taken about 1400 feet east of shovel:

Face cleat: 156°, 151°, 154°, 152°, 153°, 153°, 152°
 Butt cleat: 050°, 066°, 072°, 048°, 050°

These are very close to the measurements taken earlier (see p. 2).

More coal balls nearly 1000 feet east of Vertical Section 6, or 700 feet west of the base of No. 2 Ramp. Exposure in coal is small and largely hidden by debris. The middle part of the seam is quite solidly replaced in a mass about 3 feet wide. Around that is a zone of individual coal balls in a matrix of coal. Judging by the partial exposures, the mass of coal balls in place is not wider than 15 feet on the face. Of course, the original diameter may have been larger if this is only the edge of a mass that has been mostly mined out.

At the back of the pit, next to the spoils, are several large pieces of heavily replaced coal. The largest mass measures 5.0' X 2.9' X 2.6' thick, and another is only slightly smaller. These two masses

I would estimate as 70-80% coal balls; hard gray-brown limestone separated by streaks of coal and shale. There has been some mineralization within the coal balls, with white sparry calcite and fine-grained pyrite. The texture of woody plant material is quite obvious in many places. These coal balls must have given considerable difficulty in mining.

On the highwall adjacent (about 30 feet from) the coal balls, the roof is seen to be about 2 feet of black, fissile Anna Shale overlain by about 6 feet of hard Brereton Limestone.

Estimated section on highwall near base of Ramp # 2:
Thicknesses guessed; materials described from fallen blocks for the most part. This is nearly the thickest bedrock section in the pit.

- 10' Surficial materials; yellowish-brown.
- 5' Sandstone, weathering yellow-brown to red-brown, deeply weathered; very fine to fine-grained, thin to medium-bedded, poorly cemented, shaly, micaceous.
- 4' Shale, brownish, with thin wavy interbeds of sandstone as above.
- 0.5' Coal, bright, fairly continuous.
- 3-4' Shale, gray, soft, poorly bedded.
- 1' Coal, bright, continuous(except where eroded)
- 2' Claystone, or soft shale; greenish-gray.
- 6' Limestone (Bankston Fork), light gray to buff, fine-grained, massive, hard, much fractured; contains irregular inclusions of greenish or gray clay.
- 10' Sandstone (Anvil Rock), light gray, fine-grained well cemented, shaly, thinly bedded, thinly laminated. Grades into:
- 20' Shale (Lawson), medium-dark gray, silty, micaceous; upper part well laminated with interbeds of siltstone and light gray sandstone. Downward becomes finer and more massive. Abundant plant debris on bedding planes.

0.5-0.8' Limestone (Conant), medium-dark gray, fine grained, argillaceous, lenticular unit with concretionary masses having abundant septarian fractures, containing crystalline calcite and pyrite. Laterally grades into dark gray calcareous shale with abundant coarse fossil debris.

1.3' Shale, medium-dark gray, calcareous, fossiliferous, contains lenses of limestone as above, also lenses of coal (Jamestown). Grades downward and laterally into shale, dark gray, soft, slickensided, poorly bedded, carbonaceous, and pyritic. This layer contains Stigmaria.

In most places along the highwall the Jamestown Coal is a continuous layer of bright-banded coal about 0.1' thick.

Brereton Limestone absent here. Up to 8 feet thick elsewhere; dark gray, fine-grained with fossil fragments, massive to coarsely nodular, fractured. breaks into sharp angular fragments.

1.5' Shale (Anna), black, hard, smooth, fissile, with a zone of pyritized shells at base. Sharp contact (in some places the contact is gradational):

2' Shale (Energy), medium-dark gray, smooth, poorly bedded; pyrite trails common.

Top of Coal.

Only 30 feet to the east the Brereton Limestone is 2-3 feet thick and is somewhat lenticular. Above it is 0.2' dark gray, carbonaceous shale; then 0.1' Jamestown Coal, then 0.2' of calcareous shale representing the Conant Limestone. The Energy Shale is thinner eastward, and pinches out.

Another 60 feet eastward I observe the following:

Lawson Shale

0.8-1.0' Conant Ls.
 0.1' Jamestown Coal
 1.5' Anna Shale
 3' Energy Shale
 Herrin Coal.

East of Ramp # 2 the coal is badly oxidized and the lower half mostly covered with debris. No coal balls or other unusual features in this area.

East of Ramp # 3 the coal likewise is oxidized, and also the lower part of the pit is full of water. Still it was possible to examine closely enough to see that there are no faults or masses of coal balls. A few pieces of coal balls were found near the extreme eastern end of the pit, but no coal balls were observed in place.

Other than the one clay-dike fault and a few very small slips in the top of the coal, no other faults were noted. This is significant, for the pit is not far south of the Cottage Grove Fault System.

The strata above the coal at the extreme east end of the pit are similar to those at Ramp # 2, except that the upper of two coals above the Bankston Fork Limestone appears to be eroded in places, and replaced by the brownish sandstone. This could not be determined positively, because the highwall is inaccessible.

More Notes about the Highwall Between Ramp No. 2 and the east end of the pit, surficial erosion has removed strata down to and including the Bankston Fork Limestone.

The Brereton Limestone varies from 0 to 6 feet thick, and is coarsely nodular in this area. The Jamestown Coal is quite persistent. The Conant Limestone is commonly thin or missing, or represented by thin calcareous shale.

There is a road up the highwall about halfway between Ramps 2 and 3. Here the Anvil Rock Sandstone is seen to grade into the Lawson Shale. The upper part of the shale consists of interbedded dark gray silty shale and siltstone, with thin layers of light gray sandstone near the top. One layer of lenticular limestone is present about 8 feet below the contact, or 15 feet above the Jamestown Coal. The limestone is dark gray, fine-grained, hard, and lithologically resembles the Brereton. Its average thickness is about 0.5'.

This same limestone appears to be present elsewhere along the highwall, but is inaccessible.

In general, the Conant Limestone is well developed only where the Brereton Limestone is absent. There are exceptions to this rule.

West of Ramp 2 the brownish sandstone at the top of the highwall is thicker, and the highest of the thin coals is eroded beneath it.

Near the loading shovel the two coals have been removed in places by surficial erosion. The Brereton Limestone is up to 9 feet thick in this area; the Jamestown Coal occurs immediately above, and the Conant Limestone is represented by calcareous shale. The upper foot or two of the Brereton is shaly, while the rest of the unit is hard and massive.

West of the loading shovel a large expanse of coal has been uncovered. The surface undulates gently, but there are no indications of faults or of masses of coal balls. The overburden becomes thinner westward. The highwall is quite badly slumped and not much can be seen. In one spot, however, the Brereton Limestone is seen to lie directly on the coal (basal few inches are a shaly "clod").

On the spoil heap are a couple slabs of shaly light gray sandstone, probably Anvil Rock; with very distinct current ripples on bedding surfaces.

No indications for tectonic faults were noted anywhere in the pit today.

Sahara Coal Company - Mine No. 6 (Surface Mine - Herrin (No. 6) Coal). June 8, 1982. Steve Danner and D. K. Lumm. Notes by John Nelson.

Terry Guest, Safety Dept.
Les Sittig, Engineer

Mine may be forced to close within a month because Sahara cannot obtain a state permit for further mining. Located near center NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 24, T9S-R5E.

We went into No. 2 Incline, an inactive portion of the mine. The coal is partly mined out, leaving a rib about 15 feet back from the highwall. The coal is largely covered with debris, and there is water in the area where the coal was mined out.

About 150 yards east of the base of the incline is a road up the highwall affording a good place to measure a section of overburden.

TOP

- 15' Surficial materials - Topsoil removed by mining; yellowish-brown silt and clay with fragments of shale and limestone; secondary iron. Westward along the highwall there is additional bedrock above the Bankston Fork Limestone, including a layer of coal or black shale about 4 feet above the limestone. See Steve Danner's notes.
- 3' Bankston Fork Limestone - Light to medium gray, weathers brownish, fine-grained, argillaceous, massive. Draped with clay; poorly exposed.

- 3.5' Shale - Light to medium gray, silty, micaceous; upper 1.5' poorly bedded, a silty mudstone or claystone with 0.1' of soft flaky dark gray carbonaceous shale immediately below the limestone. Interbeds of light gray siltstone or very fine sandstone, up to $\frac{1}{2}$ foot thick, in middle portion of unit. Lower portion of unit is thinly laminated micaceous silty shale with laminae of siltstone.
- 2.5' Sandstone - Light gray, fine-grained, poorly sorted, massive; with disseminated greenish clay. Unit appears to be lenticular.
- 4.0' Sandstone - Similar to above, in beds ranging from a fraction of an inch to $\frac{1}{2}$ foot thick, interbedded with medium to dark gray silty shale comprising about $\frac{1}{4}$ of unit. Grades into:
- 23' Shale - Medium-dark gray, firm, well laminated; becomes finer-grained downward, the upper portion is largely siltstone with abundant coarse plant debris and fine parallel laminations of light gray sandstone; this grades downward to silty shale becoming less silty near the base.
- 0.5' Shale (Conant Limestone horizon) - Dark gray to black, soft, poorly bedded, highly calcareous, contains abundant shell and crinoid fragments, carbonaceous with coaly streaks near the base. Locally becomes a lenticular argillaceous limestone.
- 0.3' Jamestown Coal - Normally bright banded with interbeds of black carbonaceous shale.

- 3 -

6'+ Brereton Limestone - Medium-dark gray, fine-grained, hard, massive, contains occasional fossil fragments and calcite-filled vertical fractures. Base covered.

2'± Covered.

Top of Herrin Coal.

Description of coal seam 75 yards east of base of No. 2 Incline:

Coal overall is not too badly oxidized although there are some whitish sulfates present on the surface. Lower part of seam may have lain under water.

TOP

Thickness (distance from top)

0.20' Coal - Normally bright banded, about 1/3 vitrain? Laminations even and regular. Abundant pyrite and calcite, and a little kaolinite, on cleat facings.

0.01' Shale - Black, carbonaceous.
(0.21')

0.27' Coal - Normally bright banded, similar to
(0.48') above.

0.02' Fusain - Soft, not mineralized. Appearance
(0.50') of charcoal.

0.30' Coal - Upper 0.05' mostly vitrain, then a
(0.80') zone of attrital coal with intermittent lenses of flaky carbonaceous shale and hard pyrite. Lower half of unit normally bright banded.

- 0.01' Fusain - Soft, discontinuous
(0.81')
- 0.55' Coal - Normally bright banded, similar to
(1.36') topmost unit; numerous thick mineralized veins with calcite and pyrite, extending downward from top of unit, and feathering out in middle part of unit.
- 0.10' Fusain - Soft, lenticular, locally
(1.46') interbedded with bright coal. Varies in thickness.
- 0.90' Coal - Normally bright banded, similar to
(2.36') topmost unit; about 1/3 vitrain, 2/3 clairain and durain, trace of fusain, bands less than 0.02' thick, thick facings of pyrite, and some calcite, on cleat; occasional pyrite-filled veins. Whitish sulfates on surface.
- 0.05' Shale - Black, flaky, carbonaceous, grades
(2.41') to bone coal; thin lenses of pyrite.
- 0.46' Coal - Similar to above, yellowish sulfates
(2.87') on surface.
- 0.02' Pyrite - Discontinuous band; mineralized
(2.89') fusain parting?
- 0.33' Coal - Similar to above.
(3.22')
- 0.10' Shale (Blue Band) - Olive-gray to black,
(3.32') smooth, soft-softened by water.
- 0.40' Coal - Normally bright banded, with few
(3.72') cleat facings, a little yellowish sulfate on surface.

0.15'
(3.87') Shale and pyrite - Shale dark gray to black, smooth, very carbonaceous, with stringers of coal; pyrite occurs as elongate lenses, very hard, dense, very fine-grained.

0.85'
(4.72') Coal - Normally bright banded, similar to last unit above.

Claystone - Olive-gray, soft, with numerous lenses of
pyrite.

Generalized section
near base of No. 2 Incline - center NE $\frac{1}{4}$ Sec
Section 24.



Surficial materials 70'

Allenby Coal 60'

Bankston Fork Limestone 50'

Anvil Rock Sandstone 40'

Lawson Shale 30'

Conant Limestone 10'

Jamestown Coal

Brereton Limestone

Herrin (No. 6) Coal 0'

Sahara Coal Co.
Mine No. 6
Herrin (No.6) Coal

Saline County
6/8/82

Notes by Steve Danner. Accompanied by John Nelson and Don Lumm, ISGS geologists.

This surface mine is located just south of Rte 13 and east of the Carrier Mills blacktop. We are visiting this mine because there is a possibility that the State may not renew Sahara's permit for an additional 600 acres. Sahara is trying to cut a few corners on their reclamation program and the State doesn't like it.

The highwall at mine No. 6 trends roughly east-west. Originally the highwall trended NW-SE, but the SE end of the wall has been advanced more rapidly than the NW end. This "pivoting" of the highwall has brought it more to an east-west alignment. Due to impending bad weather we split up. Don and John check out the east $\frac{1}{2}$ of the highwall, while I take a look at the west $\frac{1}{2}$.

Stop #1: SE $\frac{1}{4}$, NW $\frac{1}{2}$ Sec 24, T9S, R5E.

West end of the active pit. The highwall is 40-45' high at this location. The top of the No.6 Coal forms a bench 10-15' wide at the base of the highwall. All but the top foot of coal is submerged beneath the water that has ponded at this end of the pit. A measured section of the highwall is as follows:

Top of section-

- 5-6' Loess and alluvium: brownish-gray; no visible sand or gravel; vertical face.
- 6-8' Sandstone: very light gray, weathers brown to gold; very fine-grained, well-sorted, mostly quartz, some mica; bedding varies, upper 3' bench contains beds about 0.3' thick, middle bench (3' thick) contains 0.6' bedding, while lowest bench is one 2' thick bed or two 1' thick beds. Occasional streaks of coal and many

brown Stigmaria are in evidence. The Stigmaria are 1-3" long, up to 0.3" wide, and are normal or oblique to the bedding. Hand sample taken. This sandstone forms the uppermost ledge in the highwall. Sharp contact with....

1.6-2.0' Siltstone: medium gray, weathers medium light-gray; mid-hardness; very silty; very thin bedded, flaggy parting; rapidly grades into....

0.4' Claystone: very dark gray, soft, clayey, poorly bdd, slickensided; friable into chips and flakes. Sharp contact with....

0.6' Coal: (Allenby) black, hard, blocky, well developed cleat; bright banded w/ an overall vitreous lustre; appears to be mostly vitrain and bright clarain; very little fusain, no visible pyrite, a little calcite on cleat. Looks to be a high quality coal, even as weathered as it is. Cleat orientation N35-50°W and N35-50°E. Sharp contact with...

3.0-3.5' Siltstone: medium reddish-gray to gray; mid-hardness; poorly bedded; upper ½ of unit is browner than lower ½, also more carbonaceous. Upper 0.3' is slickensided and very carbonaceous; serves as underclay for overlying coal. Sharp contact with....

4.5-5.5' Limestone: (Bankston Fork) light gray to light brownish-gray or even pinkish-gray; hard and dense; basically a biomicrite; fossils are mostly fine detritus; fine spar crystals in evidence; possibly glauconitic; unit comprised of two beds, upper is about 3.2' thick, lower is about 1.8' thick. Uppermost 0.6' is somewhat nodular with a light green clay matrix in part. Sharp contact with...

Sahara Mine No.6

page 3

-
- 1.0' Claystone: medium light gray, moderately soft and friable; very smooth; poorly bedded; non-calcareous; weathers poorly; resembles an underclay.
- 3-5' Sandstone: very light to light gray; hard, fine-grained, thin-bedded; quartzose; occasional ripple marks on bedding surfaces. Grades into.....
- 20-25' Shale and siltstone: medium gray to reddish gray; mid-hardness; very thin-bedded or laminated, platey parting; siltier in upper $\frac{1}{2}$ of unit. Very boring. Lower contact covered.
- 5' Covered interval: In the next pit to the west this interval consisted of:
- (1.5' Shale-claystone: black, clayey, very rotten, very carbonaceous, slickensided, soft; contains several iron-stained bands; friable with platey parting. Sharp contact with)
- (3' Limestone: (Brereton) dark gray, hard, dense, thick-bedded, sparsely fossiliferous, micritic; contains numerous calcite veins up to 0.02' thick.)
- (1' Covered interval: probably more limestone or a thin bed of shale.)
- ? Coal: (Herrin No.6) black, hard, normally bright banded; well-developed cleat, cleat orientation N30-50 W and N33-48 E.

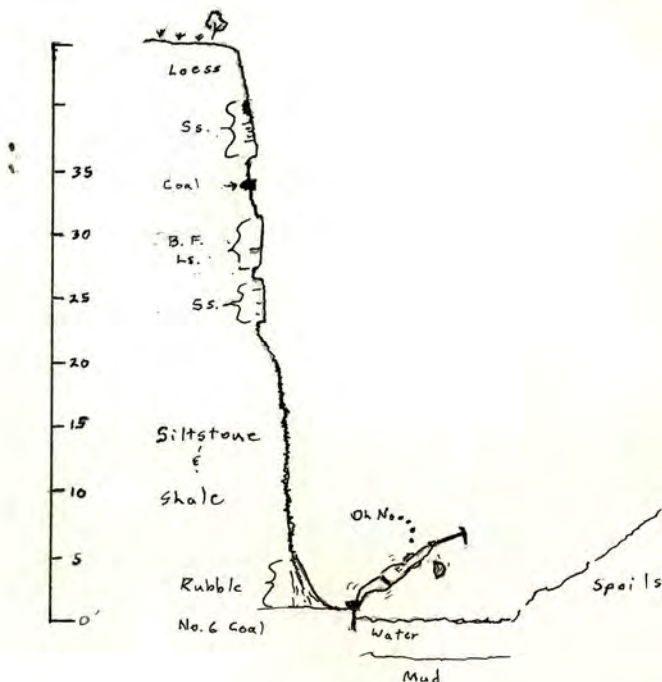
End of section.

The western-most pit offered no surprises. the highwall is close to $\frac{1}{2}$ mile in length with the same basic stratigraphy as the measured section. The upper beds are gradually eroded away as I proceed to the west. At the far west end of the pit the loess is resting directly on the Bankston Fork Limestone. There are no visible structural irreg-

Sahara Mine #6

page 4

ularities along this highwall. The wall seems fairly stable. Most of the rubble at the base of the wall is claystone and siltstone chips and plates, and an occasional slab of sandstone. A profile of the highwall is sketched below.



If you should happen to visit this mine bring your mountain gear; the spoils piles are steep and footing is treacherous. Bring your lunch!

SKD

Apr 6, 1992

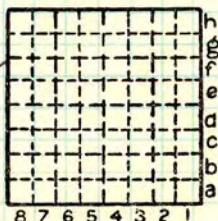
Note -

There is a carbon recovery operation near the site of the Sahara No 6 Tipple.

It may be operated by either Jadu or Arclar. It has a stripping permit but is not considered a mine

MB from Ernie Ashby DMM

Federal Landscape No 2



By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____



FORM 180 W

Sahara Coal Co.
Mine No. 6
Herrin (No.6) Coal

Saline County
6/8/82

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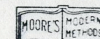
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FORM 180 W

Sahara Mine No.6

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FORM 180 W

Sahara Mine No.6

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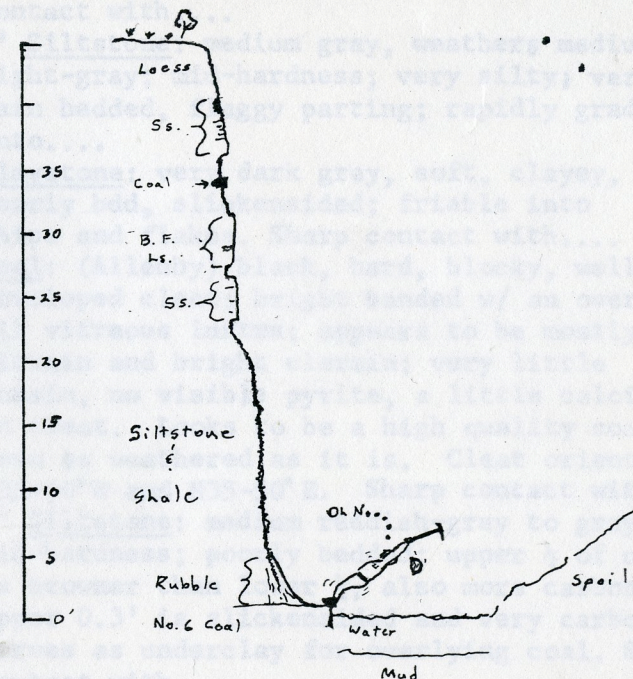


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Sahara Mine #6

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