

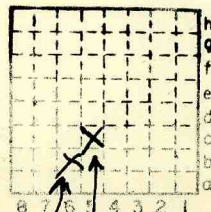


Form 180

SEE ACTIVE LOCAL BOOK

CC 200B - last production 2002, moved to this book, and water problems, were pumping 10,000 gal / day and shut pumps down. Exceedingly unlikely anyone would attempt to re-open this mine

Inland Steel
Underground
shaft mine.



Sec. 30
T. 4 S.
R. 2 E.
Index No.

M & M.
Coal hoist

Inland Steel Co. Mine # 1

Consolidation Co. C.

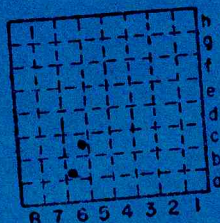
"Rend Lake" Mine 5x1986

INLAND STEEL CO.
MINE # 1

Mine Index No. 877
Coal Report No. S-5

JEFFERSON COUNTY

HERRIN



Sec. **30**
T. **4** S.
R. **2** E.
Index No.

Skip Shaft 1550' SL, 2110'WL
Man Shaft 1170' SL, 1500'WL



FORM 180 W

mn-act-jackson-01.tif



Surface works of Inland Steel Co. Mine No. 1, Jefferson County; as viewed from southeast. Photo by John Nelson, March 1981.



FORM 180 W

mn act_jackson_02.tif



View of Inland Steel's tipple from the south.



(Sheets) COAL PRODUCTION (Sheet)

Period		Tons	
Mo.	Day Year	Mo.	Day Year
	1967	4	302
	1968	336	518
	1969	845	1516
	1970	1	928 183
	1971	1	859 825
	1972	2	140 416
	1973	2	588 482
	1974	2	469 434
	1975	2	065 313
	1976	1	894 893
	1977	1	593 790
	1978	1	475 669
	1979	1	895 829
	1980	2	006 680
	1981	1	559 759
	1982	1	913 123
	1983	2	426 615
	1984	2	337 852
	1985	2	279 815
	1986	2	443 250
	1987	2	329 592
	1988	2	969 620
	1989	2	470 190
	1990		

INLAND STEEL CO.

MINE No. 1

Consol "Rond Lake"

845,156

2,969,260

SUMMARIES

No. to No.

1967-1971 (INC)

5 024 024

Railroad, Wagon, Strip, Idle, Abandoned

Sec. 30

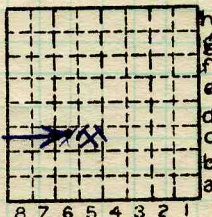
IDENTIFICATION

County No. _____ Coal No. _____

Coal Report No. S-5

Quad. incorrect

County JEFFERSON



T. 4

R. 2

Index No.

COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA



ILLINOIS STATE GEOLOGICAL SURVEY

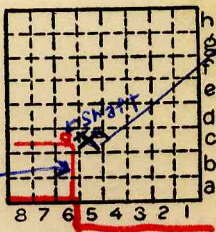
Location and Elevation Data

Location Collar shaft Exact _____ Approx. estimated by pacing.
 Location by MEH & LDW.
 Date 6/8/66 Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

Position in sec.

1500 ft. from South line _____

250 ft. from East line SW _____



correct
 Sec. 30
 T. 4 S.
 R. 2 E.

Other description _____

Bed	Depth	Elev.	Thickness
_____	_____	_____	_____

Farm _____ No. _____

(MINE Under construction
6/8/66)

Company Inland
STEEL CO. Mine
 No. _____

Card by _____ Date _____

Used in _____ County No. _____

Elevation _____ ft.

Method: Level, transit, alidade, hand level, top. map. & pacing
red from top sheet

Elev. of 449' Height of point above ground _____

Date _____ Notebook No. _____ Page _____ No. _____

Looseleaf ref. _____ Map files No. _____

Year drilled _____ Total depth _____ I. P. _____

Sample set No. _____ Electric log _____ S _____ H _____ L _____

Description (drill hole, mine, etc.) _____

Time log _____

County Jefferson • Waltonville 7.5'
 Quad. Duguein Index No. 877

ILLINOIS STATE GEOLOGICAL SURVEY

Location and Elevation Data

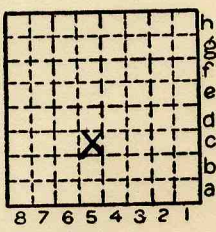
Location _____ Exact _____ Approx. _____
 Location by Fred Murray & Ken Proctor
 Date June 30, 1966 Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

Coal Hoist Shaft. Position in sec. _____

Inland Steel Mine

165 ft. from E line SE NE SW

180 ft. from S line SE NE SW



Sec. 30
 T. 4 S.
 R. 2 E.

Other description loc. from mine

planning map, shaft is currently
 Bed _____ Depth _____ Elev. _____ Thickness 95' deep.

Farm _____ No. _____

 Company _____
 _____ No. _____

Card by _____ Date _____
 Used in _____ County No. _____
 Elevation _____ ft.

Method: Level, transit, alidade, hand level, top. map.

 Elev. of _____ Height of point above ground _____
 Date _____ Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

Year drilled _____ Total depth _____ I. P. _____
 Sample set No. _____ Electric log _____ S _____ H _____ L _____
 Description (drill hole, mine, etc.) _____

Time log _____

County Jefferson. Quad. _____ Index No. _____

ILLINOIS STATE GEOLOGICAL SURVEY

Location and Elevation Data

Location _____ Exact _____ Approx. _____
 Location by Fred Murray & Ken Proctor
 Date June 30, 1966 Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

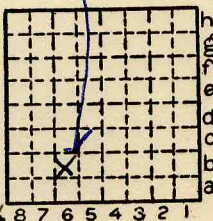
Man and Material Shaft. Position in sec. _____

365 ft. from W line NW SE SW

160 ft. from N line NW SE SW

Other description loc. from mine

planning map, shaft is currently 95 deep.



Sec. 30
 T. 4 S. 4
 R. 2 E. 4

Bed _____ Depth _____ Elev. _____ Thickness _____
 Farm _____ No. _____
 Company _____ No. _____

Card by _____ Date _____
 Used in _____ County No. _____
 Elevation _____ ft.

Method: Level, transit, alidade, hand level, top. map.
 Elev. of _____ Height of point above ground _____
 Date _____ Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

Year drilled _____ Total depth _____ I. P. _____
 Sample set No. _____ Electric log _____ S _____ H _____ L _____
 Description (drill hole, mine, etc.) _____

Time log _____

County Jefferson Quad. _____ Index No. _____

ILLINOIS STATE GEOLOGICAL SURVEY

Location and Elevation Data

Location _____ Exact _____ Approx. _____

Location by Fred Murray & Ken Proctor.

Date June 30, 1966 Notebook No. _____ Page _____ No. _____

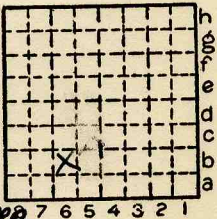
Looseleaf ref. _____ Map files No. _____

Man and Material Shaft. Position in sec. Inland Steel Mine

365 ft. from W line NW SE SW

160 ft. from N line NW SE SW

Other description loc. from mine



Sec. 30
 T. 4 S.
 R. 2 E.

planning map, shaft is now 95' deep.

Bed	Depth	Elev.	Thickness	Farm

By F.N.M. & K.E.P.

_____ No. _____

Company _____

_____ No. _____

Card by _____ Date _____

Used in _____ County No. _____

Elevation _____ ft.

Method: Level, transit, alidade, hand level, top. map.

Elev. of _____ Height of point above ground _____

Date _____ Notebook No. _____ Page _____ No. _____

Looseleaf ref. _____ Map files No. _____

Year drilled _____ Total depth _____ I. P. _____

Sample set No. _____ Electric log _____ S _____ H _____ L _____

Description (drill hole, mine, etc.) _____

Time log _____

County Jefferson Quad. _____ Index No. _____

ILLINOIS STATE GEOLOGICAL SURVEY

Location and Elevation Data

Location _____ Exact _____ Approx. _____
 Location by Fred Murray & Ken Proctor
 Date June 30, 1966 Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

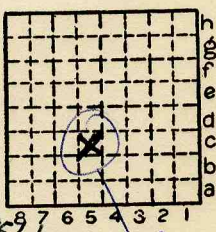
Coal Hoist Shaft. Position in sec. _____

Inland Steel Mine

165 ft. from E line SE NE SW

180 ft. from S line SE NE SW

Other description loc. from mine



Sec. 30
 T. 4 S. 4
 R. 2 E. 2

planning map, shaft is currently 95' deep.

Correct

Bed	Depth	Elev.	Thickness

Farm _____ No. _____
 Company _____ No. _____

Card by _____ Date _____
 Used in _____ Elevation _____ ft.

Method: Level, transit, alidade, hand level, top. map.

Elev. of _____ Height of point above ground _____
 Date _____ Notebook No. _____ Page _____ No. _____
 Looseleaf ref. _____ Map files No. _____

Year drilled _____ Total depth _____ I. P. _____
 Sample set No. _____ Electric log _____ S _____ H _____ L _____
 Description (drill hole, mine, etc.) _____

Time log _____

County Jefferson. Quad. _____ Index No. _____



mn - act - jackson - 03.tif

JUL . 66



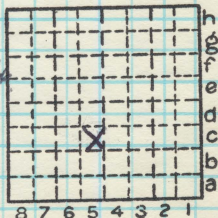
165' W/EL } SE NE SW
180' N/SL }

Sinking of Inland Steels
Coal hoist shaft.

By F. N. M. Date June 30, 1966

Quad. Part

County Jefferson



Sec. 30

T. 4 S.

R. 2 E.

Index No.





mn-act-jackson-04.td

JUL . 66



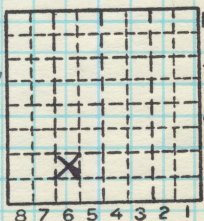
365' E/WL } NW SE SW
160' S/NL }

Sinking of Inland Steels' man and material shaft.

By F.N.M. & M.E.P. Date June 26, 1966

Quad. Part

County Jefferson



h Sec. 30
g T. 4 S.
f E.
e R. 2
d
c
b
a Index No.



ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel - Coal hoist shaft.

Face channel sample #1, taken on west side of storage bin excavation.

190'W/EL 180'N/SL SE NE SW Sec. 30, T. 4 S., R. 2 E.

February 22, 1967

Logged by F. N. Murray and W. H. Smith

Total Coal Sample - 51"

Number 5 Coal, Top of coal 768'0" below surface.

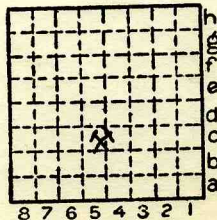
DETAILED DESCRIPTION OF COAL

Thickness from top

Feet	Inches	Description
1	6	Shale, gray, hard, smooth. A few pyritized fossil remains 1'6" exposed. Coal #5
	21	Coal bright banded pyrite or fracture surfaces in lower 4"
21-21½		Fusain, slightly shaly
21½-29½		Coal, gright banded
29½-29¾		Shale, parting discontinuous, laterally contains lenticular pyrite masses.
29¾-51"		Coal, bright banded.

(51" sampled, no exclusions)

F. N. Murray and
 By...W...H...Smith.....Date...2-22-67
 Quad.....Part.....
 County...Jefferson.....



Sec. 30

T. 4	N
	S
R. 2	E
	W

ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel - Coal hoist shaft.

Face channel sample #1, taken on west side of storage bin excavation.

190'W/EL 180'N/SL SE NE SW Sec. 30, T. 4 S., R. 2 E.

February 22, 1967

Logged by F. N. Murray and W. H. Smith

Total Coal Sample - 51"

Number 5 Coal, Top of coal 768'0" below surface.

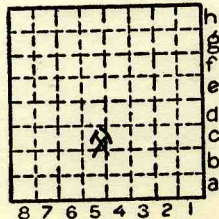
DETAILED DESCRIPTION OF COAL

Thickness from top

Feet	Inches	Description
1	6	Shale, gray, hard, smooth. A few pyritized fossil remains 1'6" exposed.
	21	Coal #5 Coal bright banded pyrite or fracture surfaces in lower 4"
	21-21½	Fusain, slightly shaly
	21½-29½	Coal, gright banded
	29½-29¾	Shale, parting discontinuous, laterally contains lenticular pyrite masses.
	29¾-51"	Coal, bright banded.

(51" sampled, no exclusions)

F. N. Murray and
 By W. H. Smith Date 2-22-67
 Quad..... Part.....
 County Jefferson.....



Sec. 30

T. 4	h
	S.
R. 2	h
	W.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel - Coal Hoist shaft

Face Channel sample #2, taken on north side of storage bin excavation.

180'W/EL 190'N/SL SE NE SW Sec. 30, T. 4 S., R. 2 E.

February 22, 1967

Logged by F. N. Smith and W. H. Smith

Total coal sample - 51"

Number 5 Coal, top of coal 768'0" below surface.

DETAILED DESCRIPTION OF COAL

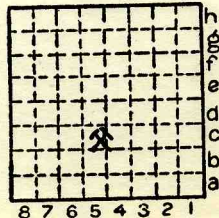
Thickness from top

Feet	Inches	Roof
		Roof same as Sample 1
		Total coal thickness 52"
	0-27	Coal bright banded
	27-27½	Shale, gray, pyritic, forms discontinuous lenses (excluded from sample)
	27½-52"	Coal bright banded, pyrite on vertical fracture surfaces, underclay, light greenish gray, 2' exposed. Seatrock, light greenish gray, much slickensided 3 to 4 feet exposed.

By F. N. Murray & W. H. Smith Date 2-22-67

Quad..... Part.....

County Jefferson



Sec. 30

T. 4	N
	S.
R. 2	E.
	W

ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel - Coal Hoist shaft

Face Channel sample #2, taken on north side of storage bin excavation.

180'W/EL 190'N/SL SE NE SW Sec. 30, T. 4 S., R. 2 E.

February 22, 1967

Logged by F. N. Smith and W. H. Smith

Total coal sample - 51"

Number 5 Coal, top of coal 768'0" below surface.

DETAILED DESCRIPTION OF COAL

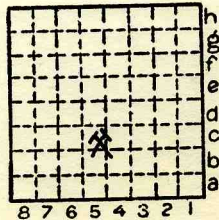
Thickness from top

Feet	Inches	Roof
		Roof same as Sample 1
		Total coal thickness 52"
	0-27	Coal bright banded
	27-27½	Shale, gray, pyritic, forms discontinuous lenses (excluded from sample)
	27½-52"	Coal bright banded, pyrite on vertical fracture surfaces, underclay, light greenish gray, 2' exposed. Seatrock, light greenish gray, much slickensided 3 to 4 feet exposed.

By... F. N. Murray & W. H. Smith Date 2-22-67

Quad..... Part.....

County Jefferson



Sec. 30

T. 4	N
	S
R. 2	E
	W

ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel

Coal hoist shaft

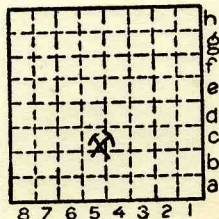
Logged by F. N. Murray and W. H. Smith

Thickness Top Base

728'10"	0'0"	728'10"
9'2"	728'10"	738'0"
30'0"	738'0"	768'0"
4'3"	768'0"	772'3"

Penn. strata above #6
 #6 Coal
 Strata between #5 and #6
 #5 Coal

F. N. Murray and
 By *W. H. Smith* Date *2-22-67*
 Quad..... Part.....
 County *Jefferson*



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



ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel

Coal hoist shaft

Logged by F. N. Murray and W. H. Smith

Thickness Top Base

728'10" 0'0" 728'10"

9'2" 728'10" 738'0"

30'0" 738'0" 768'0"

4'3" 768'0" 772'3"

Penn. strata above #6

#6 Coal

Strata between #5 and #6

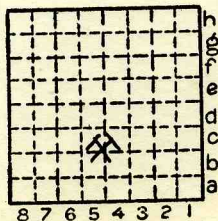
#5 Coal

#6 Coal thickness: $110'' = 9'2'' = 2.80 \text{ m}$

By F.N. Murray and W.H. Smith Date 2-22-67

Quad..... Part.....

County Jefferson



Sec. 30

T.	<u>4</u>	W
S.		
R.	<u>2</u>	E
E.		



Inland Steel Mine

Face Channel Sample No. 1

Location: 1675'N., 1400'W. of the SE corner of the NE 1/4 section 36, 4S-1E, Jefferson County

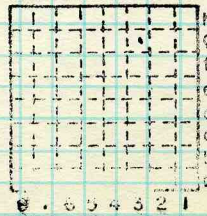
Shale (roof of #6) - medium gray, well laminated, with numerous plant fossils, bark impressions, and fairly well preserved leaves

Coal (#6) - nothing excluded - 8'10"

- 0 - 35" Coal - normally bright banded, calcite on prominent fractures, kaolinite on smaller cleat faces, some pyrite filled cleats 21"-31" from top, occasional fusain lenses, 2 very thin pyritic bands 10" from top
- 35 - 36" Coal - fusain, somewhat mineralized with calcite
- 36 - 45" Coal - normally bright banded, several thin fusain lenses and several boney bands, calcite and kaolinite on vertical fractures
- 45 - 46" - fusain lense, soft, slightly mineralized with calcite
- 47 - 73" Coal - normally bright banded, calcite and kaolinite on vertical fractures, a few thin fusain lenses and boney bands
- 73 - 74" - fusain, soft
- 74 - 86" Coal - about 65% boney bands, with thin vitrain bands
- 86 - 90" Coal - normally bright banded, kaolinite on vertical cleat faces, a few fusain bands
- 90 - 91" - boney coal *Prob. BS #20*
- 91 - 106" Coal - normally bright banded, kaolinite on vertical cleat faces (bottom of coal not seen)

Thickness: 106" = 8'10" = 2.69m
MEH + RBN

Date: 4/8/69



Sec. 36
T. 4 S.
R. 1 E.
Index No. #

6 5 4 3 2 1



Inland Steel Mine

Face Channel Sample No. 2

Location: 1025'N., 25'E., SW corner, NW $\frac{1}{4}$, section 31, 4S-2E, Jefferson County

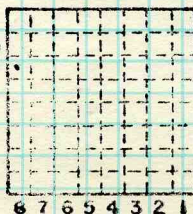
Shale (roof of #6) - gray, silty, much finely disseminated plant material

Coal (#6) - 8'8"

- 0 - 2" Coal - normally bright banded, several thin shaly interlamination
- 2 - 25" Coal - normally bright banded, kaolinite and some calcite on vertical fractures, 2 thin pyritic partings 13" from top
- 25 - 25 $\frac{1}{2}$ " Shale - light gray, lenticular
- 25 $\frac{1}{2}$ - 31" Coal - normally bright banded, kaolinite on vertical fractures
- 31 - 38" Coal - normally bright banded, interlaminated with about 35% boney bands up to $\frac{1}{2}$ " thick
- 38 - 79" Coal - normally bright banded, kaolinite and some calcite on vertical fractures, several boney zones up to 6" thick, thin fusain bands up to 5" thick
- 79 - 84" Coal - boney with 20% vitrain bands
- 84 - 85" Fusain - mineralized with calcite (excluded from sample)
- 85 - 89" Coal - normally bright banded, some kaolinite on vertical faces
- 89 - 91" Shale (blue band) - medium gray (excluded from sample)
- 91 - 104" Coal - normally bright banded, several thin boney bands, kaolinite on vertical faces (exact thickness unknown, but 3-4" from floor)

Thickness: 104" = 8'8" = 2.64m

MEH + RBN
Date: 4/8/69



h Sec. 31
g
f
e T. 4
d
c R. 2
b
a Index No.



Inland Steel Mine

Face Channel Sample No. 3

Location: 450'N., 975'E., SW corner, NW $\frac{1}{2}$,
Section 31, 4S-2E, Jefferson County

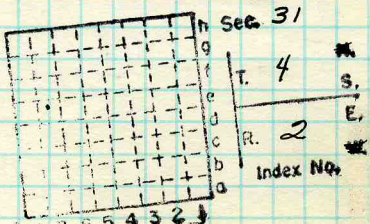
- Coal (#6) - (contact with roof not seen) - 9' 9 $\frac{1}{2}$ "
- 0 - 18" Coal - normally bright banded, small amount of pyrite on vertical fractures, occasional thin pyritic partings
 - 18 - 18 $\frac{1}{2}$ " Coal - boney
 - 18 $\frac{1}{2}$ - 29" Coal - normally bright banded, kaolinite on vertical fractures, occasional thin fusain lenses
 - 29 - 30" Coal - boney
 - 30 - 68" Coal - normally bright banded, small amount of kaolinite and calcite on vertical fractures, a few fusain lenses up to $\frac{1}{2}$ "
 - 68 - 77" Coal - normally bright banded, but with several thin boney coal bands, kaolinite on a few vertical fractures
 - 77 - 79" Shale (blue band) - medium gray with a brownish cast, thin vitrain inter-laminations (excluded from sample)
 - 79 - 101" Coal - normally bright banded, slight amount of kaolinite on vertical fractures
 - 101 - 101 $\frac{1}{2}$ " Fusain - mineralized with calcite (excluded from sample)
 - 101 $\frac{1}{2}$ - 108 $\frac{1}{2}$ " Coal - normally bright banded with several $\frac{1}{4}$ " calcareous fusain bands
 - 108 $\frac{1}{2}$ - 117 $\frac{1}{2}$ " Coal - normally bright banded, some calcite and kaolinite on vertical fractures, several thin boney bands near base
- Underclay - medium dark gray, hard, silty

Thickness: 117 $\frac{1}{2}$ " = 9' 9 $\frac{1}{2}$ " =

2.98 m

NEH + RBN

Date 4/8/69



ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel Co. Mine

Sample of fresh No. 6 Coal for oxidation study with I. Breger.

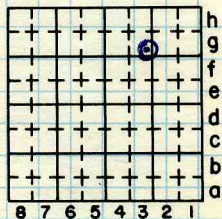
Access: Dick Shockley - superintendent
Guide in mine: Vick Greer

Sample: Two buckets (double plastic bags) taken from loader behind cutter working on development face. No. 7 entry, No. 1 Main E, 60 feet rt of 4th rt belt. Mining 7½ feet up from the fireclay in seam about 9 feet thick.

Held in plastic sacks two days then crushed ¼" rollers; stored two quart jars, twice evacuated and helium replaced.

Sample No. CP-1602 for oxidation study with I. Breger, U. S. G. S.

By N. H. Bostick
B. F. Bohor Date April 5, 1972



Quadrangle _____
County Jefferson Sec. 31 T. 4S R. 2E
CP-1602 1500 ft. N, 1200 ft. E, center
Sec. 31

ILLINOIS GEOLOGICAL SURVEY, URBANA

Inland Steel Mine

Sesser, Illinois

Collected 6/10/75^a by Gluskoter and Bengal

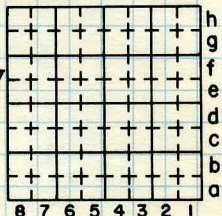
Bench Set #1 - For West end of belt entry in
Main West

4S, 1E, sec 26

Thickness	Bench #	Description
0"-12"	Z	<u>Coal</u> - Normally bright banded, 1/2" thick, fusain band noted 8" from top. Contact with sandstone and siltstone. Roof member is interbedded roof material and coal interlaminations. Top Coal. Sample taken 150' back from face.

Benches A through E taken at face

0"-21 1/2"	A	<u>Coal</u> - Normally bright banded, kaolinite on cleat. Thin pyrite stringers less than 1/8" thick at 5" and 6" from top of bench.
21 1/2"-23"	B	<u>Shale</u> - Medium gray.
23"-48"	C	<u>Coal</u> - Normally bright banded, pyrite lenses up to 3/8" thick noted. Pyrite and calcite on cleats.
48"-72"	D	<u>Coal</u> - Normally bright banded, abundant pyrite on vertical shears.
72"-98"	E	<u>Coal</u> - Normally bright banded, and not as bright as above, dull, several bony bands. Coal very dull in lower 6".



By _____ Date _____

Quadrangle _____

County Jefferson Sec. 26 T. 4S R. 1E

Bottom Coal Benches

20" above floor to
8" above floor

X

Coal - Normally bright
banded, sample was taken 150'
back from face.

Floor to 8" above
floor

Y

Coal - Normally bright banded,
no visible pyrite. Taken same
place as X.

ILLINOIS GEOLOGICAL SURVEY, URBANA
 Inland Steel Mine
 Sesser, Illinois
 Collected 6/10/75 by Gluskoter and Bengal
 Bench Set #2 - 12th right off Main West

2500 N, 1500 W

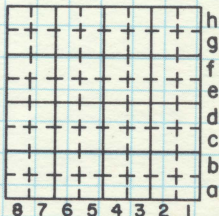
4S, 1E, sec 3/26
 ROT
 1/87

Thickness	Bench #	Description
0-4"	Z	<u>Top Coal</u> . Sample taken where roof material sampled.
4"-19"	A & B	<u>Coal</u> - Normally bright banded, soft fusain 7" from top of bench. 1/4" thick, pyrite on cleat and bedding.
19"-43"	C	<u>Coal</u> - Normally bright banded, calcite on cleats, minor pyrite.
43"-82"	D	<u>Coal</u> - Normally bright banded, minor pyrite on cleats. Kaolinite and calcite also noted. Numerous 1/4" thick fusain zones.
82"-98"	E	<u>Coal</u> - Normally bright banded.
98"-100"	F	<u>Shale</u> - Coaly with vitrain stringers (Blue Band?).
100"-121"	G	<u>Coal</u> - Normally bright banded.

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____



Inland Steel Mine

Gluskoter and Bengal 6/10/75

Bench Set #2 (9'6") and Top Coal

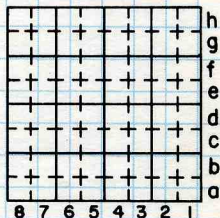
(12th right off Main West

<u>Thickness</u>	<u>Bench #</u>	<u>Description</u>
0"-12"	A & B	<u>Top Coal</u> . Recovered 3". Not to roof contact. <u>Coal</u> - Normally bright banded, soft fusain at 7", 1/4" thick, pyrite on cleat and bedding.
12-36"	C	<u>Coal</u> - Normally bright banded, calcite on cleat, minor pyrite.
36"-75"	D	<u>Coal</u> - Normally bright banded, minor pyrite on cleat, kaolinite and calcite. Numerous 1/4" fusain zone.
75"-91"	E	<u>Coal</u> - Normally bright banded.
91"-93"	F	<u>Coaly Shale</u> with vitrain stringers (Blue Band)
93"-114"	G	<u>Coal</u> - Normally bright banded.
4"	Z	<u>Top Coal</u> . (Taken at roof sample locality.)

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____



Inland Steel

Gluskoter and Bengal 6/10/75

For West end of Belt. Entry in Main West

Top Coal 1' (sampled back 150' from face).

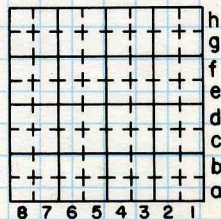
Total height of coal taking 7' 2"

<u>Thickness</u>	<u>Bench #</u>	<u>Description</u>
0-9 1/2"	A	<u>Coal</u> - Normally bright banded, kaolinite on cleat, thin pyrite stringer less than 1/8" at 5" and 6".
9 1/2"-11"	B	<u>Shale</u> - Gray.
11"-36"	C	<u>Coal</u> - Normally bright banded, pyrite lenses up to 3/8" thick, pyrite and calcite on cleat.
36"-60"	D	<u>Coal</u> - Normally bright banded, abundant pyrite on verticle shears.
60"-86"	E	<u>Coal</u> - Normally bright banded, hard and not as bright as above, dull, bony band. Coal very dull in lower 6".

Bench Set #1

Top Coal

150' from face



By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

<u>Thickness</u>	<u>Bench #</u>	<u>Description</u>
0-1'	Z	<u>Coal</u> - Normally bright banded, 1/2 fusain 8" from top. Contact with siltstone, sandstone member is interbedded sandstone and siltstone and coal.

Bench Set #1
Bottom Coal
 150' from face

Floor to 8"	Y	<u>Coal</u> - Normally bright banded, no visible pyrite.
-------------	---	--

Bench Set #1
 8" to 20" above
 floor

150' from face		<u>Coal</u> - Normally bright banded.
-------------------	--	---------------------------------------

INLAND STEEL CO. MINE # 1, NEAR SESSER, JEFFERSON
COUNTY, ILLINOIS

Herrin (No. 6) Coal Roof Study. Heinz Damberger,
H.-F. Krausse, Chris Ledvina, John Nelson, Colin
Treworgy, Steve Hunt, and others. June 1975-
Jan. 1976.

Inland Steel Mine # 1 was one of several mines selected for intensive mapping and study on this project, which was a contract sponsored and financed by the U.S. Bureau of Mines. Two main areas were mapped. One was around the face (at that time) of the 1st Main West, and the other included a large area in the 11th through 13th Panels Left off the Main West.

Notes from this mapping are in the Roof Study notebooks in the Confidential Room. Maps are in Case 10, Drawer 1. Photos and sketches are in the Roof Study Photo Notebooks. The Roof Study final report is being prepared as an I.M.N. as of 5/76.

Mine Notes - Inland Steel #1, Jefferson Co.

Trip: Dec. 15, 1976 by Phil DeMaris and Bob Bauer; Criss Watson was our guide (John Nelson with Bill Tate in W. Mains)

Coverage; Introduction
Mapping around large "roll" feature in 14th Left panel.
Comments
Samples; I.S.-A-1 to -6

Introduction

These notes were not corrected and typed until 7/20/78 because of more pressing duties. The mapping error made in the field was easily corrected & in general there were no major location problems & no significant data loss.

Mapping around large "roll" feature in the 14th Left panel

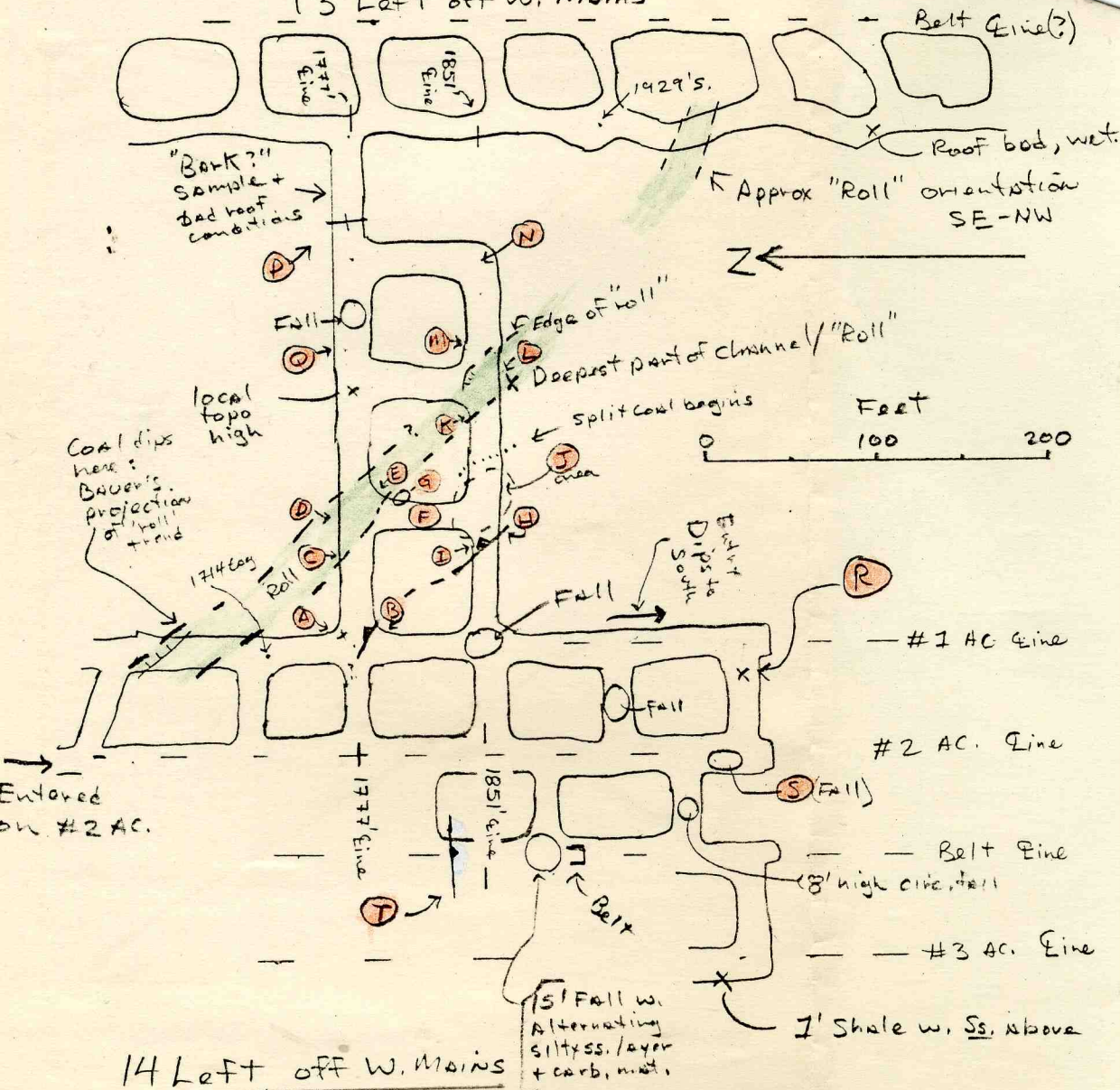
(See Field Map A) As we traveled S. in the 14th Left, we passed into the "wet" area of the mine (mapped by the Co. as the "drip line"); at ca. 820' S:^{on} a² fall is just into this area; here a 15-20' fall shows interlaminated silty shale with many carb. partings in lower section; upper units are more sandy; water drips are very salty.

(A.) (on map) Here Bob checks dip; max. dip of seam is 10° NE; N. component is 6°.

(B.) Fault dipping steeply (ca. 70° NE) with 1.2' throw at B.B. In the roof is interlaminated carb. partings near the

1 p. of wraps (2) See over for orig.

13 Left off W. Mains



14 Left off W. Mains

Notes/sites (A) to (S) inclusive. Corrected map done 7/20/78

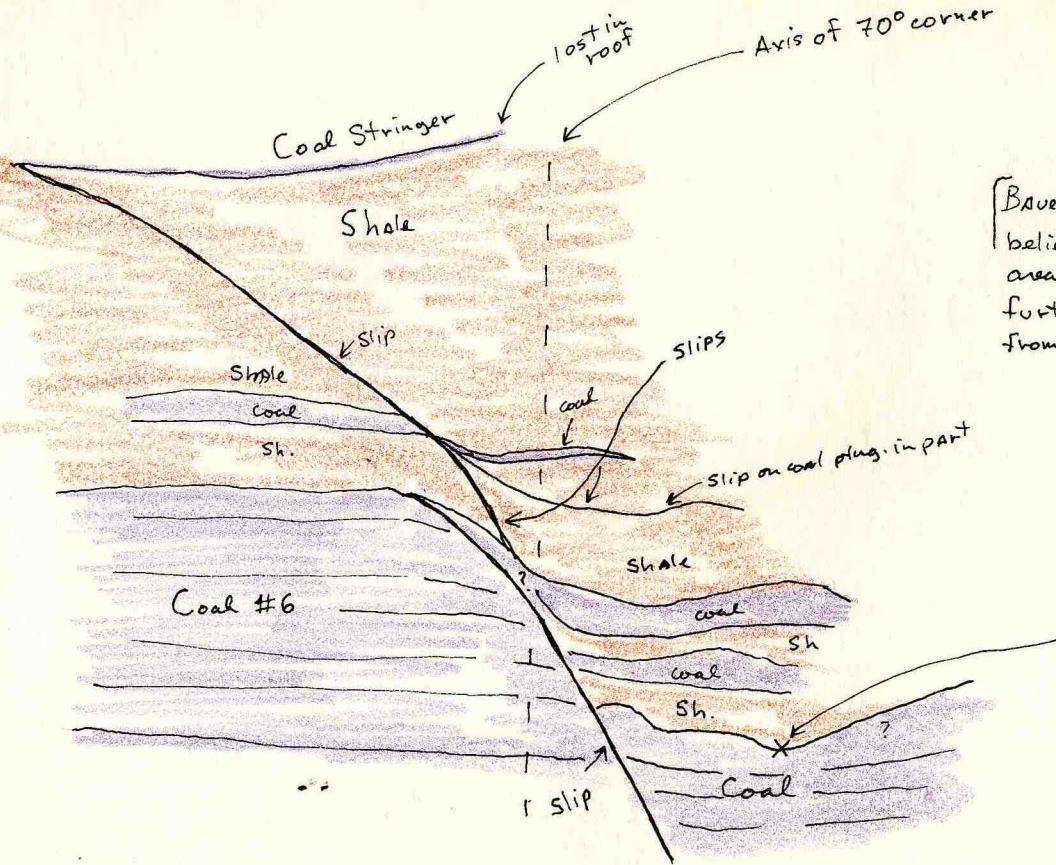
p. 2 of 6, plus 1 p. of maps

base of the siltstone.

- ©. Silty shale interlaminated with carb. layers; many slips along carb. layers. Roof is irregular here (See Bauer's sketch of "roll" here) Coal is thick here (may be "squeezed" at edge of "roll") - 7.1' above the B.B.
- ©. "Roll" in low area; bottom 0.4' is very weak carb. shale. Upper "roll" material here is greenish gray silty shale with brown (siderite?) layers. B.B. is displaced 0.5' by slip under "roll". B.B. to u/c thickness is over 2' here. (*sample A-1)
- ©. Slickensides in coal dipping steeply NE at the SW edge of "roll" at pillar.
- ©. 3' oval fall in interlam. lt. grn. fine-grained sandstone w. carb. mat. layers. Ss. averages 3/8" thick w. occas. casts of ripple marks. Numerous shale partings in coal. 2 Ss. pieces sampled (A-1 A & B)
- ©. Another lobe of "roll" silt-sized sand material; couldn't trace.
- ©. Fault displacing about 2' dipping NE at 45°.
- ©. Coal low - contact w. roof regular (silty shale).
- ©. Steep dip NE. 4' vert. loss over short distance to East. Fusain bands are common in coal. Coal/shale (w. stringers) contact is regular.

p. 3 of 6. plus 1 p. of
 Channel deepens to SE; on NW rib maps
 corner is as pictured:

(K)



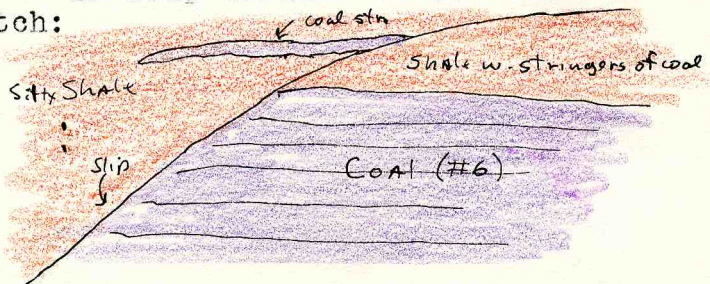
{ Better sketch at (K)
 believed to cover
 area just to N. -
 further "right"
 from this sketch. }

Deepest pt.
 on ribs.

Seems to be no clear evidence for erosion; depositional situation unclear; horz. c. stringers in silty shale body (See Bauer sketch).

(L) In "deepest" area; coal/shale contact is slip defined on SW flank of "roll"

Sketch:



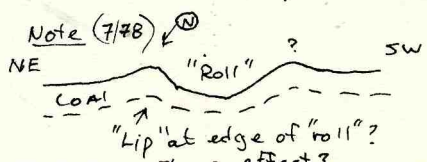
Coal sampled (Note; can find no CP # and I received no chem data) - contains wide lustreless bands - vitrain appears only 30-40% max. Channel nearly to floor (not cutting under it enough; coal depressed 6-8' from 100' West)

(M) Coal depressed under "roll" (channel dep.); is back up some from L. here. Some evidence of coal splitting here; more normal conditions to E.

(N) Roof is starting to dip again to E. ** Coal is 6 1/2' min. above B.B.; immed. roof is 0.4-0.6' weak gray shale with brown colored fossilif. material and some coal streaks. Above fossilif. shale is silty shale (2' min. here). Spotty pyrite fillings in both beds and coal cleat. 2 samples* taken (A-4 to -5) of plant impressions on coal/gr. shale surfaces. Shale locally has mult. horz. slickensides.

* inc. Area 'P' to W.

)No "O")



p. 5 of 6, plus 1 p. of maps

(P). Roll-like feature w. coal stringer arching east. Slips steeply dipping West. From P. going west, shale/coal contact more regular. Carb. banding in silty shale prominent & ripple marks present. 2' high circular fall shows about 50 layers $1\frac{3}{8}$ " ave. thickness.

(Q). Prob. silty-sand filled log in gray shale below greenish sandy siltstone. Bob sketches one; I sample one (flattened)(A-6) Immed. to west. here, the fossil-rich gray shale thickens to 1' plus. Frond impression taken (A-3) here.

At this point prob. went into westernmost entry (#3 A.C.) of the 13th Left panel to check the position of the "mega-roll"(Nelson); poor roof made for quick trip.

(R). 3.5' (aprox. length) tree trunk in coal top - filled with silty-sand material.

(S). 5' fall - layers in roof thicken; some are 1" thick (as opposed to $\frac{1}{4}$ " elsewhere)

(T). Fault dipping S. with brecciated coal; 1' displ. on E. rib; ca. $\frac{1}{2}$ ' disp. on W. rib; trends slightly NE of true E-W.

Comments

This mapping was done when Bob & I were rather inexperienced; thus "roll" is used (& still is) rather uncritically; my comments on vitrain are prob. not noteworthy; and the splitting of the seam at (M) gives only a hint of what processes might be involved. We had no idea of what we were to look at; this was

p. 6 of 6, plus 1 p. of maps

certainly not the kind of "roll" we were familiar with from Old Ben #24. In retro-spect the "mega-roll" seems likely to be a slump or load-feature which deserves more study; the parallel slip/fault? at (B) & (H) and the high "lip?" effect noted at (N). certainly suggest this.

Samples

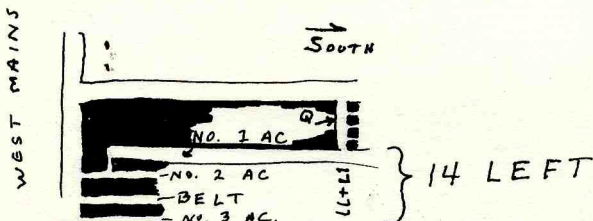
↙ "IS1" since there is a #2 mine now. AIA/86

- I.S.-A-1 "Greenish gray silty shale" from D. ("roll" at)
- A-2A & B 2 pieces of roof at E. "Lt. grn. fine-grained Ss. w. carb. partings" ave. th. 3/8"
- A-3 Prob. Neuropteris heterophylla frond impression from site Q.
- A-4 Prob. piece of de-corticated lycopod bark-coal compr. in sh. (N)
- A-5 Unkn. plant (bark?) impression.
- A-6 "log" cast part preserved in silty-sand at Q.

INLAND STEEL COAL MINE # 1 JEFFERSON COUNTY, ILL.

Bob Bauer and Phil DeMaris 12-15-76 Day Shift
and Chris Watson (Engineer Inland Steel)

14 Left off West Mains - entry at 17+77.
Point Q on map which is the 3rd Pillar east
of 14 left, on north rib.



Appears as if a log was some how replaced by a laminated sandstone, which is identical to the sandstone filled rolls encountered in the mine.

Round finely laminated body of sandstone and shale is exposed in the rib. The round sandstone body is completely surrounded by shale. Sandstone disc has a carboniferous layer all around it about 1/16 of an inch thick. The carboniferous layer shows wood material.

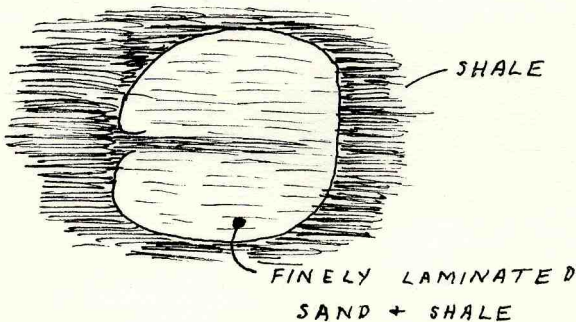
Possible explanation is that the area was covered with a sandy laminated material as the rolls are and filled the log's interior with sandy material. The sandy, laminated material could of been reroled away leaving the log and its contents behind. The area then was covered by a shale deposit.

Another possible explanation is that one end of the log sits in a sandy, laminated roll body and was filled from one end of the log, either by the interior of the log being a low energy depositional area - by being a dead end of a water course, or the interior of the log could of functioned as a water way.

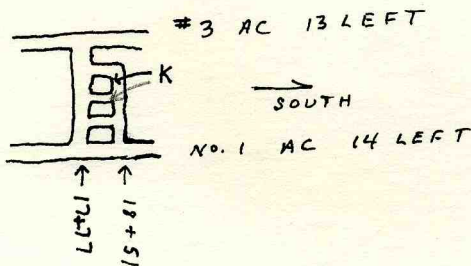
The log shows very little compaction - about 2 inches as compared to the horizontal. The log is about one foot in diameter.

Other log material in the area shows a great deal of compaction, nearly both sides of log touching each other.

One spot on the outer edge of the log did not meet - it appeared as a hole through the outer wall of the log. At this spot the shale surrounding the log appears to enter the log and become one of the lamination inside the log.



Location K

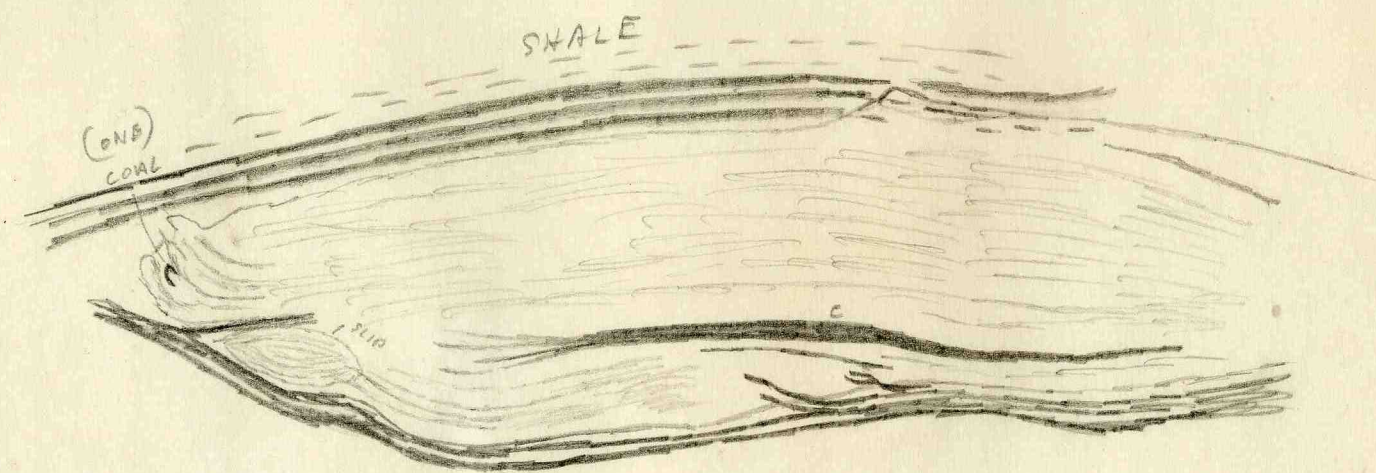


K mislocated on field map - see corrected loc. on DEMAR's map P. 70.

In the rolls with sand and shale laminations, there are folds in some of the fine sand layers. The beds above and below the folded layer are unaffected. The sand bed above the folded one rides up and over the area of the folded one. See figure next page.

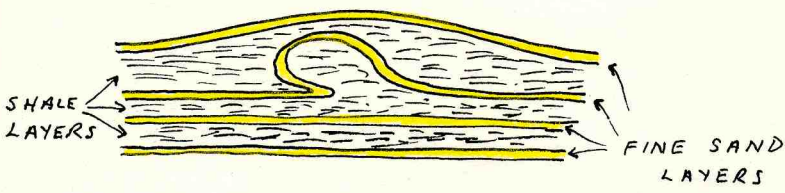
M

3



LOCATION K

12-15-76
R.D.

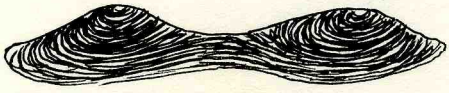


NOT TO SCALE - SAND LAYERS ~ .5 MM

Location Q

Grey shale layer above the coal in this area has numerous carboniferous fossils interbedded with the shale. This location is within the wet zone of the mine and the shale here is very wet.- the moisture comes from the layers above and the shale layer acts as a barrier to the downward movement, therefore the water keeps the shale wet and appears to flow out of the rib off the shale.

Brown concretions are found in this shale. They are elongated horizontally, being thin vertically, with knobby concretion domes.



These concretions are not calcareous. They are 3/4 to 1 inch thick and are 3 to 6 inches long. Some of the nodules had coal fossils exposed near their edges. Not sure if the nodules contained fossils in their centers.

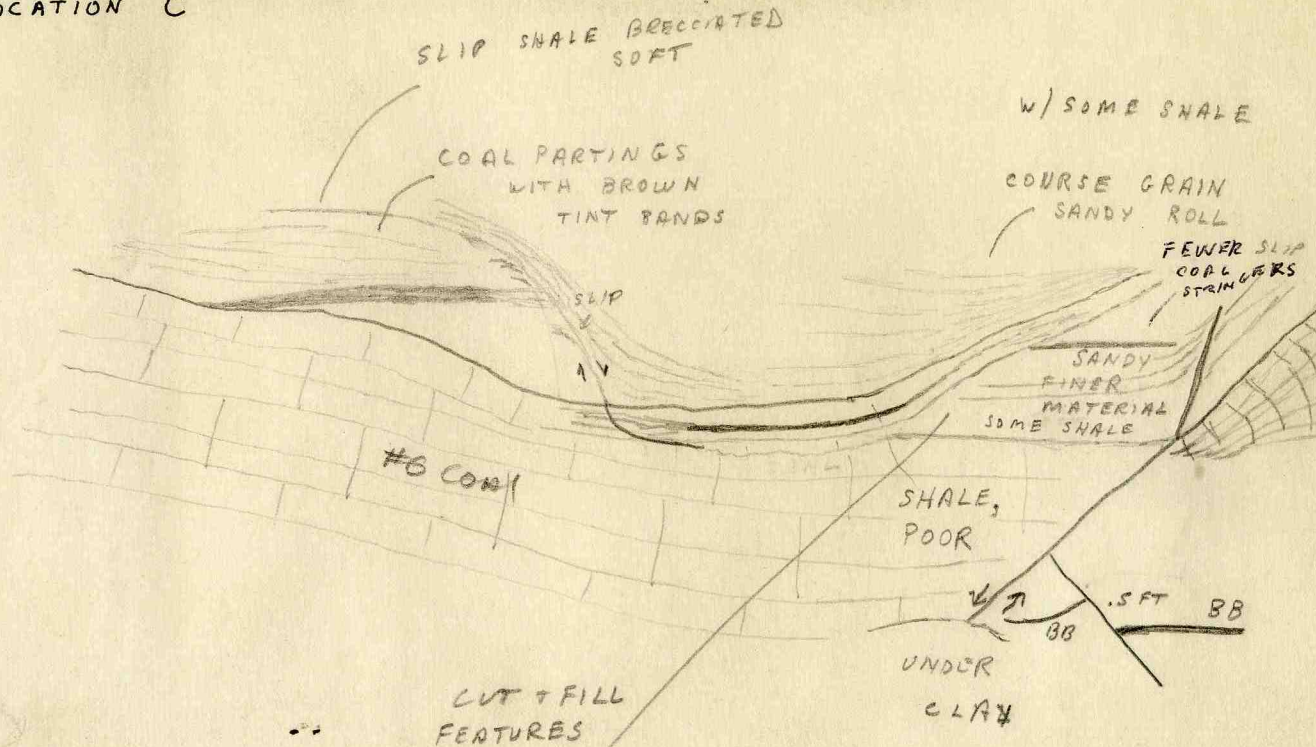
GENERAL DATA

Within Inland Steel's wet zones the water dripping down off the roof is very saline. The roof in some areas is covered with salt deposits.

Compared to Old Ben Mine #24 this mine has less sulfide layers and deposits in the coal. Also there is less calcite in the cleats of the coal.

The one spot where they have roof falls is at the top of hills in the mine. There, as Chris Watson said, is where the sandstone is closer to the top of the coal.

LOCATION C



DIFFERENT THAN
 ROLL - VERY FEW COAL SEAMS
 CO 1 SAMPLE #1

12-15-76
 R.B.

Dec. 15, 1976 Notes by John Nelson with Bill Tate
from the company.

Visit to Main West face area to examine split coal that has been encountered there. Another Survey crew, Bob Bauer and Phil DeMaris, go with Chris Watson of Inland to the 14th Left Panel to look at unusual roll structures.

Main West has been driven about 1000 feet beyond the point we saw it at a year ago, during mapping for the Herrin (No. 6) Coal Roof Study. The new works consist of four parallel entries. A year ago the face area was very wet. The dripping has mainly subsided now in the older area, but the newly mined entries are very wet and dripping, with much standing water upon the floor. This is rubber boot country- fortunately there is an extra pair on the section I can borrow.

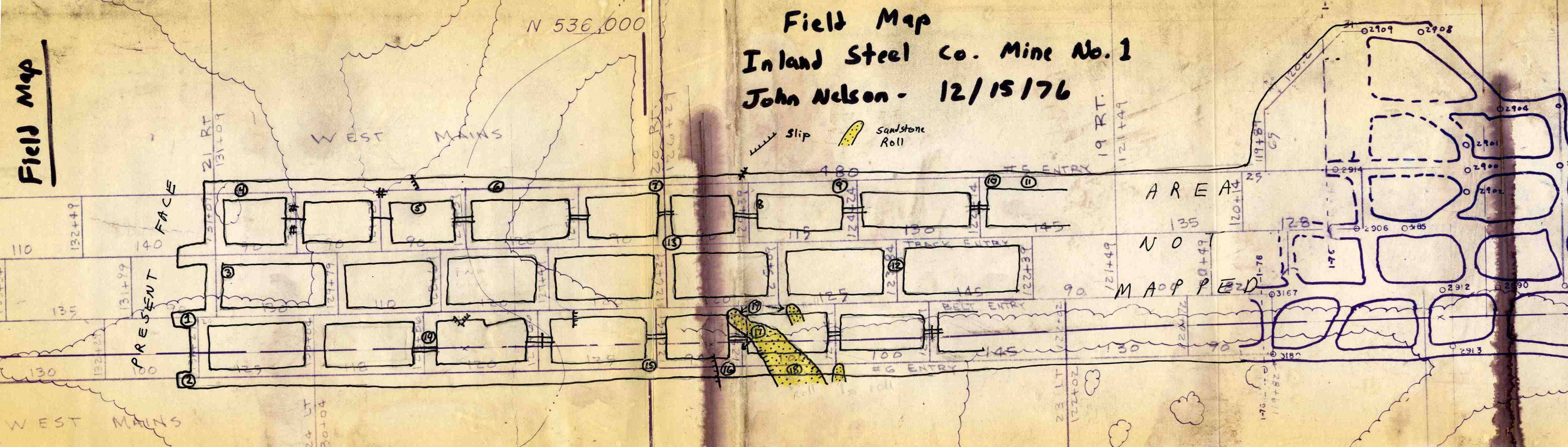
NUMBERS REFER TO POINTS ON MAP

1.) Face of belt entry, survey tag 13,310'. Mining with a Joy 10-CM, they leave about a foot of bottom coal and also some top coal, trying to maintain a mining height of at least 7 feet. The bottom coal is needed due to the large amount of water which would turn the underclay to mud. Slight rise in coal at face, and floor of entry is on shale. This appears to be either the "Blue Band" or a split. Bill Tate says the "Blue Band" is not persistent in this area, and with all the splits in the coal it would be difficult to tell which, if any, is the "Blue Band".

The entry is about 8.9' high here. The roof is top coal. The first prominent split, hereafter referred to as the "big split", is about 1.8' below the top of the entry and is the thickest individual split. It ranges from 0.14' to 0.35' thick. It is persistent in this area and is the only shale layer definitely persistent. It consists of dark gray-brown, crumbly, highly carbonaceous shale with numerous thin coaly

Field Map

Field Map
Inland Steel Co. Mine No. 1
John Nelson - 12/15/76



splits and coal stringers branching off from both above and below. In some places the shale is lighter colored and more competent, but no silt or mica is visible.

The coal above the big split is fairly normal in appearance but contains several very thin bands or laminae of shale similar to that in the big split.

For about 2.5' below the big split the coal is very shaly. The coal is finely interlaminated with dark shale which appears to make up nearly half of the total volume. Most shale partings are black or very dark gray and very thin parallel laminae, but thicker lenticular layers are also present. The thickest of these here is about 0.20' thick. Their composition is similar to that of the big split. None of these bands can be traced laterally for any distance.

From 2.5' below the big split to the floor of the entry the coal is free of large splits or shale bands, though it contains more shale than normal coal as seen elsewhere in this mine.

Floor of entry is a thick shale band with coal splits. It appears to be lenticular and up to 0.3' thick. Not sure whether this is the "Blue Band", but it definitely is not the underclay.

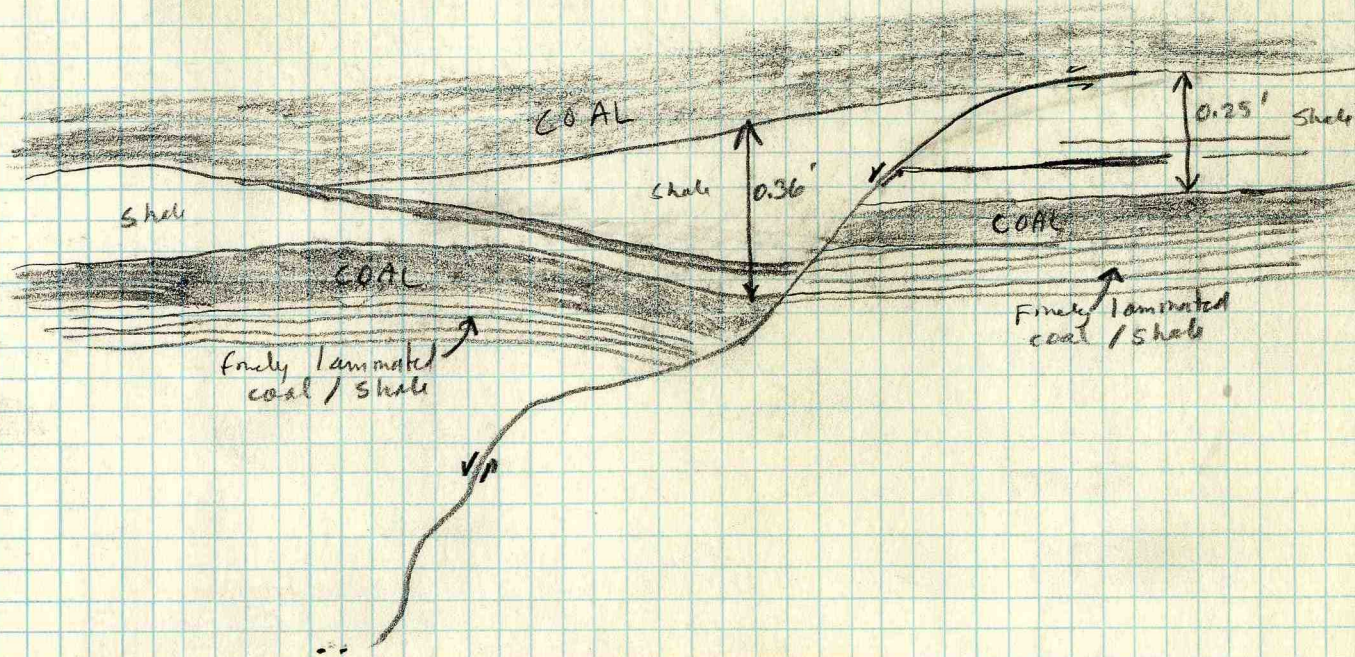
Several slips or slickensided surfaces noted in coal, mostly at large shale bands. One (see sketch, over) is in the big split and the layering is different on opposite sides of the slip. The shale on the footwall side is 0.25' thick but that on the hanging wall is 0.36' thick and the numerous coaly splits in the shale on the footwall do not trace across the slip. The slip changes from nearly horizontal to steeply inclined and its strike meanders. It appears that either the slip was formed during coal deposition or else later squeezing during compaction changed the thickness of the shale on opposite sides of the slip.

The slip dies out at top and bottom with no branching or "goat beards" as are usually seen.

W

North Rib.

E



Stop 1 - Slip displacing the big split.



Bill Tate notes numerous small en echelon fractures filled with pyrite at various levels in the coal seam, mostly near the top. These trend slightly west of north. Also small "pyrite balls"- not solid like true coal balls, they appear to be made of very closely-spaced mineralized fractures, intergrown. Slickensided surfaces are common along the bedding planes of some of the splits.

Tree bark impressions also noted on top of big split. Some of the coal stringers probably are coalified logs.

2.) Face of southernmost entry. Same basic pattern of splits in coal. The big split traces continuously from Stop 1 to here, and probably throughout the Main West, according to Bill Tate. The coal for 2.5' below the big split is still very shaly with lenticular shale bands as at Stop 1. On the northeast corner of the intersection one shale band attains a maximum thickness of 0.60' and another just below it is 0.30' thick. These are not pure shale, but contain very abundant coaly interlamination. The shale is firm, dark gray, and less carbonaceous than most splits in this area.

Deep water on floor, but little active dripping from roof.

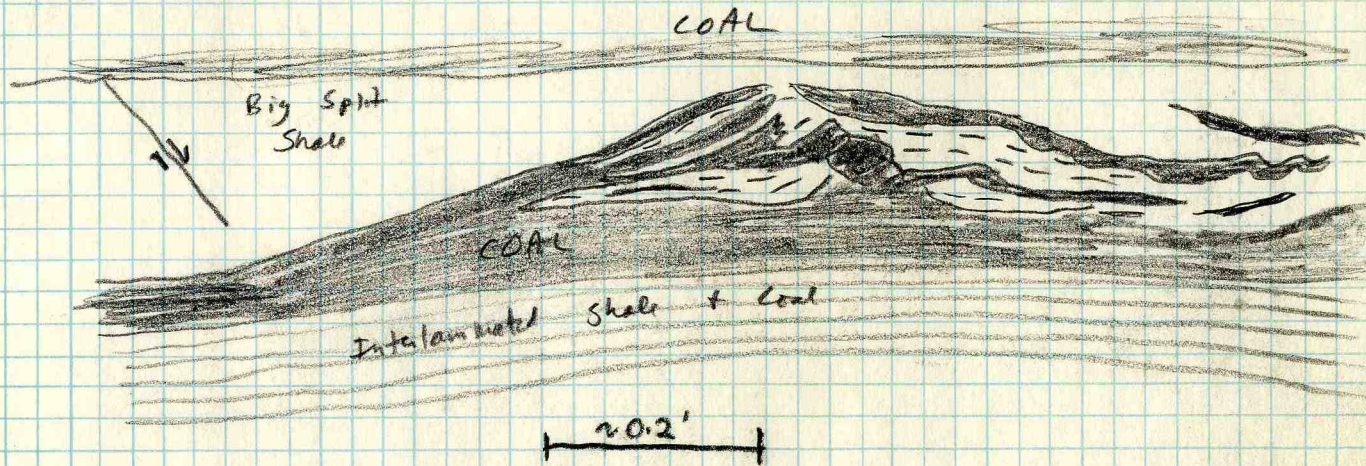
3.) On the southeast corner of this intersection the big split is nearly pinched out from below at one point (see sketch, over). The layers below are very shiny vitrain which appears gently folded and deformed, and interlayered with very dark, dull shale. The big split itself is medium-dark gray, firm, and with low carbonaceous material content.

A fairly continuous shale split lies about 1.7' below the big split. The upper and lower borders of this band are very dark gray shale with abundant fine coaly particles. The core of the band is medium to medium-dark gray shale with no visible carbonaceous material. The contact between the light core and the dark borders is sharp. The layer is lenticular.

N

East Rib

S



Stop 3 - Pinch out of big split

A miner (buggy runner) tells us the "Blue Band" is down in the floor coal. He also says that the big split is very hard to cut with the continuous miner. Perhaps this indicates that the split is hard when freshly exposed, later softening on exposure to air and moisture.

Roof bolting is with $7\frac{1}{2}$ ' minimum length resin bolts.

4.) Split pattern similar to that at Stop 1. Big split is fairly firm shale. In places it appears to be seeping water. Numerous irregular, discontinuous layers of fine-grained brassy pyrite are seen in the coal above the big split, especially near the roof line. The roof here is top coal, with no rock exposed.

The ribs rash in small pieces in the split coal region. Only the most freshly mined areas are free of spalling.

5.) Same split pattern as before. Possibly less total shale than at face, but this is hard to estimate. The thickest shale bands other than the big split occur about 2 feet below the big split. All of these are lenticular and die out within 10 to 20 feet laterally.

The slip shown on the map trends about 155/65 W and traces through top coal, displacing the big split about half an inch. No mineralization, gouge, or drag— just one clean slickensided break. This is roughly parallel with the small pyrite-filled fractures noted at Stop 1.

6.) Big split is thinning to east; not over 0.20' thick here. Overall shale content of coal seam is definitely decreasing. Mainly finely interlaminated coal and nearly black shale. No shale band other than big split is over 0.1' thick.

A very thin dark shale parting noted in the upper part of the coal a year ago in the Roof Study mapping probably is the beginnings of the big split. This

shale band was apparent in the northwest area of the face near the original proposed location of the new air shaft. See Notes 111 and 117, June 10, 1975, Chris Ledvina and John Nelson.

* The air shaft was moved back several hundred feet to avoid the bad top at the original location. This shaft is nearly complete now. The company also planned to sink a man-and-material shaft near the new air shaft, but this has been postponed until the area of split coal and channel effects can be delineated. The new man shaft will be built only if Inland feels there is sufficient minable coal to the west to justify the expense.

* J.E. The company sunk the shaft east of location originally planned - they did not move the shaft!
 7.) Eastward decrease in shaliness of coal continues. Big split less than 0.1' thick in many places, and it is dark, weak, and not very conspicuous in the rib. Marked decrease in shale content of coal below big split. No shale bands thicker than 0.01' except locally though the coal appears finely laminated with bony or fusain partings. A band of pyrite appears discontinuously about 1.5' below the big split.

8.) Miner cut down to underclay, the first such exposure noted. Top of entry is top coal. Exposed seam height 9.1'. The "Blue Band" is discontinuous, coaly layer of brownish-gray, carbonaceous hard shale about 2.2' above the base of the coal. I am not positive this is really the "Blue Band"

The big split is inconspicuous and about 0.1' thick. Several very thin discontinuous shale layers occur in the coal for 2 feet below the big split. This coal would not be considered split on a casual examination.

9.) Small area where miner cut to rock. Only base of roof rock exposed. It consists of siltstone or very fine sandstone, medium gray, micaceous, finely carbonaceous with very thin stringers of coaly material. Appears to be massive; no laminae visible, but with only the base exposed and the seam so high you have

to stand on tiptoes to break off a sample, so it is hard to tell. Minor water dripping.

The big split is about 2.1' below the top of the coal, and appears about as it does at Stops 7 and 8.

10.) Big split is discontinuous and pinches out locally. Scattered thin shale splits for about 2 feet below. Along the north rib at one point the big split trails eastward into a fusain parting, which pinches out. Near the pinchout point the split reappears abruptly about an inch lower in the coal. The split material varies from hard gray to soft dark gray shale.

11.) Small roof rock exposure, of gray-brown, dark, silty, highly carbonaceous shale with abundant large tree impressions and numerous slickensided surfaces. Probably laminated; cannot see enough to tell. Water dripping.

12.) Another roof rock exposure, of siltstone like that at Stop 9 but somewhat more uniform, less carbonaceous, and definitely layered or laminated. Laminae are 0.1-0.2' thick. Water dripping from roof. Contact of rock to coal is undulatory.

13.) Small roof rock exposure; gray-brown shale like that at Stop 11, with very abundant well-preserved large plant fragments, including numerous flat-lying logs.

The big split is continuous here, and the coal below definitely is laminated and shaly, like that at Stop 7.

14.) Crosscut just south of belt entry where small roof fall exposes rock. Section on east rib:

TOP

2.0' Shale, dark gray-brown, rather soft, very abundant carbonaceous debris including many large well-preserved stems and logs. Many of these form thin vitrain partings, which apparently

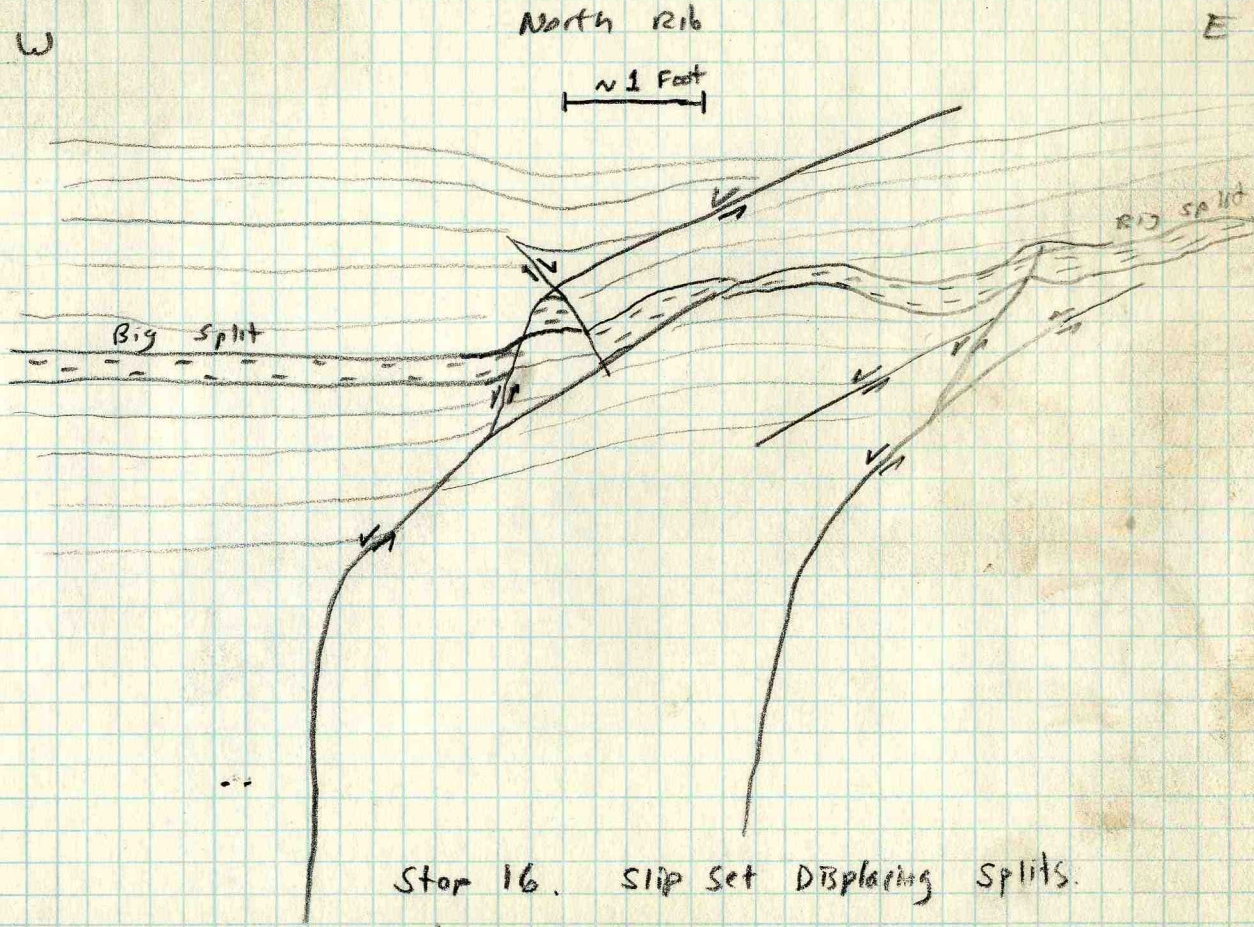
are the main cause of roof failure here.

- 2.5' Coal, N.B.B., no major shale partings. Some very thin, soft black shaly partings near base. Numerous small flattened pyritic lenses in top 0.1' of coal, and a discontinuous pyrite band 0.01' thick 1.0' down from top.
- 0.10-0.38 Shale (big split), variable thickness; medium dark gray to gray-brown, soft, crumbly, highly carbonaceous, containing numerous thin coal streaks and partings.
- 1.8' Coal, very shaly, finely laminated. Interlams of very dark gray to black, firm shale, most very thin. In lower half of interval several thicker fairly continuous shale bands to 0.05' thick; these are dark gray, dense and firm. One at the base of the interval appears to be traceable across the crosscut. Occasional pyrite lenses and streaks.
- 4.5' Coal, N.B.B., with occasional very thin dark gray to black shaly partings.
- Floor Coal.

The best shiny vitrain in the seam appears just above and below shale splits.

15.) Big split persistent, fairly regular, about 0.2' thick. Zone below less shaly than at Stop 14, and no thick or persistent shale layers there. Some lenticular shale bands are present below the big split, and also a little pyrite occurs as thin laminae with pyrite-filled "goat beards" above and below. Top and bottom coal intact.

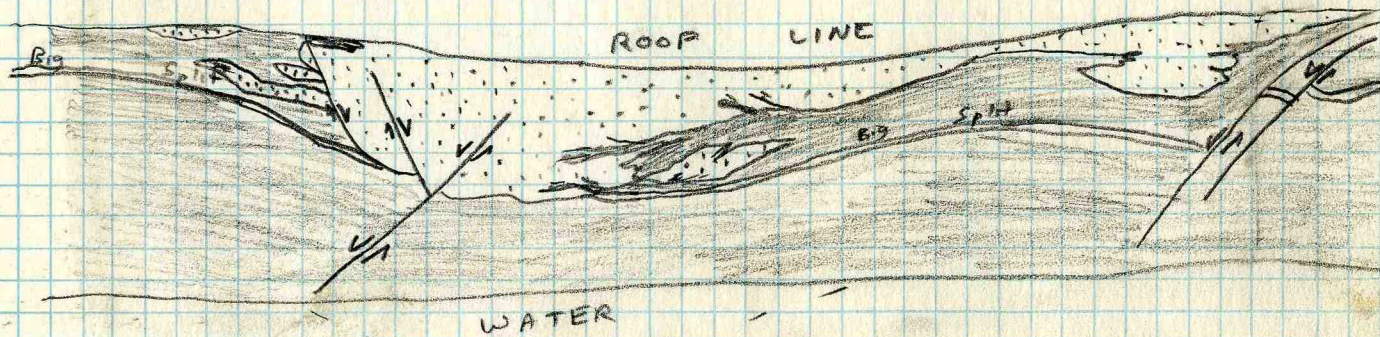
16.) Largest slip set so far noted, and the first traceable across an entry. A set of branching low-angle slips displaces the big split about half a foot. In places slips follow the shale partings. The changes in dip angle are sharp and sudden. The slips branch both upwards and downwards. No gouge or mineralization. Drag in coal is mostly normal. Only thin shale partings below big split. (See sketch, over.)



Stop 16. Slip Set Displacing Splits.

Generalized View of North Rib

W ← 40' ± → E



Stop 18 - Large Sandstone-filled Roll.

17) (In crosscut by stopping) Medium-light gray siltstone roof with carbonaceous partings which produce a layered effect. Layers are several inches thick. Roof is prone to slabbing failure. Contact of rock to coal is poorly exposed but appears "rolly" with small splits or riders at top of seam.

18.) Major sandstone-filled roll, cutting up to 5 feet into the coal. The coal seam dips into a syncline under the roll, and in places up to 2 feet of the top of the seam has been removed. Near the center of the roll the big split has been eroded. The area is dripping wet, and the feature is so complex it is hard to portray on a map.

The roof material is medium-light gray, fine-grained sandstone with darker, fine parallel, sometimes feathery interlamination. In places there are streaks or irregular riders of coal. This is not the typical slabby laminated sandstone common in this mine. Close to the coal the fine laminations are intensely disturbed. Some micro-faulting is present, but mostly the laminae are **folded or slumped** and take on a feathery appearance. Some sandstone occurs as splits in the coal near the roll margins. This is structureless and massive.

In the crosscut east of the roll the coal seam undulates considerably and another small sandstone roll is present near the south rib opposite the crosscut.

The deformational features of this roll are similar to those in the large rolls mapped previously in the 12th and 13th Left and in the south entries of the Main West east of this point (SEE roof study notebook.)

I would theorize that this was a small stream or delta distributary channel which eroded part of the coal seam. During compaction the sandstone compressed much less than the peat, so the coal below the roll was forced downward and the large slips appeared at

the roll margins. Also during compaction the sandstone spread laterally to some extent between the coal layers, forming riders and sandstone-filled splits in the coal. It is obvious that the roll is later in origin than the shale splitting because the big split is truncated by the roll.

19.) The roll feature is much less prominent here in the belt entry than at Stop 18. The easternmost feature is a sandstone roll about 2 feet deep and 6 feet wide, in the south rib. It shows little erosion of the coal and its lowest point is about 1.5' above the big split.

West of this a sandstone split appears about 0.6' above the big split. The sandstone layer reaches 0.4' thick in places.

In the east rib of the crosscut a large roll 3-4' deep and about 20 feet wide bows the coal downward. this roll is much smaller than that at Stop 18. All roll features die out before reaching the north side of the belt entry.

This behavior is typical of large sandstone-filled rolls at this mine. They are irregular in outline and non-linear; individual rolls cannot be traced for any distance. Groups of rolls however, do appear to lie in a NW-SE trending belt traceable from here through the Panels Left into the old works of Old Ben # 21.

To sum up the day's observations, I would say that the shale splits are quite uniform, persistent, and predictable, increasing in size and number to the west. They probably are depositional features, overbank deposits near the Walshville Channel. The sandstone-filled rolls are a later feature and their appearance is much less predictable. We can forecast the trends of roll belts, but not the location of individual rolls. The presence of severe undulations in the coal seam may sometimes indicate that large rolls lie nearby.



FORM 180 W

INLAND STEEL COMPANY MINE NO. 1 JEFFERSON COUNTY

NOTE BY JOHN NELSON JANUARY 31, 1979.

Today we received a call from Mr. Doug Dwosh of Inland Steel Co., informing us of a sudden influx of water in Mine No. 1, and asking us for any information we could provide on its source.

The location of the influx was given as 605' south, 20' east of the center of Section 29, 4S-2E. The source of the water was within a pillar of coal in an active panel. During development of the panel, no unusual flow of water was noted, but upon extraction of the pillars, the flooding began abruptly. The water is being pumped, and the flow reportedly is in excess of 70 gallons per minute. Mr. Dwosh believed that the source of the water was an abandoned oil test hole.

A check of our files revealed that Inland Steel had drilled one of their own coal test holes in 1918 on precisely the location given by Mr. Dwosh. The hole (County No. 62) was drilled to a depth of about one foot below the Herrin (No. 6) Coal. The elevation of the surface at the point of drilling was surveyed at 406.96 feet above sea level. The U.S.G.S. topographic map for the area shows the normal level of water in Rend Lake to be 410 feet above sea level, roughly three feet higher than the top of the casing in the well.

The obvious conclusion is that the seal in the bore hole has failed, and the waters of Rend Lake are pouring through the hole into Inland Steel Co.'s Mine No. 1.

P.S. The well later "sealed itself"

INLAND STEEL CO. MINE NO. 1 JEFFERSON COUNTY

June 14, 1979

Notes by John Nelson on visit with Faith Fiene and Phil Bowden, with Chris Watson from Inland.

Primary purpose of visit was to collect three face-channel samples and one column sample of coal from the eastern part of the mine. Samples were taken in the Main East Entries near the 20th Right Panel- see attached map.

Channel Sample 1

Crosscut north of No. 7 Entry at
footage 9401' East.

Roof- Shale, medium gray, hard, poorly bedded, silty, carbonaceous, with coarse plant material at base.

- 0.25' Shale, sim. to above, with numerous thin streaks of coal. Not sampled.
- 1.10' Coal, N.B.B., hard, with a little calcite on cleats and pyrite on "goat heard" near top.
- 0.01' Fusain
- 1.15' Coal, N.B.B., hard, trace of calcite.
- 0.02' Fusain
- 4.00' Coal, sim. to above.
- 0.07' Shale (Blue Band), brownish-black, hard, carbonaceous, excluded from sample (FC1-A)
- 0.82' Coal, sim. to above.
- Floor- Claystone, dark olive-gray, hard.

total 7.42'
Ribs heavily coated with rock dust, some of which got into sample.

Channel Sample 2
and Column Sample

South rib of No. 8 Entry about at
footage 9420'

Roof, shale, as at Sample 1.

- 1.9' Coal, N.B.B., hard, calcite on cleats, pyrite in vertical fracture.
 - 0.01' Fusain
 - 1.20' Coal, sim. to above, trace of calcite, no visible pyrite
 - 0.01' Fusain
 - 3.30' Coal, with occasional discontinuous fusain partings.
 - 0.07' Shale, (Blue Band), dark gray-brown, hard, carbonaceous, numerous coal stringers. Excluded from sample.
 - 0.93 Coal, sim. to above.
- Floor, claystone, olive-gray, moderately hard, finely carbonaceous.

total 7.42'

Channel Sample 3

In crosscut just south of No. 8 Entry at footage 9357'.

Roof, shale, as at other locations.

- 2.9' Coal, N.B.B., hard, calcite on cleats in upper half; several thin discontinuous fusain partings
 - 0.01' Fusain
 - 1.4' Coal, sim. to above, no calcite noted.
 - 0.01' Fusain
 - 2.23' Coal, sim. to above
 - 0.07' Shale (Blue Band), dark gray-brown, hard, carbonaceous. EXCLUDED
 - 0.82' Coal, sim. to above.
- Floor- Claystone, olive-gray, moderately hard.

7.44

All samples contaminated with rock dust, which is powdered limestone dusted on roof and ribs to dilute coal dust and lessen the chance of an explosion. Rock dust is a problem with nearly all samples taken in underground mines. It probably will not have a great effect on the percentage of ash in a large sample, but certainly will throw off the

analyses for calcium and other minor elements.

After taking the sample we walked east to the face of the Main East, a distance of about 2600 feet. We mainly followed the 4th and 5th Entries, but in places had to detour into other entries to avoid water, which is said to seep up from the floor.

The area we walk through is very dull geologically, with few good roof exposures and no large falls. No major structural features are seen and the coal seam and roof are quite uniform. The coal does undulate a bit, and minor splaying of the top layers of coal into the roof are quite common. No large rolls such as those we mapped in the western part of the mine are seen. The roof is medium gray, silty shale or mudstone, quite competent, with local laminations of brownish siderite.

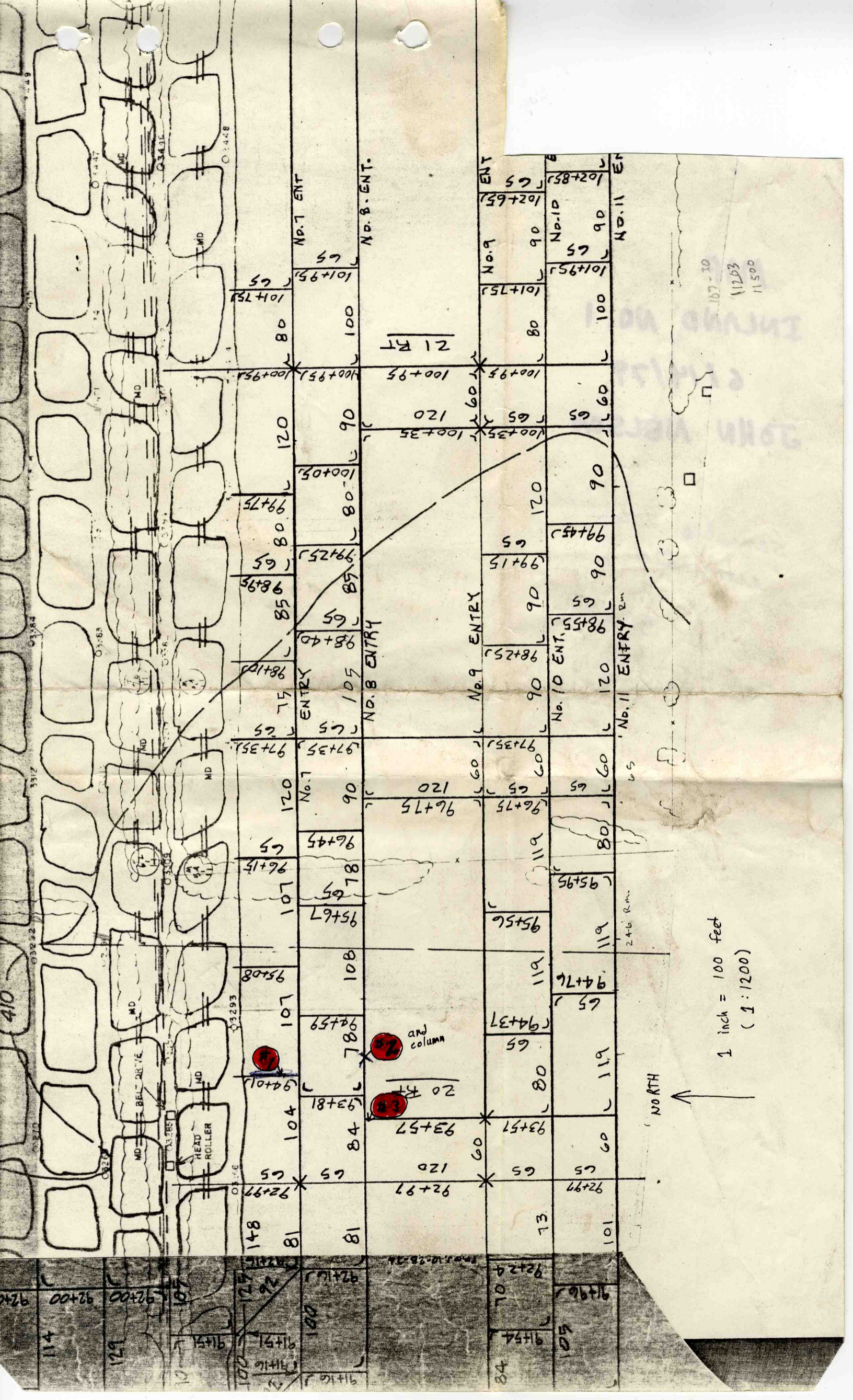
The only structural features of note are occasional high-angle fractures in the coal, which locally penetrate the roof as closely-spaced en echelon fractures. The fractures trend due north to slightly west of north, and may have displacements of less than an inch. Many are observed to die out either upward or downward in the seam. None can be traced along strike for more than about 20 feet. They tend to pass into bundles of extension fractures or "goat beards". They are distinguished from common slips by their steep inclination and their lack of curvature in strike and dip.

The face of the Main East is approaching the projected line of the Rend Lake Fault System. Fractures of this type are quite abundant within the fault zone, as studied by Nick Keys. I am quite sure we are seeing precursors to the main fault zone. However, since the fractures show no trend to increase in intensity or abundance, I cannot guess how far the face is from the major faults.

The roof contains local, widely spaced joints trending roughly 070. Neither the joints nor the high-angle fractures seem to be detrimental to roof stability. No preferred direction of failure, or "kink zones" are noted. A north-south "kink zone" is common within the Rend Lake Fault System, but is not apparent here, even though part of the entries were mined several years ago.

The drill hole (see note of 1/31/79) is still making water, but the flow is being handled by the pumps, even though the rate of influx has not decreased. According to Chris Watson, the surface location of the drill hole is above Rend Lake. The company tried to dig for the hole with a backhoe, but was unsuccessful. The water must be seeping through sand and gravel in the subsurface. Chris says it is fresh water; therefore it is definitely not from deeper aquifers.

Inland has installed four computer terminals underground. These are hooked with a main computer in Chicago. The terminals provide a rapid read-out of the status of all working sections, with such information as amount of coal loaded, causes of delays, time lost for repairs, etc. being printed or shown on a TV screen. The face bosses call in every hour to give the data about their individual sections. It is apparent that this system will give the company a very detailed and accurate accounting of the performance of their working crews and their equipment.



INLAND STEEL COMPANY MINE NO. 1 JEFFERSON COUNTY

May 28, 1980

Notes by John Nelson on visit with Steve Danner,
accompanied by Dave Dopp and Ray Dunahay from Inland.

The Main North Entries have been driven approximately 6400 feet north from the main shaft, and work is now commencing on Main East and Main West Entries off the Main North. We visit the face area of the Main North to take samples and make general observations. Steve Danner has notes on the samples.

Rib rashing is a bit of a problem in this area. The coal pops out of the rib quite easily as we cut our samples. The middle part of the seam appears most prone to spalling.

Usual practice is to leave several inches of top coal. In some places bottom coal is also left. Top coal is left to protect the roof shale from moisture and because it crackles if the entry is taking weight. Exposures of the roof are not common except where rolls are present. The coal undulates quite a bit, but not enough to cause much trouble in mining. The rolls (protrusions of roof rock into the coal) are mostly small and do not appear to be continuous for any distance.

The immediate roof is a very carbonaceous shale with numerous laminae of coal. In places the shale contains thin silty laminations. The contact of shale to coal is irregular and interfingering. At most about two feet of the shale was exposed where the miner accidentally cut into it. No roof falls were noted in this area; Dave says the Main North has excellent top.

The only persistent parting in the coal is the Blue Band, which lies a little more than a foot above the floor. This band varies in thickness but was not seen to be thicker than two inches or so. Other thin layers of pyrite, clay or fusain are present locally. Pyrite is also present as cleat facings and as occasional lenses, mainly in the upper two feet of the

seam. This pyrite is sparsely distributed. Bands of hard dull coal and fusain are fairly common between the Blue Band and the midpoint of the seam.

The floor is a medium gray or olive gray claystone with coal stringers and plant impressions. It is silty in places and is moderately hard. No problems with heaving are reported.

After sampling in the Main North we went to the 16th Left Panel, Main West of Main South, to observe the area of large rolls and wet sandstone roof that is part of the same belt described in I.M.N. 72 (Roof Study). The area of rolls, etc., was found in the expected location.

On the travelway 1200' inby the Main West the coal seam undulates quite a bit but not strongly enough to cause trouble. The roof is shale; medium gray, silty, faintly laminated, with abundant stringers of coal and small lenses of siderite, and with abundant plant fossils and carbonaceous debris which weaken the roof considerably. Many impressions of leaves and Calamites stems are well preserved.

About 1300' inby the Main West are several discontinuous rolls filled with sandstone. The sandstone is light gray, fine-grained, faintly laminated and tends to be interbedded with shale (as above). Most rolls seem to trend east-west or northwest-southeast as expected. Sandstone also occurs as large lenses within the upper part of the coal, and it interfingers with the coal laterally. The sandstone is overlain by the gray silty shale.

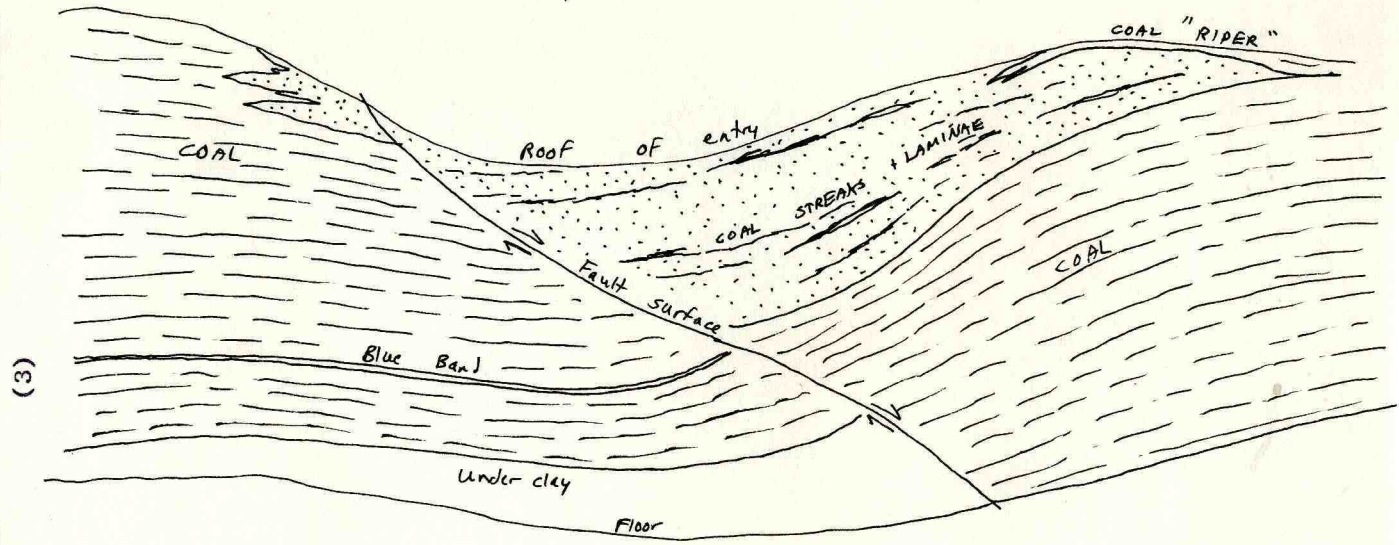
One lens of sandstone observed in the crosscut east of the travelway is 30 feet long (along the rib) and up to 2½ feet thick. It is completely overlain by layers of coal, with highly slickensided shale above the coal. The ribs are rashing heavily and some water is dripping from the roof.

1470' inby the Main West on the travelway is a roll which nearly cuts all the way through the coal (see sketch, over).

Sketch of large "roll" on
travelway of 16th Left Panel
1470' in by the Main west

S

N



The roll trends in a northwesterly or west-northwesterly direction. The southwest side is marked by a low-angle compactional fault which has about six feet of throw and cuts through the underclay. The coal on the northeast side dips as steeply as 45 degrees toward the fault. Above the coal is well-laminated sandstone with abundant stringers of carbonaceous material. Though the laminations are locally disturbed they strongly rule against any interpretation of this roll as sand squeezed or injected into the coal. I believe the roll is a lens or linear body of sandstone deposited in a small channel or "washout" and bowed downward by differential compaction.

This roll extends across the belt entry and the two intake-air entries west of the travelway. The appearance of the roll changes from one place to the next but the overall trend is maintained.

On the belt entry about 1650' inby the Main West is a roof fall 12 to 15 feet high exposing the planar-bedded sandstone well known as an unstable lithology in this mine. The fall narrows upward to a V-shaped crest with a strong "kink zone" at the top and some beds of sandstone show well-developed ripple marks.

Similar conditions were noted in another roof fall farther north along the belt entry. On the east rib the coal is as much as 12 feet thick and is topped directly by planar-bedded sandstone. On the west rib the coal is only 7 feet thick and is overlain by 4 to 5 feet of massive siltstone with a coal "rider" at the top. Planar-bedded sandstone overlies the "rider".

Difficulty in mining this area has been minimized because the bad conditions were correctly anticipated.

Inland Steel Co. Mine No.1 Jefferson County
May 28, 1980

Notes by Steve Danner; accompanied on visit by John Nelson and two engineers from Inland, Dave Dop and Ray Dunahay.

Purpose of visit was to collect bench samples from the Herrin (No.6) Coal and to check out the geologic conditions in the mine. Sampling conditions were rather hazardous, but adequate.

Sample Site #1: Belt entry of East Mains off Main North, 460' east of the No.8 entry of Main North; or NW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 19, T.4S, R.2E.
(sample # C21068 \rightarrow C21075)

- Roof Shale: med dark gray-brown, hard, carbonaceous; barely exposed.
- 0.95' Coal: N.B.B., well-developed cleat; some calcite and a little pyrite on cleat; vitrain generally less than 0.01' thick.
- 0.02' Fusain: disseminated pyrite, discontinuous.
- 1.15' Coal: N.B.B., similar to above; several pyrite filled fractures and goatbeards.
- 1.25' Coal: N.B.B., thinly laminated with well-developed cleat; thickest vitrain 0.02' thick; attrital is fine grained and midlusterous; less calcite than above; no visible pyrite and almost no fusain.
- 0.03' Coal: S.B.B., banding very variable in thickness, but generally greater than 0.01'.
- 0.46' Coal: N.B.B., similar to 4th unit above.
- 0.01' Fusain: soft, variable thickness, continuous.
- 0.70' Coal: N.B.B., similar to above; contains thin fusain lenses, a little calcite, and no visible pyrite.
- 1.20' Coal: N.B.B., similar to above.
- 0.59' Coal: N.B.B., similar to above; contains few vitrain bands, but several of these are up to 0.04' thick.

- 0.08' Coal: S.B.B., very faint laminations; vitrain restricted to several streaks near top of unit; attrital is mod dull.
- 0.51' Coal: N.B.B., thinly laminated with a few vitrain bands up to 0.03' thick; attrital is midlusterous; well-developed cleat with a little calcite; trace of pyrite.
- 0.10' Shale:(Blue Band) dark brown and black, hard and smooth; laminated. (excluded from sample)
- 1.55' Coal: N.B.B., similar to above; lenses of fusain near base; no visible pyrite.
- Floor Claystone: med dark gray, soft, smooth, carbonaceous, some plant fossils.
- Total thickness: 8.60'

Random Notes:

Note 1: Approx 8 inches (0.67') of top coal is left throughout the mine as an indicator of roof stability and to prevent slaking of the shale (from air moisture).

Note 2: Wherever the gray shale roof is exposed it is usually a med to dark gray with some dark laminae; occasional light mottling; finely laminated; some coal stringers near base, also many black plant impressions in lowest 0.03' of unit; slips and slickensides are rare in this part of the mine.

Note 3: It appears that the greatest quantity of impurities in the coal is fusain, although much calcite is present locally. Some of the fusain lenses are up to 0.30' thick and 6' long.

16th Left Panel, Main West off Main South

Note 4: The roof is a med dark gray with a very light mottling; contains brown nodules,

(continued)

lenses, and streaks; thinly laminated and rather smooth; abundant plant impressions; there is a layer of intermittently continuous vitrain stringers 1.5' above the coal. Some of the stringers are 0.02' thick and add to the instability of the roof. Between the coal stringers and the abundant carbonaceous debris, there are enough planes of weakness to make ground control in this area a real problem.

Note 5: Approx 1500' along the travelway we encounter a large roll that crosses the entry. The roll is greater than 8' thick and consists of a light to med gray, fine-grained sandstone. It contains many fine carbonaceous streaks and laminae and occasional small clasts of fusain. The orientation of the laminae indicates that this body has undergone some deformation.

The roll has a northwesterly trending axis and is accompanied by a low-angle compactional fault that cuts through the coal and into the underclay with approx 6' of throw. The roll material interfingers with coal riders and stringers where it approaches the roof. The coal itself shows little deformation except for a zone less than 0.1' wide, along the contact between the coal and the roll. From appearances, I would conclude that this roll body is in fact a channel filling that has undergone differential compaction. As John Nelson mentioned in his notes, the nature of this roll seems to rule out the injection or squeeze hypothesis.

Note 6: Belt entry of Panel 16 Left. Approx

(continued)

15' of planar bedded sandstone has fallen along this entry. This fall, shaped like an inverted "V", has exposed numerous ripple-marked bedding planes. The ripple mark ridges and valleys trend N 40-50°W, while the bedding planes dip to the east. It should be noted that the coal in the vicinity of the fall is almost 12' thick.



FORM 180 W

Inland Steel Company - Mine No. 1 - Jefferson County, Illinois. March 12, 1984. Notes by John Nelson on visit with Rich Cahill and Chen-Lin Chou, accompanied by Phil Rodgers

Now mining in three areas: the Main West, the Main East, and panels west off the Main North. In the west, as before, they are contending with split coal, rolls, wet mining conditions, and other adverse conditions related to the Walshville Channel. The 1st and 2nd Right Panels off the 15th Left encountered severely split coal (up to 60% rejects) near the end of the panels, and some faces butted into solid rock. Some areas along the 2nd Right had sandstone roof and were extremely wet, but the rooms between 1st and 2nd Right had excellent mining conditions. The pillars were not pulled because Inland did not have subsidence rights.

In the Main East they are proceeding with panel development and no unusual conditions have been encountered. Still no sign of the Rend Lake Fault Zone. Coal 6 to 7 ft. thick.

Panels and No. 1 Main West off Main North are in generally good to excellent mining conditions with 10 to 12 feet of coal and fairly uniform shale roof. The shale is said to be softer and more difficult to support toward the north. There are occasionally "slips" and "rolls", as throughout the mine.

According to Phil Rodgers ↑



FORM 180 W

- 2 -

SAMPLE 1

crosscut between 5AC and 6AC at footage
21 + 15', in No. 1 North Mains off the
Main West.

Roof: Top coal, not sampled.

3.1' coal, alternate bright and dull bands, very shaly, estimate 1/3 of seam is shaly coal, hard, carbonaceous coal stringers, occasional stringers of pyrite, shaly laminae irregular and discontinuous,

Coal laminae are mainly bright coal, with thinner bands of detrital coal, very closely spaced calcite cleats, coal laminae are rather continuous,

1.65' of coal, lacking shaly partings, irregularly laminated, numerous lamination of fusain, abundant calcite or cleats, little pyrite,

0.02' fusain

0.50' coal similar to the last unit,

0.05' shaly coal, dark brownish gray, with numerous coaly streaks, continuous but various thickness,

1.9' coal, bright with dull bands, very little fusain or shale, less calcite than above, most laminae regular and continuous,

0.10' blue band, hard, carbonaceous shale

1.0' coal, not sampled.



FORM 180 W

- 3 -

Conditions at the place sampled appear fairly typical for this section. Coal is left both in the roof and the floor. The mining height varies from about 8 feet to 9 feet. The upper 2 to 3 feet of the exposed coal are very shaly, generally about 1/3 being carbonaceous shale, in partings and laminae up to several inches thick.

The shale partings are well exposed near the mouth of the 1st North in the entry west of the travelway. Some of the splits may be traceable for several tens of feet, if not farther and range up to 4 inches thick. The shale is medium-dark gray to black, irregularly laminated, very hard and siliceous, probably finely silty; no visible sand or mica. It is highly carbonaceous and contains numerous stringers of coal.

A large roof fall exposed about 10 feet of medium gray, very silty mudstone above the coal. It is massive to poorly bedded and contains, in some zones, well-preserved compression fossils of plant stems and foliage. A basal zone ranging from a few inches to about 2 feet thick is darker and especially carbonaceous, with abundant fossils and coaly stringers. Water is seeping from the top of the fall.

In the return-air entry one crosscut in by the regulator is a 15-foot high dome-shaped roof fall, exposing about 10 feet of silty mudstone as before, overlain by a thinly bedded siltstone or shale/sandstone (no samples available) showing ripple marks on some layers. Plant fossils again are abundant in the basal layers of mudstone, just above the coal.



FORM 180 W

- 4 -

The coal seam undulates, showing as much as 10 feet of local relief. These are small normal faults probably of compactional origin.

Sample 2

In 14th Planel Left off Main East, easternmost entry at intersection of Room 33 and 38 (that is, 3338 feet from the Main East).

Roof: Shale, light gray, hard, very finely sandy has faint parallel sandy laminations, little plant debris.

6.5' Coal, bright-banded with little attrital coal and very little fusain, no shale partings; the laminations very thin and regular, face hard without well-developed cleat, little calcite, trace of pyrite.

0.1' Shale (Blue Band), brownish-gray, hard claystone, slightly carbonaceous.

0.8' Coal, as above.

Floor: Claystone, olive-gray, smooth, slickensided, full of stigmarian rootlets.

We only briefly examined conditions in this section. The coal is quite uniform in thickness and free of disturbance or impurities. The contact of the coal with the siltstone is irregular, and the top layers of coal splay into the siltstone. It looks as though some of the peat may have been eroded. (before deposition of the siltstone).



FORM 180 W

- 5 -

Sample 4

3th Right off the 2nd Main West, on east entry
(#1 air course) 2212' in by the 2nd Main West.

2212' in by the 2nd Main West.

Roof: top coal.

9.1' Coal, bright-banded with less than 1/4 of dull (attrital) coal, and only a few thin laminae or elongate lenses of mineralized fusain and black carbonaceous shale. The "blue band" was not observed. The coal is very hard, with poorly developed cleat; facings and small "goat beards" of calcite are fairly common; pyrite occurs in trace amounts.

Floor: Claystone, dark gray, hard, smooth, slickensided, rooted.

Elsewhere in the section a shale layer, up to about 0.2' thick, and resembling the "blue band", is 3 to 3½ feet above the floor. Top coal has been left in place everywhere; no exposure of the overlying stratum was noted in our hasty examination. The coal undulates only slightly in this section of the mine.



FORM 180 W

Inland Steel No. 1 - Jefferson County

Trip: December 12, 1985 by Phil DeMaris, with Francis Aue, Charlie Morris and Bob (Inland) and Lee Wilson (Rend Lake College)

Coverage: Introduction
Visit to 15th left panel
General notes
Samples: IS1-B-1 to -6

Introduction

This sample trip is part of FitzPatrick and Ruch's CRSC contract. The primary purpose of the visit was to allow Dave Rapp, Joe FitzPatrick (NU) and myself to assist Elliot Spearin and Larry Leonard (both of Inland) in riffling, loading and sealing up barrels of coal needed on the project. We were also to transport 2 of the barrels back to Champaign.

A secondary purpose was for me to go in-mine and examine one or more working faces (6 were active). I went underground in a party of 5 lead by Francis Aue; they were not expecting my visit, but were very accomodating.

Visit to 15th L. panel off (new) 1st East Main

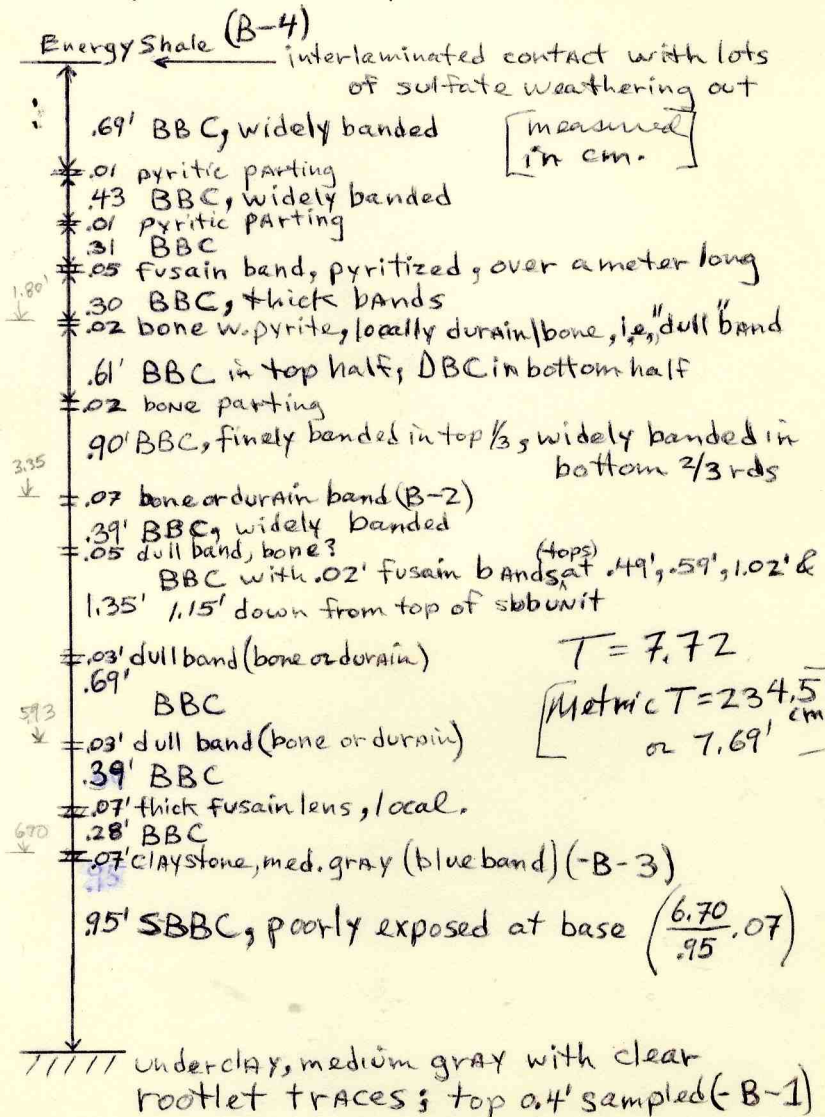
The section is being mined on retreat and is nearly completed with the panel; this is a maintainance shift. This unit worked last night and thus contributed to the sample being collected. Panel runs north of the mains and the sites are in the vicinity of the 1st-2nd rooms.



FORM 180 W

-2- of 4

- A. Site near base of panel at 573' into panel (NE NE NW of Sec. 33, T.4S R.2E). Mining is high extraction, so roof falls usually within a shift in this area - larger falls are typically 15-20' high. Description done nearby in a recently-cut area on a pillar corner.





FORM 180 W

-3-074

B. Site about 2 crosscuts south of A., not specifically located. Collected bulk sample of the blue band (-B-5) where it is $2\frac{1}{2}$ cm. thick, light gray, with pelltoidal structure (presumably clasts). Also collected oriented block of a pyritic parting 1' from the top of the seam (-B-6).

General notes

Roof on the E. Mains is generally "rolly". Energy Shale is laminated only in the bottom 1' with coalified compressions and with siderite in the bottom $2\frac{1}{2}$ feet or more (seen in highest exposure). As at A., the roof contact where examined is usually interlaminated (with vitrain stringers from plant compressions) over $\frac{1}{4}$ to $\frac{3}{4}$ of an inch, but weathering of pyrite(?) which produces sulfates soon obscures this at older exposures.

When we were back on the surface (about noon), I inquired how far west one could get in the mine. In the old west mains one can't get much past the "C" shaft. The Northern-most set of Mains ("new" West Mains) are not driven very far (7th R. panel), so the areas where the blue band/split thickens have not been reached yet.

Samples: IS1-B-1 to -6

	<u>Site</u>	<u>Description</u>
-B-1	A	Underclay, medium gray, rooted (bulk).
-B-2	A	Bone(?) parting or durain band in Herrin, 106 cm. from roof, 2 cm. thick. Inert-rich? <i>down it scratch clay-rich</i>
-B-3	A	Blue band, medium to dark gray claystone, 2 cm thick (block and bulk)



FORM 180 W

-4- of 4

	<u>Site</u>	<u>Description</u>
-B-4	A	Energy Shale roof, just above interlaminated contact (Bulk).
-B-5	B	Blue band, medium gray, 2½ cm. thick, showing small clasts in structure (bulk).
-B-6	B	Parting in Herrin, variably pyritic, one foot down from roof; 1 cm. unmin. (Block and bulk)

All six samples will be submitted for XRD analysis, and some of the partings will be analysed chemically.

Mine originally operated by: (1)

Date

early
1986?

Original name or number:

Illinois Coal Report

p.

LATER OPERATORS

r No.

INLAND SELLS TWO MINES IN ILLINOIS TO CONSOLIDATION COAL

Inland Steel Coal has agreed to sell its two southern Illinois mines and reserves to Consolidation Coal in a deal that will give both companies something they want: money for Inland and low sulfur coal for Consol. The sale, which still must be approved by boards of Inland Steel Industries and Du Pont, the sale partners' parent firms, will take inland out of the coal business for the first time since World War I.

When completed in November, the transaction will turn a profit for Inland, a company spokesman confirmed. Neither the size of the expected profit nor the purchase price was revealed.

Consol is buying all the stock of Inland Steel Coal, whose principal assets include 2 underground mines—Number 1 in Jefferson County and Number 2 in Hamilton County—plus undeveloped reserves in Clark County. Inland 1 produces

2

about 2.4-million t/y, Inland 2 about 1.1-million tons. They have about 1,100 employees.

The agreement also covers Inland's existing coal supply contracts, which include a \$68 million pact signed earlier this year with Illinois Power Co. It calls for Inland #1 to supply 2.5-million tons of coal over the next 5 years to the utility's Wood River, Illinois generating station.

Inland also has contracted with Consol for the purchase of metallurgical and steam coal at market price for six years, with an option to renew for an additional five years.

The Inland mines, especially #1, boast some of the lowest sulfur coal in the midwest, much of it below 2%. Consol is expected to blend some of that coal with higher sulfur coal from its three Burning Star surface mines in southern Illinois.

Industry officials hailed the news. Joseph Spivey, president of the Illinois Coal Assn., predicted the sale will "put Consol back up as one of the largest producers in the state." There already is talk that Consol may install a slope and two long-walls at #1 to boost production.



FORM 180 W

CONSOL PLANS SECOND REND LAKE LONGWALL; JOB LOSS IN EX-INLAND MINE'S FUTURE

Pleased with the early success of its first longwall mining unit in Illinois, Consolidation Coal Company is developing a second longwall unit at the same mine.

A company spokesman confirmed a second longwall is in the works for Consol's Rend Lake mine near Sesser in Franklin County. Bobby R. Brown, Consol's president and chief executive officer, discussed the longwall during a recent visit to southern Illinois. Installation of the first longwall led to more than 100 layoffs at Rend Lake (8-24-87 *Coal Week*), and triggered some local resentment toward Consol.

Brown's visit to Sesser, where his company became the newest member of the city's Chamber of Commerce, was seen as an attempt to build grassroots support for the major coal producer. Brown told his audience, which included civic and union officials, that Consol is committed to longwalls whenever possible because of their safety and higher productivity.

On the down side, longwalls are not labor intensive. Brown acknowledged in his speech that it is "hard to ignore one obvious consequence of longwall mining; it requires fewer employees in terms of production.

Coal Week 12/7/87



New equipment results in 145 coal mine layoffs

By PAUL DE LA GARZA
Associated Press Writer

SESSER.— Modern machinery for mining coal led to 145 layoffs at Consolidation Coal Co.'s Rend Lake site.

An official with the United Mine Workers expects more reductions.

Paul Kvederis, a spokesman for the Pittsburgh-based company, said the layoffs took effect this week, affecting 134 miners and 11 salaried workers.

In a telephone interview from his Pittsburgh office, Kvederis said the reduction represents about 25 percent of the work force at the mine, two miles north of this Southern Illinois town.

He didn't know how many mines the company operates in Illinois.

The layoffs were implemented to keep the mine "cost competitive in today's difficult coal market," said Grayson Heard, Consolidation Coal's regional vice president for mining.

HEARD SAID INVESTMENT in new longwall-mining equipment, which became operational at the mine about four weeks ago, "will help ensure a future for the mine in today's market."

Longwall mining is a method in which a steel plow or rotating cutting drum is mechanically pulled back and forth across a face of coal, usually several hundred feet long, with the loosened coal falling onto a conveyor.

Kenny Dawes, president of the United Mine Workers union local that represents employees at the Rend Lake site, said union officials had been expecting the layoffs ever since the longwall-mining equipment was installed.

But that doesn't make the layoffs any easier to swallow, he added. "We don't like it. It's terrible that people are put out of work."

Dawes said the company has informed union officials that additional longwall-mining equipment has been ordered and that more layoffs will be made next year.

The number of employees who eventually will be affected remains to be seen, he said.

CONSOLIDATION COAL laid off 30 miners at the Rend Lake mine in January, but recalled them in March, Dawes said. With the new equipment in place, the union spokesman did not expect any employees to be rehired.

"Mechanization has just taken another step. In another 50 years, they'll probably be mining the coal without anybody," Dawes said.

The company notified union officials of the layoffs Saturday. Employees who were affected were contacted Saturday and Sunday.

Dawes said the reduction affected every shift. Those with the least seniority generally were released.

The employees affected were from a 10-county region in Southern Illinois.

Mine originally operated by: (1)

Date

Original name or number:

Illinois Coal Report

p.

LATER OPERATORS

Date

Operator

Name or No.

LATER OPERATORS

Consol lay offs

United Mine Workers of America officials in Illinois say they fear Consolidation Coal Co.'s laying off 228 miners last month is not the end of work force reductions Consol will be making in the state in the coming months. Consol says it currently has no plans for additional lay offs. The union blames Consol's cutback of 145 workers at its Rend Lake mine, near

*Coalage
Sept 1987*



Sesser, on a new longwall mining unit installed at mine. Rend Lake formerly was Inland Steel Coal Co's No. 1 mine. In addition, 83 workers have been laid off at Consol's Wheeler Creek mine, near McLeansboro, Ill., previously Inland's No. 2 mine. Union officials say they believe another 100 miners will lose their jobs once the Rend Lake longwall is operating at peak efficiency, later this year or early next year.

Railroad, Wagon, Strip, Idle, Abandoned

IDENTIFICATION

County No. _____

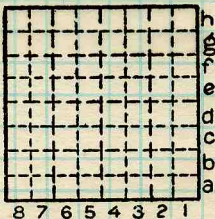
Coal No. _____

Coal Report No. _____



Quad.

County



Sec.

T. N.
S. S.

R. E.
W. W.

Index. No.

COAL MINE OPERATOR





FORM 180 W

p. 1 of 14,
plus 2 maps

ISGS Mine Notes - Consol. Rend Lake Mine - Jefferson Co.

Visit: Jan. 24-25, 1990, by Phil DeMaris,
Mark Phillips and Kumar Chandrashekar
of SIU-C, escorted by Ray Dunahay,

Engineer

Coverage: Introduction
Intersection N. and 2nd E. Mains
Far 2nd E. Mains (Faults)
5R Longwall panel
2nd W. Mains "hill"/vic. (Day 2)
2B Longwall panel set up area
2B Longwall panel headgate area
2B Longwall panel face and tailgate
Summary
Samples: Set B complete

Introduction

This is the fifth mine visited for the second year of IMSRP-supported ground stability research.

Intersect N. and 2nd E. Mains

A. Examined area near "fall" marked on mine map. "Fall" is 1 yr old in 1983-84 mining. I sampled coaly, immediate roof shale (-B-1); is locally about 1' thick, has lots of plant debris and some larger plant compressions, and is locally sideritic. There is noticeably less plant debris above that level. (Comparisons with medium gray shale and lighter gray shale facies at Orient 6 are probably useful, but we are much nearer to the channel here and may have higher-energy depositional environments.) I saw Neuropteris, Alethopteris, and Lepidodendron material in bottom 1/2' of Energy at SCSR site. Bolts are 6' spiral



FORM 180 W

2 of 14, plus
2 maps

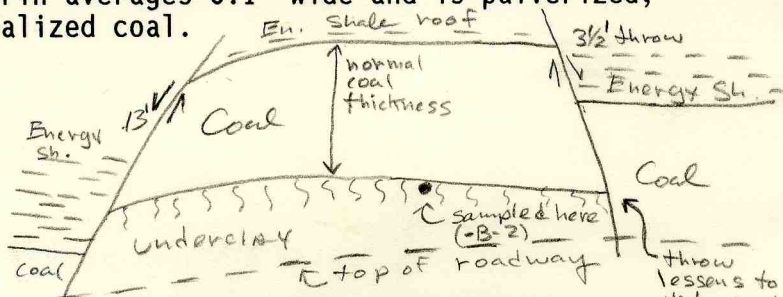
bolts with resined top 2', and are used throughout the mine.

B. 8R Head roller area (loc. uncertain) shows 15' fall in uniform Energy Shale, light gray and sideritic, with little plant debris seen. One upright tree stump (coalified rind) seen where we parked.

Far 2nd E. Mains (Faults) See map (A).

C. At about 8' west of 91 + 72' tag we found a small high angle fault, striking 165° in vicinity of 78 c/c. It pulverizes Herrin Coal down to knee position before disappearing.

D. Further E. we found the big fault which has about 13' throw on the travelway. It also has 165° strike and about 50° W. dip. The plane in the Herrin averages 0.1' wide and is pulverized, unmineralized coal.



We examined these two faults on the belt entry; the throw on the small fault lessens to 1 1/4' there. I sampled the top to 0.3' of the Herrin underclay from the horst block (-B-2).

E. We returned West past area of first fault to vic. ~~78~~ c/c 74 (8912'); about 40' past crosscut found fault with 7.7' throw down to W., dipping 70° and striking 170°. Again we found no

Map (A)

Far East Fault exposures

1/4 mile

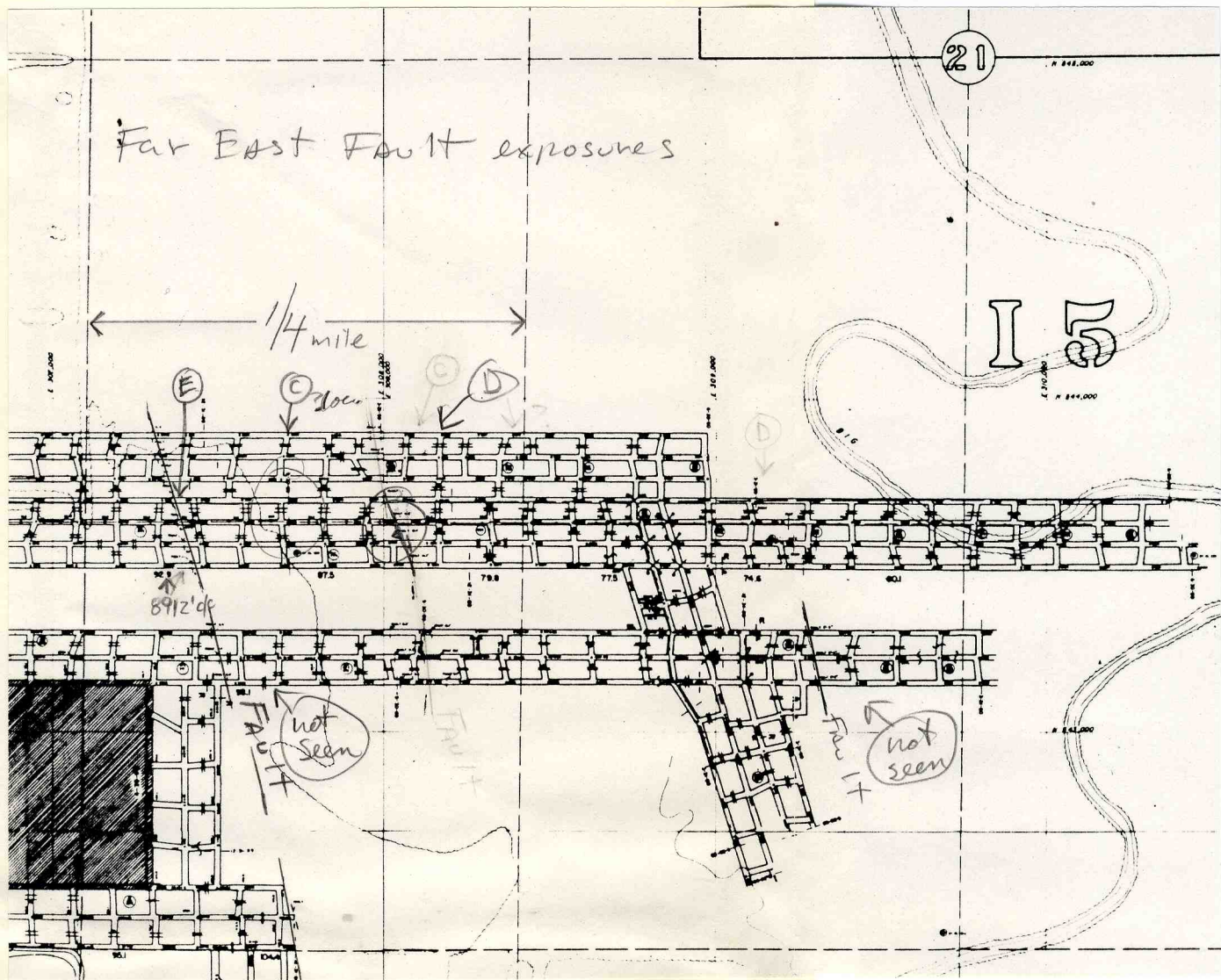
21

N 844,000

15

N 844,000

N 844,000





FORM 180 W

3 of 14, plus 2 maps

mineralization on the fault plane (this contrasts with observations of Rend Lake faults in O.B. 24).

F. We went east again to ^{ward} the active face, just ahead of blower at 96 + 66 crosscut. At the blower we saw mature lycopod trunks (cf. Lepidodendron aculeatum) over 1' of medium gray laminated Energy Shale. At 1½' level we saw 20' long lycopod trunks, so growth of these trees may well be atop mud, not in the original peat swamp. No upright stumps seen, but limited examination time. In terms of roof stability, the overlapping large compressions form a weak zone in the roof. I collected blueband from near where they were bolting (-B-3).

5R Longwall panel

G. We walked west and south into the tailgate of the active longwall panel. At 625' we saw Calamites and small foliage debris (including Neuropteris) up 1/2' in light gray roof shale. This material seems to be post-swamp since there are no standing trunks and there is less plant debris in the shale closer to the coal.

At 1025' on tailgate a coalified prob. lycopod root(?) becoming asymptotic with the top of the seam; dull coal sampled from/in? root(?) for analysis (-B-4).

At 1430' the immediate roof flora has many lycopod twigs (young/small plants?) and high levels of Lepidophyloides. I also saw one big sheet of thick lyc. periderm (coalified) compression and cf. Pecopteris. This seems to be an original or end-of-swamp flora, and is clearly different from



FORM 180 W

4 of 17, plus 2 maps

the material seen higher in the Energy (i.e. L. aculeatum, Neuropteris sp. and Calamites. These patterns need more study.

I also collected, in haste, a Lepidodendron compression (-B-5) and a branch node of a pteridosperm in compression (-B-6) from unknown positions in the Energy Shale.

H. We walked the longwall face from tailgate to headgate. Tailgate was at 29 + 25' and headgate was at 29 + 11'. I took mining height data and a few other notes.

Shield	Mining Height	Cutting roof?	Floor?	Comments
124	8.0'	-	?	roof fair " - " = not checked
99/100	7.6'	-	?	
93/94	7.9'	0.3'	?	? = unknown
89/90	6.8'	0.5'	?	
78/79	7.1'	-	?	dug 1' loose coal
71/72	7.3'	Kiss	NO	dug 1/2' loose coal; only a trace of uncut floor coal left
64/5	7.6'	Kiss	?	
55/6	7.7'	Kiss	?	
47/8	7.2'	Kiss	?	Shearer position
37/8	7.3'	Kiss	?	
28/9	7.6'	0.2'	?	
21/2	7.8'	Kiss	?	
15/6	7.4'	Kiss	?	
7/8	7.4'	Kiss	?	
Headgate				roof stable - is light gray w. plant fossils, and has plant debris planes to 3' up w. lg. lycopod segments on bedding.



FORM 180 W

5 of 12, plus 2 maps

I. I took a coal thickness measure about 90' from headgate, on NE corner of pillar diagonally from pan head equipment. The Herrin is 7.75' thick here.

2nd W. Mains "hill" and vic. (Day 2) See Map (B)

J. Traveling west we paused at top of 12-15' hill at 5002' c/c on travelway. Area was mined in 1986 and is still wet, Halite crystals cover galvanized sheets used as collector system; wet unit (ss?) is in immediate roof along N-S path-- wet area also shows on tailgate entries of 2B longwall (not examined) but not on headgate entries. Siltstone (locally w. fine ss. laminae) "roll" found in roof in crosscut.

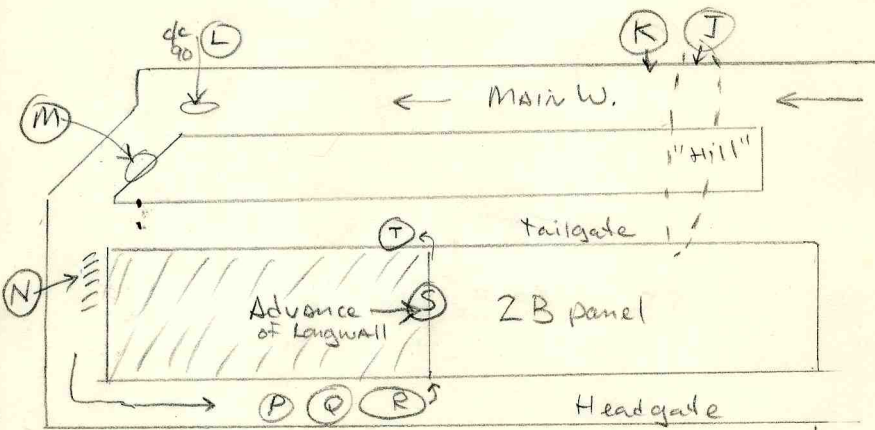
K. A few crosscuts further west we examined siltstone "rolls" and rolling top of Herrin at vic. c/c 51. Laminated siltstone on Herrin and small rip up features indicate erosion occurred prior to deformation. Much deformation is present and Herrin is pinched out over 8' distance at 50/51. Boudinage-style deformation seen in siltstones over coal. One exposure of a bifurcated plant compression suggests very rapid sedimentation on vertical lower limb of deformed surface. (Second thoughts 7/90 - plant must have been enclosed in sediments prior to being split during deformation.) The bottom few feet of roof is universally deformed over this area.

Similar "rolls" present (5 or 6) from crosscuts 54 to 57. A couple more "rolls" were seen vicinity of 73-74 c/c.

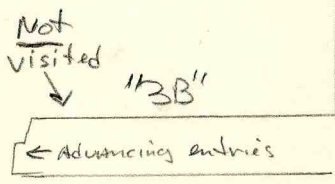


West side-longwall panels

DAY 2
Sites
Map (B)



Map (B)





FORM 180 W

6 of 12^{1/2} plus 2 maps

- L. We parked at 90 c/c near end of W. Mains, just short of SW-angled entries.

$$\frac{6.61'}{2.24'} \text{ } 0.16' \text{ (BB.) [Block + bulk collected]}$$

u/c

In addition to the "blue band" (-B-7) which was rather thick (0.16') there was a second thin carb. claystone parting at 2.15' above the top of the blue band (not sampled).

- M. Around 92 c/c in angled entry, I took a quick thickness measure.

$$\frac{\text{Energy, carbonaceous}}{7.26'} \leftarrow \text{no obvious claystone partings}$$

$$\frac{1.92'}{u/c} \quad T = 9.29'$$

0.11' (BB)

Here there was no obvious claystone partings above the blue band, but no time either for a detailed description.

2B panel set up area

- N. We examined area just to west of 2B panel set-up room. Ray indicated there was much rib rashing before the first major roof collapse in the panel. We first observed from one c/c away at NW corner, inline with tailgate entry; roof has fallen steeply at corner, but not propagated into the entry. There appears to be about 1' of heave in the intervening c/c. We moved due S. to observe entry between 1st and 2nd remaining pillars. Roof failure has propagated about 10' past the pillar corner line, and materials have sloughed off this pile to nearly 1/2 way down the entry. Prominent rib rashing on N. rib of



FORM 180 W

7 of 12, plus 2 maps

bounding pillar 2. We moved due S. to observe entry between 2nd and 3rd bounding pillars. Roof failure has propagated about 15' past the pillar corner line, and large (6' long) debris is visible on the pile. N. rib rashing on 3rd bounding pillar is again prominent and some vertical cracks can be seen in the pillar. Sigillaria compressions B-8 and B-9 were collected at one of these three stops, probably at the third. A large piece of Energy with lycopod cones (-B-10) was collected at the third site 1' above Herrin contact, with mature Sigillaria compressions (1.8' wide seen) just above it.

Here near the center of the long axis of the panel, the roof looked progressively less stable, so we declined to go further.

2B panel headgate area

P. We moved east toward longwall headgate. Coal is consistently 8'+, and no rolls were seen. Gentle topo hills encountered at 13 and 17 c/c from set up room. I sampled in situ Stigmaria compression about 3/4' up into Energy (-B-11) in this area, which proved that local rerooting of basal Energy did occur, probably during a hiatus in mud deposition. No note "O" made.

Q. On the travelway between 18/19 c/c I did a quick coal thickness in rather thick coal:

$$\begin{array}{r} \text{Energy} \\ \hline 7.70' \text{ — no major claystone ptng} \\ \text{all claystone (B.B.)} \\ \hline 2.47' \\ \text{etc} \end{array} \quad T = 10.28'$$

R. Longwall face is inactive for a few days(?) while a new H+B cast pan line is being



FORM 180 W

8 of 17, plus 2 maps

disassembled and pulled out. It is being sent back on warranty due to broken and weak parts. The face is at 2297' and we examined several crosscuts to the west "behind" the face, viewed toward the north.

•1st c/c back shows headgate entry cribs starting to rotate due to lateral pressure. Pillar corners have not collapsed, and roof failure break line is approximately in line with original riblines of pillars. Roof fall is temporarily stable but will soon move into c/c as cribs collapse.

•2nd c/c back shows roof failure has advanced 1/3 of way into c/c, and floor debris 1/2 way into crosscut. Material has fallen to 20' above orig. rib line, open space is present and debris is continuing to fall.

•3rd c/c back shows roof failure only 6-8' past original rib line, and floor debris comes in another 20'. Some slight potting out of top coal along ribs. Sounds stable. Roof is exposed in a few places between bolts.

•4th c/c back shows roof failure line about 15' into crosscut from original pillar rib line, but pillar corners have not failed. 6'-20' long debris on top of fallen materials. Debris on floor comes 1/3 way into c/c. Fall makes slight popping noise. Roof bolts don't fail, but bolts plates locally show "lip" bending failure.



FORM 180 W

9 of 17, plus 2 maps

2B panel face and tailgate

S. We walked the longwall face from head to tail while the pan was being extracted. Before stopping they have pulled up onto coal bottoms and have bolted some top coal along the face. No mining height (M.H.) data was taken due to unusual conditions, but stop coal thickness relative to the blue band were taken. Roof is med. gray shale with plant compression in the headgate area.

Shield	Thickness			Total	Notes:
	above B.B.	B.B.	below B.B.		
3 (pillar corner)	7.45'	.10'	1.95'	9.50'	position 21+97' vic. c/c 24
7	7.62'	.06'	.7' ⁺	-	
12/3	7.22'	.07'	.55' ⁺	-	
18	7.11'	present	.50' ⁺	-	
24/5	7.44'	2.06'	at Floor	-	
30/1	7.52'	.06'	at Floor	-	
35/6	7.20'	.06'	.35' ⁺	-	
44/5	7.45'	.10'	at Floor	-	
65	7.25'	.12'	2.15'	9.52'	Big <u>Sigillaria</u> up 0.4' in En. w. lots of smaller debris
70	7.35'	.11'	.80' ⁺	-	
77	7.20	.06'	.30' ⁺	-	
95	7.25'	.11'	.90' ⁺	-	
107	7.07'	.03'	1.0' ⁺	-	
115	7.24'	.09'	1.96'	9.29'	at Floor
120/21	7.25'	.12'	2.20'	9.57'	at floor some coal washing
129/30	7.42'	.08'	1.0' ⁺	-	130 is last shield position = 22+54'



FORM 180 W

10 of 17, plus 2 maps

At 24/25 a continuous vitrain rim representing a large lycopod stump rooted atop the Herrin was encountered at the face. Diameter is 3.9' by 3.8'; vitrain cylinder is .02 to .04' thick and is smooth to inside. The cylinder edge has flared out to a 45° angle where it meets the seam at the face. The size of this tree is similar to those studied at Orient 6.

T. We examined the tailgate area behind the face. Pillars are now on 75' centers; earlier panels used 100' centers.

•At 2 c/c behind the longwall face (prob. actually 1½ c/c back) we viewed the N-S c/c from the north. The ribs show much more rashing than the headgate at a similar position. Roof collapse follows rib line of pillars; inside post line is gone, outside set is leaning. Top coal on E. side of entry has rashed off all top coal. The centerline of the entry shows maximum of 1' of heave.

•At 3rd c/c behind the longwall face the roof breakline has bulged about 10' into the c/c and large shale debris (to 10' long) are visible. Debris on floor comes in about 20-25' from original ribline.

•At 4th c/c back, rib rashing is common but top coal is still mostly bolted. The roof breakline has encroached 3-5' into the crosscut from the pillar rib line. Material to 6' long can be seen in fall. About 1½' heave along C.L. of entry, and a little heave is present in entry parallel to the panel.



FORM 180 W

11 of 17, plus 2 maps

Summary

We saw at least three different facies of the Energy Shale as immediate roof: 1) carbonaceous gray shale (med. to dark gray) full of plant compressions of all sizes, with occasional upright tree trunks; 2) medium gray shale with some plant debris with occasional upright tree trunks; and 3) a siltstone (fine ss. to silty shale), med. to light gray with only plant fragments. We did not make enough observations to exclude the existence of other distinct facies, and a separate mapping project would be needed to determine the spatial and vertical interrelationships of the above facies. Facies 1 and 2 (above) may be closely related, simply varying in carbonaceous matter across sub-environments. Using carbon % (or color as a surrogate for carbon %) to help distinguish facies is complicated by large carbon % differences between the matrix shale and the proportion of high carbon compressions. Ultimately these facies may be best defined by their floras if it can be shown that similar depositional facies have similar floras.

Thus lithologies and/or floras will need to be studied in a mapped area to sort this out definitively. We performed no formal nor informal study of facies, but we were interested in general stability. In general the plant compression layers are planes of separation and they promote many small falls in the bottom 2' of the roof. The siltstone roof we saw on the west side of the mine was probably innately more stable, but it is associated with a rolling top of Herrin Coal, which is unstable due to compactional discontinuities. For our study only three



FORM 180 W

12 of 14, plus 2 maps

official falls were designated in total, so no generalizations are probably needed.

Three comments on genesis of the roof shales should be noted. Clearly there is an early facies of Energy Shale, full of mature lycopod compressions, which probably represents the final swamp flora as drowned out. Mapping this and other facies will clearly have problems, some of which are noted above. The second point is that some of the lycopod and other larger material in the shale above 1' from the top of the Herrin is new growth on the mud substrate, as evidenced by Stigmaria (-B-11). During the lycopod forest study at Orient 6 rooting in the roof shale was seen at one site (Area B). This was thought to be unusual, but had no effect on interpretation of end of swamp events. Now that this rooting seems to be more common (seen here at 2 sites, I believe) it suggests that breaks in Energy deposition may be more common than expected near the Walshville. These interruptions were known to occur locally at Orient 6 and O.B. 27 a decade ago when thin impure, in situ coals were found in the Energy. Thirdly, I suspect the siltstone "roll" areas may have had any older Energy Shale facies stripped off as mud, since this is known to have occurred in Orient 6 (Nelson's notes) just to the north. This interpretation is also compatible with my observations of a NW-SE trending "mega-roll" seen earlier in this mine.

Samples: CRL-B-1 to -11

#	Site	des.
-B-1	A	Energy Shale, med. to dark gray, immediate carbonaceous roof unit



FORM 180 W

13 of 14, plus 2 maps

- B-2 D Underclay, med. gray (top.3')
from horst block at R.L. Fault
on E. Mains
- B-3 F Blue band, med. gray, 38 mm
thick; bulk for XRD
- B-4 G Dull coal in(of?) root(?) at top
of seam on tailgate entry at
1025'
- B-5 G Coalified compression of small
Lepidodendron (cast to stabilize
and photograph)
- B-6 G Compression/impression of cf.
pteridosperm stem showing
bifurcation (cast to stabilize
and photograph)
- B-7 L Blue band, very dark gray; block
and bulk for chemistry. Lower
part of band is very dark
gray claystone and 24-26 mm
thick; upper part is granular
black carb. claystone and is
8-14 mm thick. (Day 2)
- B-8 N Coalified Sigillaria (large
piece): shows both faces of
tree; coalified cushion on one
side, parinchinos scars in
shale on reverse. Leaf cushions
are 1½ to 2½ mm vitrain.
- B-9 N Sigillaria, bigger leaf cushions
than above.



FORM 180 W

14 of 14, plus 2 maps

- B-10 N Cone compressions in Energy Shale, 1' above contact w. Sigillaria above. Spores from 3 cones sampled by Deb Willard, 7/90
- B-11 P Stigmara as carbon film on medium gray Energy Shale.

Done 8/90 PJD

C:\WP51\WRK\PJD\MINENOTE



COAL

v. 16:24
coal week
6/11/90

An Intelligence Service for Executives Covering

UNION ELECTRIC, CONSOL IN 12-YEAR DEAL; REND LAKE TO SUPPLY MID-SULFUR COALS

Union Electric Co. of St. Louis MO confirmed last week that it has signed a 12-year contract with Consolidation Coal for supplies of mid-sulfur coal from its Rend Lake mine in Jefferson County IL.

UE spokesperson Tom Dehner told *Coal Week* that the utility signed the contract some time in January and took first contract deliveries from Rend Lake in March. Deliveries are continuing, mostly to UE's bid Labadie plant, he said. Dehner would say only that the term was for 12 years and that it was similar to a contract announced earlier with ARCO Coal for compliance coal from the West Elk mine in Colorado.

There are few details available about the ARCO contract, either, with sources saying that tonnages run from 500,000-1 million t/y, while others said that tonnage is conditional on the status of other UE contracts and Clean Air Act action. About all either ARCO or UE would say was that the term was 12 years and that ARCO is refurbishing West Elk to service it.

Rend Lake needs no refurbishment. Consol bought the mine from Inland Steel in 1987 and installed a longwall mining unit in 1988. Coalfield sources said that the product is an excellent steam coal as well as a high-sulfur, high-vol met coal. The mine is the former Inland Steel No. 2, one of two Consol bought from Inland. Inland 2 renamed Wheeler Creek, was put in standby in 1988. While there has been speculation that Consol would reopen Wheeler Creek, a spokesperson has said the company has no such plans.

Dehner said there was no truth to a report from United Mine Workers of America sources that Union Electric had signed a 7-year contract to purchase coal from Consol's Burning Star No. 4 mine near Cutler. He said the Burning Star contract has been in effect for some time and remains in effect. However, Consol had been shipping contract coal to the Meramec plant from Burning Star No. 5, a mine Consol quietly put on inactive status last December.

Jerry Jones, UMW president in Illinois, said the agreement calls for the big surface mine to ship the bulk of its nearly 3 million tons a year production to UE. Jones said the union was pleased to hear about the UE accord because there had been some concern about the future of Burning Star 4.



FORM 180 W

SAMPLE HISTORY

Plant sampled: Rend Lake

Date: Nov. 24, 1992

Company: Consolidation Coal Co

Sample ID: RENDMET, C32795
RENDSTM, C32796B. D. Singh, Mgr Technical Services
Consol Plaza, Pittsburgh PA 15241

Company representative:

Ron Marcum, vp, Ill. Operations, POB 566, Sesser, IL 62274-0566
Kevin Buchman - Supervisor - Quality Control (618) 625-2041

Mine (source of sample): Rend Lake Mine

Collected by: Wayne Frankie

Seam identification: No. 6 Coal Seam

Time of closure:

Mining period represented (dates): 11/16/92

Panel(s) & location(s) in mine: 5B longwall, west part of mine

Mine locations (descriptive):

 $\frac{1}{4}$ or footage section twp rge*Jefferson*

Type of Preparation Plant: Heavy media, Teska and Dian Whirlpools, froth flotation. plant rated at 1,000 tons per hour, reject averages 37.85 percent, at time of collection running at 30 percent.

Sampling point: belt

increments:

Belt (describe position in plant) Two samples were collected, the metallurgical one was collected between plant and storage silo; and the steam coal was hand sampled off of the final product belt.

Train yes

Truck

Company's sampling device (yes)

Type:

Other (describe) Metallurgical coal is shipped to Inland Steel, and Steam coal is shipped to Rush Island for Illinois Power.

Procedures (describe other aspects):

Additional Data: company analysis

Sample	moisture	ash	sulfur	BTU
met	11.82	6.05	.75	13,700
steam	11.27	16.67	.98	13,500



FORM 180 W

**CONSOL WINS REND LAKE PERMIT;
APPROVAL ALLOWS CONTINUED MINING**

A new permit that allows Consolidation Coal Co.'s Rend Lake underground mine to produce coal beneath a wildlife refuge in southern Illinois is expected to extend the life of the mine by several years.

The Illinois Department of Mines and Minerals recently issued a permit for Consol to mine a 2,390-acre area under Rend Lake, a popular recreational facility near Sesser IL and an adjoining wildlife refuge. The permit was granted after several agencies, including Mines and Minerals and the U.S. Army Corps of

COAL WEEK • April 11, 1994

in add to Rend Lake Mine

Engineers concluded subsidence resulting from Consol's long-wall operations would not do any permanent damage to the area's ecology.

Consol spokesperson Paul Kvederis said the Rend Lake mine already is mining under the refuge under a previous permit. "The new permit allows continuation of existing mining plans," he said. "It will extend the life of the mine and it will also enhance employment opportunities."

In anticipation of receiving the permit, Consol has added about 50 employees at Rend Lake since the start of the year, swelling the mine's work force to approximately 400.

Without the permit, "mining operations would be restricted and layoffs would occur," Kvederis added.

While Kvederis said there are too many variables to accurately estimate the life of the mine, other observers said the new permit should extend Rend Lake's life by several years, giving it at least a 20-year life span.

→ 2014

0065

Coal Week, 3/25/96 issue reported:

Consol has recalled 76 of 97 employees it laid off in Dec. 95, because of increased sales, supposedly > 1 mill. t. to utility in Indiana, and to South. Ill. Electric Co., plus spot sales to Alabama. Company attributed recalls to "improved market conditions. Mine employs ~ 380 people, produced ~ 3.2 mill. t. in 1995, up from 2.4 in 1994.

"Coal", June 1996

Consol has recalled 76 of 97 employees laid off in December 1995.

Oct. 18, 1996

Art Rice of Illinois Office of Mines & Recl. reported that mine had a mine fire this week which required evacuation of the mine; this fire resulted from flare up of fire several weeks ago; they had sealed the area; seals leaked and they measured > 5% CH₄! Resealed seals after evacuation



FORM 180 W

GULF BUYS REND LAKE COAL ON TERM; PRICE IN LOW \$20'S FOR 1.15 PERCENT SULFUR

Gulf Power Co. has signed a long-term coal contract with Consolidation Coal Co. for coal produced at CONSOL's Rend Lake mine in Jefferson County IL.

Reports filed with the Florida Public Service Commission for July show that Gulf paid \$32.80/t FOB port of Mobile AL for 11,738 tons of coal which ultimately was delivered to Gulf's plant Crist. Transportation from Mobile to Crist was \$2.46/t. The coal carried specifications of 11,966 Btu/lb. 1.15 percent sulfur, 6.25 percent ash and 12.01 percent moisture and delivery was by a combination of rail and barge.

Last year, CONSOL shipped Rend Lake spot coal to Gulf affiliate Alabama power for \$32.66/t FOB plant Barry on a similar movement. While the coal shipped on a delivered basis FOB Mobile, the base price was \$23.00/t FOB mine for the coal, yielding a combined shipping and handling price of \$9.66/t. The \$32.80/t price FOB Mobile for the coal intended for Crist indicates a higher price for the coal, perhaps as high as \$24.00/t FOB mine, although a knowledgeable source said the actual FOB mine price could be more in the \$22-\$23/t range.

COAL WEEK • October 21, 1996

Note: apparently as result of this contract Consol cancelled contract with Quantum Chemicals for about 100,000 - 140,000 t/yr. of coal; Consol told Qu. that they were "running low in reserves". Checked reserves available, looks like about 20 million t in ground! or max. of ~ 5 yrs. of low S coal available!

Mine Company (parent)	Seam	Seam height (inches)	Cutting height (inches)	Panel width (ft)	Panel length (ft)	Overburden (ft)	No. gate entries	Depth of cut (inches)	Shearer ¹	Haulage system
Rend Lake CONSOL Coal Group	Herrin (No. 6)	84-108	84-108	750	7,000	500-700	3	30	Long-Airdox DDR 750	Dynatrac
	Herrin (No. 6)	84-108	84-108	625	5,000	500-700	3	30	Long-Airdox DDR 750	Dynatrac

Roof supports (legs/yield)	Face conveyor Type ² (strand, motors)	Face conveyor width (mm)/ speed (fpm)	Stageloader type width, speed	Crusher	Electrical controls	Voltage to face	Capacity (raw tons per shift) ³	Daily no. prod. shifts
Joy 2/686	MTA 34 TIB 2x550	800/264	MTA 1,000 mm, 335 fpm	MTA	Service Machine	1,000	—	—
Joy 2/856	MTA 34 TIB 2x450	1,000/264	MTA 1,000 mm, 355 fpm	MTA	Service Machine	1,000	—	—

Longwall census U.S. mines in
COAL AGE 2/98

Coal mining is taking its toll on the Rend Lake Wildlife Refuge

BY TIM RENKEN

9/18/99
Of the Post-Dispatch

An earthquake of sorts is threatening the Rend Lake Wildlife Refuge in Southern Illinois, about 100 miles southeast of St. Louis.

The refuge, on a huge point that protrudes from the north into the popular Corps of Engineers reservoir, is home to many kinds of wildlife. It is the primary attraction for waterfowl and helps provide some of the best duck and goose hunting in the state.

The small earthquake is the result of long-wall coal mining, which is the way almost all coal is mined these days.

In the long-wall method, a powerful rotary cutting machine moves along a panel, or wall, of coal, chewing off the coal and moving it back on conveyors. It's a fast, efficient and relatively clean operation. It requires just a few people to operate the machines, and it has kept the price of coal down, along with the cost of electricity that coal generates.

The machine can remove an entire seam of coal, even one 8 feet thick. As the machine moves on, the ground that once was supported by the coal collapses, either immediately or soon after the supports are removed.

Usually, the ground above sinks 75 percent. The sinking is predictable and controlled. That's in contrast to older mining methods which caused sinking to take place over many years, often after the mining company was long gone or even out of business.

At Consolidation Coal Company's (CONSOL) Rend Lake mine, the mining is taking place more than 600 feet beneath the lake. When the ground subsides beneath the lake, the effect is only that the lake, over a period of days, gets 4 to 6 feet deeper there.

When a wall extends to underneath a shoreline, though, what was dry land becomes submerged. Whatever value the ground had is lost. That happened not long ago on one of the public beaches, and it cost the coal company about \$1 million to replace the beach.

Not long ago, CONSOL, which owns the right to mine the coal, said it wanted to start six long-wall panels beneath Rend Lake Refuge, which the state operates on land owned by the Corps of Engineers on Nason Point, near Nason, Ill.

Some of the 5,000-acre refuge area is water, some cropland and some shallow flats. The shallows are ideal shorebird and waterfowl habitat. The cropland is planted

with corn and other foods required by geese, ducks and other wildlife.

If the mining takes place, those shallows won't be shallow anymore, and what are now grainfields will be lake bottom.

The extension of the mine beneath that part of the refuge is opposed, for obvious reasons, by waterfowl hunters. The Illinois Department of Natural Resources, which includes the state's wildlife agency, operates the refuge, but it has not tried to stop the proposed mining. The DNR also includes the Office of Mines and Minerals, which has the promotion of mining as part of its mission.

DNR spokesman Joe Khayyat said the DNR believes it is powerless to stop the mining but is working with the Corps to get the best possible mitigation for the public and the wildlife.

The coal company merely is demanding its rights, which it acquired 30 years ago before there was goose hunting or much of any kind of recreation on those lands.

The Corps is in the middle, required legally to allow mining but also required to preserve the other mandated uses of the reservoir, including fish and wildlife conservation, recreation and historic preservation.

In the past, the solution was the replacement of the assets, such as land, lost to subsidence. That was relatively easy because the loss was relatively small. Now, though, the loss can't be solved by acquiring mitigation lands. The marshes on the east side of the peninsula are, as a practical matter, irreplaceable. When they are gone, the ducks, geese and other wildlife will go, too, along with the hunting that helps support the area's tourist industry.

A source close to the issue said the coal beneath the most valuable part of the refuge amounts to just 15 percent of the new proposed mine area.

"CONSOL has changed its plans in the past when it looked like the subsidence would be too costly," the source said. "It can surely change its plans in this case because mitigation isn't possible, even if you replace every acre lost with 100 acres. They simply cannot be allowed to mine under that area."

Phil Jenkins, operations manager for the Corps, said the Corps is required to see that other interests on the lake, including wildlife and recreation, are "made whole" by the coal company.

It will be interesting to see how that happens.

St. Louis
Post Dispatch
9/18/99

Critics attack mine expansion

Outdoors enthusiasts fear damage to waterfowl habitat

By MICHAEL PEARSON
of The Associated Press

JE 10/11/97

REND LAKE WILDLIFE REFUGE — For nearly a decade, miners have taken coal from beneath federally owned Rend Lake in a process that remains virtually invisible to the thousands who come here each year to boat, hunt and fish.

Now, outdoors enthusiasts are gearing up to fight Pittsburgh, Pa.-based Consol Coal Co.'s plan to expand its mining beneath this wildlife refuge, 5,000 acres of state-managed property between Rend Lake's two northern forks.

They fear the collapsing of ground that follows underground mining would leave the area flooded and chase away the migratory waterfowl and shorebirds that use the area each fall. That could have serious effects on the regional economy — which depends heavily on waterfowl hunting — and on the birds that use the refuge, critics of the proposal say.

"It's basically corporate greed," said Don Bald, director of the Illinois Waterfowl Alliance. "There's no way you're going to come back and take wildlife habitat like that and replace it."

Officials at Consol's Rend Lake Mine referred telephone calls to the company's corporate offices. Repeated telephone messages left with company spokesmen were not returned.

Mining under and around Rend Lake has gone on since 1966, according to the state Department of Natural Resources. Consol began its mining in 1986.

Until now, the impact has been relatively small. In fact, some say the collapsing of earth, or subsidence, beneath the lake has helped keep parts of the lake from being gummed up with silt.

But Consol now is preparing to extract coal from the refuge's eastern shore — land uniquely suited to waterfowl, said Larry Leitner, who manages the property for the Department of Natural Resources. DNR leases the land from the Army Corps of Engineers.

Unlike the western part of the refuge — which is hillier — the eastern shore consists of

gently sloping fields covered in corn and beans, leading to mud flats adjacent to the waters of Rend Lake. The relatively isolated location has been a resting spot or winter home for as many as 250,000 geese.

It's also one of the few reliable stopping points for migratory shorebirds in southern Illinois, said Laraine Wright of the Audubon Society.

But if Consol mines beneath the land, the resulting underground hole will cause the surface to fall by as much as 4 to 6 feet in a matter of days, said Phil Jenkins, who manages Rend Lake for the Corps of Engineers.

That would leave much of the land underwater for as much as six months a year and ruin it as a bird habitat, said Todd Gessner, a guide who hunts and fishes the Rend Lake area regularly.

"If they ruin the refuge, and I think that's essentially what the mining will do, it's going to have a major impact on the area," Gessner said.

Consol has a permit to mine the area, meaning state and federal authorities must let the company proceed, said DNR spokesman Joe Khayyat.

But Consol is required by state law to find a way to repay the landowner — in this case the federal government — for any damage its mining operations causes on the surface.

The company is negotiating with the state and federal governments to come up with a suitable mitigation plan. Although Consol was given a permit to mine the area in 1991, Khayyat said mines are not typically required to submit detailed mitigation plans until they are ready to mine or have completed mining.

Typically, the state would require a coal company to replace land lost to subsidence with land adjacent to that property. But there is no suitable land nearby, Khayyat said, meaning the mud flats may be replaced by farm fields a mile or two away.

But he said mining could improve parts of the refuge, particularly for fish.

"For the most part, Consol has been a good partner, they have been a reliable partner and they have been more than willing in situations like this to sit down and negotiate very good and very effective mitigation plans," Khayyat said.

Symbol

I division=3 I

Inches



ING NEWS • BREAKING NEWS • BREAKING NEWS • BREAKING NEWS • BREAKING NEWS • BR

Sept. 2001 Coal Age

Geologic Conditions Bedeviling CONSOL Mines

Adverse geologic conditions bedeviling CONSOL Energy Inc. forced the Pittsburgh-based coal producer to cut production at its Rend Lake and Mine No. 84 underground operations in Illinois and Pennsylvania, respectively.

Over a several-week period in mid-summer, a series of roof falls played havoc with Rend Lake, resulting in an early August decision by the company to lay off about 150 of the mine's approximately 430 hourly and salaried employees. CONSOL, the largest producer of bituminous coal in the United States, did not indicate when the workers would be recalled.

It might not be soon, though, given the mine's recent run of bad luck. According to officials with the United Mine Workers of America (UMWA), which represents Rend Lake's 360 hourly employees, the mine was plagued by no fewer than five roof falls from early July to early August. Two of the falls were on the main beltline, severely hampering production. Union officials said Rend Lake also has encountered problems with its longwall mining system.

The UMWA, claiming the company violated seniority rules, filed a grievance against the company over the layoff.

A federal Mine Safety and Health Administration (MSHA) official at the agency's regional office in Vincennes, Ind., said MSHA was aware of four separate falls at Rend Lake. The office was awaiting a report by its inspectors on the recent falls.

Rend Lake, located north of Sesser in Franklin County, Ill., has been a CONSOL operation since the company acquired the mine from Inland Steel almost two decades ago. It is one of the largest underground mines in Illinois.

Meanwhile, problems continue at Mine No. 84 near Washington, Pa. In early August the company announced it was temporarily reducing coal production because of persistent adverse geologic conditions that initially surfaced about a year ago.

Mine No. 84 halted production with its longwall system and a different mining plan is being considered.

CONSOL said it intends, at least for the time being, to continue to produce coal from its continuous miner sections. A longwall system is not expected to be reinstalled at Mine No. 84 prior to Jan. 1, 2002. That move means Mine No. 84's production is expected to be reduced by about 1.5 million tons during the second half of this year, the company said.

Collector.

Mine.

Co.

Index No.

Coal Survey No.

Q.—COAL SECTION SHEET.



Symbol

Description

Inches

1 division=3 in.]

Production cut at Rend Lake coal mine will affect 245 employees

ST. LOUIS
APR 3/26/02

THE ASSOCIATED PRESS

SESSER, Ill. — Officials from the Rend Lake coal mine said Monday that they will cut production in the months ahead, by either trimming the hours the mine operates or temporarily idling it.

Whichever decision Consol Energy Inc. of Pittsburgh makes will affect the jobs of 245 miners in one of Illinois' poorest areas.

"We could reduce working shifts per day or cut out weekends," Consol spokesman Thomas Hoffman said Monday. "We could go from (operating) five days a week to four, or idle the mine for a certain period. We haven't decided yet."

The company said Wednesday that production would be cut by a total of 5 million to 7 million tons this year at Rend Lake and six other mines in Ohio, Virginia and West Virginia because of a drop in demand caused by mild winter temperatures.

The company also said it will permanently close four of its

mines by the end of the year in Pennsylvania, West Virginia and Ohio.

The Rend Lake mine produced almost 2 million tons of coal last year.

Chuck Wilson, president of the United Mine Workers of America at Rend Lake, said company officials told miners over the weekend that the mine would be idled in the middle of July, with a small maintenance staff remaining in case the order comes to start again.

"We were told the decision has been made," Wilson said.

The Rend Lake mine is in Franklin County, about 100 miles southeast of St. Louis, the heart of Illinois' coal country. Jobless rates there are among the highest in the state.

Wilson said Rend Lake's miners are trying to concentrate on their jobs, but they are worried about their futures.

"I tell them that naturally they'd be more likely to want to reopen us if we keep performing well," he said. "You've got to keep your mind on your work."

Collector.

Mine.

Co.

Coal: Survey No.

Index No.

Q.—COAL SECTION SHEET,

Inland #1

5-28-80

Doug Dwosh - Chief engineer
Dave Dop - project engineer

Note: 11 working sections; 8 working
units/shift; 24 ~~to~~ units/day

80% of clean goes for meta coke
20% " " coal " " steam generation.

Bench Sample #1 (U.S.G.S)

A (Top) Bench	: 0.9'
B Bench	: 1.2
C "	1.1
D "	1.2
E "	1.2
F "	1.4 ← Blue Band
G "	1.7

Location: Belt entry East Mains off main N.
4 + 60' east of No. 8 Entry of main N.
1450' south 150' east of center Sec. 19, T45, R2E.

Roof: shale: (Eaergy) med dark gray-brn, hard
carb; barely exposed;

A } 0.95' Coal: N.B.B. - well devel cleat; calc & little pyrite on cleats; thinly banded vitrain; few mod bands; (Bench #1)

B } 0.02' Fusain: dissem. pyr; discon;

1.15' Coal: S.T.A.; sev pyr filled frac & gthrds; (arbitrary contact)

C } 1.25' Coal: N.B.B. thinly lamin; thickest vitr 0.02' thick; well devel cleat, less calc than above; midlustrous attrital; almost no fusain, no visible pyrite.

0.03' Coal: mod dull; not lamin; varies in thickness (banding)

0.46' Coal: STA

0.01' Fusain: soft, varies in thickness; continuous;

0.70' Coal: STA, thin fusain lenses; little calc; no visible pyr; (arbitrary contact)

E } 1.2' Coal: S.T.A.; (arbitrary contact)

0.59' Coal: S.T.A.; few vitr bands; as thick as 0.04';

F } 0.08' Coal: mod dull; very faint lamin; hard streaks of vitr near top;

0.51' Coal: N.B.B.; thinly lamin w/ few mod thick vitr. bands; well devel cleat w/ a little calc; trace of pyr;

0.10' Shale: (Blue Band) laminar; dk brn & blk;
hard & smooth; (excluded from bench
sample)

G { 0.55' Coal: S.T.A.; lenses of fus near base;
no visible pyrite

floor - Clst: med dk gray; smooth, carb. plant
fossils; (had to dig out 0.4" bottom
coal)

Note: ~8" Top coal is left + to mine
as an indicator of roof trouble & to
prevent slaking of shale (from air
moisture).

Note: where the shale roof is exposed
the lower 0.01 - 0.03' is loaded w/
black ~~the~~ ^{plant} impressions; shale is ~~very~~
laminated.

Underlay: med to dark gray w/ light mottling,
med hard; slightly silty, a few vitr
stringers

✓ Note: occasional coal stringers in gray shale
roof; slkns rare in this part
of mine.

Note: appears that greatest volume of
impurities is fusain, although much
cal site is also present locally.

Note: where gray shale is exposed it is usually med ^{to dark} gray w/ some dark lamina; all is finely laminated

Note: occasional fusain lenses up to ~~0.3~~ 0.3' thick & 6.0' long; soft

16 Left Panel

Note: Roof-shale: med drk gray; mottled (white) some brn nod, lenses & streaks; intermittent vitr stringers 1.5' above coal, some .02' thick; abundant plant impressions; shale is thinly laminated & rather smooth; much shale has slaked off; ~~long~~

A small roll crosses entry displac ~1' coal; fault extends down to underclay.

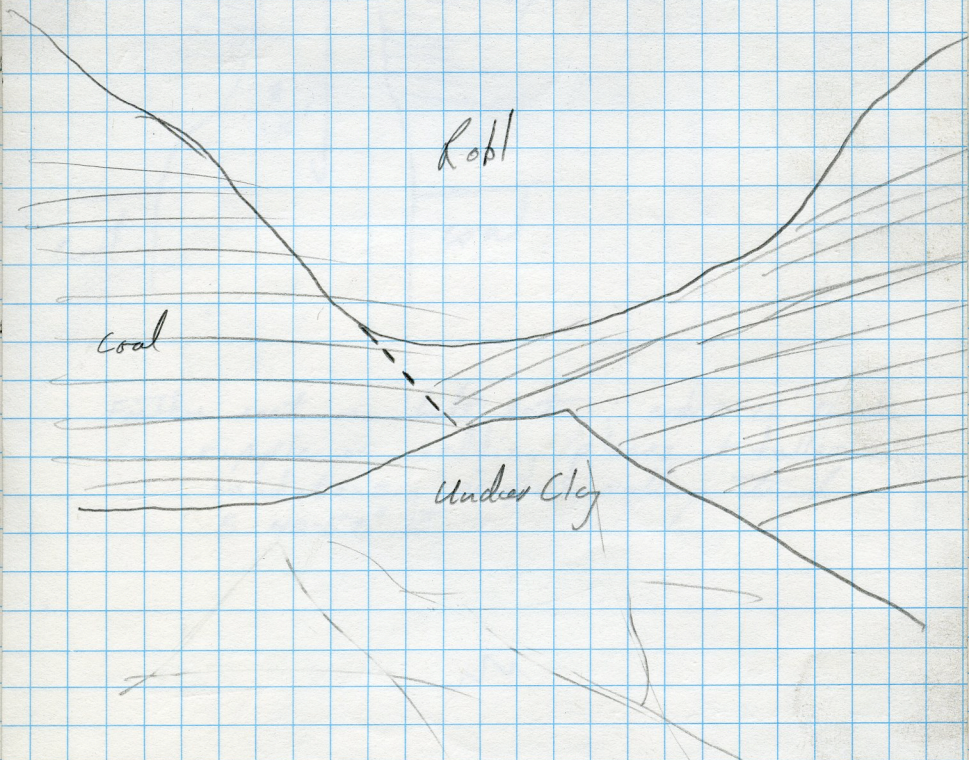
Note: Large roll: crosses entry; 7-8' thick; light to med gray siltstone; hard; some mottling, carb streaks; interfingers w/ coal where it approaches roof (soft sed deformation)

Number coaly streaks
in roll.

Robl

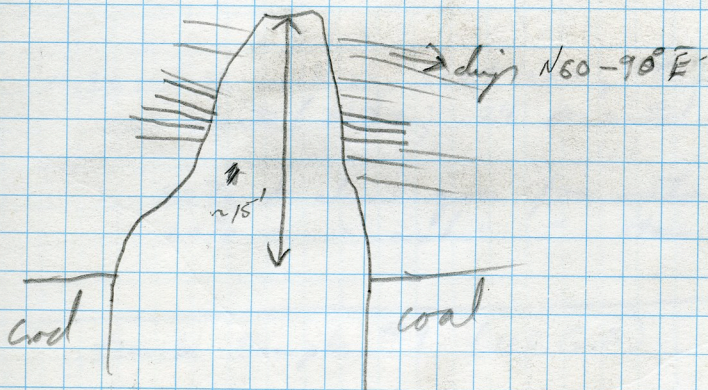
Coal

Under Clay



Belt entry (16 left):

15' fall of planar bedded sandstone;



Farther east on belt entry; coal ~12' thick
ripple on bedding planes of fallen
sandstone, ridges & valleys trend
S 40-50° E

