Truax-Traer Coal Co. Hillsboro Mine

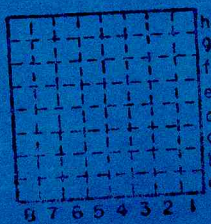
Consolidation Coal Co., Truax-Traer Div. Hillsboro Mine

Consolidation Coal Co., Midwestern Div. Hillsboro Mine (Aug. 1971)

ABND - 1983

CONSOLIDATION COAL CO.
HILLSBORO MINE

Mine Index No. 871
Coal Report No. S-5



[redacted]

MONTGOMERY COUNTY

Mine originally operated by: (1)

Date

Original name or number:

Illinois Coal Report S-5 p. 38

LATER OPERATORS

	Date	Operator	Name or No.
1	1965	Troax-Traer Coal Co.	"Hillsboro"
2	AUG 1971	CONSOLIDATION COAL CO. MIDWESTERN DIV.	HILLSBORO
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			

*Also owners #See ownership sheet

Railroad, Wagon, Strip, Idle, Abandoned

IDENTIFICATION

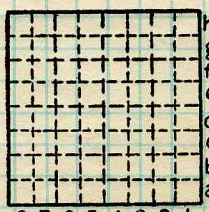
County No.

Coal Report No. S-5

Quad.

County Montgomery

Coal No. □ 6



Sec. 14

T. 7 N. S.

R. 3 W. E.

Index. No.

COAL MINE OPERATOR

MOORE'S MODERN METHODS

(Sheets) COAL PRODUCTION (Sheet)

CONSOLIDATION COAL CO.

HILLSBORO MINE

Period Mo.	Day	Year	Mo.	Day	Year	Tons
		1964				19,064
		1965				334,939
		1966				1,017,106
		1967				1,169,008
		1968				990,222
		1969				1,150,513
		1970				924,960
		1971				1,113,216
		1972				1,990,700
		1973				1,894,484
		1974				1,640,486
		1975				1,802,434
		1976				1,784,478
		1977				1,854,058
		1978				1,546,471
		1979				2,105,374
		1980				1,915,252
		1981				1,353,446
		1982				1,700,670
Last production April 1983.		1983				472,473

SUMMARIES

No.				No.	Tons
1964	to	1971 (INC)		6	6,719,028
1964 to 1983 HHD 11/3/92				26	29,979,354

Railroad, Wagon, Strip, Idle, Abandoned

Sec. 14

IDENTIFICATION

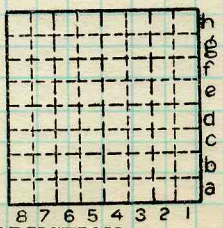
County No. 5-5

Coal Report No.

Quad.

County Montgomery

Coal No. ☐ 6



T. 7 N. S.

R. 3 E. W.

Index No.

COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA

(2732—2M—7-41)

John C. Moore Corporation, Rochester, N.Y. 14604
MOORE'S MODERN METHODS
FORM 180 W

Skip shaft of the Hillsboro Mine, with smokestack of the C.I.P.S. power plant behind. Note twin rotary crushers (just below stack) and overland conveyor belt that carries crushed coal from the mine to the power plant.

Name ?
Date ?

Mine notes

Lucas-Branch Hillsboro mine - Montgomery Co.

Stop 1 - 4th Rt. X/C of 1st N ∈
70' in by Nosh. 22

1 div = 1 ft

Roof fall seems related to abundant slips - major one runs NE parallel to entry - others at rt. ∠
Brereton is rel. thin 3"-6"
Fall extends about 4' above the Brereton

In 1st SE
Normal Fault trends about due E-W
∠ of fault is 45° from horizontal
down on South - vert. disp. about 6'

---

at other location - another 45° normal fault
1st North East Sub main -
Trend NW-SE - down about 12' on N

Roof fall

Stop 1 - in 70' in by Sta. 22
in 4th Right off of 1st NE

1500' from S. line
450' " E line
} Sec. 11

Rm. 27 - (40' in) 4th rt. off of 1st NE
on advance side - Mel. in heard on

1000' from S. line
175' from W line
} Sec. 12

130' in Rm. 17 4th rt off 1st NE

1300' from S. line
375' " W "
} Sec. 12

1st. SE Entry at intersec. 5th. 28 of
original main east

1200' from N line
2075' " E line
} Sec. 14

1st. NE at Fault
underclay

1600' from S. line
1500' " E line
} Sec. 11

Belt Crossover - underdip

825' from N. line } Sec. 13
1200' " E line }

Room 11 - in 285' off 4th W.

1550' from S. line } Sec. 12
275 " W " }

1st SE 65' in by Sta. 41
in belt entry

1650' from N. line } Sec. 14
2050' " E. " }

3rd heading 2nd NE - 60' in by
Sta 346 ~~975~~ ~~950~~ from N. line } Sec. 7
~~1025~~ 1750' " W "

~~1~~ 2

also 150' in by Sta 346
800' from N. line } Sec. 7
1800 " W. line }

(77438—5M—5-58) 2

ILLINOIS GEOLOGICAL SURVEY, URBANA

Truax Traer - Near Coffeen, Illinois, Hillsboro Mine, Channel Sample No. 1 - 8th ~~N~~ CHANNEL at face, July 29, 1965. Gluskoter, Marks, Comerio. 1ST NE

Location - 265'E, 240'S, NE/c NE/4 NW/4, Sec. 14, T. 7 N. R. 3 W.

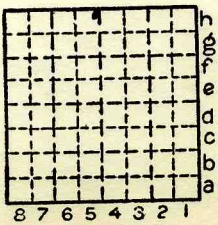
Total Sample 6'1", 1' coal on top not mined, not sampled, soft underclay bottom.

Coal - normally bright banded, calcite on vertical fractures, thin (1/16") pyritic lens at 1 3/4", 1/8" pyrite band at bottom.	0"	9"
Coal - normally bright banded, calcite on vertical fractures, 1/8" fusain, soft at 14", 1/4" bony band at 20", 1/8" pyritic lens at base.	9"	27"
Coal - normally bright banded, calcite and minor pyrite on vertical fractures, 1/4" soft fusain included, minor pyrite at 37", thin pyrite nodules 1/16" thick at 39", relatively clean coal down to 58".	27"	58"
Shale - gray, relatively well indurated blue band omitted from sample, bottom of blue band 60"	58"	60"
Coal - 1/4" mineralized fusain at 60½" calcite on vertical fractures, pyritic lens 1/16" thick at 70".	60"	73"

By.....Date.....

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

County Montgomery



Sec. 14

T. 7 N.
~~S.~~

R. 3 W.
~~E.~~

ILLINOIS GEOLOGICAL SURVEY, URBANA

Truax-Traer - Hillsboro Mine (Coffeen) - Channel Sample No. 2, 6th East face, July 29, 1965, Gluskoter, Marks, and Comerio. Total Sample - 6'1", leaving 4-6" at top and bottom, bottom extension wet. 200'E, 390'N of SE/c, NE NW Sec. 14, T. 7 N., R. 3 W.

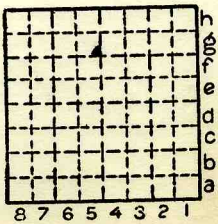
Coal - normally bright banded, calcite and pyrite on vertical fractures, thin, less than 1/16" pyrite stringer at 2½", 3¼", 4½", 1/4" bony coal and pyrite at base.	0"	11½"
Coal - normally bright banded, calcite on vertical fractures, 1/2" zone of pyrite lens and stringers at 17"	11½"	27"
Coal - normally bright banded with 1/4" bony bands at 27½", 30", 37", bony bands continued, discontinued pyrite, thin, less than 1/16" pyrite lens at base.	27"	41"
Coal - normally bright banded but not as bright as above, duller throughout, thin pyrite stringer at 49" and 52", 1/8" gray shale band at 64½".	41"	66"
Shale - gray, blue band, omitted from sample.	66"	67½"
Coal - normally bright banded but rather dull in appearance.	67½"	73"

By..... Date.....

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

Montgomery

County.....



Sec. 14

T. 7 N.
~~S.~~

R. ~~E.~~
6 W.

(77438—5M—5-58)

ILLINOIS GEOLOGICAL SURVEY, URBANA

Truax Traer - Hillsboro Mine (Near Coffeen) Channel Sample #3 - 2nd E face, July 29, 1965, Gluskoter, Marks, Comerio.

Location - 280'E, 640' N of SE/c NE NW, Sec. 14, T. 7 N., R. 3 W.

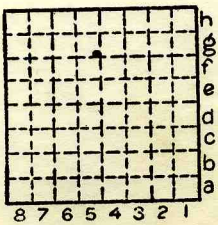
Total Sample - 73" sampled 1' top remains.

Coal - normally bright banded, 1/16" pyritic lens at 3½", calcite on vertical fractures, 1/2" bony band at 12", 5/8" bony band at base.	0"	17½"
Coal - normally bright, calcite on vertical fractures.	17½"	29½"
Bony Coal - continuing irregular thick veinlet to stringer of pyrite.	29½"	30"
Coal - normally bright banded, calcite on vertical fractures, 1/4" soft fusain band at 33", 39".	30"	50"
Bony coal includes thin pyrite.	50"	50 3/4"
Coal - normally bright banded but generally duller than above, calcite on vertical fractures.	50¾"	60"
Shale - light gray with several very thin vertical bands (blue band omitted from sample).	60"	62"
Coal - normally bright banded, calcite on vertical fractures, hard, not as bright as other 1/2 of seam.	62"	73"

By.....Date.....

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

County Montgomery



Sec. 14

T. 7 N.
~~S.~~

R. 3 W.
~~E.~~

(77438—5M—5-58) 2

Truax Traer - Near Coffeen, Illinois, Hillsboro Mine, Channel Sample No. 1 - 8th NE at face, July 29, 1965. Gluskoter, Marks, Comerio.

Location - 265'E, 240'S, NE/c NE/4 NW/4, Sec. 14, T. 7 N., R. 3 W.

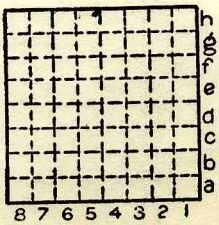
Total Sample 6'1", 1' coal on top not mined, not sampled, soft underclay bottom.

Coal - normally bright banded, calcite on vertical fractures, thin (1/16") pyritic lens at 1 3/4", 1/8" pyrite band at bottom.	0"	9"
Coal - normally bright banded, calcite on vertical fractures, 1/8" fusain, soft at 14", 1/4" bony band at 20", 1/8" pyritic lens at base.	9"	27"
Coal - normally bright banded, calcite and minor pyrite on vertical fractures, 1/4" soft fusain included, minor pyrite at 37", thin pyrite nodules 1/16" thick at 39", relatively clean coal down to 58".	27"	58"
Shale - gray, relatively well indurated blue band omitted from sample, bottom of blue band 60"	58"	60"
Coal - 1/4" mineralized fusain at 60½" calcite on vertical fractures, pyritic lens 1/16" thick at 70".	60"	73"

By.....Date.....

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

County Montgomery



Sec. 14

T. 7 N. S.

R. 3 W. E.

Truax-Traer - Hillsboro Mine (Coffeen) - Channel Sample No. 2, 6th East face, July 29, 1965, Gluskoter, Marks, and Comerio. Total Sample - 6'1", leaving 4-6" at top and bottom, bottom extension wet. 200'E, 390'N of SE/c, NE NW Sec. 14, T. 7 N., R. 3 W.

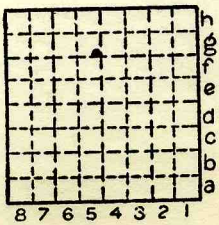
Coal - normally bright banded, calcite and pyrite on vertical fractures, thin, less than 1/16" pyrite stringer at 2½", 3½", 4½", 1/4" bony coal and pyrite at base.	0"	11½"
Coal - normally bright banded, calcite on vertical fractures, 1/2" zone of pyrite lens and stringers at 17"	11½"	27"
Coal - normally bright banded with 1/4" bony bands at 27½", 30", 37", bony bands continued, discontinued pyrite, thin, less than 1/16" pyrite lens at base.	27"	41"
Coal - normally bright banded but not as bright as above, duller throughout, thin pyrite stringer at 49" and 52", 1/8" gray shale band at 64½".	41"	66"
Shale - gray, blue band, omitted from sample.	66"	67½"
Coal - normally bright banded but rather dull in appearance.	67½"	73"

By.....Date.....

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

Montgomery

County.....



Sec. 14

T. 7 N.
~~S.~~

R. ~~E.~~ 6 W.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Truax Traer - Hillsboro Mine (Near Coffeen) Channel Sample #3 - 2nd E face, July 29, 1965, Gluskoter, Marks, Comerio.

Location - 280'E, 640' N of SE/c NE NW, Sec. 14, T. 7 N., R. 3 W.

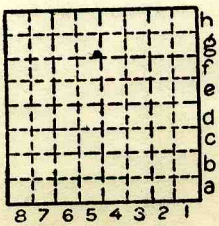
Total Sample - 73" sampled 1' top remains.

Coal - normally bright banded, 1/16" pyritic lens at 3½", calcite on vertical fractures, 1/2" bony band at 12", 5/8" bony band at base.	0"	17½"
Coal - normally bright, calcite on vertical fractures.	17½"	29½"
Bony Coal - continuing irregular thick vein-let to stringer of pyrite.	29½"	30"
Coal - normally bright banded, calcite on vertical fractures, 1/4" soft fusain band at 33", 39".	30"	50"
Bony coal includes thin pyrite.	50"	50 3/4"
Coal - normally bright banded but generally duller than above, calcite on vertical fractures.	50 3/4"	60"
Shale - light gray with several very thin vertical bands (blue band omitted from sample).	60"	62"
Coal - normally bright banded, calcite on vertical fractures, hard, not as bright as other 1/2 of seam.	62"	73"

By.....Date.....

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

County Montgomery



Sec. 14

T. 7 N.
S.

R. E.
3 W.

(77438—5M—5-58) 2

ILLINOIS GEOLOGICAL SURVEY, URBANA

F. C. Description #1

Truax Traer, Coffeen Mine

2nd left of 1st N.E., 1775'E., 1325'N. SW/c
Room 37 left

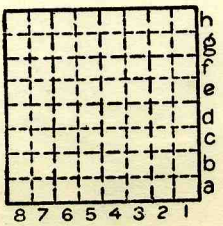
76" Coal mined
8" (approx.) coal left at top.
Description from top down.

top - 10½" Coal - normally bright banded, calcite on vertical fractures, thin pyrite stringers, less than 1/8" at 4".
10½"-10 3/4" Pyrite lens, 1/4" omitted from sample.
10 3/4"-1'9" Coal - normally bright banded, much calcite on vertical fractures.
1'9"-1'9 1/8" Carbonaceous shale.
1'9 1/8"-1'10 1/8" Fusain - soft with some vitrain interbedded.
1'10 1/8"-2'7" Coal - normally bright banded, calcite abundant on vertical fractures, mineralized fusain on cleavage cutting across bedding at 2'3", thin 1/8" pyrite at base.
2'7"-5'½" Coal - normally bright banded, thin, less than 1/8" pyrite lense, extends laterally at 3'4½", contains 6 thin pyrite stringers less than 1/8" in bottom 4".
5'½"-5'1" Shale - gray, includes pyrite lenses, blue band omitted from sample.
5'1"-6'4" Coal - normally bright banded, calcite and pyrite on vertical fractures, several very thin shale lenses in bottom 6".
Bottom of coal is on underclay.

By HJG, FNM, KEP Date 7/14/66

Quad. Part

County



Sec. 11
T. 7 N.
R. 3 W.

F. C. Description #2

Truax Traer, Coffeen Mine

3rd left of the 1st N.E., 2275'W., 1775'N., SE/c
No. 3 Entry

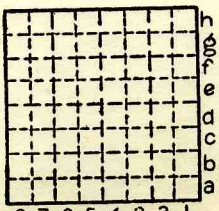
76" coal mined
8" (approx.) coal left at top.

Top - 11½" Coal - normally bright banded, 1/16" pyrite stringer at 3", calcite on vertical fractures, 1/4" boney band at base.
11½"-11 9/16" Pyrite lense, 1/16"
11 9/16"-2'4½" Coal - normally bright banded, calcite and pyrite on fractures, thin pyrite stringer at 1'5½", thin soft fusain band at base.
2'4½"-4'9¼" Coal - normally bright banded, calcite and pyrite, thin 1/8" pyrite lense at 3'1" and 3'4" 1/8" boney band at 3'8"
4'9¼"-4'9½" Pyrite lense 1/4" includes shaly material.
4'9½"-5'6" Coal - normally bright banded, with 1/16" pyritic shale bands between 5' and 5'1", calcite on vertical fractures.
5'6"-5'8" Shale - medium gray, blue band, omitted from sample.
5'8"-6'4" Coal - normally bright banded, calcite and pyrite on vertical fractures.

By HJG,FNM,KEP Date 7/14/66

Quad. Part.

County



Sec. 11
T. 7 N.
R. 3 W.

(77438—5M—5-58)

ILLINOIS GEOLOGICAL SURVEY, URBANA

F. C. Description #3

Truax Traer, Coffeen Mine
July 14, 1966
No. 5 Entry 1st N.E. heading, 3500'N, 300'W, SE/c
H. Cluskoter, F. N. Murray, K. E. Proctor

76" Coal mined
3"-4" (approx.) coal left at top and bottom.
Description from top down.

Top. 1'5" Coal - normally bright banded, calcite and abundant pyrite on vertical fractures, less than 1/16" pyrite stringat at 3½" and 9", 1/8" pyrite lense at base.

1'5" - 3' Coal - normally bright banded, calcite and some pyrite on vertical fractures. 1" boney band at 9½" and at 2'3", 1/4" soft fusain band at base.

3'-4'7" Coal - normally bright banded, calcite and pyrite on vertical fractures.

4'7"-5'2" Coal - dull, much dirtier than above, much pyrite and calcite on vertical fractures.

5'2"-5'3½" Pyrite and shale lense, very dirty, omitted from sample.

5'3½"-5'5" Coal - normally bright banded.

5'5"-5'6" Shale - dark gray, carbonaceous with few vitrain stringers.

5'6"-5'8" omitted from sample.

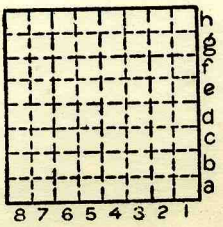
5'8"-5'8½" Shale - dark gray, carbonaceous, omitted from sample.

5'8½"-6'4" Coal - normally bright banded, calcite and pyrite on vertical fractures at 6'0" and 6'1".

By HJG,FNM,KEP Date 7/14/66

Quad. Part.

County



Sec. 11
T. 7 N.
R. 3 W.

Sample #1, Truax-Traer - Hillsboro Mine (Coffeen Mine)
1400' from E. line, 400' from N. line, Sec. 1-7N-3W,
Montgomery County
Described by M.E.H.
Recorded by R.P.
1/22/68

Roof is shale, medium gray, much plant material and coaly streets, poorly laminated, contains 25% coal, total thickness observed 6'8", detail of No. 6 Coal.

0"-11"	Coal is NBB, kaolinite and calcite on vertical fractures
11"-11 1/8"	is pyrite band
11 1/8"-21"	Coal is NBB, kaolinite and some calcite on vertical fractures
21"-21 1/4"	Fusain
21 1/4"-35 3/4"	Coal is NBB, kaolinite and some calcite and occasional pyrite on vertical fractures
35 3/4"-36 3/4"	Fusain
36 3/4"-47 3/4"	Coal NBB, some kaolinite on vertical fractures
47 3/4"-47 7/8"	pyrite band, discontinuous
47 7/8"-50"	Coal NBB, kaolinite on vertical fractures
50"-50 3/4"	Coal interbedded with shale, coal 60%, (not excluded)
50 3/4"-63 3/4"	Coal NBB, minor kaolinite, occasiona bony beds up to $\frac{1}{2}$" thick

Sample #1 - page 2

63 3/4"-65"	Shale, medium-gray, some coal seams (excluded from sample)
65"-67 1/4"	Coal NBB
67 1/4"-69 1/4"	Shale, medium light gray, pyrite with pyrite nodules, hard (excluded)
69 1/4"-85 1/4"	Coal NBB, kaolinite and with several thin fusain bands on vertical fractures
85 1/4"-85 3/4"	Fusain band partly mineralized with pyrite (not excluded)
85 3/4"-86"	Coal NBB

Underclay not reached, floor is coal

Sample #2, Truax-Traer - Hillsboro Mine (Coffeen Mine)
1320' from E. line, 70' from N. line, Sec. 12-7N-3W,
Montgomery County
Description by M.E.H.
Recorded by R.P.

Total thickness observed 6'9" (81")
Roof is coal

0"-1/2"	Shale, dark gray (excluded)
1/2"-3"	Coal NBB, calcite on vertical fractures
3"-6 1/2"	Shale, medium gray, very pyritic, with thin coaly seams, thins laterally to zero (excluded)
6 1/2"-19"	Coal NBB, calcite and kaolinite on vertical fractures
19"-19 1/2"	Fusain, mineralized with calcite
19 1/2"-32"	Coal NBB, calcite and kaolinite on vertical fractures, a 1" zone, 4" from top contains much fusain
32"-33"	Shale, with pyrite lenses (excluded)
33"-35"	Coal NBB, few fusain bands
35"-35 1/2"	Fusain, mineralized with calcite
35 1/2"-44"	Coal NBB with kaolinite on vertical fractures
44"-44 1/8"	Pyrite, thickens to $\frac{1}{2}$" laterally
44 1/8"-56 1/2"	Coal NBB, kaolinite on vertical fractures

Sample #2 - page 2

56 1/2"-56 3/4"	Pyrite
56 3/4"-66 3/4"	Coal NBB
66 3/4"-68 1/4"	Fusain mineralized with calcite
68 1/4"-70 1/4"	Coal NBB
70 1/4"-72 3/4"	Shale, medium light gray, several coaly shales (excluded)
72 3/4"-74 3/4"	Coal NBB
74 3/4"-77 1/4"	Shale, medium light gray, hard, pyritic (excluded)
77 1/4"-81"	Coal NBB, several thin bony bands

Underclay not reached

Sample #3, Truax-Traer - Hillsboro Mine (Coffeen Mine)
1300' from S. line, 1510' from E. line, Sec. 1-7N-3W,
Montgomery County
Description by M.E.H.
Recorded by R.P.

Total thickness observed 6'7"
Roof is coal

0"-27"	Coal NBB, occasional thin pyrite bands, kaolinite on vertical fractures
27"-27 1/4"	Shale, gray
27 1/4"-35 1/2"	Coal NBB, kaolinite on vertical fractures
35 1/2"-35 3/4"	Pyrite lense (excluded)
35 3/4"-46"	Coal NBB, occasional thin fusain particles, kaolinite and pyrites on vertical pyrite
46"-46 1/4"	Pyrite lenses, discontinuous
46 1/4"-62"	Coal NBB, few thin, pyritic lenses
62"-62 1/2"	Shale, medium light gray, carbonaceous (excluded)
62 1/4"-65"	Coal NBB, some kaolinite on vertical fractures
65"-66 1/2"	Shale, medium gray, carbonaceous, few thin coaly streaks (excluded)
66 1/2"-79"	Coal NBB, few thin pyrite bands

Claystone (seat rock) light gray, numerous carbonaceous roofless, smooth, slicken sided.
4" thick

ILLINOIS GEOLOGICAL SURVEY, URBANA

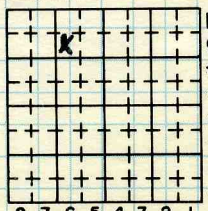
Consol. Coal Co., Hillsboro Mine, MI #671
Visited by H. H. Damberger, J. A. Simon with Glen Phillips, and R. A. Dutcher

1. Relative to the question of mine management if there were any reason why entries should run NE rather than N from Main East:

No prominent and persistent fracture system could be detected in the roof during our visit. A N 70 to 10 E joint direction prevailed in some locations in the roof shale, spacing about 2 to 4 feet. The joints were straight and could usually be traced all across entries. They seemed to be restricted to good roof conditions, possibly areas where Brereton Limestone is well developed, with a few feet black shale underneath. Areas of bad roof or roof falls seemed to consistently lack such a regular joint system.

2. Bad roof and roof falls are widespread in this mine. Roof control should be difficult no matter which direction entries are driven. A number of considerations might be useful in judging the roof conditions in this mine:

(a) It is characteristic for the Brereton Limestone (here as in other areas) to vary greatly in thickness, from 0 to several feet, often within short distances. Especially the areas where the Brereton Limestone decreases within a short distance from several feet to only a few or zero inches thickness might be roof problem areas. In none of the major roof falls that we saw did a thick limestone overlie the coal within a few feet to



By HHD Date 1-6-72

Quadrangle

County Montgomery Sec. 14 T 7N R 3W

G 6

about 10 to 15 feet. Areas where the Brereton Limestone is absent or very thin and shale overlies the seam up to 10 or 15 or more feet are most prone to falls, often up to the next prominent limestone (Conant Limestone).

(b) Bolts are usually anchored into the first "hard rock" (limestone) which the roof bolters recognize when they drill the holes. Recognition of "hard rock" (limestone) and judgement of its suitability as anchoring rock (hardness and thickness) is left to the drilling and bolting crew. They have anchors of 4 feet length to which they attach one or two 4-feet extensions for a total length of 4, 8, or 12 feet. After bolts are set there is apparently no way of knowing the total length of the bolt. No records are kept of the length of the bolts. Thus, it is now not possible to determine the thickness of shale up to the first "hard rock" (limestone). Such information would be very helpful in determining relations between thickness of shale up to the first hard limestone and bad roof.

(c) The lack of a thick limestone within a few feet of the coal and the petrographic character of such relatively thick shale-claystone sections (with only thin limestones intercalated) above the coal are apparently not the sole pre-condition for roof falls, though the prevailance or presence of certain types of claystones (especially the greenish "mottled" type) probably enhances the possibility of roof falls or bad roof.

The sites of roof falls can generally be characterized by the presence of many polished and slickensided planes which cut fairly irregularly through the roof shales and claystones thus greatly weakening the roof rocks. Most of them are inclined less than 45° and they tend to be curved with shallowing dip toward the coal seam. Though most of these slip planes are confined to the roof shale-claystone, they occasionally also cut down into the top 1 to 2 feet coal, especially where the roof shale is severely affected by these slip planes. Their horizontal and vertical extension is very variable, but they usually extend vertically a few feet through the roof rocks and the larger ones can often be followed horizontally across entries. In a few cases, small clay dikes ("horsebacks") were also associated with such small-scale faulting. They were a few inches wide and reached a few inches to about 2 feet at most down into the coal. Otherwise, they have the same characteristics as the larger claydikes in the Springfield (No. 5) Coal (see mine notes EL-Ben Mine, Logan Co.) and the claydikes that are associated with "white top" of Herrin (No. 6) Coal in northern and northwestern Illinois (Guidebook 8, mine notes in several mines of Fulton, Peoria, and Stark Counties). The difference seems to be more one of size and severety rather than character.

It was my impression that major roof falls occur especially where the roof shales-claystone are intensely cut by such polished, slickensided slip planes.

E notes by JAS

Severe roof problems were usually encountered where major slip planes cut through the immediate roof of the coal and can be traced over ten and more feet across entries. Major roof falls had occured in several rooms adjacent to the Main East where such slip planes ran for some distance along the roof of the rooms rather than into the pillar. Vice versa, roof falls in the mains also seemed to occur especially where major slips had cut through the roof rocks, judging from the roof adjacent to such large roof falls.

Such slips in the freshly uncovered roof should be a good warning for bad roof. Careful roof bolting and use of 12 feet roof bolts around such disruptions of the roof might reduce the probability of roof falls. Since the average dip of slip planes is around 45° or less, bolts should be set to have a maximum chance to hold such blocks up adjacent to traceable slip planes in the roof. Special caution is needed if the top 1 to 2 feet of the seam is also affected (e.g. clay dikes) and if such major slips run along entries or rooms rather than across them.

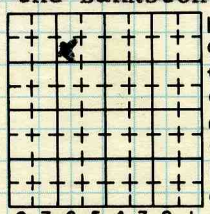
ILLINOIS GEOLOGICAL SURVEY, URBANA

Consol. Coal Co., Hillsboro Mine, MI #671
Visited by H. H. Damberger, J. A. Simon with
Glen Phillips, R. R. Dutcher
Consol cc S.I.U.

Primary purpose of visit was to determine if natural conditions, particularly any dominant fracture system, suggested any reason why NE SW main entries might provide better roof conditions than would N-S, E-W entries. We were unable to determine that any prominent fracture pattern existed and concluded that roof falls were associated principally with probable character of the roof (which is highly variable) and extra wide mined area (intersections where extra coal may have been taken). Commonly the falls are probably a response to a combination of both.

Based on this single day's visit, we were unable to determine any reason that there should be a significantly "better" direction for mining. We did not visit the short entry between the air shaft and hoisting shaft which we later learned ran north-south and gave particular trouble. Roof conditions observed, however, were of such character, as to suggest that this relatively short entry is likely to have been in an area of relatively poor roof strata. It is also possible that these entries may have been driven slightly wider than normal entries (although this is not known).

The lone possibility that areas where the Brereton limestone is thin or absent and the mottled shale and other shale below the Bankston Fork Limestone is relatively thick may have linear development, could influence a favored mining direction if such possible linear areas



By JAS Date 1-6-72

Quadrangle

County Montgomery Sec. 14 T 7N R 3W

G 6

had consistent directions. This was not apparent on inspection, and it is probable that the drill holes, although fairly numerous, still could not be sufficient to demonstrate this. The only practical way to determine this would be mapping of carefully compiled roof bolt hole data which generally are not available.

The following are a few specific observations and measurements recorded during the mine visit:

1. Fall observed about 150' outby Station 105A on the Main East #4 entry, at intersection of cross-cut and main entry.

Fall was about 8± ' high, fall showed some randomly oriented slips (probably related to concretions). Some fractures (not major) oriented N 15° W.

2. Next cross-cut inby 1. above measured face and butt cleat in coal - not well developed. Face cleat N 60° W, butt cleat N 25° E. A fracture system in bottom 2 inches of roof shale N 70° E.

3. Three cross-cuts inby 2., fractures in roof oriented N 80° E.

4. At cross cut on #4 entry, Main E, Station 25. Observed some moderately prominent slips roughly NE SW. Some moderately prominent fractures in cross cut N 60°-70° E. Some slips N 30° W.

5. Second NE Main entry. Roof and cross cuts appeared to be slightly better than Main E entry, although this was a general evaluation only. Some fractures observed that generally ranged from N 10° E to N 10° W in the few places measured.

6. Second NE Main entry. Large fall opposite cross cut 49? (4 cross cuts inby Station 156.) No prominent slips or fractures observed. Fall appears to be due to width mined and character of immediate roof. Fall about 8± ' high to limestone. Mottled shale about 30± inches below limestone. Mottled shale sampled.

Consolidation Coal Company Hillsboro Mine

General Information compiled by H.-F. Krausse, 8/13/74.

ISGS Mine Index No. 871 AAPG County Code 135

Main Operating Office: Consolidation Coal Co.
Midwestern Division, Box #218
Pinckneyville, Ill. 62274
Tel. (618) 357-9311

Staff members at above: Don E. Marston, President
Harry R. Eaton, Oper. Vice-President
Glen J. Phillips, Chief Engineer
John Robinson, Asst. to Chief Engineer
Gerald A. Bayless, Director of Safety
Max Marlow, Engineer (left company in 1975.)
Linda Dutcher, Geologist
Ken Neller, Public Relations

Mailing Address of Mine: Coffeen, Ill. 62017
Tel. (217) 534-2392

Staff members at mine: Wilson R. Moore, Supt. (this position vacant ? in 1975.)
James White, Mine Manager
Nelson Rule, Safety Engineer
Jim Slopak, Ed Banovik, Lou Daley } Engineering Office

Coal Seam Mined: Herrin (No. 6), 73-84" thick.

Production Figures:

1969	1,150,513	tons
1970	942,960	"
1971	1,113,216	"
1972	1,990,686	"
1973	1,894,484	"

All production goes to C.I.P.S. power plant just west of mine tipple. No preparation other than raw breaker, $1\frac{1}{2}$ X 0.

Man and Materials Shaft is 510' deep and located in $NE\frac{1}{4}$ $NW\frac{1}{4}$ Sect. 14, T 7N, R 3W.

Production Shaft (skips) is 510' deep and located in $NW\frac{1}{4}$ $NW\frac{1}{4}$ Sect. 14.

New air shaft, soon to be a man shaft, is about 500' deep and located in the $SE\frac{1}{4}$ $NE\frac{1}{4}$ $NE\frac{1}{4}$ Sect. 18, T 7N, R 2W.

Main entries run east from the bottom. Submains run northeast (about 025°) and southeast (about 155°.) Panels are at right angles to the submains. Main entries are 18 ft. wide, others are 20 ft. wide, and pillars are on 70-75 ft. centers. Continuous miners have been used for the life of the mine. Currently Joy 10-CM rippers; Marietta borers were used in the past. No pillaring is being done.

Floor heaving is slight, but has been problem in past (1st NE). Little pillar and barrier rashing. Roof falls are a problem. Many slips, faults, and areas of weak mottled shale without good limestone beds to pin to. No water problems at present, but water was a problem earlier in history, mainly in 1st NE.

No other active mines in vicinity. Clover Leaf Mining Co. #1, abandoned 1909, and #2, abandoned 1925, lie about 1000' northwest of present workings.

CONSOLIDATION COAL CO. HILLSBORO MINE, COFFEEN, MONTGOMERY COUNTY, ILLINOIS

Herrin (No. 6) Coal Roof Study. Heinz Damberger, H.-F. Krausse, Chris Ledvina, John Nelson, Colin Treworgy, and others, 1974-75.

The Hillsboro Mine was one of several mines studied and mapped in detail in connection with the Roof Study, a contract sponsored and funded by the U.S. Bureau of Mines. Mapping centered on the 1st SE Entries to the 2nd Right Panel, with part of the adjacent Parallels; in the 2nd NE 12-14 Panels Left and 14th Right; and in the Main East around, and to the west of the # 2 Air Shaft. Other parts of the mine were mapped in less detail.

The notes from this mapping work are in a book on file in the Confidential Room, and the maps, both field and compilations, are in Case 10, Drawer 1. Sketches and photos may be found in the Roof Study Photo Notebook in the Confidential Room. In addition, the Roof Study final report is being prepared (5/76) for publication as an I.M.N.

CONSOLIDATION COAL COMPANY'S COFFEEN/HILLSBORO UNDERGROUND MINE, MONTGOMERY COUNTY
November 8, 1978

Notes by H. T. Krausse on a visit with H. H. Damberger

Main reason for the visit was an invitation by Consol. personnel to see and compare roof conditions in active mine areas of today. The layout of the main and submain entries has been changed since we conducted our previous roof study in 1974/75.

The submains off the East main entry are now driven straight to the north and to the south rather than they used to be (southeast and northeast). The company's personnel wanted to inquire whether we found a recognizable impact of geologic factors on the roof stability by having altered the mining plan and layout of the submain and panels.

We were accompanied by : Mrs. Linda Dutcher, geologist; Mr. Jim Grogan, Regional Underground Superintendent and Mr. Don Arrowsmith, Mining Engineer.

We visited the 3rd submain north, the area around the air shaft in the main east (study area 3 of our Roof Study 1974/75) and made some stops on the way out in the main east entries.

Major observations:

1. Roof conditions and roof lithology and stratigraphy are very much the same and similar to what we had found 1974/75 in our roof study.

2. In the belt entry of the 3rd submains north, we observed a small low-angle normal fault, that strikes parallel to the entry and displaces the

coal-roof interface less than a foot at the western side of the belt entry, thus forming a wedge of roof rock over the entry which is prone to fall if not heavily supported. The fault was observed in the entry for several hundred feet along strike. The entry was timbered along the belt, but may need additional support (timbers or where possible cribs, which is difficult due to the space taken by the belt). This situation is certainly hazardous to the life of the belt entry and therefore to haulage procedure from an entire section of the mine.

However, we infer from our previous study, that the alteration of the mining plan and layout has basically nothing to do with this type of hazard, because the fault and slips are responding to the distribution, orientation and variation of lithologic roof bodies and their boundaries, therefore curve around, split, end, start anew. They do not follow one or more individual definite trends. Thus a situation like the one observed and described above may occur in any entry no matter which orientation the entry has.

In our discussion primarily with J. Grogan and D. Arrowsmith, we suggested to add more timbers into the entry and if possible not to mine the coal from the immediate vicinity of the entries which are endangered by that type of roof instability at least until the major block of coal further out by the submain has been exploited, that is to mine the coal in retreat during the last phase of mining in this 3rd North submain area.

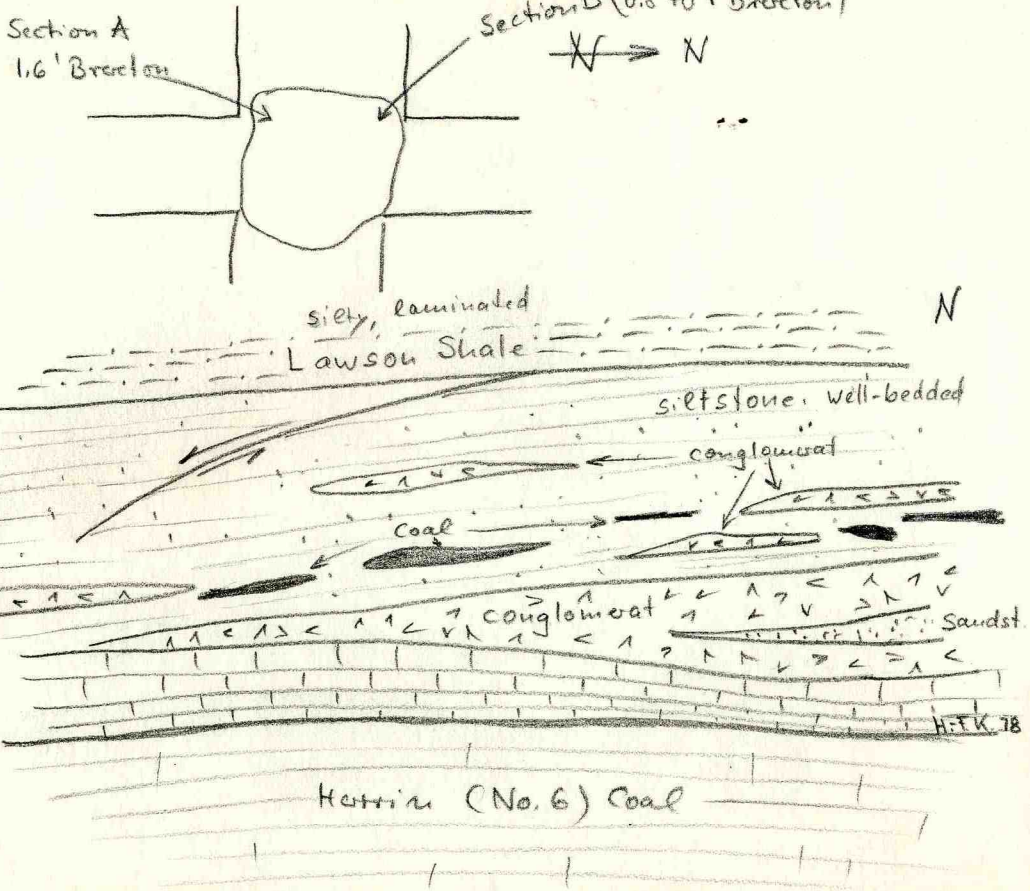
3. A very "strange" sequence of roof strata was observed in a roof fall several cross-cuts west of the intersection between the 3rd submain north with the track entry of teh main east. This type of lithology has not been observed in our study 1974/75 although it reminded us of a situation in the 2nd

submain northeast (study area 2, station H.H.D 288, HFK 245)

Section A Lawson Shale
2.6' siltstone (sandstone) well bedded and laminated; bedding planes coated with plant debris, locally containing coal streaks, and conglomeratic lenses
0.4' conglomerate, coarse with flat pebbles of shale (greenish mottled Lawson sh.) and coal fragments
1.6' Brereton Limestone (?)
Herrin (No. 6) Coal

Section B
2.5' (estimate) Lawson Shale, well laminated, apparently with silty layers (but barely visible, hard to determine).
2.5' siltstone (+sandstone) well bedded, well laminated, bedding planes coated with plant debris (tend to split), locally containing coal streaks and conglomeratic lenses.
1.8' conglomeratic with flat pebbles of shale (greenish mottled Lawson sh.) and coal fragments.
1' to 1.8' Brereton Limestone (?)
Herrin (No.6) Coal

Situation on roof fall looks as if a sheet of of sandstone with conglomeratic base or a shallow, channel-like feature (anvil rock) has come in. It would need further detailed study.



H.T.K.

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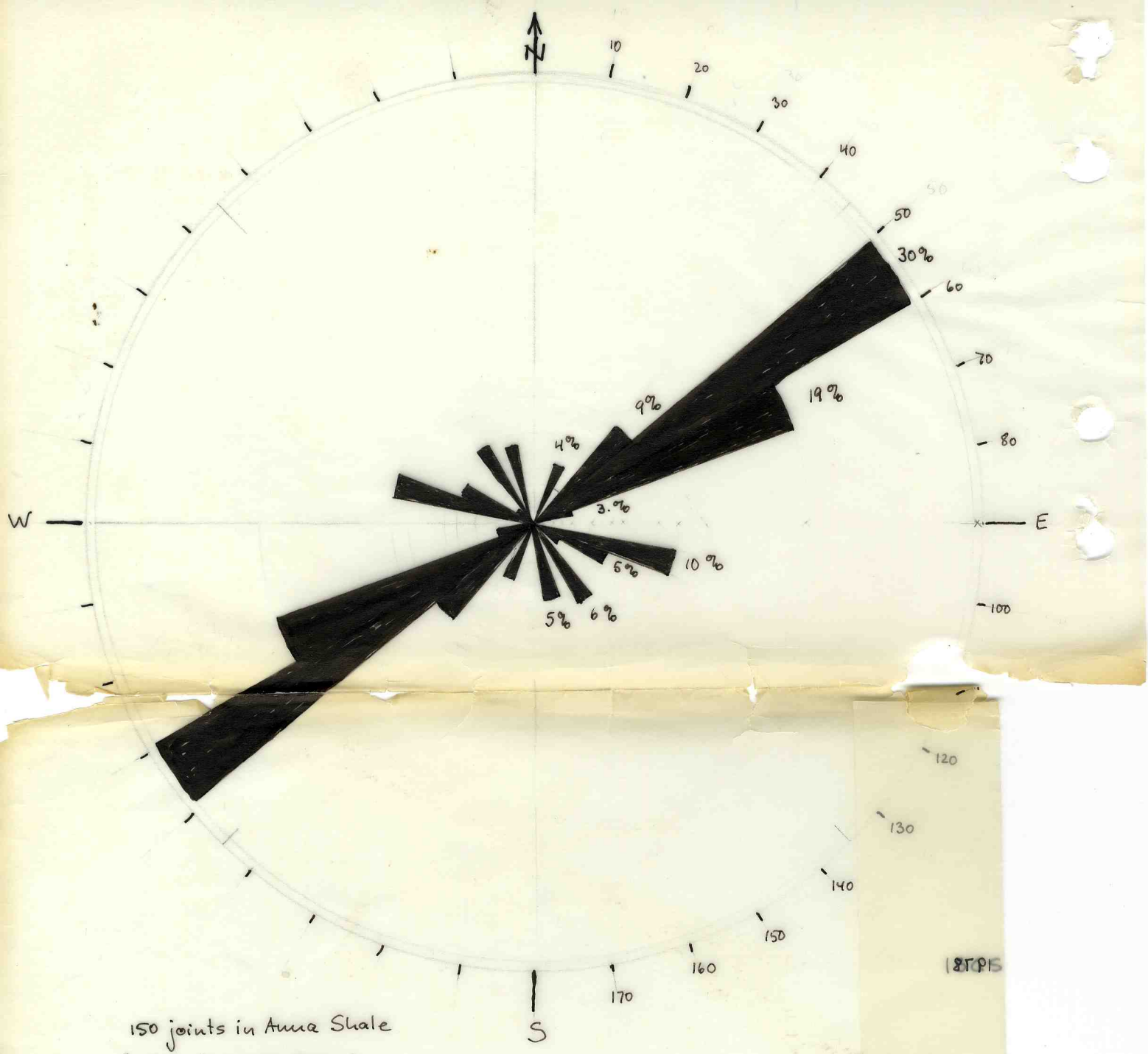
H. Wells Board

Nov. 8, 1978

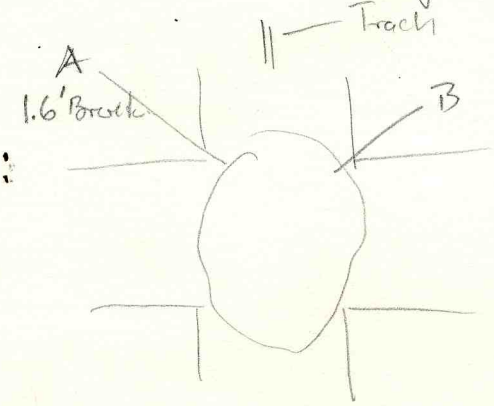


150 joints in Anna Shale
(1st SE) Study Area 1
Mine A Data H.-F.K.

given to HHD and typed!!

11/06/78 11/15/78

Hillsboro Main East at intersection west of 3rd North Roof Fall in Breccia and "Anvil Rock" (Lawson with Conglomerate.)



2.6 siltstone (sandstone) well bedded + laminated with coal streaks local conglom

0.4 Konglomerat with Lawson Sh. Pebbles plant brokenup coal

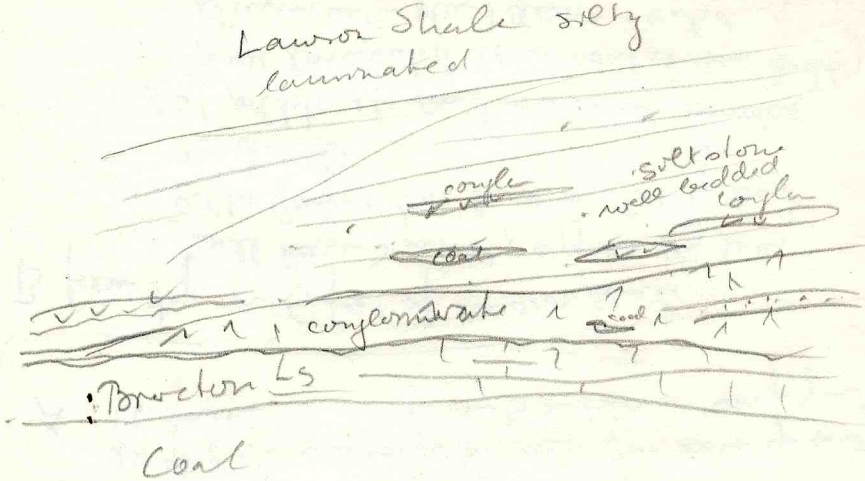
A 1.6 Breccia fragments and limestone fragments

B from top ~ 5 feet of Lawson Shale well laminated, apparently with silty layers, but local weathering bad to decide

2.5' siltstone (+ sandstone) well bedded well laminated local coalstreaks bedding planes with plant debris coated

1.8' Conglomerate with pebbles of ~~coal~~ Lawson shale greenish soft siltstone + coal fragments

1 to 0.8 Breccia


Lawson Shale silty
laminated
conglo
coal
well bedded
conglomerate
Bowerbank Ls
Coal

CONSOLIDATION COAL COMPANY HILLSBORO MINE
February 10-11, 1981
Notes by John Nelson on visit with Steve Danner, accompanied by John Gefferth, engineer from Consol.

Gerald Bayless, general sup't.
Emil Teisa, sup't of mine

Purpose of visit was to collect three bench samples and to make general geologic observations.

Bench Sample 1

3rd Left off 2nd South, Room 15N.

Roof: Anna Shale, black, hard, fissile, smooth, contains occasional pyrtiized fossil debris, note possible fish tooth. Numerous concretions. Joints trend about N 65 E and are lined with calcite. Shale was sampled.

1.77' Bench 1-

1.76' Coal, N.B.B., moderately hard, vitrain about 15%, thin-banded, thickest vitrai 0.02', average 0.01'; attrital coal 50-70%, moderate banding. Fusain thin-banded and in lenses, generally soft. Pyrite as vein-fillings, thin and in light concentration. Cleat moderately developed, with calcite on one set. One fusain lens 0.04' X 0.60'.

0.01' Pyrite, discontinuous lamina.

0.97' Bench 2-

0.95' Coal, sim. to above, slightly less vitrain, more attrital coal, banding as above. Pyrite as above, much less fusain although no large lenses. 3 intermittent bands of pyrite less than 0.01' thick.

0.02' Shale, medium gray, slightly silty, contains streaks of bright coal, appear non-pyritic.

1.56' Bench 3-

0.79' Coal, sim. to above, cleat less well-develpoed.

0.02' Pyrite, fairly continuous, some shale mixed with dull coal, moderately hard to hard.

0.75' Coal, sim. to above, little calcite and pyrite. Thickest vitrain 0.025'

0.01-

0.02' Pyrite, intermittent, moderately hard.

1.82' Bench 4-

1.55' Coal, sim. to above with several vitrain bands over 0.02', sparse vitrain; attrital coal medium to thinly banded, about 70% of total. Fusain finely disseminated and in very thin laminae. Lower half of unit contains several convoluted shaly partings.

EXCLUDED 0.08-

0.10' Shale, medium-light gray, hard, pyritized, varies in thickness; a lens about 1.5 ft long, contains lamiane of pyrite and coaly streaks along irregular contact.

0.17' Coal, sim. to above.

1.20' Bench 5-

EXCLUDED 0.10' Shale (Blue Band), medium gray, moderately hard, smooth, contains numerous fine coal stringers, base contains alternating coal and shale, upper contact fairly sharp and irregular, lower contact gradational.

1.10' Coal, harder than above, some calcite, very little pyrite. Overall bonier than above.

Floor- Claystone, medium gray, moderately soft, silty, slickensided, not much carbonaceous debris.

7.32' total thickness of seam.

Went to look at several faults near the area where we sampled. One fault outby the face of the 3rd Left Panel trends NW-SE and dips about 30-40 degrees southwest, having about 7 feet of throw. False drag is strongly developed on both blocks; this is a typical clay-dike fault. Rock dust hides the details.

Another fault has been struck at the face of the track entry of the 2ns South Mains, 3459' inby the Main East as indicated by a survey tag. This fault str strikes east-west and has the western side downthrown 7 feet. It dips 30 degrees and both blocks again show definite false drag. It is another clay-dike fault.

Roof sequence at the fault is mainly Lawson Shale; little or no Anna or Brereton; thin Jamestown coal interval and Conant Limestone. The lower part of the Lawson Shale is much siltier than normal for this mine; it is almost a siltstone containing pyrite trails, plant debris, and numerous small pelecypods. Upward the shale becomes smooth and is finely and strongly mottled. It is intensely sheared along the fault

BENCH SAMPLE 2

3rd South Submains, face of No. 6 Entry 3900 ft. inby the Main East.

Roof- Jamestown Coal interval; dark gray carbonaceous shale with lenses of brownish limestone and streaks of coal.

1.5' Anna Shale, dark gray, moderately hard, poorly bedded, contains occasional light-colored bands, very smooth, short faint coaly streaks near base very sharp, irregular contact. Sampled.

1.18' Bench 1- Coal, N.B.B., moderately hard, cleat developed in two directions, vitrain very thinly banded, moderate concentrations, max. 0.01' thick; attrital coal also very thinly laminated

and amounts to 50-60% of seam. Little calcite mainly on cleat; some pyrite in lenses and on cleat; occasional intermittent pyrite bands less than 0.01' thick.

1.44' Bench 2- Coal, sim. to above, band of dull coal 0.15' thick near middle of unit; small lenses and discontinuous bands of pyrite, little calcite on cleat, fusian finely disseminated and in thin laminae.

1.20' Bench 3- Coal, sim. to above but less vitrain, more attrital; more earthy lustre, occasional disseminated fusain and intermittent laminae of pyrite. A few pyritic "goat beards" noted. Thin shaly parting at top of bench. Vitrain up to 0.04' locally.

1.57' Bench 4- Coal, bonier than above, rather earthy approx. 15% vitrain, 70% attrital; fusain laminae and as small lenses or disseminated particle occasional thick bands of bony coal, with stringers of bright coal. Calcite sparse to moderate.

1.26' Bench 5-

EXCLUDED 0.08' Shale, light brownish-gray, hard, pyritic, lenticular uneven band. Grades into bone coal above and below.

0.25' Coal, sim. to above; thinly banded.

EXCLUDED 0.13' Shale (Blue Band), sim. to shale above; soft to moderately hard, appear to be "benched" by two coal streaks. Slightly pyritic.

0.85' Coal, earthy, numerous thin shale partings (all less than 0.01'); banding somewhat indistinct, fusain in laminae, little visible calcite; pyrite disseminated.

FLOOR- Claystone, light to medium gray, soft to moderately soft, very smooth, some carbonaceous debris, slickensided.

6.65' total thickness of seam.

Major roof fall on belt entry of 3rd South Submains, about 8 to 10 crosscuts outby the face, put the belt out of commission for something like 10 weeks View in fall in not very goof because of dust, chicken wire, and bolts along sides and top. Estimated section:

TOP- Coal (Danville No. 7 ?) Fallen pieces are N.B.B. with much fusain, thin irregular shaly partings, and oxidized pyrite.
1' Claystone
12' Shale or mudstone, olive gray
2' Shale, dark gray or black
7' Shale or mudstone, medium gray, slickensided
2' Limestone (Bankston Fork), brownish, fine-grained
3' Shale, mottled greenish to light gray, soft, poorly bedded
4' Shale, dark gray, silty, poorly bedded
0.8' Limestone (Conant), medium gray, coarse grained, very argillaceous
0.7' Jamestown coal interval, dark gray hard shale with streaks of coal.
No. 6 Coal.

BENCH SAMPLE 3

Face of the Main East; right breakthrough north of Station 202, approx. 10,350 feet east of No. 2 shaft.

Roof- Shale (Anna), dark gray with light gray bands of carbonate, moderately hard to hard, poorly bedded, smooth, sharp jagged fractures, some slickensided fractures, sharp even contact with coal; calcite of joint surfaces. Sampled.
1.40' Bench 1- Coal, N.B.B., moderately hard, moderate cleat development, vitrain in moderate amounts, thickest bed 0.02', average 0.01', attrital coal thin to medium banding, fusain as thin laminae and finely disseminated particles; calcite on cleat and in vertical fractures

small lenses of carbonate near top of seam like those near base of Anna Shale, also several thin bands of pyrite.

1.21' Bench 2- Coal, sim. to above, with several discontinuous bands of fusain up to 0.02' thick, one band of medium-dark gray shale near middle of unit, several small lenses and numerous laminae of pyrite, a few pyritized "goat beards" and generally more fusain than in Bench 1.

1.28' Bench 3- Coal, similar to above, contains large lens of hard fusain 0.1' thick (average) and up to 0.25' thick away from sample; pyrite and calcite on cleat and pyrite on laminae, vitrain thin-bedded, attrital coal medium to thick-bedded.

1.32' Bench 4- Coal, sim. to above, less fusain, contains pyrite and calcite as above.

0.90' Bench 5-

0.16' Coal, sim. to above, band of shale and pyrite 0.02' thick (discontinuous) at top; locally thickens to pyritic lens 0.06' thick - this was EXCLUDED

EXCLUDED 0.10' Shale, lenticular ; medium gray, silty contains several bands and streaks of bright coal. Uneven contact, pyritic in part. May be "Blue Band".

0.64' Coal, sim. to above, thinly banded overall, one vitrain band 0.02', the rest less than 0.01'. Shaly streaks common. Sharp contact to floor.

FLOOR: Claystone, dark gray to black, slickensided, moderately hard, generally smooth, occasional thin coaly streaks, very little carbonaceous debris.

6.11' total thickness of seam.

Reportedly coal is as thin as 5 feet in this area we did not see any that thin but noted that the coal

is appreciably thinner here than elsewhere. No indications of erosion, or other causes of thinning.

Roof conditions were rather poor. In most of the area we saw the roof appears to be thin Anna Shale with little or no limestone above. Many faults are present. Heavy rock dust prohibited easy study.

3rd North Submains were visited just to observe geologic conditions. We walked the return-air escapeway from the face of the 3rd Left Panel as far as the 1st Right Panel.

Area of Energy Shale roof - the first such seen in this mine - along the 5th and 6th Entries near the face of the submainsabout 4800 feet inby the Main East The shale forms a lens-shaped body about 250 feet in diameter and up to 5 feet thick. The shale is mostly dark gray (locally lighter), poorly bedded, moderately soft to moderately hard, faintly laminated, contains numerous crystals of pyrite near base, one large Pecten noted. Large brownish lens-shaped concretions common in lower portion. This shale is overlain directly by the Jamestown coal interval. Where the Energy Shale pinches out the Jamestown Coal forms the immediate roof, but a short distance away, a lens of Anna Shale occurs under the Jamestown Coal. The area of Energy Shale has bad roof conditions and most of the shale has fallen away exposing the base of the Conant Limestone. Many fractures and small faults add to the instability. One clay dike was noted penetrating coal, Energy Shale, and overlying units. The Energy Shale weathers to its usual yellowish-brown color in some places.

About 3750 feet inby the Main East another lens of Energy Shale was observed. This one was only about 50 feet across and perhaps 2 feet thick. The top was truncated and very sharply overlain by black, fissile Anna Shale.

About 4000 feet inby the Main East, in an area where Jamestown Coal is the immediate roof, the upper one foot or more of the coal is interbedded with brownish pyritic coarsely fossiliferous limestone and with black to dark gray hard coaly shale. Both of these are typical lithologies of the Jamestown Coal. Distinguishing Jamestown from Herrin Coal is not possible here. Numerous small clay dikes and clay-dike faults intrude and penetrate the interlaminated material.

Section measured in northern of a set of three overcasts of the 1st Right off the 3rd Submain North. Section in other two overcasts was similar:

TOP: Greenish slickensided shale parting at base of competent bed

0.5' Limestone, brown, fine-grained, nodular, lenticular, contains partings of greenish shale.

2.5' Shale (Lawson), medium gray with intense greenish mottling, soft, smooth, not bedded.

0.6-1.0' Limestone (Conant), brownish, coarse-grained, fossiliferous, argillaceous, contains the usual big fractured concretions.

0.4' Jamestown coal interval, grayish-black carbonaceous shale and brownish limestone(as above), with a few streaks of coal.

2.5' Shale (Anna), upper 1.0' mottled, weak black shale with a zone of phosphatic lenses at the top. Remaining 1.5' of unit black, hard, fissile with concretions.

Herrin (No. 6) Coal.

Locations within sections for the three bench samples:

Sample 1- 1100' S.L., 1740' W.L., Section 13, T. 7N-R. 3W, Montgomery County.
Sample 2- 890'S.L., 2190' W.L., Section 18, T. 7N-R. 2W.
Sample 3- 1870' N.L., 550' E.L., Section 16, T. 7N-R. 2W.

Fault Map in Office

We had a chance to examine a map showing faults plotted on the mine workings. The approximate throws of faults are indicated by symbols, but the direction of downthrow is not shown.

A swarm of faults crosses the entire 1st Southeast area of the mine. Nearly all of these trend parallel with each other, N 70-80 W and have straight to slightly curved courses. The largest faults at the mouth of the panel were mapped during our roof study. The same system of faults is being encountered in the 2nd Submain South. We saw one of these faults during our visit (the other one we saw had different trend).

Two faults are shown in the sealed 1st Submain Northeast. These trend N. 30 W and one of them can be traced for a mile along strike. Several faults in the 2nd Submain Northeast show a variety of trends, most strike between due north and N 45 W, but some trend E-W. Faults in other parts of the mine are scattered, and do not show consistent direction of strike.

I have no way of knowing how consistently faults were or are plotted on the map. I do know for a certainty that the map does not show all faults with more than a foot of throw, and that some larger faults also have been omitted. Nonetheless the parallelism of most of the faults in the 1st Southeast is interesting, and probably significant to their origin. We still have not settled the question of whether the largest

faults at this mine are clay-dike faults.

Note that the old system of driving submain entries northeast and southeast has been abandoned. All headings now run north-south and east-west (except for a few rooms, experimentallly driven at 45-degree angles to the panel entries). Some pillar-punching is being tried again; however, this led to a squeeze in the 2nd Left Panel off the 3rd North.

The coal from this mine, as shipped to the power plant, contains 9300 to 9900 B.T.U.'s per pound, an averge of 19% ash and 3.6 or 3.7% sulfur. Much of the ash is fire clay, etc., loaded with the coal. The coal is not cleaned, but is crushed and screened. Excessive ash or low B.T.U.'s lead to penalties from the power company.

We did not have as much time to observe roof conditions as we might have liked; conditions for observation were generally poor in the areas we sampled because of rock dust on the ribs. The discovery of Energy Shale is new but not unexpected. The other significant difference we noted from what we expected was finding the very silty material in the Lawson Shale in the 2nd South. The absence of sandstone in the Lawson Shale interval is a bit remarkable, in light of the presence of the major Anvil Rock channel just west of the current workings of the mine.

John C. Moore Corporation, Rochester, N.Y. 14604
FORM 180 W

Consolidated Coal Co. Hillsboro Mine
Montgomery County 2/10/81

Addendum to John Nelson's notes by Steve Danner.

Random notes:

Average production at present is 8100 tons per day, with 2 production shifts of 9 units each.

Underclay: Overall the underclay holds up fairly well. They have had only 2 squeezes in last 4 years.

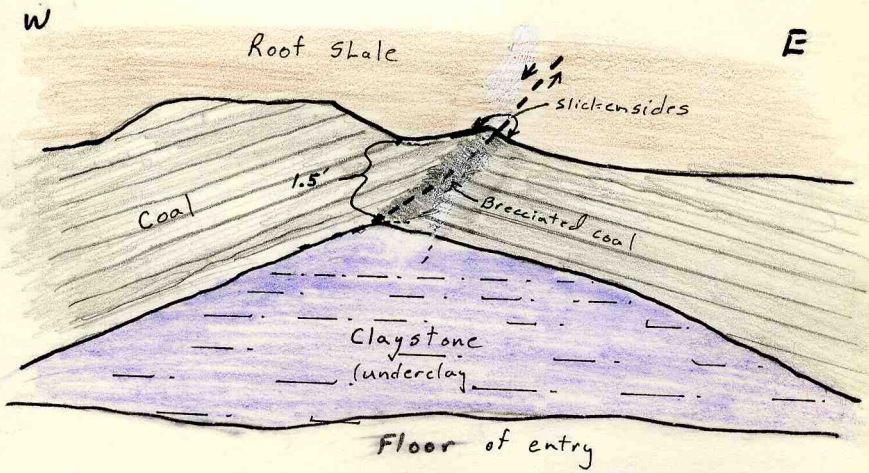
Occasionally the pillars are shaved in designated areas. A 10' bite is taken from each pillar on the retreat phase of mining.

Had to pull out of 2nd left panel off third north off Main East because of squeeze. Located on section line between sections 7 & 8.

Depth to coal averages approx. 500 ft. (490-520')

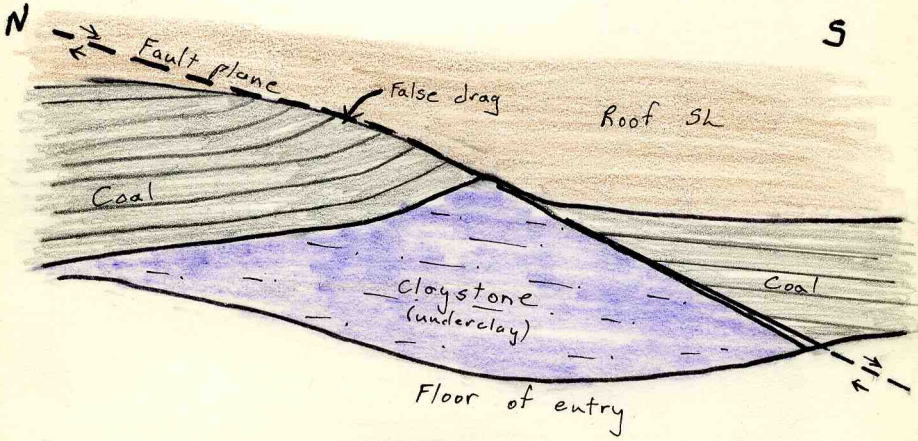
No real water problems except where they break through to Trivoli Sandstone.

Fault: (2nd South Submains off Main East)
Trends N40W across entry. Fault area is a topographic low in this entry. Faulted area is approximately 50 ft. wide. Coal on east side of fault dips to east at approx. 20 degrees. Sharp contact with underclay (clst).



John C. Moore Corporation, Rochester, N.Y. 14604
MOORE'S MODERN METHODS
FORM 180 W

Fault: (2nd South Submains off Main East) Coal on north side of fault is inclined with evidence of false drag. Coal on south side is level. Moderately sharp contact along fault; little or no gouge (breccia).



John C. Moore Corporation, Rochester, N.Y. 14604
MOORE'S MODERN METHODS
FORM 180 W

Hillsboro Mine July 28, 1981 Notes by John Nelson

The mine is threatened with closure because of a dispute with its customer, Central Illinois Public Service (power company) over excessive ash and low Btu's in the coal being supplied. The mine has no cleaning plant, only a rotary crusher and coarse screen. Ash levels had reached 17-20% and Btu's dipped nearly to 9000, at which point CIPS began buying coal from other mines. The Hillsboro Mine is, of course, a "captive" operation of CIPS and has no other outlet for its product.

So the mine is now operating in a "reprieve" period; although the decision may yet be made to close it. The quality of the coal shipped is now much higher as a result of extra care being taken to avoid shipping any rock or other foreign material out of the mine. Coal containing excess rock now is being stowed in the mine as gob, and miner operators are taking special care to stay out of the floor and roof. A special variance had to be obtained from Federal authorities to store so much gob in the mine. This entails using large quantities of rock dust, and also entails loss of much coal in the gob. However, Consol has achieved its goal of producing cleaner coal. Lately the Btu's of the product have run consistently above 10,000 and are within a few hundred of the level obtained by Monterey's No. 1 Mine, which has a full cleaning plant.

Our whole visit was consumed in taking the column samples, so we had no time for making geologic observations.

Consolidation C.C. Hillsboro Mine July 28, 1981

Notes by Steve Danner on visit with Suzanne Russell, John Nelson, and John Hamilton. Accompanied by John Geffreth, a company engineer.

The purpose of our visit was to collect one full-seam column sample and one channel sample from each of two sample sites.

Sample Site #1

Location: 2640' from North line and 690' from West line of Sec. 18, T.7N, R.2W, Montgomery County.

Channel Sample H-1: (C21543) Herrin (No.6) Coal

Roof Shale: (Anna Shale) black to dark gray; moderately hard; occasional slickensides.

0.83' Clarodurain: calcite on moderately developed cleat; vitrain bands generally less than or equal to one mm.
0.58' Clarain: contains a pyrite lens of variable thickness.
2.37' Clarain: vitrain and durain bands thicker than above, up to 0.08' thick; some fusain laminations; calcite on cleat; a few thin pyrite lenses associated with durain bands.
0.08' Pyrite lens: hard. (Excluded from sample.)
0.62' Clarain: similar to above.
0.17' Duroclarain: calcite on cleat.
0.96' Clarain: contains two bands of dull coal about 0.04' thick; lower dull band contains a pyrite stringer.
0.08' Dull coal: contains a pyrite stringer.
0.21' Clarain: cleats are small but numerous w/ much calcite.

(cont. next page)

Consolidation's Hillsboro Mine Sample H-1 cont.

0.17' Shale: (Blue Band) med gray; moderately hard. (Excluded from sample.)
0.83' Clarain: much calcite on small cleats; vitrain bands less than 1 mm.; contains a 0.08' shale band that was excluded from the sample.

Floor Underclay: med gray; moderately soft; slickensided; some carbonaceous debris.

Total thickness of coal: 6.75'

Sample Site #2

Location: 2140' from North line and 550' from West line of Sec. 13, T.7N, R.3W, Montgomery County.

Channel Sample H-2: (C21544) Herrin (No.6) Coal

Roof Shale: (Anna Shale) dark gray to black; hard; slickensided.

0.54' Clarain: contains one fusain lens less than 0.01' thick; some calcite on moderately developed cleat.
0.03' Pyrite lens
0.68' Clarain: some calcite on cleat; contains some fine pyrite stringers.
0.02' Pyrite lens:
0.51' Clarain: calcite on cleat; contains some thin fusain lenses, less than 0.01' thick.
0.01' Pyrite: discontinuous.
3.92' Clarain: calcite on cleat; several pyrite lenses less than 0.01' thick; fusain lenses up to 0.04' thick; durain bands up to 0.06' thick.
0.11' Shale: (Blue Band) med gray; contains some pyrite stringers. (Excluded from sample.)

-continued-

Mine closing

Apr. 11, 1983 "Daily Illini"

HILLSBORO, Ill. (AP) — About 400 miners were laid off at Consolidation Coal Co.'s Hillsboro mine, and Montgomery County will suffer because of it, a county official says.

The miners were laid off Monday when the mine closed indefinitely because its only customer, Central Illinois Public Service Co., is ending its contract with the firm.

"It's going to be quite a jolt to the county because you're looking at the loss of tax revenue and also the loss of jobs in the county," said Barney Redfern, Montgomery County supervisor of assessments.

Consol, Central Illinois PS settle coal contract dispute

"Coal Week" Vol. 9, No 15 Apr. 11, 1983

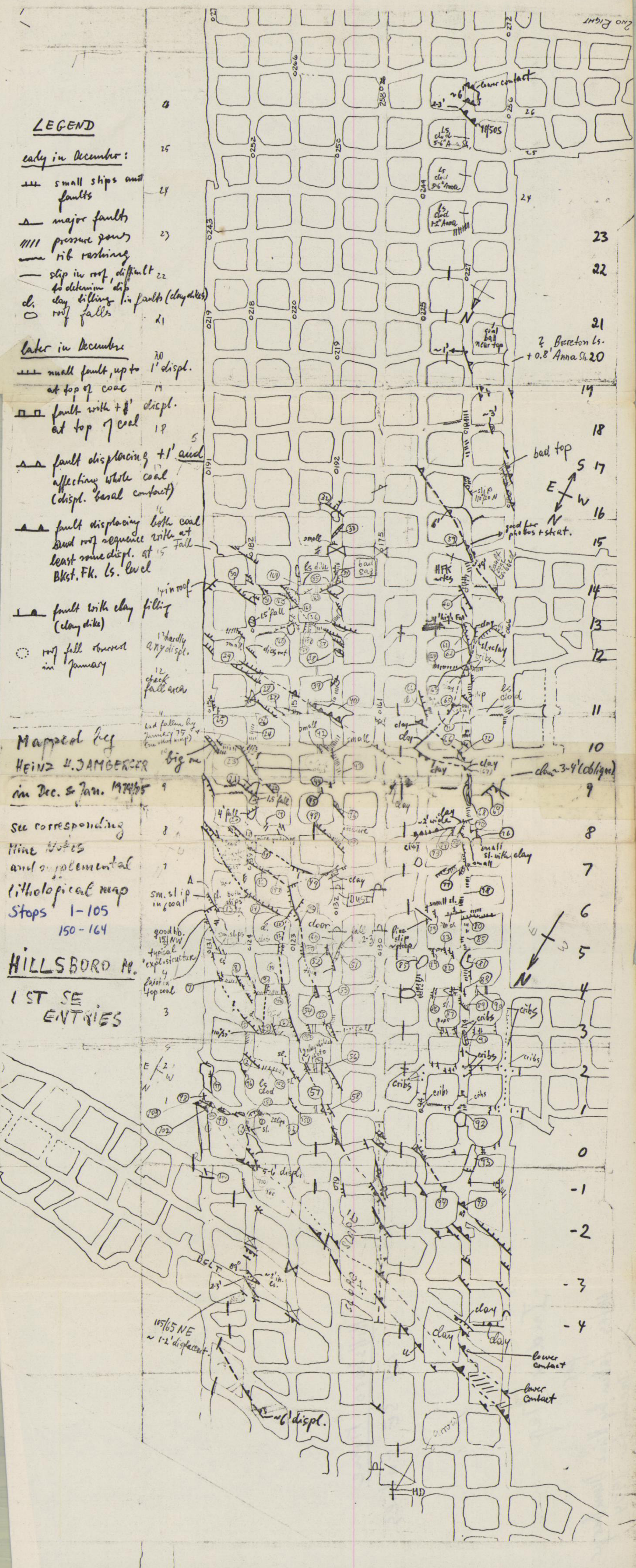
Central Illinois Public Service has settled its seven-year-old lawsuit against Consolidation Coal reportedly for $25-million and permission to cancel its 1.7-million t/y contract with the coal firm.

The utility will give Consolidation's business to Exxon Coal's Monterey mine in Illinois at the end of this month, says a utility official who declines to discuss specifics of the settlement.

Consolidation's Hillsborough IL mine had been supplying the coal, but company officials don't know what the impact will be locally because of the loss of the contract, says a Consolidation official who also declines to discuss specifics of the settlement.

The utility began its legal action against Consolidation in the mid-1960s, claiming that the coal firm failed to meet quality and quantity specifications in the contract. The original lawsuit sought $2-million, but was refiled in 1976 seeking $20-million. In 1980, Central Illinois alleged that Consolidation tampered with scales used for the coal shipments and increased the amount of damages to $120-million. It tried to terminate the Consolidation contract in 1981, but the coal firm sought and won an injunction keeping it intact.

Exxon already supplies Central Illinois' 850-mw Coffeen plant with 10,500 Btu/lb., 3.6% sulfur and 9% ash coal from the Monterey mine. It now will supply 2.2-million t/y, a utility official says.


LEGEND
early in December:
small slips and faults
major faults
pressure zones
rib rashing
slip in roof, difficult to determine dip
d. clay filling in faults (clay dikes)
roof falls
later in December
small fault, up to 1' displ. at top of coal
fault with +1' displ. at top of coal
fault displacing +1' and affecting whole coal (displ. basal contact)
fault displacing both coal and roof sequence with at least some displ. at Bkst. Fk. ls. level
fault with clay filling (clay dike)
roof fall observed in January
Mapped by
HEINZ H. DAMBERGER
in Dec. & Jan. 1974/75
see corresponding
Mine Notes
and supplemental
lithological map
Stops 1-105
150-164
HILLSBORO M.
1 ST SE
ENTRIES
2ND RIGHT
lower contact
ls clod 5-6" Anna Sh.
ls clod 1-2" Anna
coal ball near top
? Brereton ls. + 0.8' Anna Sh.
bad top
slip 110°/20 N
good for photos + strat.
fault zone cribbed
HFK notes
ls dike
bad sag
small
Fall
15' fall
1/4 in roof
1' hardly any displ.
dies out
check fall area
had fallen by January '75
big one
4' fall
1.5 fall
clay ~3-4' (oblique)
~2' wide
small sl. with clay
sm. slip in coal
good hb. 15/NW
typical "expl. structure"
faint in top coal
door
DUST
fine slip w/ top
cribs
5-6 displ.
105/65 NE ~1-2' displacement
BELT
SLOPE
~6' displ.
lower contact
HD
25
24
23
22
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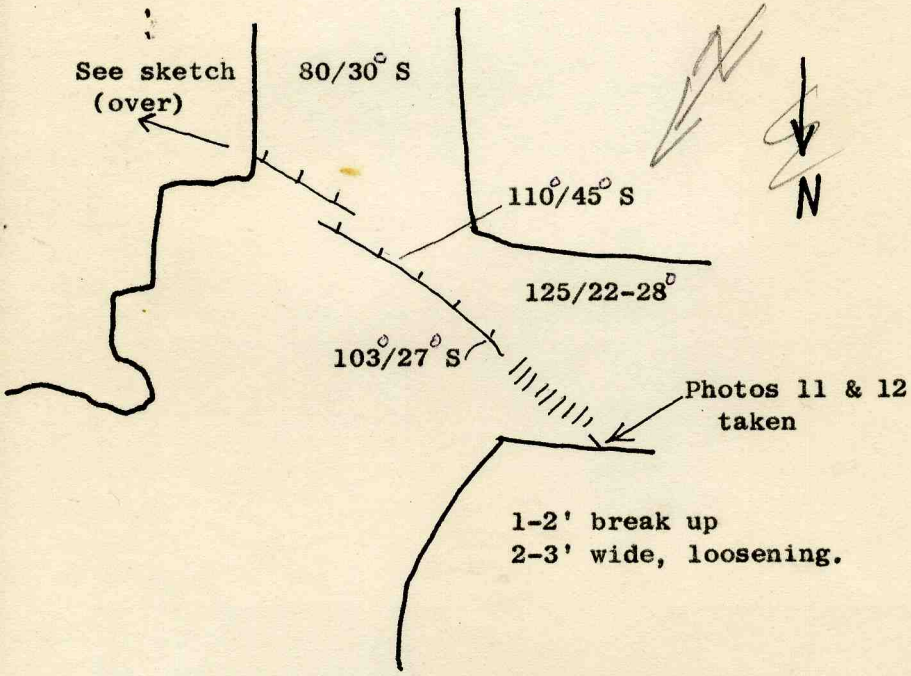
-4

Consolidation Coal Co. Hillsboro Mine, 1st S.E. Entries. Heinz Damberger, Dec. 3, 1974. Numbers in text refer to locations on index map (attached)

* * * * * * * * * * * * * * * * * * *

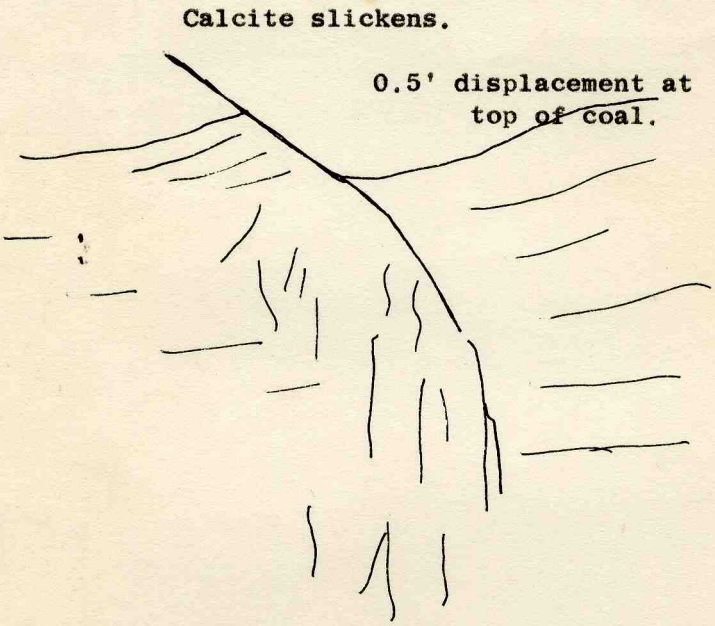
(1) H.F. Krausse took notes. station H.F.K. #1

(2) Slip in crosscut (see drawing below.)

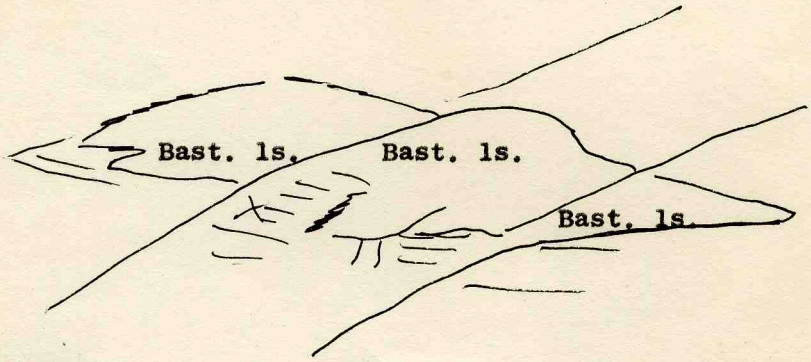


Photos show "Bastard Limestone" lense with several slips around and through.

Side view of slip from Note 2.

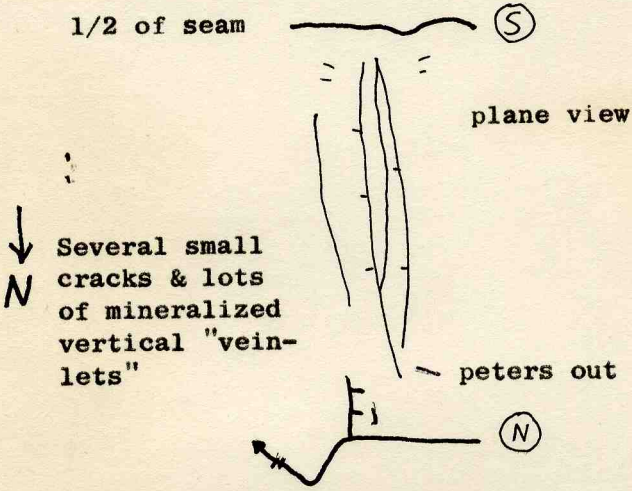


Photos 11 and 12.



(3) Two clay dikes en echelon, take close-ups!

(4) Small clay dike confined to top 1/2 of seam.



(5) Slip in roof across intersection petering out in coal (top 1/2) as usual.

(6) Slip down into about 1/2 coal, usual petering out. 120/42-45 S

(7) Small slip, only in N side of crosscut, peters out in about middle of crosscut, also in usual way down in about 1/2 of coal.

40 ↖ 135 En echelon off-set in middle to fine streak only in S-side of roof.

(8) Small slip, peters out quickly in coal, with 55-60 ↖ 115 en echelon continuation also along trend.

SEE ALSO ON 12/4/74.

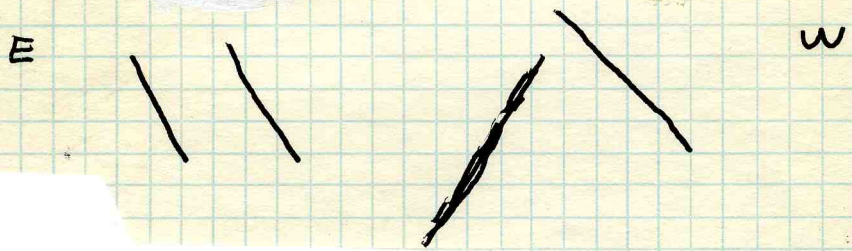
(9) Almost vertical with small clay dikes splitting near top of coal, petering out in top 1/2 of coal in usual way, some break up in coal.

+70° ↗ ↖ 150°

(10) Major clay dike, cutting all the way through coal with major disturbance near coal base (usual petering out), clay filling up to 1/3' normal; nice cleat set to dike exposed in roof; another clay dike crossing this one (splitting into several veins).

(11) Slight slip-type fracture in base of limestone, does not seem to do much to coal below.

(12) Two clay dikes dipping to W., another to E. in between them



Heinz Damberger
Dec. 4, 1974

12-4-74

13. Small typical slip, ~1.5' down into coal, with typical petering ~3' down, small adjacent slip to SW with opposite dip; main slip less prominent to SSE.

14. Major "horseback" with ± 1' clay filling near top, typical in coal, with interfingering (good for photo), cutting close to coal base.

15. Typical clay dike ~1' down into coal, typical petering ~2 1/2-3', filling greenish, up to 2-3" wide, often splitting into 3-4 veinlets.

16. Clay dike, obliquely cut, filling in coal 1-1 1/2' wide: ~47° ~ 100°, limestone nodules ~1" ϕ within

dike, H.-F. Krausse has sample, limestone directly on coal, with limestone nodules in top coal layers.

17 Very shallow dip, just touching top of coal:

18 Very low angle clay vein ~35° ↘ 97°, clay filling a few inches wide, changing along trend, often splitting.

19 Two small fracture zones, ± vertical in top ~1' of coal, quickly petering out downward, /5° and /25°.

20 Fall in rather typical Anna Shale sequence up to base of Brereton Limestone, small slip at S side, only in Anna Shale.

21 Fall at intersection extending into entry. Exposed rocks are badly fractured by slip-type faults in various directions, so badly disturbed that rock sequence is difficult to determine. Seemed to have about 3' Anna Shale, slaty near base, locally typical phosphatic lenses visible, overlain by what looks like typical mottled Shale (Lawson?).

No indications of Brereton Limestone. Anna Shale often has greenish color, particularly where badly disturbed, clay dike runs into fall, but could be traced upward. Floor heaves in cross cut 9.

22 "Explosion structure" with petering 2-3' down in seam. Very low-angle slip in roof: ~30° ↗ 105°, south side might be good for photo (no clay).

23 Slip and dike thinning SE-ward and tending to tilt to vertical dip, also splits up in S side of cross

cut, nice "petering" there.

Hardly any top coal left in this area, good slaty Anna exposed, drops in large thin slabs, particularly at an close to intersection; antithetic slips are common, sometimes look like prime slip; joints in Anna Shale; 55°-57° is main direction.

Prominent 112° fracture seems related to slips, rather irregular surface. Intersection has bent down ± 1' with new fractures and rashing of ~1' up into Anna Shale - may fall soon.
P.S. Had fallen on 1-10-75

24 Pressure in middle, trending to S. Anna Shale breaks along joints in big slabs—one anchor loose (fell out) joints: 46-50°; several concretions in lower part of Anna Shale.

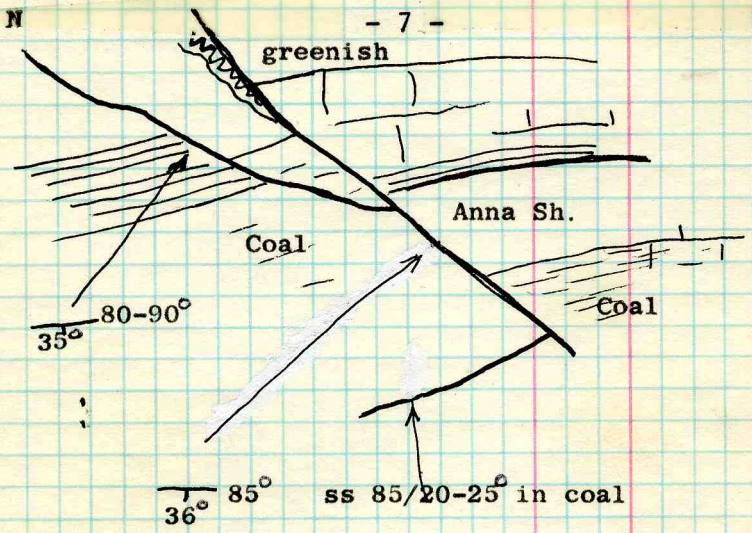
25 Small slip in roof shale with clay filling (maximum 1') dips rather steep, almost vertical; nice petering in coal.

26 Slip—mostly visible as "petering" in coal, dip close to vertical.

27 Small "kinked" slip, peters out within cross-cut, nice "petering" in top coal.

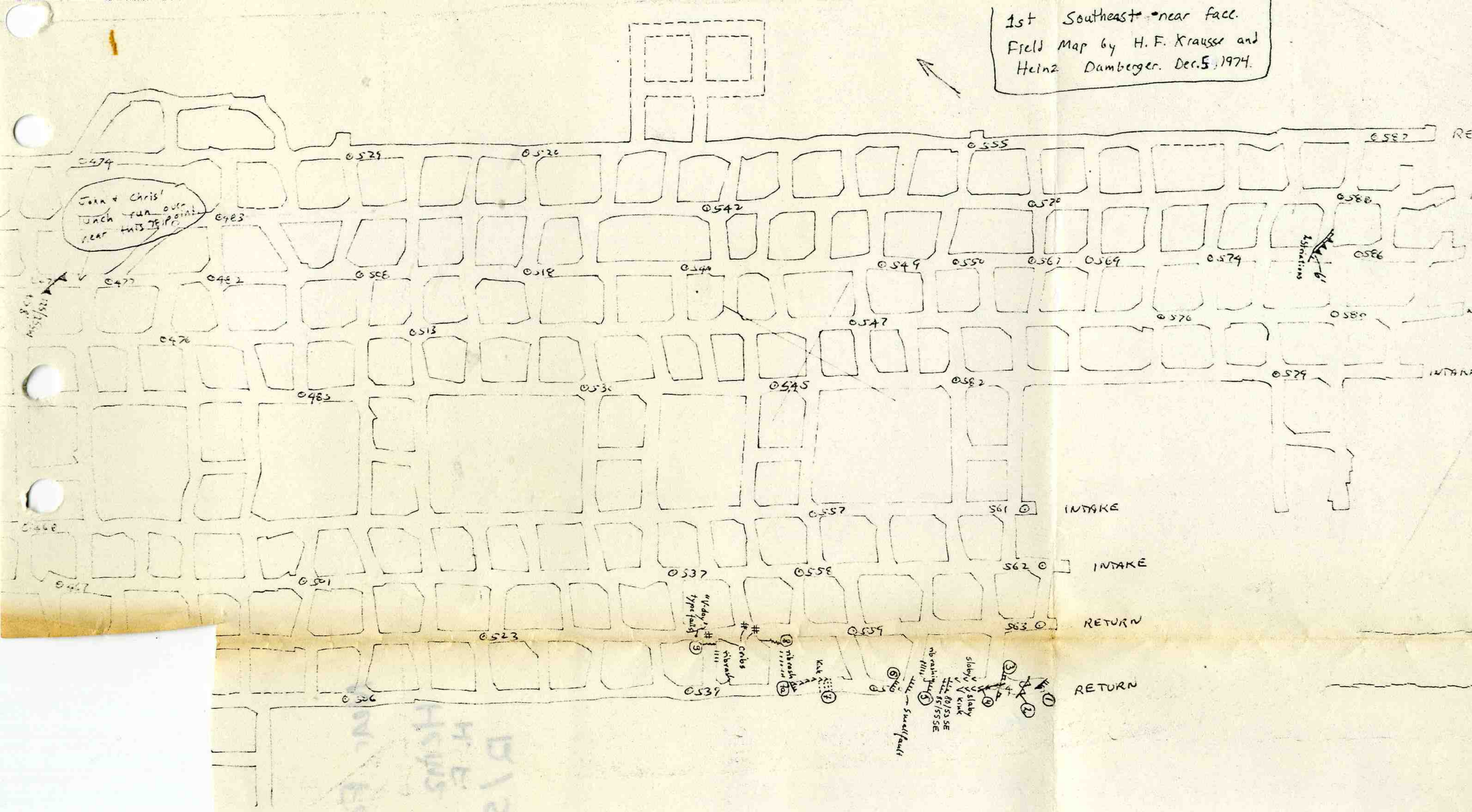
28 Fall at intersection of two slips (and clay dikes); fall exposes about 3' of roof sequence, shales cut criss-cross by slips, bottom of mottled shale (top of Anna Shale?), just visible.

29 Intersection fell between two major slips, ~4-6' high, SE slip is actually fault with seam thickness displacement, very sharp fault plane.



30. Fault—in S. side of cross cut, about 3-4' displacement. 30° ⌐ 88° within coal, sharp fault plane. Roof bad all along, cause of fall on map. ~40°\110° some "petering" in coal.

31. Trace of slip in both sides of cross cut, not well seen in top coal; second "fault plane" visible in N. side of cross cut.


1st Southeast near face.
Field Map by H. F. Krausse and
Heinz Damberger. Dec.5, 1974.
John + Chris' lunch run over point near this
474
529
526
555
587
RE
483
542
570
588
477
482
508
518
549
550
567
569
574
586
1 striations
61'
476
513
547
576
585
483
530
545
582
579
INTAKE
468
557
S61
S62
S63
INTAKE
INTAKE
RETURN
RETURN
467
501
537
558
523
559
"V-day" type faults
cribs
nbrash
Kink
slaby
Kink
80/53 SE
85/55 SE
small fault
506
539

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine (Coffeen), Consolidation Coal Co.
12-5-74 - Notes and map by H. F. K. and H. H. D.
(writing H. H. Damberger and partly H. F. Krausse,
measurements and observing H. F. Krausse)

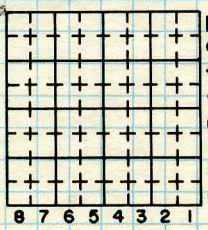
Location: Towards "far" SE in 1st SE entries close towards face.

In a) ~~For~~ 3rd entry, close to roof mask (Surveys) No. 471, fault (clay dike-type 125/25 SW displacement more than 8'.

In b) ~~For~~ 3rd entry, close to face, near roof mask No. 586 (Surveys) is fault with two striations on same fault surface (128/38 SW) Striation #1 = 37/38 SW; Striation #2 dipping 19° towards SW; displacement at fault 6'. Further locations are in 8th and 9th entries west side of 1st SE beginning at face near roof mask (Surveys) No. 564 (see map appendix).

(32) 1. Clay dike with small fault 130/50-55 SW reaches about 2-3' down into coal, peters out with "goat beard".

(33) Larger 2. Layer fault 95/20 SW at east side of entry
93/38 at west side of entry.
displacement is about 5.4' normal down, fault
is surface ~~is~~ very sharp and well defined. ~~2)~~ Two
striations on the very same surface plane 93/38 SW,
1st striation in dip direction, dip (plunge) 38° SW
2nd Striation dip (plunge) - 28° West SW.
Bedding planes at base of coal seam 70/14 NW
east side and about base of seam but west side
82/16 NW.



By HHD + H-F.K Date 12-05-1974

Quadrangle

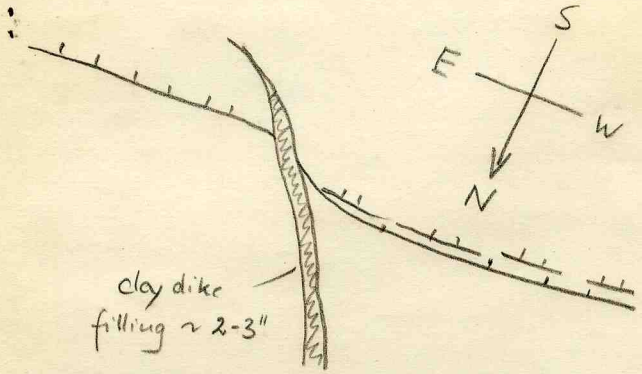
County Montgomery Sec. 14 T 7N? R 3W?

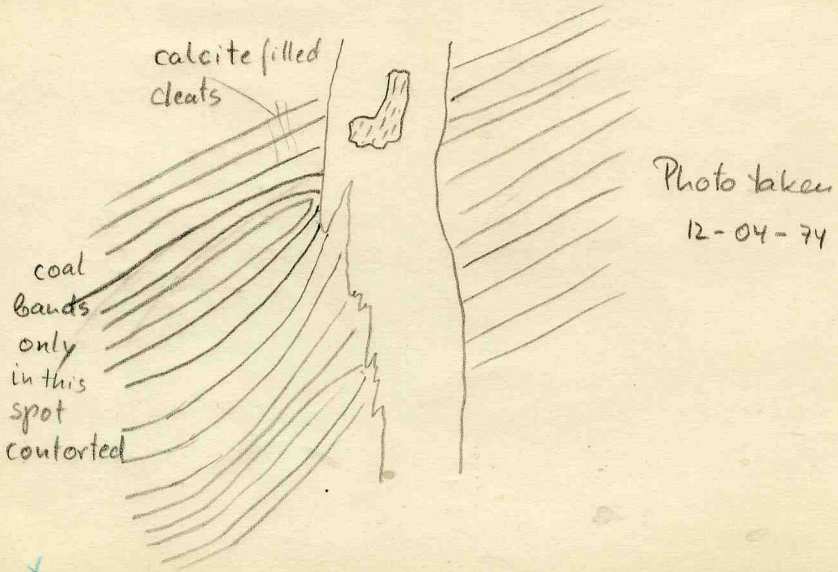
(34)

3. Small clay dike - type fault 70/15 SE with two striations on surface: 1st striation in dip direction 15° SE. 2nd striation 80/0-5 SW. Displacement at fault 3-3.5'.

4. Clay dike in roof traceble 130/45-55 SW.

(35)



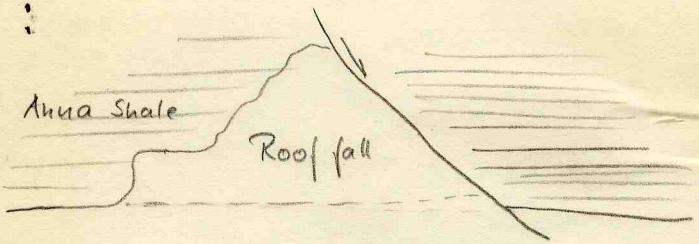


(36)

5. Roof is Anna Shale with well developed joints about 60° E strike also small clay dike type fault 85/58 South, joints spacing 4 joints/3'.

(37)

6. Small fault in Anna Shale only at east side of entry, dies out after about 1/3 off rib leads into irregular fractures. Anna Shale in roof is "slaby".



(38)

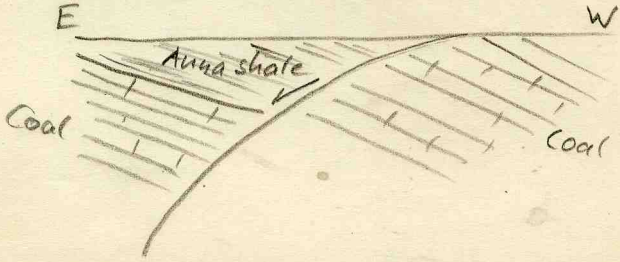
7. Roof consists of Anna Shale with prominent joints 70/85 SE roof show slabing and kinks along joint zone.

(38a)

7a. 5' further North clay dike type fault 85/40 SE at east rib is hard to trace west wards similar to #5.

(39)

8. North rib shows clay dike with small fault about 140°/very low angular roof fall area.



(40)

9. Similar to 8, but not as much fallen (yet) cribs serve as protection.

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H. F. Krausse.

Hillsboro 12-6-74

Belt entry, 1st SE starting at cross cut 16, working northwestward towards Mains.

32. Typical clay dike in top coal up to 1/2' wide, "peters
(91) in top 1/3 of coal, prominent slip in roof, associated with 2-3' high fall above belt in location shown on map, ~40° → 100°, in fall several antithetic slips in fall: Anna Shale badly disturbed, ~2', looks mottled, not sure if overlain by limestone or mottled Lawson type shale.

P.S. probably mottled Anna Sh.

upper portion of Anna Sh.
HHD 12/22/75

Another slip intersects this one, trending about NS.

33. Major slip with clay filling splitting in middle of entry, causing bad, rough roof, not sure which way it dips.

34. Roof sags almost down onto belt, plus breaking; fall about 2-3' high, stuff badly disturbed; fall adjacent to slip with +1' displacement.

35. Fall at intersection, multi-directional slips in center, to E. thick Anna Shale exposed: Section from Top :

Limestone caps fall.
~3' Anna Shale - Black, with phosphatic lense-layer at top and about 2' down, somewhat "mottled," especially near top.

~1 1/2' Anna Shale - Black, fissile, laminated with concretions.

Sharp contact to coal.

In center of fall Anna Shale is badly torn up and disturbed.

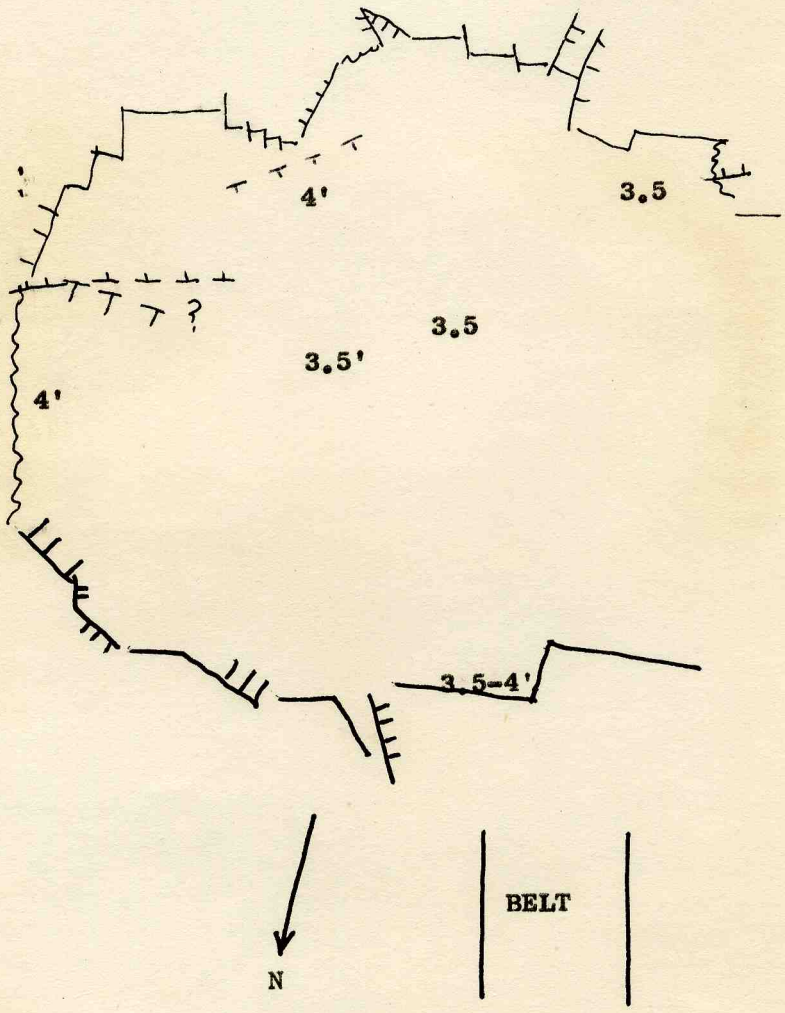
Slip planes in fall:

20/50 N	15/45 S	
130/36 SW	*30/52 S	normal striat.
152/50 E	*42/42 S	"
42/40 NE	35/45 S	"
125/38 S	75/45 N	"

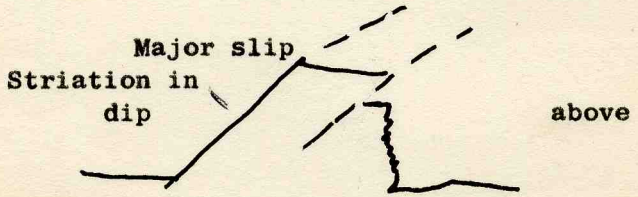
*Join upwards into bedding plane between Anna Shale and limestone above, steepens at coal, with about 0.5 feet displacement, typical "petering" within about 1', general trend in cross cut in top coal ~38°.

38°
42-52

Drawing of roof fall at Note 35, looking upward.

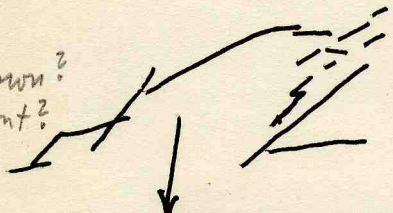


(45) 36. Major slip 35-40 87 , with parallel sub-slips, small fall above belt 1.5-2'



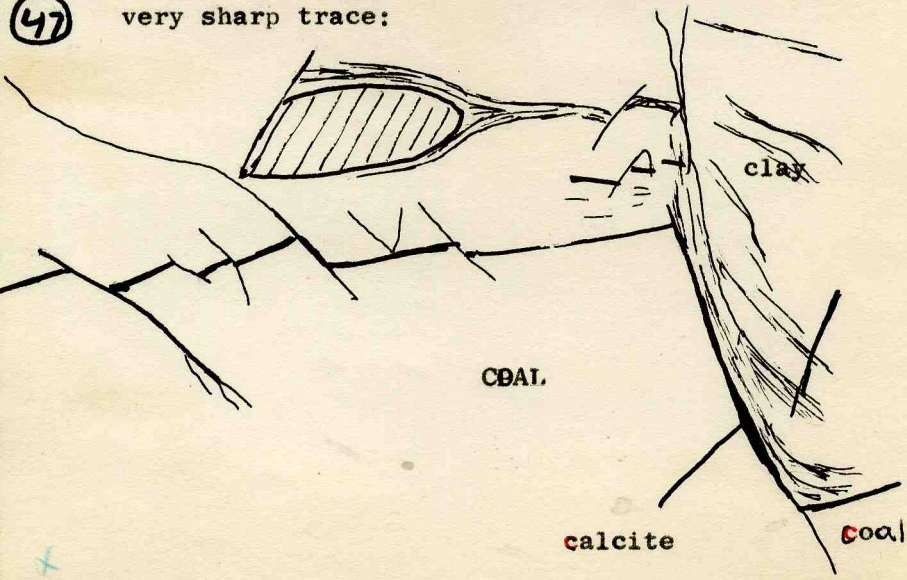
(46) 37. Fall 3-4' high, mostly between two prominent slips.

P.S.
Anna + Jamestown?
overlain by Conant?
WHD 12/75



All in Anna Shale up to base of limestone; one slip seen cutting into limestone at very shallow angle, only one double slip traceable in top coal of crosscut, but only halfway to stop: 43-46 85 striation parallel to slip.

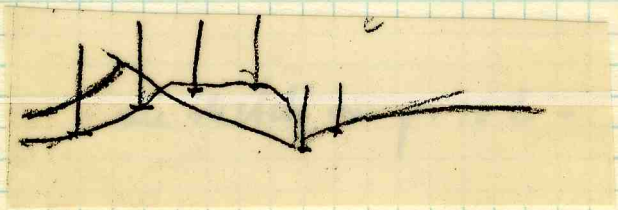
(47) 38. Major slip with 1.8' displacement at top of coal, very sharp trace:



Fall about 3' high, all in Anna Shale, topping in Limestone.

39. Small slips causing ~1' fall plus pressure on top coal.

40. Some uncontrolled falls - looks like roof fall, but roughness is mostly caused by shallow dip of fault and switch in control level:



Whole cross cut up to stop badly disturbed, fault plane cuts well into coal but seems to peter out within coal.

Main fault plane: 85/35 S,
86/34 S,
70/34 S,
82/33 S,
85/31 S.

41. Fault zone has about width of cross cut.

Main fault accompanied by several smaller scale parallel and antithetic slips.

42. Two en echelon minor slips with maximum 1' thick clay filling, only in Anna Shale, not traceable down into coal.

43. Well developed joints in Anna Shale, opening up some under pressure: ~65/S.

44. Very small slip, almost vertical few mm filling, nice

"petering" 118/80 S and secondary mineralized cleats.

45. (54) Similar to above, crack is filled mostly with mylonized coal and calcite. Cannot be traced all across cross cut, quickly "peters" within coal (about 1/2'), 128 dip almost vertical.

46. (55) At least two slips exposed in maximum 3' high, irregular fall along trend of slips, hardly any trace in coal, lots of irregular slips exposed within fall.

47. (56) Nice joints exposed in Anna Shale, ~55-60° trend.

48. (57) Well developed clay dike, traceable in roof, zone up to 1' wide, filling mostly fractured Anna Shale and claystone, no major problem in roof control, typical "petering" within coal within about 2-3', 38° — 85°, pressure and some falling in belt entry.

49. (58) Double clay dike and associated slips: 30° Y *30° and 10° Y 30°.

*This one is major one; difficult roof control, shallow one cuts deep into coal, steeper one "peters" typically in coal.

Roof at intersection very rough (V-Day like).

50. (59) Pressure visible, breaks open along joints in Anna Shale.

51. (60) Slip, not easily traceable, but roof fell irregularly along trend.

52. (61) Fine trace of slip in top coal, nice "petering" within coal in S rib of cross cut, no visible filling of clay.

Second small slip about 4' in by cross-cut in N. rib,

traceable in top coal, thin mylonized coal filling and calcite mineralization (124/55-60E), other one 128/50 E.

53. Typical slip, hardly traceable in top coal (mineralized and mylonized coal filling, maximum 1-2"), and typical "petering" out toward intersection, small break-outs of roof, maximum 1'; 125/50 E.

54. Major clay dike up to 2' wide in places, splits in cross-cut, well exposed, does not cause much trouble though, 112/?47 E.

55. Slips and clay dike cutting deep into coal, apparently associated with major dike mapped 35° ∠ 110°, displaces coal by about 2'; displacement along major dike about same. Well-shown "false drag" in coal associated with eastern slip-clay-dike.

56. Typical clay dike-slip, to NW, difficult to trace because Anna Shale wedges out and Brereton sits directly on coal, seems to have little effect on Brereton Limestone, slip itself has hardly any clay filling, but "explosive clay dike structures" with filling, are clearly associated 32° ∠ 128°, probably ~1' displacement.

57. Well developed dike-slip, +2' displacement, sharp fault plane associated with typical "clay shots" sideways through coal, would make good photos, 45° ∠ 118°, direct roof here is very argillaceous limestone with fossil fragments.

58. Slip, only thin filling, does not penetrate deep into coal, 40° ∠ 122°, South : fine clay stringers; timbered to hold roof (with success). Slip shows slight gapping in roof.

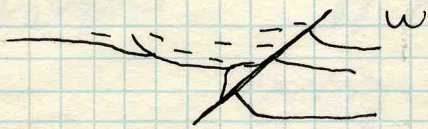
12-11-74

Cross-cut 15-16, entry 7 from left (RETURN)

59. Major fault, high roof fall, sequence up to and above Bankston Fork Limestone exposed:

Come back to take photos and sequence.

60. Clay dike up to +1' wide causing bad, sagging roof especially at intersection (4 cribs), 37° ↗ 128°, dip variable, but probably as indicated, no significant displacement in roof.



61. Fall: good exposure of intra-sedimentary deformations, take photos, coal overlain by shale, gray, but not typical Anna Shale, lower slaty layer missing, phosphatic, lenticles missing, ~3' thick, then ~1' Conant type limestone, then fairly flat roof (limestone?).

take Photos

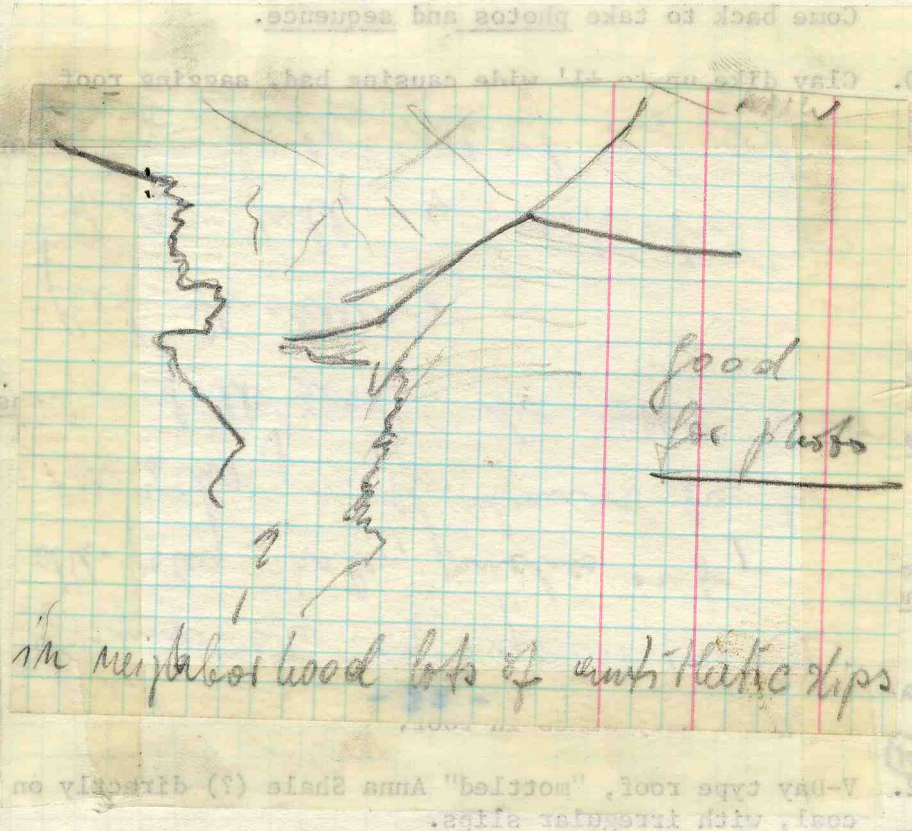
Lots of very shallow slips, often merging into bedding planes worth detailed structural analysis, lots of irregular clay dikes in roof.

62. V-Day type roof, "mottled" Anna Shale (?) directly on coal, with irregular slips.

63. Major slip, ~1' displaced at roof, with clay dike in coal up to 2' wide, but "petering" out above coal base.

over for sketch

good for photos


Good
for photo

In neighborhood lots of antithetic slips.

64. (73) Immediate roof exposed (~1') dark gray shale, pinches out, increasing in thickness to W. to fall area to over two feet thickness.

Roof fall is restricted to this shale, which is also dragged into large clay dike with brecciated shale and completely disintegrated shale as filling.

65. (74) Clay dike, "petering" quickly down into coal, dip seems to E. in SE rib, and ± vertical in NW rib, filling exposed in roof : \ 170°.

66. (75) Uncleaned fall, one slip visible with about 1' displacement; above coal, ~1' dark gray shale with coal stringers near top, ~0.4' limestone Conant Limestone?, ? gray shale ? between cross cuts 10 and 11 and over to entry 6 quite a few concretions in Anna Shale +1' in diameter.

66a. (75a) Small slip and clay dike, about 2-3' into coal.

67. (76) clay dike in coal, ± vertical, rather nice exposure, probably dipping to NE: — 82°.

68. (77) Roof badly sagging, clay dikes seen in roof, and slickensided slips dipping both E. and W., displacement seems to be to E., Anna rather "slaty" here, about 1' thick at least.

69. (78) Small slip and clay dike, traceable in roof, ? \ 170°, indications of more in this cross cut.

70. (79) Major clay dike, strike about 32°, dip uncertain.

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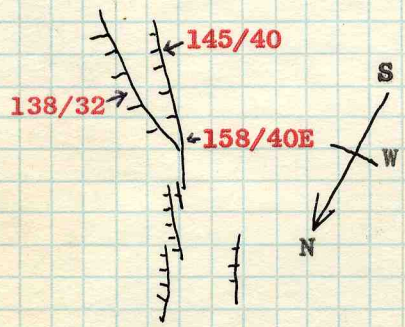
Hillsboro Mine: 12-12-74

71. Quite a few kettle bottoms in roof with slickensid
(80) ~~areas~~ during, dropping out, averaging ~1.5'ϕ.

72. (81) Clay dike, 2-3" filling, about 3' down into coal, rather "explosive" look, runs along edge of fall, slips continuing into roof are visible abt. 120°, in map.

73. (82) Slip in roof with up to 1" clay filling, bifurcates at position indicated into small clay dike to W. and coal mylonite dike to NE, clay dike fades after about 10', coal mylonite dike after 1-2'.

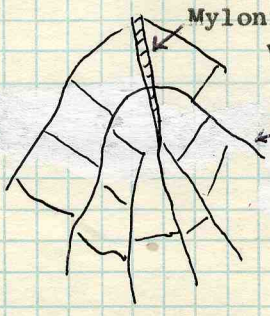
74. (83) Small slips in top coal with thin clay filling.



Crosscut 8
Entry 7, 1st S.E.

75. (84) 1.5-2' clay dike—good for photo ± vertical, almost down to bottom of seam.

76. (85) Fairly straight small slip in top coal, petering out close to NNW rib like so:



Good for photo.

Plan view

77. (86) Slip system, just touching coal seam, but lots of slips in roof, fall reaches 1.5-2' above seam, all within disturbed "Anna" type shale which has many fine coal stringers 44° ↘ 170°, slips are normal type.

78. (87) Some roof rashing (sic) seems related to fairly well-developed joints in slaty shale and kettlebottoms which are frequent, 1' in diameter. Joints: 45-50°, somewhat wavy due to kettlebottoms. (N 45-50 E)

79. (88) Typical fine slip in top coal with typical "petering" within the top 3' of coal, may fade to SE; other small slips marked on map are similar.

80. (89) Slip zone traceable, slabs of rather dark slaty shale breaking off along this zone. In crosscut coal stayed up, clay filling of 2". to west en echelon off sets, but same zone can be traced into rib: 44-48° general trend, about 1' displacement in E. rib of Entry 7; still many kettlebottoms, which seem to make slips meander along their trend.

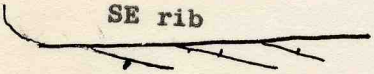
81. (90) Major fall over 1/2 intersection; fell up to Bankston Fork Limestone. Bottom two layers of about 0.5-0.75' each of limestone separated by thin shale also failed (lie on top of fall material.) Total height above coal about 5-6', mostly Lawson Shale, hardly any Brereton Limestone, 1-2' Anna Shale, Jamestown Limestone (sic) apparently about 0.5' thick, about 1' of top coal left.

82. (91) Fine slip visible in top coal, nice "petering" within coal 3' down. Nothing seen on S. rib, 56° ↘ 135°

83. (92) Some interesting slip structures by combination of several slips, in particular one along rib, one almost perpendicular to it. Nice "petering", interesting fault system, take photo, make structural analysis. 55 ↘ 122, 43 ↙ 60, and 40 ↙ 45 with normal

and slightly oblique striations (to W.) on slip plane.

84. Typical slip with mylonized coal filling, typical "petering" in N. rib about 3-4' down into coal. Who is this "Peter?" — it's Goat Beard



En echelon slips along SE rib seem to dip both ways.

85. Lots of irregular cleats especially in top coal, possibly indicate bad things above; possibly similar to what is exposed in roof fall in Entry 6.

86. "Petering" fine slips.

87. Small roof fall, 1.6' into rock. 1.40' disturbed Anna Shale, greenish mottling near top, lots of slips in various directions.

0.7' below top is a 0.1' thick layer with phosphatic lenses similar to one above but often badly torn. Slips: 28°/46°, 15°/38°, 25°/65° and 47°/ (several fall broke along this set.)

0.15'- Dark gray shale with lenticular light brown phosphatic lenses.

0.2' Clod Limestone.

40°/70, 35/45 (broke partly along this set.)

88. Slip into mylonized coal, nice "petering" 3-4' down into coal.

89. Clay-filled (1-2") slip, may terminate against one in E. rib, may also peter out to W., most of top coal fell along it and along E. rib.

90. Interesting pattern of fading, en echelon, and bifurcating slips and associated cleats in top coal, "braided" in places, take photo.

91. Elongate fall, apparently caused by prominent slip with subslips of same trend.

92. Crib prevented falls from blocking whole intersection, but hangs badly; more may fall soon. In fall, 2' rather typical Anna Shale with about 0.5' Conant Limestone (?) exposed and gray Lawson Shale fell from higher, but no sequence exposed.

93. Elongate high fall, doming in Bankston Fork Limestone in N. portion of fall which is highest; about 8'+ high. Sequence from top of fall downward as follows:

TOP- Base of Bankston Fork Limestone. Looks somewhat nodular, but fairly level.
4.0± - Shale, weathers greenish-gray, mostly mottled, esp. upwards.
0.6' - Limestone (Conant); brownish-gray, solid, forming roof in part of fall.
0.02'- Shale; dark band. Top of Jamestown interval.
0.2' - Limestone, medium brown, lenticular.
0.15'- Shale, dark gray with many medium brown limestone lenses.
0.5' - Shale, dark gray, paper-like, with pyrite.
0.2' - Limestone (Brereton ?); dark gray, somewhat lenticular.
0.25'- Shale, gray, heavily greenish mottled, somewhat variable in thickness. Top of Anna Shale
0.2' - Shale, dark gray to black, rather soft, slightly mottled with greenish spots and cracks.
0.05'- Shale, greenish and dark gray, slip planes parallel to bedding (?)
0.25'- Shale, dark gray, with lots of light brown phosphatic lenses.

Measured section of Stop 93 (continued)

0.6' - Shale, dark gray, disturbed by slickensides, slips often greenish "mottled", much less fissile than unit below; joints hardly visible.

1.8' - Shale, rather typical Anna Shale (Black, hard, fissile) with well-developed joints along which it breaks, spaced about one every 0.8-1.0', trend 60°, mostly to NW (?) 0.1' thick layer with phosphatic nodules about 1.5' above base. Fairly frequent concretions 1-1.5' dia. (about one every 3-6 feet.)

Herrin (NO. 6) Coal. No thickness given.

Prominent slips at N. end in Anna Shale; 35-45° \ 165°, 40° ⊢ 85°, 40° ↖ 120°, 28° ↖ 105°.

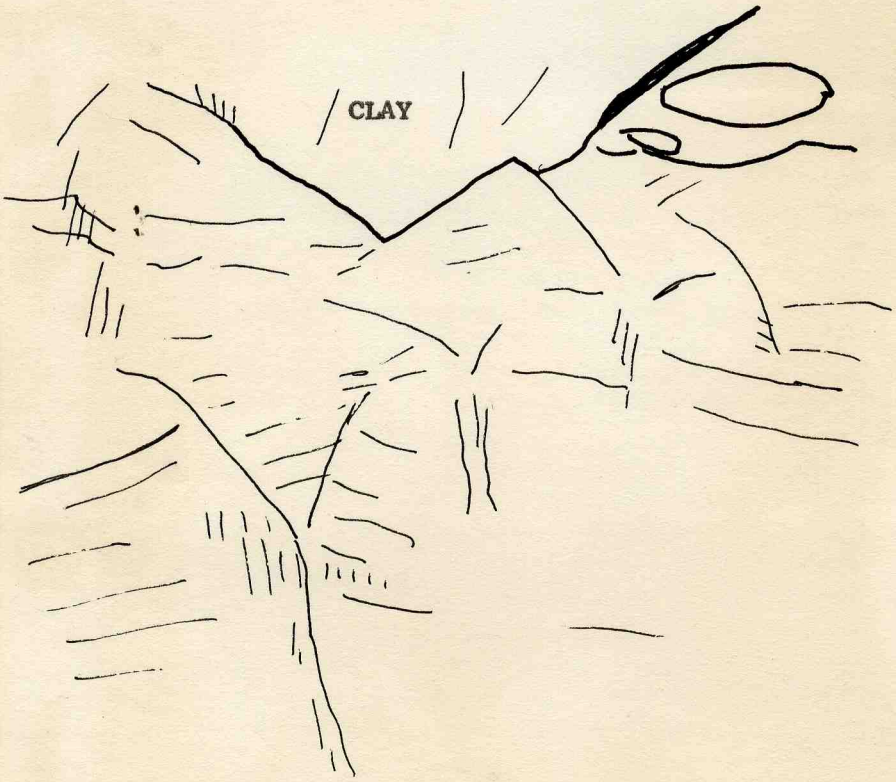
94. Slip and clay dike, quite different in appearance in S. and N. ribs. (103)

N. rib: Sharp fault plane, about 2' displacement, peters out about 1.5' above coal base, steepening etc., etc.

S. rib: Several irregular slips with clay "plug" at top, lots of "petering" Hi Pete! down and sideways, would make good photo, associated with thick concretion, which may be cause for different appearance. Strike 110°, dip 42° to SW.

See drawing, next page.

Drawing of slip in south rib, Stop 94.



(104) 95. Clay dike, ? ~~/~~ 70, lots of "petering", about 1' wide in roof, but not as large as in 94.

Heinz Damberger + Fred Klauss

Hillsboro 12-13-74

1st SE entries 1-3 from left
Cross cuts -1 to 2.

96. Slip-fault in coal, 2/3 down, rather well defined fault plane, clay filling only as fine film, ~1' displacement in coal 46° ↘ 120°.

97. Within roof fall area it is very difficult to find any prominent slips, a few are shown in map; measured planes:

40-45° / 155-170°, 47° ↘ 125°, 100° / 50°, 25° ↘ 128°,

65° — 92°

Roof fall entirely in ~2.8' Anna Shale, fairly slaty near base, with some concretions, then 0.15' gray shale with phosphatic lenses (0.7' above base) 1.4' dark gray greenish mottled shale, 2' dark shale with phosphatic lenses 0.3' highly mottled dark gray shale, clod, limestone.

98. Slip in roof shale at edge of fall, 30° / ↘ 106°.

99. Small roof fall (~2' high) in badly disturbed Anna Shale, top portion highly mottled, tops in limestone.

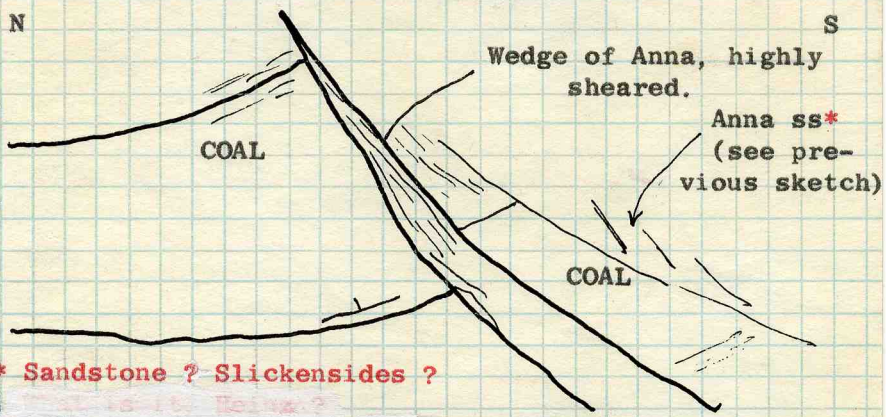
100. 30° ↘ 96°, major fault, but lit le roof problem here, 5-6' displacement and 35° / 153°, with unknown throw, possibly continuing across entry 35° ↘ 120°, with at least 5-6' displacement.

101. (110) Sideritic concretion in bottommost layer of Anna Shale, protruding ~0.2' into top coal: coal laminae bent around it—take photo.

102. (111) Fault plane cutting through coal into underclay ~4.5-5.5' displacement: 27° \ 100°.

103. (112) Major fault plane, quite variable in dip, seems to shallow out in coal, roof fell right along fault plane, probably as high as 6-8' in places; average trend across entry: \ 105-110°, 5-6' displacement. 27-30°

Both fault planes form system, seem to merge upwards by shallower dip of southernmost major fault.



* Sandstone ? Slickensides ?

(113)

104. "Petering" seen in top coal, some coal fell. Dip uncertain.

(114)

105. Clay dike in top coal, pinching out to NW, dip uncertain, \ 112°.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine

January 8, 1975

1st SE, entries #2 and #3 from left, mapping roof lithology of immediate roof between cross cuts 0 and 25 and structure between 14 and 25.

Heinz Damberger, Colin Treworgy

150. Limestone - Brown to gray, smooth bottom surface.
(115) .25' Clod, typical
.25' Shale - dark gray to black, many irregular phosphatic lenses and nodules, rather soft.
Coal - Boring machine cut through top coal at 4'.

151. Pressure along rib with some roof rashing into Anna Shale up to base of limestone.
(116)

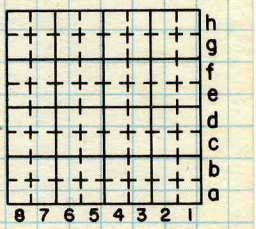
Limestone - Dark gray, fossiliferous, typical Brereton.

1' Anna Shale, typical, black, fissile with small phosphatic lenses and nodules throughout, particularly at base. Joints not well developed, many burrows in top .1' shale, locally some clod at top.

Coal

Anna Shale thickens quickly towards E to over 2'.

152. West portion of cross-cut, NW rib, pressure causes roof rashing to base
(117) of Brereton Limestone near cross-cut 3, .4 - .5' clod towards middle of



By_____ Date_____

Quadrangle_____

County_____ Sec._____ T_____ R_____

cross-cut, Anna Shale comes in as up to .2' lenses seems to pinch out toward cross-cut 2 E.

Clod becomes up to .6'

At intersection cross-cut 28, entry 2 , along fault .7' Anna with .2 - .3 clod on top and below smooth limestone.

Slip seems confined to shale.

153. (118) Clay dike exposed in small roof fall, peculiar formation of phosphatic lense in clod is exposed near clay dike. is Bastard LS comp. # 5 H.-T. K

Also, a coal ball near top of coal has been cut and displaced by 1'.

154. (119) Clod .4' exposed in present zone locally thinning to .1' towards SE within 3-4'.

155. (120) Long clay dike and fault on NE side
+.3 Limestone - typical Brereton.
.2 Clod, typical.
.4 Anna Shale - typical, joints not well developed.

Anna Shale dragged into fault. Very nice exposure of clay dike associated with fault, good for photo.

156. (121) Clod like shale, thickens to .9' on top of clay dike on downthrown side, wedging out towards SE, which is upthrown footwall.

Fault seems to shallow as Brereton Limestone is approached, Limestone has been affected some by faulting.

Within wedge shaped filling on top of fault and below limestone, some Anna type shale comes in at base of clod type shale, but only up to .15' thick.

157. Bottom of Brereton Limestone protruding through top coal, very irregular surface, looks nodular, some elongate limestone nodules found in top layers of coal.

(122)

Anna and clod pinchout quickly under this "limestone boss."

158. Small fault, 1' displaced in roof, cuts through whole coal seam as well defined, sharp fault plane with several minor parallel and subparallel shear planes. Strike 84° dip 60° in roof, 42° in middle of coal.

(123)

Normal striations on fault plane. Typical clay dike structures. Fault plane and irregular slips not filled with clay but coal has been typically shattered.

159. Two faults displaced coal by 1' along E fault and by 1.4' along W fault.

(124)

Roof fell between two fault planes at NW rib, about 2', all in badly disturbed Anna Shale.

2' Anna Shale exposed up to a little above lower phosphatic band.

Very little clay filling associated with faults but typical "petering" with "beard" especially on E fault.

Western fault - Strike 140°/33° NW
Eastern fault - Strike 162°/41° NW

160. Roof fall, maximum 3.5' high, all in Anna Shale up to top phosphatic layer.

(125)

Shale above upper phosphatic layer looks mottled.

No indication of Brereton Limestone.

Possibly base of Lawson (Jamestown?) in contact with Anna.

Many irregular slips exposed in fall area.
Slickensided, striations generally normal;
Strike 145°/65°-36°W
" 50°/62°S
" 12°/78°-32°W
" 155°/21°NE
" 95°/45°S

Few concretions in lower Anna Shale.

161. Fault about 2.5' displaced to S, with many associated slip planes in shaly roof above coal and below Brareton Limestone.

(126)

Anna Shale badly disturbed, approximately 2' thick.

Fault plane well defined, but steepening in lower half of coal and apparently ptering out in usual fashion with "beard."

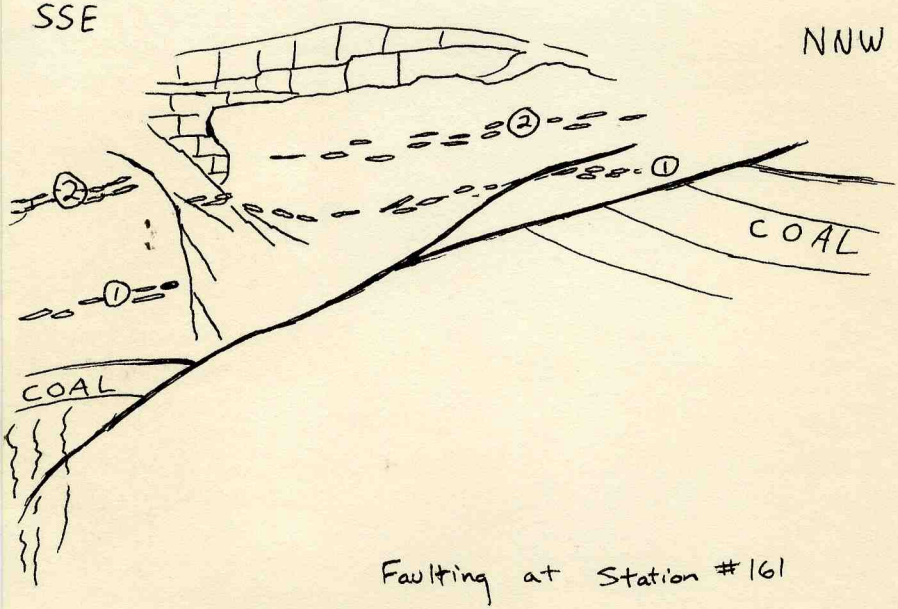
Strike trend in roof: 118°/42°S
trend in coal: 110°/40°S

At this local, base of middle Brereton Limestone is exposed with irregular basal surface. Within fault zone several irregular offshoots(?) up to .4' thick found in disturbed area below.

Look like "extrusions" from limestone above, but seem much more argillaceous. Quite nodular in appearance and not continued in coal.

Another fault less than 1' ~~distance~~ displacement traceable across entry; 9°/42°E, normal striations on slip plane, typical "petering" within top 1'-2' of coal. Clay filling thin, maximum 1'.

Relationship to major fault not clear, but seems to die out in small slips before hitting major fault.



Faulting at Station #161

162. (127) Within roof fall the following sequence exposed from top:

Limestone - irregular base.

.3' Shale, dark gray, heavily mottled with greenish spots, crumbly.

.35' Shale, dark gray to black with many thin phosphatic lenses, disturbed in most of roof-fall area.

1.4' Shale, dark gray to black, mostly heavily distributed, many fine irregular fissures along which some mottling begins to develop.

.2' Shale, dark gray to black with irregular phosphatic lenses and nodules, not as many as above.

.7' Shale, dark gray to black.

.9' Shale, dark gray to black, well laminated, fossiliferous, hard, with joints developing and concretions, usually +1' diameter near base.

Whole exposure in fall badly disturbed by numerous planes, attitudes of some of these: 72°/52° N, 108°/52° S, 90°/47° N, 85°/33° S, 182°/45° W, 75°/27° S.

163. (128) Small slip in top coal, traceable mostly as slip plane, but with thin clay filling trend 36°/36° SE, normal striations cannot be traced further to SW than indicated on map. Usual "petering" with "beard" in top 2" of coal.

164. (129) Nice exposure of calcite filled cleats with 141° direction generally running through and 58° direction offset. 23 cleats per foot in 141° direction, about the same or less in other direction. Offset cleats are less persistent in trend and often more curved. Good for photo.

Hillsboro Mine
1st SE
January 10, 1975

Lithologic mapping in track and belt entries starting in cross cut 17 backwards to shaft.

Heinz H. Damberger and Colin Treworgy

location not clear, probably in belt entry between cross cuts 16 & 17

165. Small roof fall with section from top; limestone, weathers brown, probably Conant.

(130)

.5 Shale, medium gray with irregular limestone nodules and lenses, probably Jamestown horizon.

.4 Shale, dark gray to black, top layer of Anna.

.25 Shale, dark gray to black, many thin phosphatic lenses.

.9 Shale, dark gray to black.

.2 Shale, dark gray to black, thin phosphatic lenses and laminations.

.2 Shale, dark gray to black, jointing somewhat developed.

.85 Shale, black, hard, fissile, typical Anna with concretions.

part of 166 ??

(131?)

.05 Limestone, clod like, weathers brownish and flakes.

.25 Limestone, brownish gray with irregular dark shale lenses, rather lenticular. JAMESTOWN?

.1 Shale, dark gray to black with very thin phosphatic lenses throughout, weathers in flaky fashion.

.4 Shale, black with phosphatic lenses, joints not too well developed.

.4 Shale, dark gray to black, hard, fissile, joints well developed.

Coal

Top limestone probably Conant, lenticular limestone below is either Jamestown or Brereton. Black shale is Anna.

167. Exposed sequence

(132)

.05 Limestone, clod like.

.2 Shale, dark gray, soft.

.1 Shale, weathers crumbly with fine phosphatic laminations.

.3 Shale, black with few phosphatic streaks.

.3 Shale, black, hard, fissile with coaly streaks near base.

Coal

Limestone in top may be Conant.
Jamestown and Brereton levels either represented in top shale or missing, rest definitely Anna.

Anna seems to thin toward north. Judging from exposure around corner in track entry, shale unit below limestone probably Jamestown horizon. Shows some irregular brown lenses that might be limey, but no coaly streaks.

168. On north side of major fault, Anna Shale picks up in thickness quite rapidly; in west rib sequence is:

(133)

Limestone, fairly smooth, basal plane, somewhat flaky at bottom.

.3 Shale, medium brown, gray, crumbles when weathered, possible limey inclusions in irregular form, weathers yellowish in basal portion.

.9 Shale, dark gray to black with greenish, yellowish, irregular mottling throughout, perferentially along bedding than fissures as frequently observed

.35 Shale, dark gray to black, well bedded, joints not well developed.

.55 Shale, black, hard, fissile with well developed joints, few coaly streaks near base.

Coal

In east rib sequence as follows:

Limestone

.4 Shale, brown to gray, probably Calcareous.

.25 Shale, dark gray to black, with irregular greenish mottling, crumbly.

.1 Shale, dark gray to black with many thin phosphatic lenses.

1.0 Shale, dark gray to black, irregular, mottled greenish and yellowish spots, soft.

1.1 Shale, dark gray to black, hard, fissile, well jointed.

169. Sequence as follows:

(134)

Limestone, flaky in basal portion.

.25 Shale, with many irregular limestone lenses, medium brownish gray, probably Jamestown Horizon.

.05 Limestone, irregular lenticular, often completely missing or very thin, possibly Brereton.

.1 Shale, medium brownish gray, soft.

.55 Shale, dark gray to black with much greenish mottling irregular throughout.

.07 Shale, dark gray to black, many fine phosphatic lenses and laminations.
1.1 Shale, dark gray to black with greenish mottling.
.65 Shale, dark gray to black with concretions near base.
.35 Shale, dark gray to black, hard, fissile with joints well developed.

Coal
Sequence at this location due to nearby major fault, badly disturbed by many slip planes, thicknesses thus may not be accurate.

170. (135) Major fault trending 38°/25° NW fault zone at least 3'-4' wide in roof causing breakout up to 2.5' high along trend. Seems to cut through most of seam. Displacement at top of coal at least 2'.

171. (136)
.25 Shale, dark gray to black, intensely borrowed(?), quite flaky.
.15 Shale, dark gray to black with joints fairly well developed, irregular phosphatic layer at base.

Coal

172. (137)
Limestone, smooth basal surface.

.1 Anna Shale, slightly mottled, fissile.
.2 Shale, heavily borrowed(?), mottled, weathers flaky.

Coal

ILLINOIS GEOLOGICAL SURVEY, URBANA

H. H. Damberger
January 24, 1975
Hillsboro Mine

See Map filed under 1st SE, Jan. 8-9.

Mapping in northernmost w/ entry of "Parallels," starting in West, mapping toward East in corner portion at 1st SE entries.

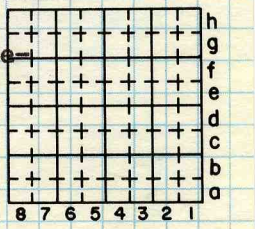
(138)

200. Major fault, displaces by full coal thickness plus and about 2-3': t=~9'. Anna Shale is dragged down into fault zone which is about 1' wide (see sketch). 95/36 S is main fault plane in roof.
90/34 S at top of coal.
104/28-30S at base of coal.

Anna Shale in hanging wall is almost undisturbed:

Profile from top:

0.1'	Clod with many limestone nodules.
0.2'	Shale, dark gray with many small greenish mottles.
0.25'	Shale, as above, but with lenticular limestone (argillaceous) band in middle, ~0.1' maximum thickness.
0.2'	Anna Shale, with many phosphatic lenses and nodules.
0.85'	Anna Shale, slightly mottled.
0.2'	Anna Shale, with relatively few thin phosphatic lenses.



By Hine Damberger Date 1/24/75

Quadrangle

County Montgomery Sec. T R

X

ILLINOIS GEOLOGICAL SURVEY, URBANA

January 24, 1975 H. H. Damberger

Hillsboro Mine

Track Entry of Main East

Cross cut "35": roof fall just S of track entry

Major N-S clay dike exposed, from coal up:

Bottom

Coal

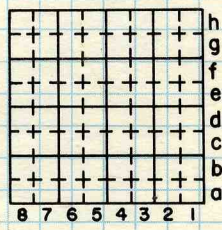
3.8' Anna Shale, typical sequence for this mine.

0.7' Brereton Horizon, dark gray limestone, very argillaceous with irregular nodules, lenticular to ground, 1" to +1' ϕ. Mottled, especially upper part, ~~but~~ along trend fault; possibly limestone.

Top

In fall area further S about 0.7'-1' Jamestown sequence, mostly shaly with limestone nodules and lenses, then about 0.7' Conant Limestone of typical appearance for this mine.

File under Parallels.



By Heinz Damberger Date 1/24/75

Quadrangle

County Montgomery Sec. T R

0.6' Anna Shale, not slaty.

1.0' Anna Shale, fissile, slaty with some thin phosphatic lenses near top and in lower one-third.

____ Coal