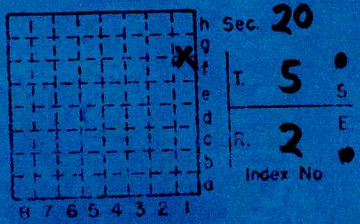
HERRIN

OLD BEN COAL CO.
MINE # 26

Mine Index No. 879 S-26



[redacted]
FRANKLIN COUNTY

1245' NL, 360' EL

(Sheets) COAL PRODUCTION (Sheet)

Period Mo. Day Year	Period Mo. Day Year	Tons		
PRODUCTION NOT YET STARTED	1967			
	1968		263	859
	1969	1	776	911
	1970	2	290	198
	1971	1	975	389
	1972	2	041	352
	1973	2	100	316
	1974	1	738	593
	1975	1	578	531
	1976	1	571	755
OLD BEN COAL CO.	1977	1	159	874
	1978		864	750
MINE NO. 26	1979	1	135	307
	1980	1	286	574
	1981	1	223	043
	1982	1	254	862
	1983	2	120	052
	1984	2	458	067
	1985	2	349	692
	1986	2	467	212
	1987	2	255	766
	1988	2	737	233
	1989	2	459	478

SUMMARIES

No.	to No.			
1968	TO 1971	6	306	451

Railroad, Wagon, Strip, Idle, Abandoned

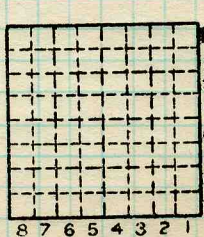
IDENTIFICATION

County No. _____ Coal No. ☐6

Coal Report No. 5-26

Quad.

County Franklin



Sec. 20

T. 5 N.

R. 2 E.

Index No.

COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA

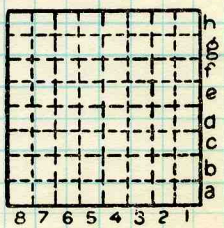
(2732—2M—7-41)

Illinois State Geological Survey

Face-channel Sample #1
Old Ben Coal Corp., Mine #26

7th main E (7 main B) +6128 E, 60'S to center of 8 S.

6.9'	Coal - About 0.6' of coal at top - not sampled.
0-1.15'	Coal - Normally bright banded, minor calcite and kaolinite on vertical fractures.
1.15'-1.17'	Fusain - Calcareous.
1.17'-2.23'	Coal - Normally bright banded, occasional pyrite on vertical fractures.
2.23'-2.29'	Fusain - Pyritic and thin pyrite lenses.
2.29'-3.26'	Coal - Normally bright banded, several calcareous fusain partings and thin lenses. Some pyrite in thin partings and vertical fracture fillings.
3.26'-3.30'	Fusain - Calcareous.
3.30'-5.50'	Coal - Normally bright banded, minor kaolinite on cleat, several thin calcareous fusain lenses, prominent calcite on cleat in lower .5'.
5.50'-5.58'	Blue Band - Shale, gray with thin vitrain partings. (EXCLUDED).
5.58'-6.90'	Coal - Normally bright banded, few pyritic partings and one 0.1' pyrite



By MEH Date 1/28/71

Quadrangle

County Franklin Sec. 22 T 5S R 2E
175'N, 450'E of SW cor.

Sample #1 continued

nodule - not in line of channel.

Underclay.

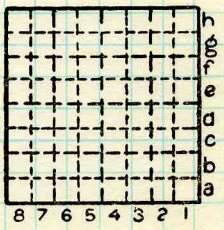
Illinois State Geological Survey

Face-channel Sample #2
Old Ben Coal Corp., Mine #26

22nd N off 1st E south +1005 ft. N

Total thickness seen 7.1' - no floor or roof shale visible - estimate 6 to 10" of top coal left in roof.

0-2.20'	Coal - Normally bright banded, kaolinite on cleats.
2.20'-2.32'	Fusain - Soft, not pyritized.
2.32'-5.10'	Coal - Normally bright banded, kaolinite and minor calcite on cleats, no pyrite seen.
5.10'-5.20'	Shale (Blue band) - With ¼" bright coal in middle, relatively soft (EXCLUDED).
5.20'-5.30'	Coal - Bony, very argillaceous (part of Blue band).
5.30'-5.60'	Coal - Normally bright banded.
5.60'-5.70'	Coal - Bony.
5.70'-6.50'	Coal - Normally bright banded.
6.50'-7.10'	Coal - Not examined (under water).



By NHB Date 1/28/71

Quadrangle

County Sec. 21 T 5S R 2E

1600'N, 750'W of SE cor.

Illinois State Geological Survey

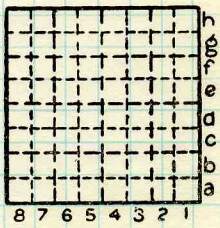
Face-channel Sample #3
Old Ben Coal Corp., Mine #26

14th E off 11th main S + 1902 ft. E

Floor and roof strata not seen

Total thickness exposed - 6.9'

0-0.80'	Coal - Normally bright banded, kaolinite, calcareous and pyrite on cleat, thin (< 1/8") pyrite partings at 0.1' and 0.3', 0.02' fusain (hard and mineralized) at base.
0.80'-2.50'	Coal - Normally bright banded, thin (< .02') fusain, soft, at 1.57', 1.65', and 1.74, kaolinite on cleat.
2.50'-2.55'	Coal - Bony.
2.55'-4.05'	Coal - Normally bright banded, kaolinite along cleat in vitrain, minor calcite on cleat, minor pyrite on vertical fractures.
4.05'-4.12'	Fusain - Soft with some vitrain partings, .02' fusain at base.
4.12'-5.05'	Coal - Normally bright banded.
5.05'-5.60'	Coal - Normally bright banded, but less bright than above, hard.
5.60'-5.65'	Fusain - Soft.
5.65'-5.80'	Coal - Normally bright banded, kaolinite on



By HJG Date 1/28/71

Quadrangle

County Sec. 28 T 5S R 2E

500'N, 1350'E of SW cor.

Sample #3 continued

vertical fractures.

5.80'-5.83' Shale - Gray (Blue band). (EXCLUDED).

5.83'-6.90' Coal - Normally bright banded, hard, somewhat duller than above, units much kaolinite on cleat in vitrain.

FRANKLIN CO.

Old Ben Coal Co. - Mine No. 26 - No. 5 Coal - Channel
Sample #1 - in hoisting shaft 26-A - 51" of coal

Roof shale - dark gray, carbonaceous, pyritic, extremely pyritic in bottom 2"			
Coal - normally bright banded, calcite and pyrite on vertical fractures; thin 1/16" pyrite stringers (6) in upper inch and a half; kaolinite present along vitrain bands in bottom 3"	0	9½"	9½"
Pyrite - lense, continuous laterally for at least several feet	9½"	1/8"	9 5/8
Coal - normally bright banded, extremely pyritic in upper 2", calcite abundant on cleat	9 5/8"		31"
Pyrite lense - grades laterally into pyritic shale nodules, shale nodule up to 1½" thick. NOTE: Channel sample does not include nodules - passes to west of nodule			
Coal - normally bright banded, calcite and pyrite on cleat, some kaolinite along vitrain; at 3'1" several thin <1/8" bony bands at 3'7"-3'8". Bottom 2" very dull and bony. Underclay medium gray, dense, slickensided, includes some coaly stringers	31"		51"

1/8" fusain

Old Ben Coal Co. - Mine No. 26 - No. 5 Coal - Channel
Sample #2 - in hoisting shaft 26-A - 4'3" coal

Dark gray shale roof with large pyrite cemented concretions 3" over coal		
Coal - normally bright banded, calcite, kaolinite, pyrite on cleat	0	17"
Coal - bright banded, with 1/8" soft fusain band at 1'5", 1'6"; thin < 1/8" at base	17"	19"
Coal - normally bright banded, abundant calcite on cleat; some along vitrain band, pyrite along vertical fractures along bottom 6", ¼" bony band at base	19"	31"
Coal - normally bright banded, calcite, kaolinite, and pyrite along cleat NOTE: at 3'6" weakly cemented pyrite nodules are present along both sides of channel, 1 nodule up to 3" thick	31"	42"
Coal - normally bright banded, calcite, pyrite in cleat	42"	51"

Old Ben Coal Co. Mine # 26 Visit by Heinz Damberger, 7/26/74. and H.-K.K.

Photo 1 6th Main E off South. Fault, looking S and up fault: white stuff probably sandstone drawn into fault. Coal in west side of fault downthrown, much fault breccia to E side of main fault plane. Strike 010°, dip 60-70° east. Barite found in little fault east of main fault.

Photo 2 Distance wrong; not included.

Photo 3 Closeup of vitrain layer with cleat system. Pencil points to almost north (160°) cleats. 140-145° and about 65-70°.

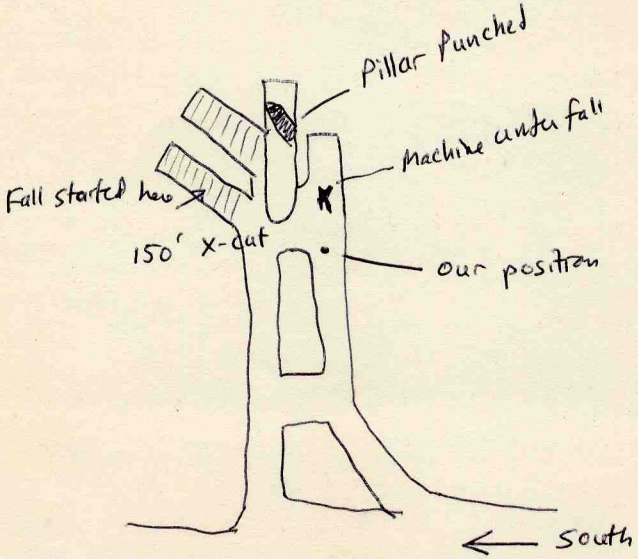
Photo 4 Left side front (pencil) covers same area as photo 3; fracture in roof (incipient fall) trends about 165-170°.

9th East Entry

Photo 5 Looking into roof fall, due almost south 150 (sic). They turned from E-W to 45°; that's when it fell. This is only one entry farther south from photo 4, same zone of weakness, fell where it hit intersection, shows pressure (powdered rock) in ceiling, trending 160 on west side it followed 140 main cleat and joint tried ? to do this several places (sic), gray shale with brownish bands. Fell before March; that is, maybe two months after mining. 9' bolts still hanging from roof. 10th entry E, 8650' in.

Photo 6 4th Main E off S, about 8000' in, E of fault halfway up hill. Shot up on ceiling showing nice fracture pattern, trending about 50°, top of camera trends 25°.

Photos 7-12 Roof fall caused by pillaring. Mining machine trapped by fall.



Top

Photo 1 mn-03A-042.tif

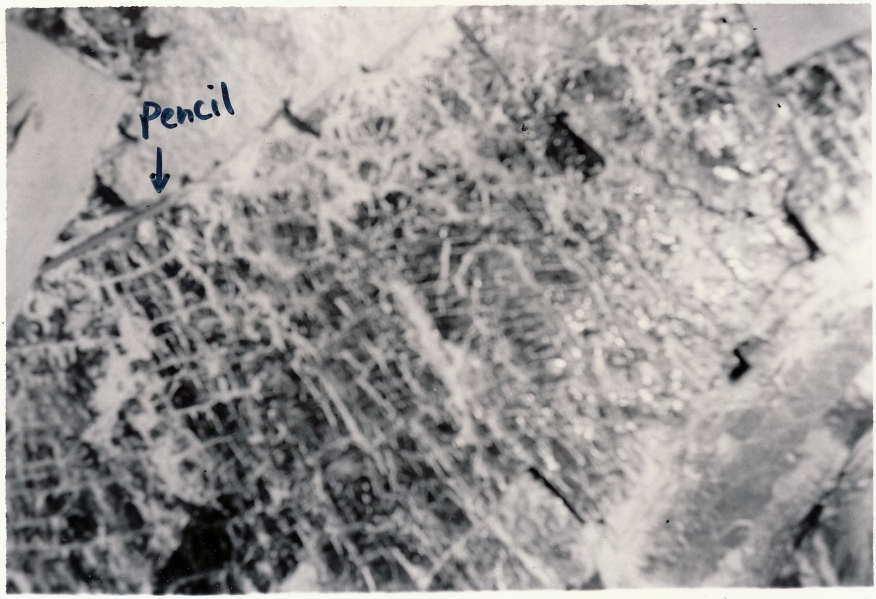


Photo 3 ↑ mn-03A-043

Photo 4 ↓ mn-03A-044

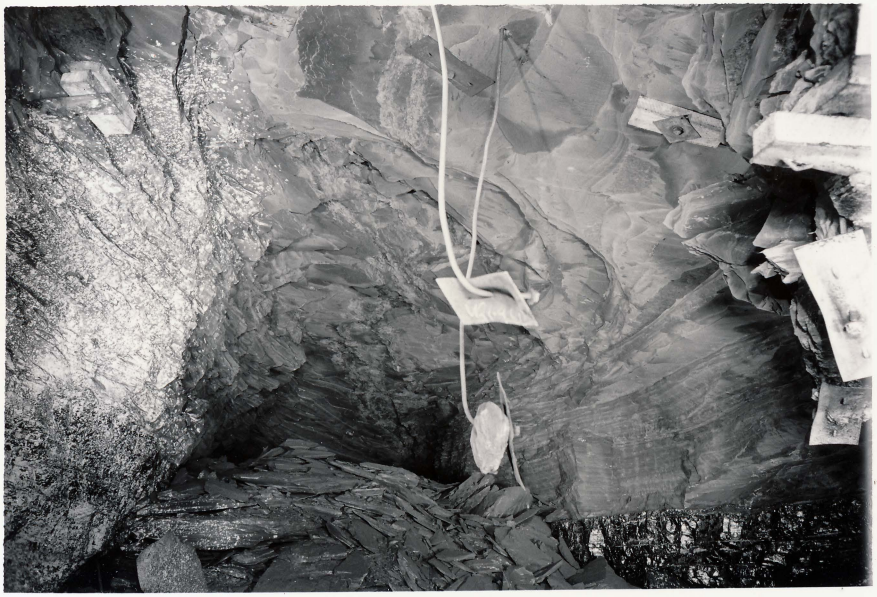


Photo 5 mn-03A_045

Photo 6 not available. See Roof Study Photo Notebook.

Photo 7 ↑ mn_03A_046

Photo 8 ↓ mn_03A_047

Photo 9 ↑ mn-03A-048

Photo 10 ↓ mn-03A-049

Photo 11 ↑ mn-03A-050 Photo 12 ↓ mn-03A-051

Illinois State Geological Survey

Old Ben 26 — 3 —

Photo 1 (2A) 6th Main E off S fault, looking S and up fault: whole stuff probably ss down into fault. Coal in W side of fault, down thrown to E side, much fault breccia to E of main fault plane

By ____________ Date ____________

Quadrangle ____________

County ____________ E 10° 60-70°, throw? Sec. ______ T ______ R ______

h g f e d c b a
8 7 6 5 4 3 2 1

Barite found

Barite found in little fault E of main fault

Ph. 2: distance view (3A)

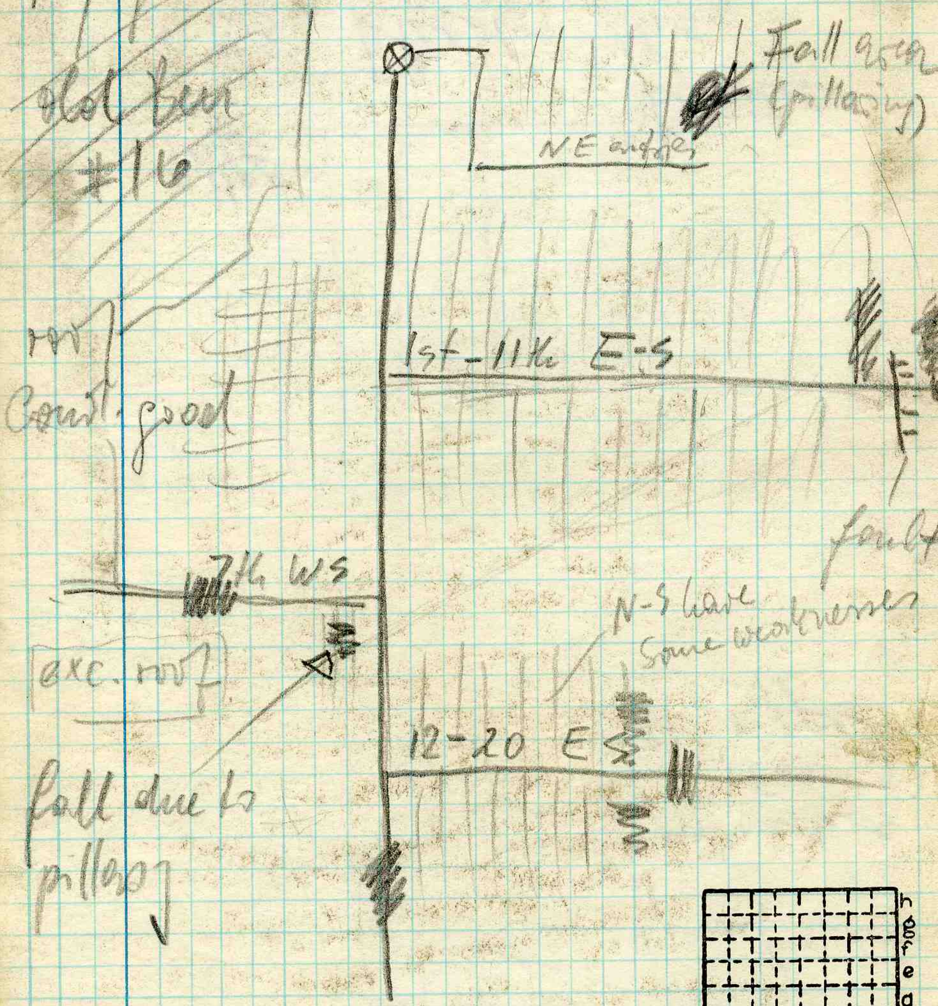
Ph. 3: close up of vitrain (4A) layer with chat system pencil points to almost N (160°) chats: ~ 140-145° and about 65-70°

ph. 4: left side front (pencil) (5A) covers same area as ph. 3 fracture in roof (incipient fault) trends about 165-70 (N.N)

Illinois State Geological Survey

Old Ben 26 7/26/74

top good to west

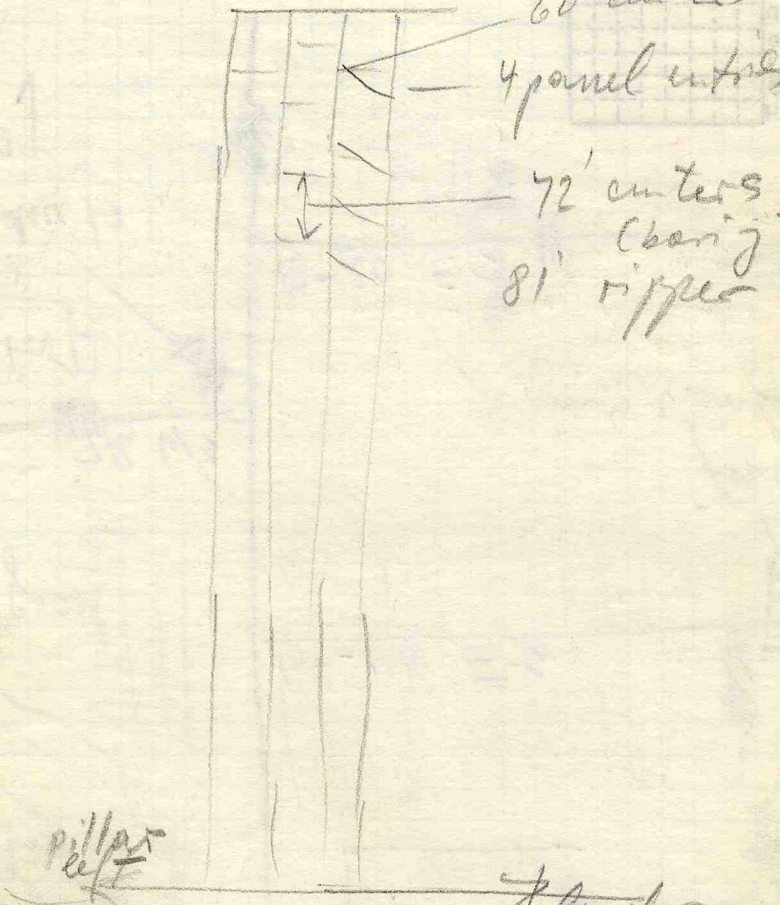


By ______________________ Date ______________________

Quadrangle ______________________

County ______________________ Sec. ______ T ______ R ______

Plains



or this blocks this

Illinois State Geological Survey

9th E entry Old Ben 26 #5

ph. 5: looking S. to roof fall, one almost S (150°) they turned from E-W to 45°, that's where it fell there is only one entry further S from ph. 4, some zone of weakness, fell where it hit intersection, shows pressure (powdered rock) in ceiling, trending 160° on W side it followed 140° main cleat & joint ... to do this several places

6A

By

Date

Quadrangle

County

Sec.

T.

8 7

... followed 140° major cleat & joint .....

gray shale with brownish
bands. Fell before March,
that is may be 2 months
after mining:
9' bolts still hanging out
of roof

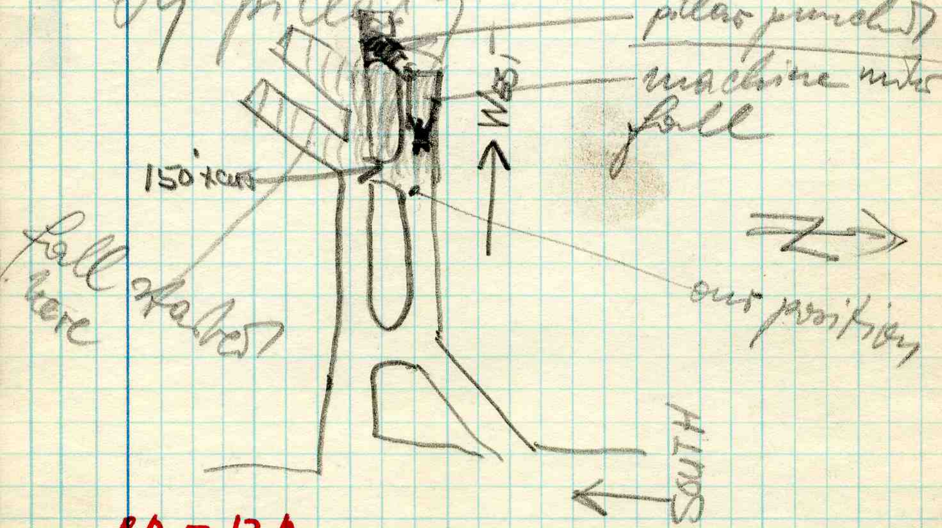
10 th entry E, 8650' in

ph. 6: 4th Main E off S, (7A)
about 8000' in, E of fault
1/2 way on hill,
shot up on ceiling showing nice
fracture pattern, trending about
50°, top of camera ~~points~~ 25°

Illinois State Geological Survey

Old Ben 11 — Old Ben 26 [illegible]

ple 7-12: roof fall caused by pillar



8A - 13A

h g f e d c b a
8 7 6 5 4 3 2 1

By ____________________ Date ____________________

Quadrangle ____________________

County ____________________ Sec. ________ T ________ R ________

5 th Lvl South

Cross cut 67 ~ 1400 in

100' trouble tracking ~150'

Old Ben Coal Company Mine #26. John Nelson, Larry Bengal, Roger Nance. May 25, 1976. Notes by John Nelson.

Bill Young, Jim Chady - our guides underground.

Purpose of visit is to examine fault system recently encountered in the face of the East North Mains, previously crossed on East South Mains.

Maps are 10-3-5, Confidential Room

Twelve working sections at present: Six Marietta Miners, two Goodman Borers, three Joy 10CM's, pillaring work. Old Ben has had good success with Mariettas and Goodmans on pillar work. Pillars are extracted on all panels. Like nearly all Illinois mines, this uses shuttle cars and conveyer belt coal haulage. Men and materials move by rail.

First we go to East South Mains. 6th E. is the track entry in Old Ben notation.

(1.) Area heavily cribbed. Numerous nearly vertical fractures or small faults in both roof and coal, for about 30' west of the main fault. Fractures about 080', 80E-90°. The top is heavily cribbed an the cribs are taking weight.

(2.) Main fault here split into two faults with wedged block between. The westerly about 080°/90°, 8 ft. downthrown to east. About 10 ft. farther east is the second fault of greater displacement. Track entry graded through roof to east of this point.

Considerable normal drag in the coal wedge block, which is also heavily fractured. Zone of crushed coal and rock on fault planes only a few inches wide. Fault plane sinuous, varies in dip. In places it dips to west, creating in effect a reverse fault.

Shale across fault is moderately dark gray, firm, faintly laminated. This is the Lawson shale.

(3.) Fault in rock, about 090°/80W, no way to tell displacement. Rock to west is sideride-free, to the

east of fault it shows distinct even sideritic banding, and is slightly darker gray.

(4.) Section in entry:

16 ≠	Shale (Lawson) - Medium dark to dark gray, smooth, fair bedded, sideritic banding and lenses, becomes calcareous at base.
3'4"	Limestone (Conant) - Medium dark gray, fine-medium grained, hard, argillaceous, faintly bedded. Lower portion shalier.
6"	Coal (Jamestown) - Impure, with dark gray shale bands.
1'2"	Shale - dark gray, smooth, calcareous, carbonaceous, thin coal streaks, siderite bands present. Grades into
9'≠	Limestone (Brereton) - Medium gray, fine grained with coarse fossil debris, semi-crystalline, hard, massive. Sharp contact
2'1"	Shale (Anna) - Black, smooth, well bedded, fissile, sharp basal contact. Top part poorly bedded, calcareous
12'≠	**Shale (Energy) - Medium dark gray, poorly bedded, smooth, firm. Lighter downward. Shear plane on bedding plane at base.**
2'11"	**Shale - Medium gray, smooth, firm, fair bedded, sideritic bands near top, lower foot highly carbonaceous with numerous thick coal splits from top of seam.**
8'	**Herrin (No. 6) Coal -**

(5.) **Entry levels out at bottom of hill. Small slips at top of coal, only a few inches displacement and a few feet long. Coal top irregular with thin "riders" and splayed "rolls" of small size.**

(6.) **On 5th East. Jamestown Horizon**

6"	**Coal -boney and bright interbedded, black shale partings**
2'4"	**Limestone - nodular lenticular, brown, fine grained**

9" Shale - Dark gray, poorly bedded, inclined coaly stringers. Closely assembles Jamestown Interval when well-developed at Consolidation Coal Company Hillsboro mine, Montgomery County (See Herrin No. 6 Coal Roof Study Book 1.)

Measured Lawson Shale on this entry 16 feet ≠ from top of Conant Limestone to the bedding plane opposite base of coal on "up" side of fault.

(7.) Main fault zone about 15 feet wide. This westerly fault is about 6 feet. The easterly fault is bigger. Stratigraphic displacement about 49' (by adding thicknesses) and total displacement of zone is about 55'.

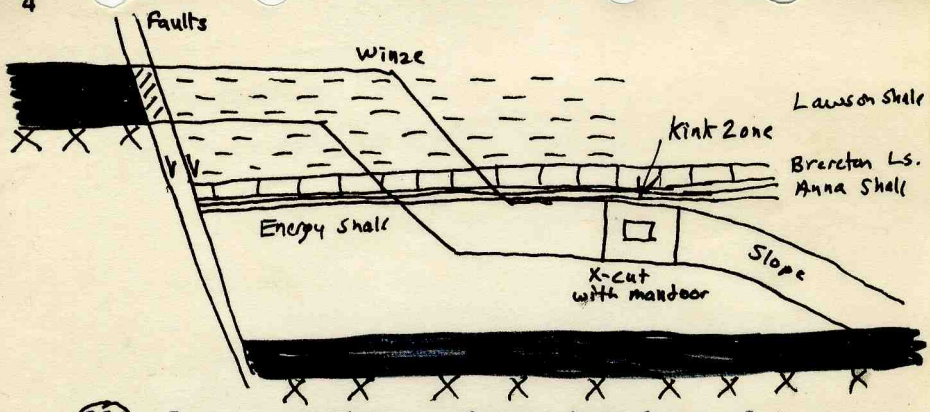
(8.) Fault zone narrows to 3 feet or so with sharp displacement on west. Coal is cut off clean with no drag folding and only very minor powdering of coal on and near fault plane. Very minor micro-faulting in coal in 3" zone adjacent to fault.

Bankston Fork Limestone forms the brow on the hanging wall. It is brownish-weathering, medium gray when fresh, fine grained, hard, and heavily fractured with orange-brown material in fractures.

Irregular zone 2-4 feet wide of crushed shale along fault zone between two sinuous fault planes.

(9.) Two faults again, the west dips 50-60° east, very sharp plane. Small fractures in coal dip in opposit directions, some zones are shattered The wedge between faults is tilted to west. East fault has about 2' wide gouge zone. Oil seeps here, as along most entries in the fault.

(10.) Winze - a nearly vertical raise with stairs. This was blasted throught Brereton Limestone, which is very hard to cut with continuous miner.



(11.) Severe cutting as shown, into base of Anna Shale. Contact Anna to medium gray Energy Shale is very sharp. North-south cutting or "kinks" are typical

General Observations on
East South Mains

A) Fault is prone to split and the plane varies in dip from 55°E to 70°W locally-it can appear to have reverse throw.

B) Oustide of main fault zone only small slips and faults of less than 1 foot displacement occur. Except for the fault in Lawson Shale 100 feet east, which is unknown throw and displacement.

C) "Kink" zones run N-S, parallel to faults

Now to the East North

(12.) Fault zone in 1st E just in by 7000' mark. From west to east:

(A) 3 slips 160/55-60°W intersecting downward in coal.
(B) Shear plane on bedding in roof one foot above coal top-stirations 075°.
(C) Slip 162°/~45° W in roof only.
(D) Fault 165°/57° W about 3'8" displacement in a zone some 2 feet wide of numerous

slips, fractures and mylonite.
(E) Fault 155°/ 75° E about 0.7' displacement.
(F) Fault 150°/50°W about 0.7' displacement.
Numerous smaller fractures in coal and roof, same trend (150-165°), most dip west. Roof about 1.0' dark gray laminated shale overlain sharply (shear plane contact) by medium gray shale.

(13) Face to fault - rock exposed near floor behind gob so can't examine. Top of face is in coal with Energy Shale above. On right (S)corner coal appears somewhat crushed as does shale above. Slickensided fractures abundant. Water is dripping slasly. Can't see much due to gob. Minor fall at face. Note slip just outby.

(14) Face of 3rd East. Slip mapped has less than 0.5' displacement, down to west 155°160° steepens downward into coal.

At the face the top half of coal seam and medium-dark gray shale roof are intact. Lower half of face is sheared coal then about 2½ feet of underclay. Appears to be a wedge in a fault zone, normal faults dipping west. Entry was not driven up far enough to give a good view.

Shear planes common along bedding of the Energy Shale roof.

(15) Again fault at face. Here apparent underclay comes 6 feet from floor, indicating at least that much displacement on fault here. This is firm, probably calcareous light brown or tan claystone.

(16) Fall about 3 feet high - medium dark gray well-laminated shale with thin light gray siltstone interlaminations and coaly streaks. Coal at face.

(17) Marietta miner at face. Cutting heads contract

in diameter for tramming. Roof bolting is taking place in angled X-cut to north. Strictly conventional bolts--no resin bolts at Old Ben #26.

Coal at face and roof appear normal. No slips or faults noted.

(18.) Fault from stop (12) here almost exactly seam's thickness (8 ft.) displacement. Striations in roof, 1 ft. up at dark gray/medium gray shale contact noted; they run E-W.

(19.) Strongly defined vertical joints in immediate roof trend 090° and are spaced 15-20 to the foot. Thin strips of rock break out of roof. Almost looks like vertical bedding. Confined to lower foot of roof shale and extremely localized. May relate to bedding plane shearing.

(20.) Main fault 159°/55°W, 7'3" displacement. Shallower dip downward. Gouged zone about a foot wide, no drag. Roof on footwall about 1.5' medium gray laminated shale topped by shear plane with medium gray shale above. Roof on hanging wall medium gray, fairly silty and sideritic-actually the same as on footwall.

Final Notes

A. Old Ben does not plan to mine throught the faults. They will mine up to them from the east but will not connect the entries on the East North.

B. The fault zone is definitely different here, with the main faults down to the west rather than to east. But faults down to the east probably still lie ahead (east of the E.N. fall)

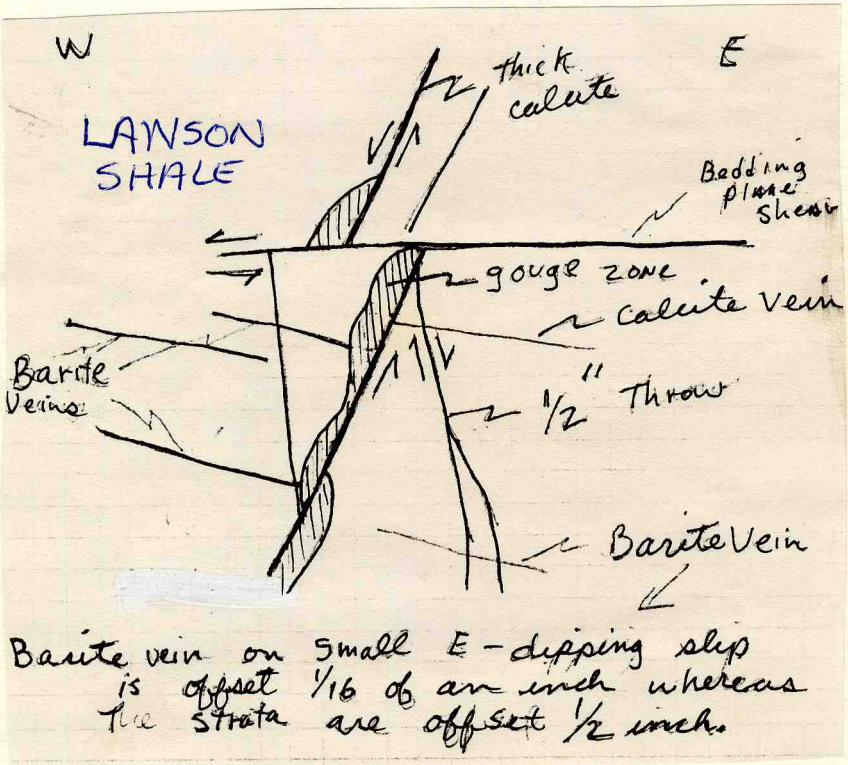
C. Boring machines produce excellent top and ribs-the "kinks" occur only in faulted or slip-prone wear.

Mine: Old Ben #26 And Fault exposure at surface ≥
Title: Mapping in Fault Zone (Sec 22, 6S-2E)
By: Nick Keys and John Nelson
Date: July 20, 1977

MINE Notes by Nick Keys - SURFACE NOTES BY JOHN NELSON

1. Small N-S slip in Lawson shale. Mylonitic and calcite vein. Dips W at 70°.

2. N-S slip - Dips W - offset by horizontal shear. Throw Approx. 1'.

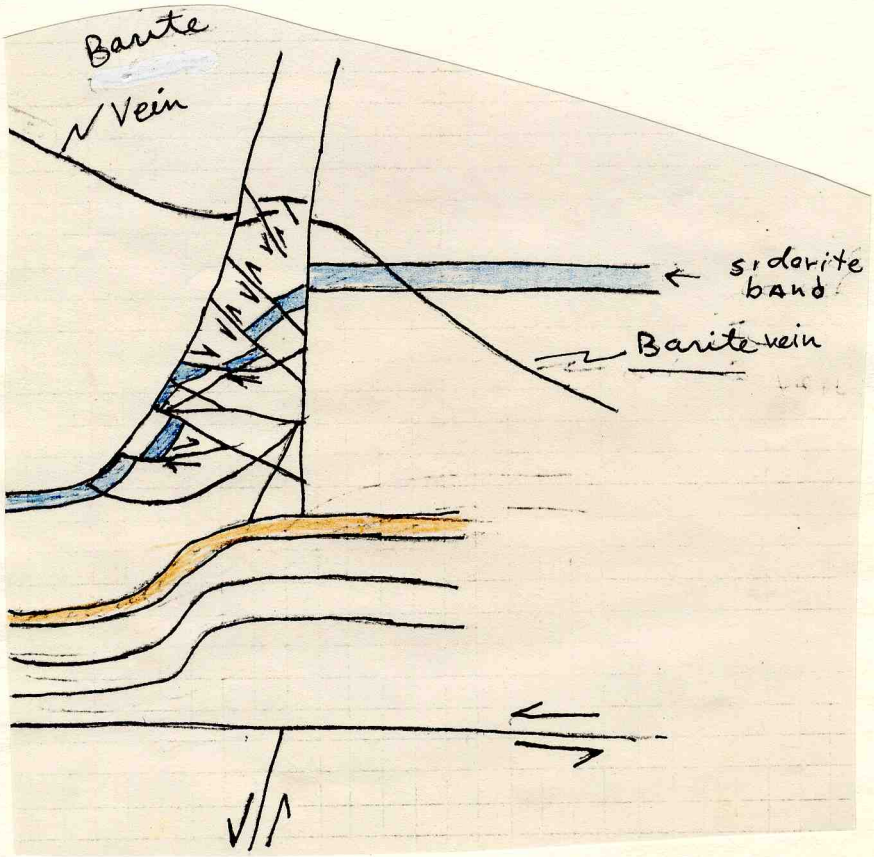


Barite vein on small E-dipping slip is offset 1/16 of an inch whereas the strata are offset 1/2 inch.

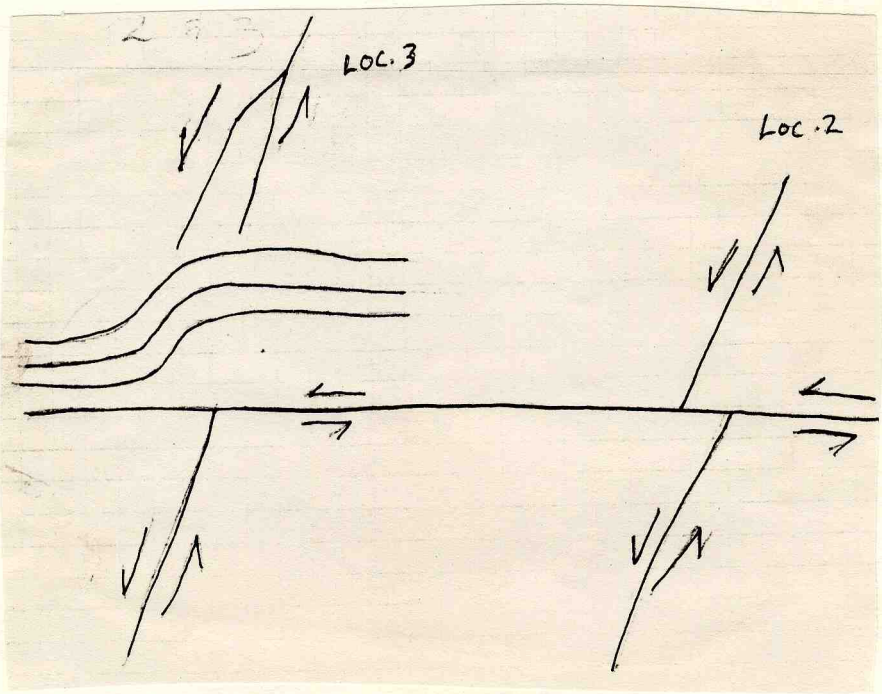
Also Barite veins do not enter gouge zone. Also not slickensided.

In other words, the shallow dipping veins appear to have occurred after initial movement, but prior to cessession of movement. They do not appear to offset anything else. Also are many small conjugate shears besides the two shown. Bedding plane shear shows neither calcite nor slickensides.

3. Highly fractured ½ foot fault/monocline. Down to W.



Summary drawing of locations 2+3:



4. E dipping thrust fault. Probably same as bedding plane slip shown above. Apparent dip: 13°E continues as far as arrow on map.

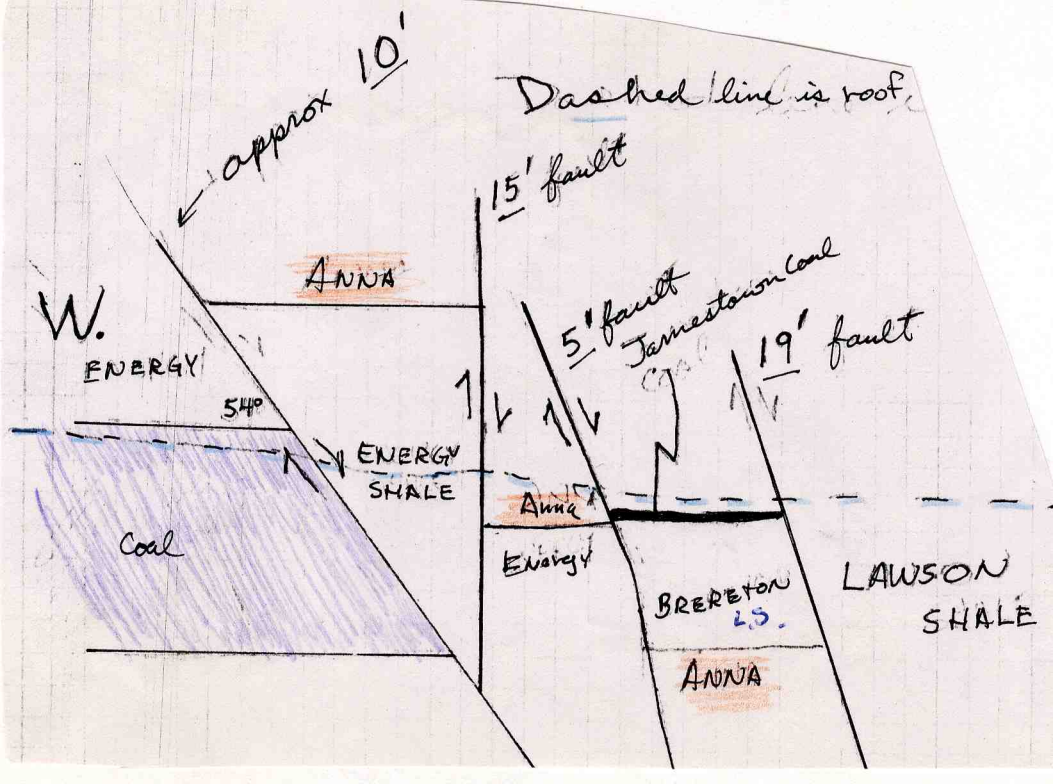
5. Goat beards predominantly dip to W.

6. Last shear fractures seen at 2nd ~~Main~~ Man door west of map.

7. Last shears E of fault (off map) is at the 2nd overcast where there are 2 together.

8. Major fault is composed of 2 faults 5' apart, striking due North and with a 67° dip to East. Can't tell which fault is bigger. Coal exhibits very little drag. Throw can't be measured, but Lawson Shale and perhaps Bankston Fork exposed on downthrown side.

9. Faulting here more complex. At least 4 different fault planes. X-section next page.


approx 10'
Dashed line is roof
15' fault
ANNA
W.
ENERGY
540
ENERGY SHALE
Coal
5' fault
Jamestown Coal
19' fault
Anna
Energy
BRERETON LS.
ANNA
LAWSON SHALE

July 21, 1977
Nick Keys and John Nelson this part by

Approximately 500'SL, 1000'EL, Section 22-6S-2E, Franklin County, south bank, Big Muddy River. Possible Rend Lake fault in surface exposure.

On outside of river bend is fairly continuous bedrock exposure about 300 feet long. Consists of shale, dark gray, silty, carbonaceous, thinly laminated, and siltstone to fine sandstone, medium gray; with fine parallel to lenticular interlamination. In places possible ripple bedding. Occasional thicker lense of sandstone.

This is fairly low water level. A maximum of about 5 feet of section exposed. No vertical or lateral variation noted.

One fracture noted in this exposure. It is exposed along a 10-foot length from water level to soil cover and it trends 161°, and is nearly vertical. There is a filling or gouge zone up to 0.3' wide containing crushed clay-like material apparently derived from surrounding rock. No extraneous material noted. This persists below weathered zone. Small plants were growing along gouge zone.

Close to the sides of the fracture the bedding of the surrounding rock is tilted upward. In one place, west of fracture, the layers are tilted 71°. Tilting is most prominent west of fracture but also is seen east of fracture (up to 29°). In places this effect is complicated by ripple-bedded siltstone.

The fracture is not expressed in any way in the dirt bluff above the bedrock exposure.

No other joints or regular fracture systems noted in outcrop. The most likely explanation of this fracture is that it is part of the Rend Lake Fault System. No displacement can be detected due to similarity of rocks either side of fracture.

Upwarp of rock either side of fracture suggests clay dike, but filling is unlike typical clay dike filling. This filling appears to be pulverized country rock.

OLD BEN COAL CO. MINE NO. 26 FRANKLIN COUNTY

John Nelson and Nick Keys 7/20/77 Notes by J.N.

Visit to map and study faulting in East South Mains. This is the only set of entries in this mine that cross the fault. Another set of entries north of here were driven up to the fault and stopped. See notes of 1976 visit with Roger Nance.

1.) Flexural fault in Lawson Shale. This entry is graded in the Lawson Shale from the fault to the raise, as shown on the field map. The Lawson Shale was cut with a boring-type continuous miner. The raise was drilled and shot through the Conant and Brereton Limestones, and the entry graded down into coal through the Energy Shale, again using the miner.

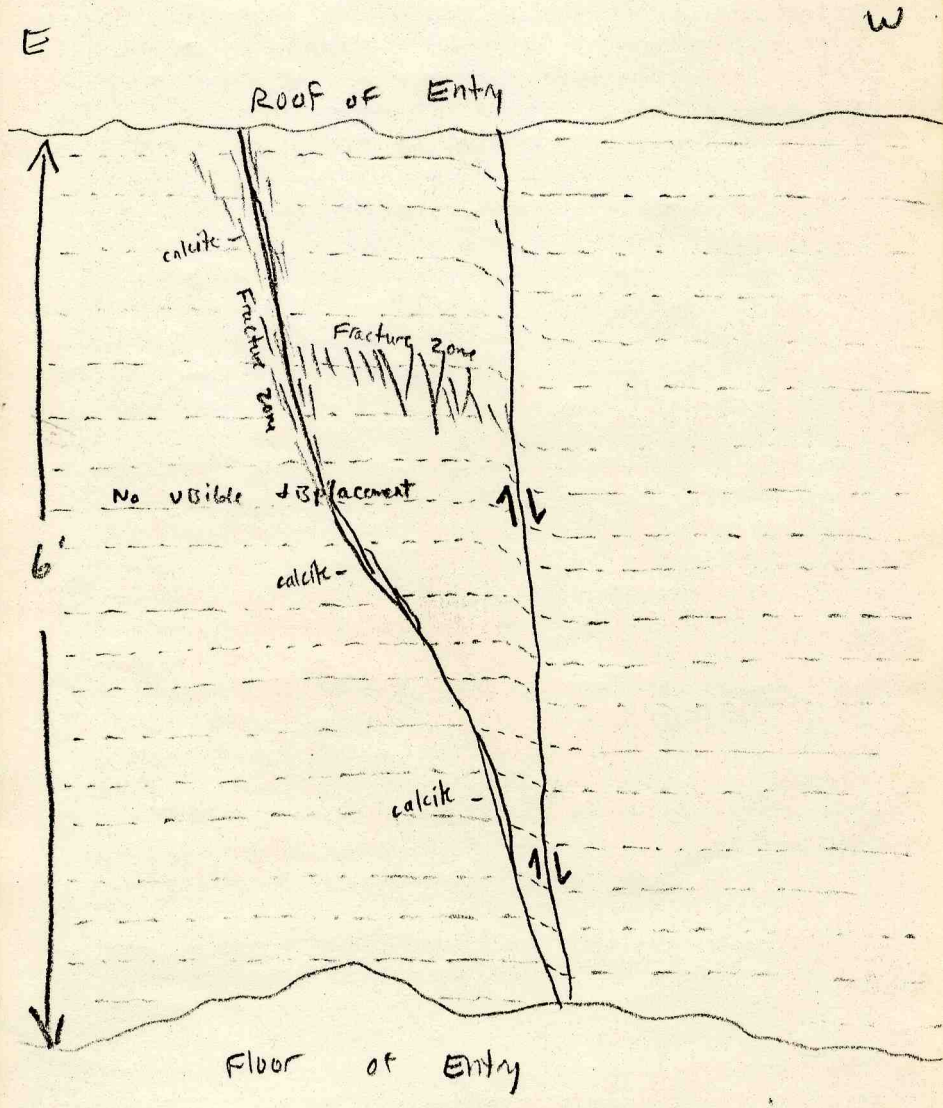
The flexural fault looks about the same on both sides of the entry. It trends N-S and dips steeply westward. Near the floor it is a single fault, but it branches upward into two separate fractures. Total displacement is less than a foot, accomplished mostly by folding of the shale rather than by offset. There is calcite filling on the fault plane. See sketch (over).

The Lawson Shale is medium-dark gray, firm, silty, micaceous, and contains closely-spaced parallel bands of siderite. Near the floor it grades into poorly bedded calcareous shale which in turn grades into the Conant Limestone (visible in the raise). The upward branching of the fault may relate to the change in composition of the rock.

2.) East of the main fault on this entry the Lawson Shale shows little structural deformation. The entry rises westward, grading toward the fault.

Only one set of small faults with displacement is seen. These trend N-S, dip steeply west, and contain calcite filling. Both shearing offset and flexural folding are seen; mostly the former. There are numerous vertical fractures and low-angle slick-

Stop 1
South side of entry



ensided surfaces in the area, and some bedding planes show slickensides. Overall displacement small, probably less than a foot, but this cannot be determined due to lack of marker horizons. The general appearance of this structure is much like that at Stop 1.

East of these small faults are a few vertical fractures trending 015-030°, and west of the small faults are north-south vertical fractures. These become more numerous as the large fault is approached. The Lawson Shale does not have joints or vertical fractures away from the main fault, so we can infer that these fractures are fault-related.

3.) The main fault in the 10th W.S. with roughly 50 feet displacement, down to the east. Herrin (No. 6) Coal is seen west of the fault and Lawson Shale to the east.

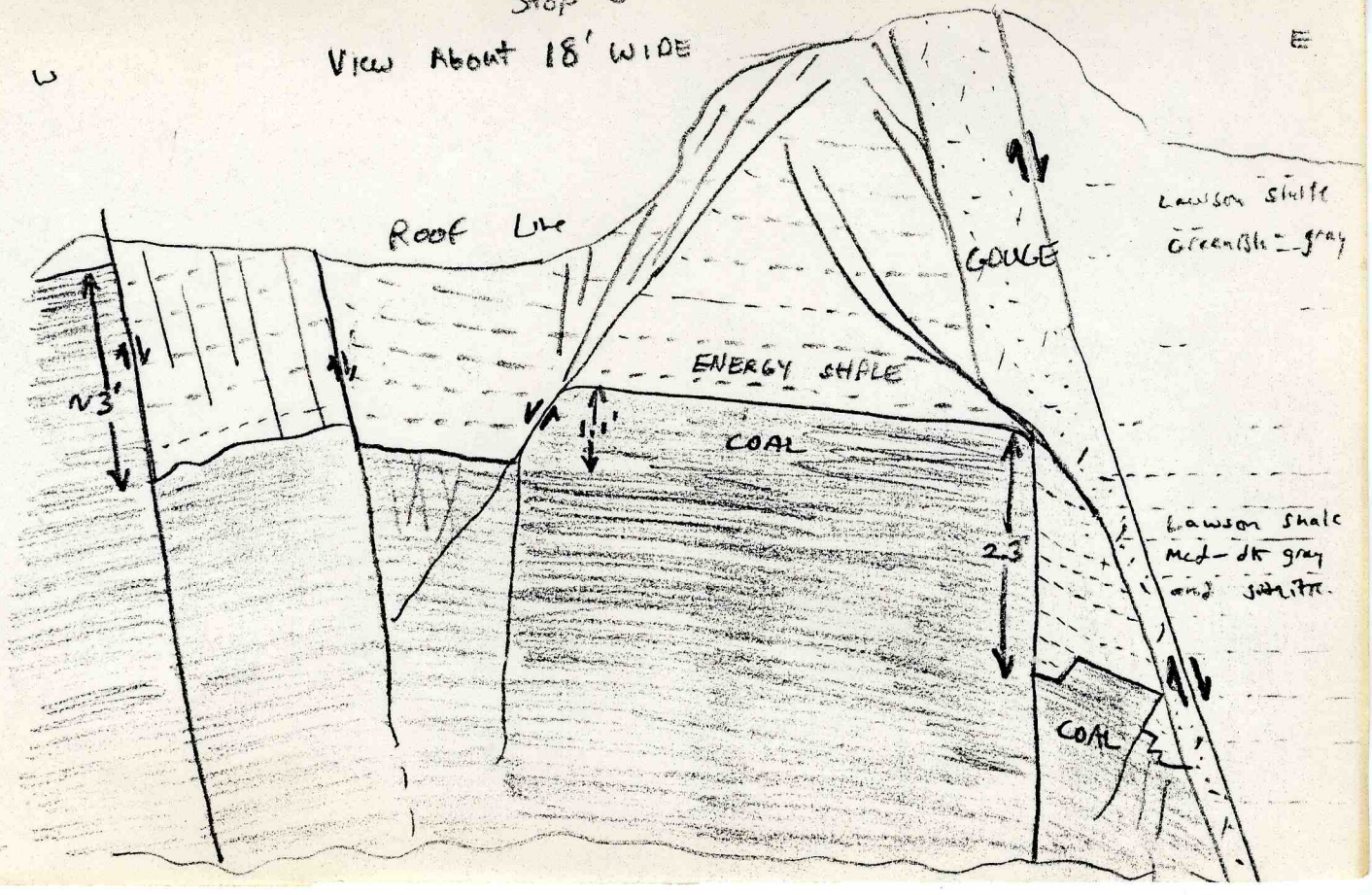
Gouge zone along the main fault is in most places less than half a foot wide and is filled with a sticky claylike material with chunks of limestone, siderite and other lithologies.

The Lawson Shale, as mentioned previously, is little disturbed and displays no drag. Only a few vertical fractures trending N-S are seen.

West of the fault the coal and overlying Energy Shale are broken by numerous fractures and normal faults with up to 3 feet displacement. Most of these trend 160-165° and appear to intersect the main fault to the south. They can be seen to change considerably in displacement from one side of the entry to the other.

See sketch of fault zone (over).

4.) High-angle normal fault trending 007/75° W and down 1.6' to the west. Wide zone of broken and pulverized coal along the fault. Fault branches upward into numerous slips and fractures in roof. Some of these diverge in strike as well as dip (strike of 027° noted on one.)


Stop 3 - North Rib
View About 18' WIDE
W
E
Roof Line
N3'
ENERGY SHALE
1.1'
COAL
GOUGE
2.3'
COAL
Lawson Shale
Green Blk - gray
Lawson Shale
Med - dk gray
and siltstone.

5.) Two noticeable patterns in this area.

(A) Numerous high-angle fractures in coal. Nearly all of them dip to the west and show no visible displacement. Prominent mineralized "goat beards" on many.

(B) Very strong N-S preferred direction for roof falls and "kinks". Crosscuts have many small falls and strongly developed "kinks", but entries have intact top coal and show no signs of roof trouble.

6.) East of main fault conditions are as at Stop 5 with abundant N-S fractures in the coal and severe N-S "kinks" with E-W entries unaffected. The fractures are very abundant in the coal but none were noted in the Energy Shale where the entry was graded through this unit. We often note the differing behavior of different rock types in fault zones. Coal, being the most brittle, shows more abundant and complex fracture patterns.

Nick Keys mapped the small fractures along the 9th E.S. both east and west of the main fault. The small fractures are shown on his map but not on mine.

7.) Conditions continue as at Stop 6 beyond the east edge of the map area. Top continues to be very bad in the N-S direction; some of the worst "kinks" I have ever seen. Note that the two crosscuts driven at 45° angles near the east edge of the map do not show "kinks". The top coal was intact in these crosscuts.

In many places "kinks" appear to intensify along small faults or fractures.

Minor floor heave seen in several places, along both entries and crosscuts (no preferred orientation)

8.) Main fault in north return. As in other entries they mined in the coal eastward to the fault, graded down through the Lawson, shot a raise through lime-

stone, and graded through Energy Shale back into the coal.

Fault trends 001/67°E and consists of two separate planes about 6 feet apart. The westerly one brings gray shale (Energy?) against the coal. No drag in the coal, but the gray shale block is tilted about 15° to the east. The second fault brings gray shale against darker, laminated sideritic shale (Lawson). This fault has a gouge zone less than half a foot wide.

East of the faults are numerous N-S fractures dipping about 45° eastward in the Lawson Shale. West of the faults is a major roof fall which is cribbed above rail bars set into the ribs. This cribbing obstructs our view of the top of the coal, but we can see that the coal is much sheared.

Two entries north of this not accessible due to falls and water.

9.) Measured section in roof sequence east of fault:

Top- At Fault.

16' (est.) Shale (Lawson), medium-dark gray, firm, well-bedded, silty, micaceous, finely laminated, contains numerous regular bands and lenses of siderite. Lacks definite jointing. Lower portion more massive, and lacks sideritic banding. Grades into:

2.5' Limestone (Conant), medium-dark gray, fine to medium grained, hard, massive, composed mainly of fossil debris in finer matrix. Fossils include shell and crinois fragments and chain bryozoans.

0.4' Jamestown Coal Horizon, consisting of impure coal, dark gray carbonaceous shale,

and gray lenticular limestone, irregularly interbedded. Varies in thickness. Sharp contact:

1.1' Claystone, dark gray, medium-firm, highly carbonaceous with abundant plant debris, becomes harder and more calcareous downward, grades into:

9' Limestone (Brereton), medium-dark gray, fine-grained with abundant medium-grained fossil debris, including shell and crinoid fragments. Hard, massive, slightly argillaceous, with faint lamination in some zones. Lower part somewhat nodular. Grades rapidly to:

2.9' Shale (Anna), black hard, smooth, fissile, except in upper 0.4' or so which is not fissile. Numerous concretions with pyrite rims. Lower contact knife-edge and undulatory. Prominent 055° jointing.

16' (est.) Shale (Energy), Medium-dark gray, firm, poorly bedded, silty, contains occasional plant fragments and small pyrite nodules. Abundant discontinuos siderite bands in lower half. Unit probably varies in thickness. Sharp even contact:

8' (est.) Coal (Herrin-No. 6)

54' Total, which should equal displacement on the fault.

Note that this is necessarily a composite section measured along a graded entry several hundred feet long. The thicknesses of most of the units, especially the Lawson and Energy Shales, are only rough approximations. It is nearly impossible to take accurate thickness measurements in a gently sloping entry.

10.) Unconformity within Energy Shale. Upper 2-4' of the unit are darker and organic-rich, pyritic, and non-laminated, in contrast to the lighter gray finely laminated shale below. The upper dark shale lies in sharp contact with the lighter shale below and in many places the dark shale sharply truncates the lamination in the light shale. On close inspection the contact shows wispy interfingering of dark and light shale, the same as is sometimes seen at the Anna/Energy Shale contact.

The Anna Shale in turn overlies the dark gray Energy Shale with a sharp, in places pitted contact. Though this contact undulates slightly it does not appear unconformable.

In some places the dark and light Energy Shale phases grade into each other and the unconformable contact is lost.

Running out of time on this visit. See further notes from next visit.

John Nelson and Nick Keys 7/27/77 Notes by J.N.

Continue mapping faulted area in 1-11 East South.

11.) Unconformities within Energy Shale not visible here. Unit is about 25 feet thick and is sharply overlain by Anna Shale with slightly undulating contact. The upper portion of the Energy Shale is massive and highly silty, almost a siltstone. The unit fines downward and becomes increasingly siderite. The siderite appears as irregular discontinuous bands and nodules in the upper part of the unit. These bands become very even and regular downward, and the shale becomes well-bedded and finely laminated.

The crosscut between Stops 10 and 11 has one of the most strongly developed "kink zones" I have ever seen. This is developed in the lower part of the

Anna Shale. North of the 8th E.S. the Anna has fallen away exposing the base of the Brereton Limestone which does not show "kinks".

10.) (Revisited) Unconformity within Energy Shale. Dashed line on map outlines area where this can be seen. The appearance of the unconformity varies considerably. In some places the contact is very sharp and distinct but elsewhere it fades out. Though the dark shale generally truncates the bedding of the underlying light shale at fairly high angles, the actual contact is not a knife-edge in most places. Instead wispy interfingering occurs along the boundary, and small inclusions of dark shale can be found in the light shale.

In this area the bedding of the Energy Shale shows large gentle troughs and crests, with local pinch-out and truncation of silty laminae, within the light gray shale.

The upper dark gray Energy Shale clearly is distinct from the Anna Shale. The Energy Shale is much siltier and lacks fissility. The Anna overlies it with sharp undulating contact. However, the dark gray Energy Shale may represent some kind of transition from Anna to Energy.

Large oval concretions are found in both dark and light Energy Shale. They are up to a foot long and are composed of hard, dense, very fine-grained limestone. Some are pyritic. They contain small fossil shells including small gastropods of a type almost never seen in Anna or Energy Shale. They also contain septarian fractures filled with calcite.

12.) Very unusual sedimentary structure within the Energy Shale along the dark/light contact. See sketch and photos (over).

The feature is an irregular sacklike intrusion of dark gray shale down into the light gray shale. The intrusion is about 2.0' deep and 1.8' wide at its

widest point. The sides of the intrusion are sharp, irregular boundaries that truncate the bedding or lamination of the light gray shale. These contacts are not slickensided, though one small slip fracture occurs at the upper south side of the intrusion.

The filling material is different from the rest of the Energy Shale and more closely resembles "bastard limestone". It is dark gray, poorly bedded, faintly laminated calcareous shale with abundant fine shell debris. A few small coaly inclusions are present. Above the top of the intrusion are numerous large irregular nodules or concretions of hard, dense fine-grained limestone. The calcareous filling material grades upward and laterally into non-calcareous dark gray shale.

Lamination in the host rock is bowed down slightly at the sides of the intrusion (see sketch). Faint lamination within the intrusion lies nearly horizontal. There is no apparent deformation or disturbance of lamination either in the intrusion or in the host rock. This seems to rule against the feature being a true intrusion (clastic dike) with the dark gray shale squeezed or forced in from above. If this had happened there would be considerable deformation of bedding.

Small rounded inclusions of dark gray calcareous shale are found in the medium gray shale near the "intrusion".

It is difficult to guess how this structure was formed. As noted above, absence of deformed lamination rules against it being some form of clastic dike or load feature. Anything formed by an animal, such as a shark's nest, also would show deformation. It cannot be a replacement feature because of the interruption of bedding at the sides of the structure and in any case fossils are not formed by replacement.

The closest thing we have seen to this are "rolls" in Old Ben # 24 and Orient # 4. Some of these

"rolls" contain "bastard limestone" very much like the filling of the present feature. However, all "rolls" we have observed so far occur at the coal/roof contact; none have been observed entirely within the roof shale. And we do not know how the "rolls" formed either.

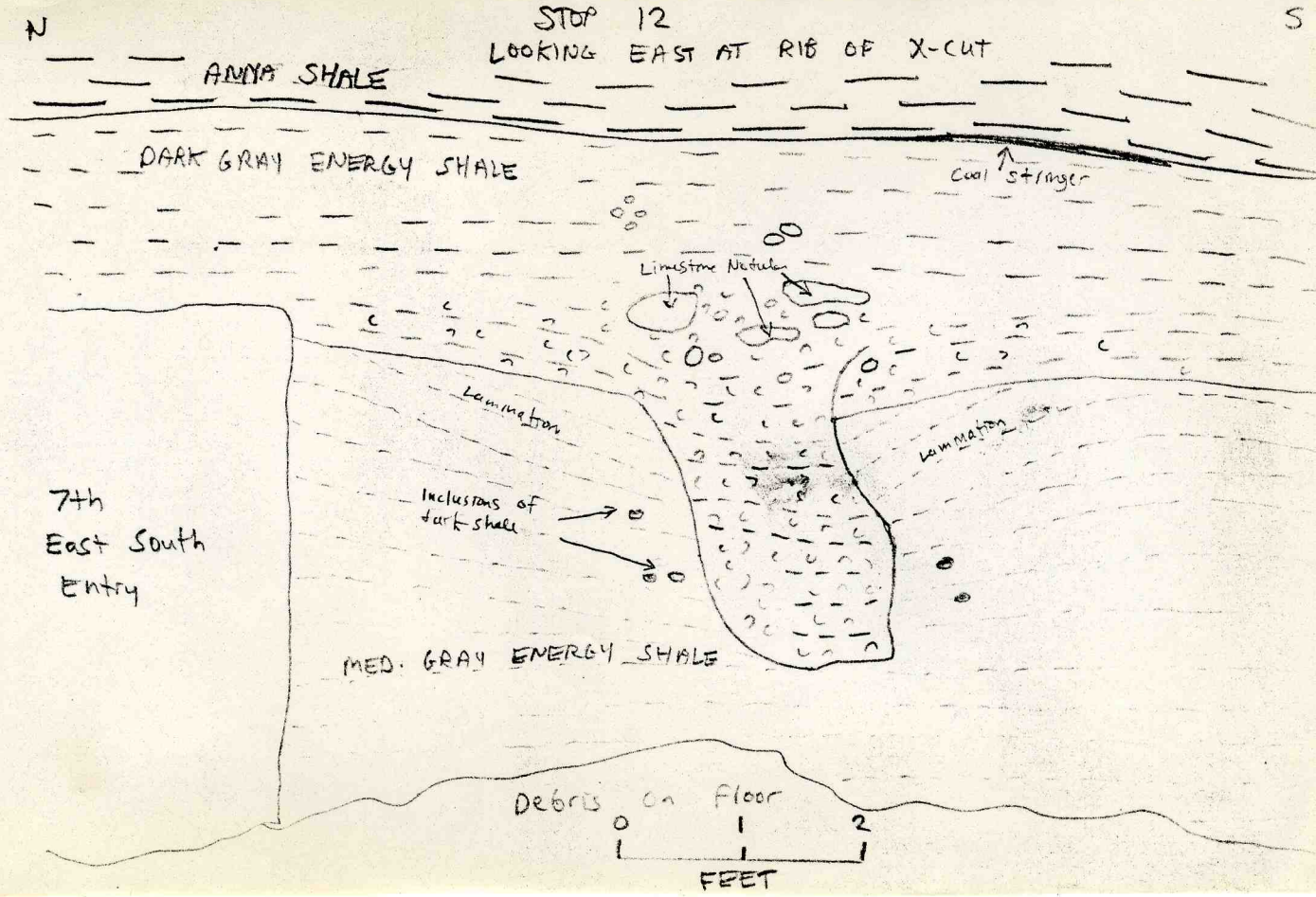
The best idea I can come up with at this time is that this feature is a small infilled erosional channel. In order to create the overhanging bank the channel must have migrated laterally to the north during the latter stage of its existence. The channel was a different environment within the Energy Shale and was suitable for marine organisms-or possibly these shells were washed in from somewhere else.

I believe the "rolls" mentioned above probably formed in the same way, but there are many puzzling features in "rolls" and in the present structure. It may be some time before we can come up with a unified theory to explain their origin.

13.) Small slips mapped in this area appear to be soft-sediment features not related to Rend Lake Fault. They show up to 1 foot displacement at the top of the coal, but steepen and die out downward. Very complex mineralized "goat beards" are seen. Some are associated with small "rolls" in the gray shale.

Falls block access to fault zone in two north return-air entries.

Note that we did not cover the entire map area on these two visits. Our purpose was not to prepare a complete map of the fault zone, but rather to see how this fault zone compares with others we have mapped in detail (at Old Ben # 21 and # 24).


N
STOP 12
LOOKING EAST AT RIB OF X-CUT
S
ANNA SHALE
DARK GRAY ENERGY SHALE
coal stringer
Limestone Nodules
Lamination
Lamination
Inclusions of dark shale
7th East South Entry
MED. GRAY ENERGY SHALE
Debris on floor
0
1
2
FEET

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

Surface works of Old Ben No. 26. Photo by John Nelson, March, 1981.

Image mn_03a_052.tif

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

Old Ben Coal Co. Mine No. 26 Franklin County
Feb 10 & 11, 1982

Notes by Steve Danner on a visit with Phil DeMaris and Rich Cahill to Mine No. 26. The purpose of the visit was to map an area of black shale roof on the east side of the mine, and to collect two channel samples of coal. Our guide was Jim Minton, Chief Surveyor at Old Ben's Benton office.

Channel Sample No. 1 (C21721)
Location: 745' from South line, 1785' from West line, Sec. 27, T.5S., R.2E., Franklin County. In-mine location: 7590' inby 12th East Entry off Main South, SW corner of intersection.

Roof: Shale-(Anna) dark gray to black, hard, brittle, smooth, very finely laminated, almost appears massive; numerous phosphate bands up to 0.1' thick; several concretions up to 1.0' in diameter; shale is jointed in part, with a spacing of 0.3 to 0.5' between joints. Concretions have oxidized or pyritic rinds. Several slip fractures with slickensides are present. No visible fossils. Sharp, but uneven contact with coal.

0.10' Top Coal: unsampled; appears NBB.
1.07' Coal: NBB, Black, hard, moderate cleat development; calcite on cleat and in thin vertical fractures; very little pyrite; approx 25% vitrain, bands average .01' thick, max .03' thick; fusain thin banded, approx 10%; approx 60-70% clarain, thin banded; occasional thin bands of durain.
0.02' Shale: med to dark gray; heavily pyritized locally; variable thickness.

1.49' Coal: NBB, similar to above; more pyrite than above, occasionally in goatbeards; several fusain lenses .02' thick; prominent vertical fractures filled with calcite.

0.05' Durain: dull sheen; variable thickness, intermittently continuous; interfingers with bright coal.

0.81' Coal: NBB, similar to above; predom. thin banded; calcite prevalent; more pyrite than above; contains one durain band .03' thick near middle of unit.

0.10' Fusain: satin lustre; soft and friable; lenticular. (phyteral)

0.98' Coal: NBB, similar to above; contains pyrite goatbeards, and several vert. fractures up to 2 mm wide; passes thru edge of fusain lens 0.74' from top of unit, that changes laterally to a vitrain band(s) 0.06' thick. (phyteral)

0.03' Fusain & bright coal: interlaminated; fusain is soft and friable; band is discontinuous.

0.72' Coal: NBB, similar to above; calcite and pyrite still prevalent; thin banded overall; less vitrain than above; approx 15% fusain; mostly clarain.

0.17' Durain: dark gray to black; variable thickness; contains fine streaks of bright coal.

0.72' Coal: NBB, similar to above; well developed cleat; much calcite; less pyrite than above; one vitrain band .09' thick, 0.24' from top of unit.

0.10' Shale:(Blue Band) med to dark gray, smooth texture; lower contact fairly sharp; upper contact irregular; occasional stringers of bright coal and pyrite. (Excluded from channel; sampled separately)

1.73' Coal: NBB, similar to above; harder than above, cleat less developed; calcite still prevalent; yellow oxide coating locally; occasional thin lenses of fusain; coal interlaminated with shale and pyrite near base of unit.

Floor: Claystone- med gray with dark gray mottling; moderately soft; some carbonaceous debris; slightly silty; slickensided. (Sampled)

Total thickness of coal: 8.09'

Channel Sample No. 2 (C21722)
Location: 460' from South line, 2080' from West line, Sec. 27, T.5S., R.2E., Franklin County.
In-mine location: 7905' inby 14th East Entry off Main South, NW corner of intersection.

Roof: Shale-(Energy) med gray, mod hard and brittle; smooth texture; slightly carbonaceous.

0.74' Coal: NBB, black, moderately hard, thin-banded; approx 10% vitrain, 0.01' maximum band thickness; approx 85% clarain, very thin-banded; very thin, golden brown layer of clay on many banding surfaces, not apparent in cross-section; well-developed cleat with much calcite; fine pyrite on banding surfaces; less than 5% fusain.

0.01' Fusain: silver-gray, soft, friable, silky lustre; has a patchwork appearance. (.005')

0.75' Coal: NBB, similar to above: calcite and kaolinite present on well-developed cleat; occas pyrite goatbeards 0.1-0.2' long; fusain lenses up to 0.02' thick.

0.03' Fusain: silver-gray, soft, friable; contains fine lamina of bright coal; grades laterally to clarain.
0.47' Coal: NBB, similar to above.
0.17' Coal: three durain bands 0.05' thick, separated by two bands of bright coal; intermittently continuous.
0.14' Coal: predominantly clarain.
0.04' Durain: contains streaks of bright coal.
0.83' Coal: NBB, similar to above; predominantly thin-banded clarain; contains streaks of pyrite and pyritized shale; occasional pyrite goatbeards; pyrite more prominent than in above units; contains two thin fusain bands.
0.06' Durain: contains occasional streaks of bright coal.
0.25' Coal: NBB; mostly clarain with several patches of fusain; one vitrain band 0.02' thick, average 0.01' thick.
0.025' Durain: dark gray to black, dull lustre.
1.22' Coal: NBB, similar to above; predom thin-banded clarain; one vitrain band 0.06' thick, 0.7' from top of unit; moderately developed cleat containing pyrite, calcite, and kaolinte; several thin durain bands visible; one pyrite nodule excluded from sample.
0.04' Durain: dark gray, mod hard, contains streaks of bright coal; fairly continuous.
0.41' Coal: NBB, similar to above; moderate cleat; calcite, kaolinite, and pyrite still prevalent.
0.03' Durain: dark gray; fairly continuous.
0.58' Coal: NBB, similar to above; mostly clarain.
0.15' Durain: contains two vitrain lamina; grades laterally to fusain and durain.

Old Ben No. 26 page 5

0.82' Coal: NBB, similar to above; much pyrite and calcite, a little kaolinite; several vertical pyrite goatbeards extend full thickness of unit; contains one fusain lens 0.05' thick.

0.07' Shale: (Blue Band) med dark gray, mod hard, smooth texture; carbonaceous in part; mod sharp contact above and below. (Excluded)

1.97' Coal: NBB; predominantly clarain; 5-10% vitrain; 5-10% fusain; much calcite on cleat; contains one large pyrite and fusain lens 0.15' thick, 0.7' from top of unit; sharp contact with underclay. Pyrite lens excluded from sample.

Floor: Claystone- med dark gray, mod soft, friable, slightly silty, very slickensided; contains carbonaceous debris and occasional streaks of bright coal.

Total thickness of coal: 8.80' (8.79' tape-checked)

The following notes were made while mapping the roof in the 12th East thru 18th East entries off Main South, in the SE¼ SW¼ Sec. 27, T.5S, R.2E, Franklin County. The stops correspond to locations marked on Phil DeMaris's mine works map.

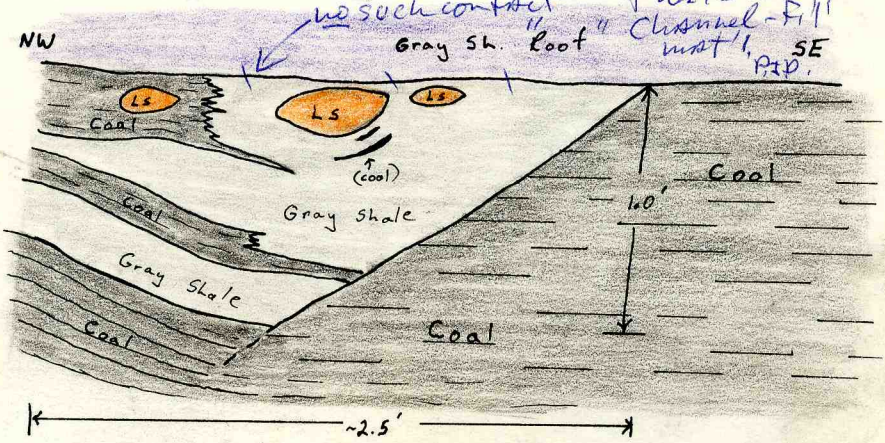
Stop E: Exposure of black shale roof. Most of the immediate roof in this mine is the gray Energy shale, so an exposure of the black Anna shale is a rare find. This patch of Anna is roughly six feet in diameter and located in the center of the entry. The contact with the underlying Energy is covered by top coal. The Anna shale is dark gray to black, hard, brittle, smooth textured, very finely laminated, very carbonaceous, and slickensided. It contains numerous light colored bands (phosphatic?) up to 0.1' thick, as well as several concretions up to 1.0' in diameter. The concretions are a medium gray with a darker oxidized rind. There are several small patches of "jointed" shale with a spacing of 0.3'-0.5' between joints. No visible fossils were found. This exposure is about 20-30' from sample site #1. Samples of roof are collected.

Stop H: Exposed roll in rib. We have tracked this NE trending roll across three entries and this is the best exposure. See sketch. The roll is about 3-4' wide and displaces about one foot of coal at at its lowest point. The right side of the structure is terminated by a slip fracture about 2.5' in length. The coal along this fault shows no signs of drag, the banding is terminated sharply. The roll materials consist of mostly a gray shale (Energy?), some bright-banded coal, and a bastard limestone. The shale is not very different from the roof rock. The coal in the roll interfingers with the shale, and shows a curving, or bending, of the coal laminations(bands), especially near

(cont. next page)

the base of the structure. Several thin stringers of coal are isolated within the shale. The bastard limestone is a medium gray to med dark gray micrite containing numerous fossil shell fragments. Although very argillaceous, crystals of sparry calcite are in evidence. There seems to be no preferred orientation to the shell fragments. The blocks of limestone are isolated within the shale or within the rider coal. No bedded ls is visible.

Sketch of roll at Stop H:



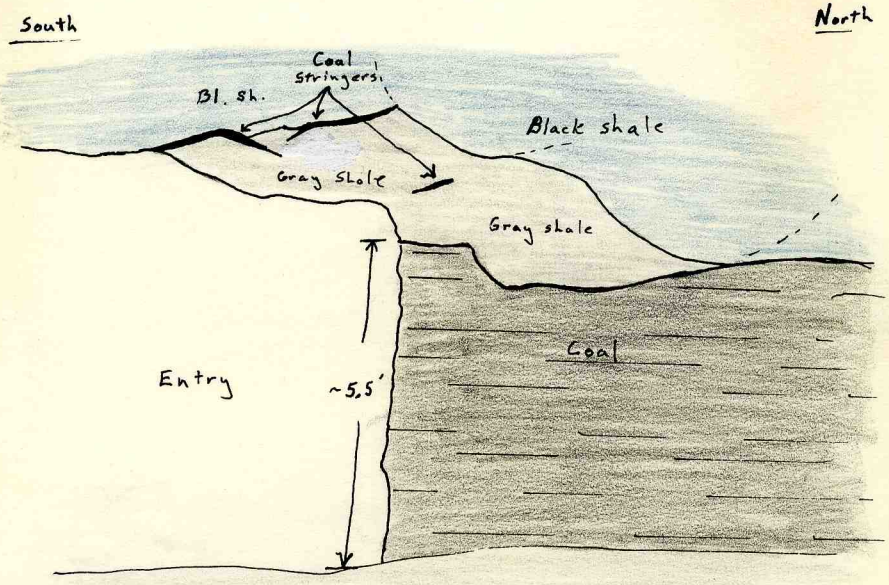
Stop O: Coal balls and bastard limestone. Here we find several small, elongated coal balls in the coal, just below the coal-roof contact. About 0.3' below the coal balls is a block of bastard limestone. The ls is very fossiliferous and contains stringers of bright coal. There is much pyrite along the coal-roof contact, in patches, streaks, and nodules.
The roof is a med dark gray shale, darker than most of the Energy shale in this mine. It may be a facies of the Anna shale.

(cont. next page)

The bastard limestone is medium dark gray, fossiliferous, and very argillaceous. In fact, it could be considered a calcareous shale, or clod. The coal below these anomalies is riddled with calcite filled, vertical fractures. Also, much calcite on cleat.
The coal balls are a medium brown, pyritic, hard; peat preservation is poor.
Samples of limestone and coal balls were taken by P.J. DeMaris.

Stop Q:

Sketch from Stop Q.

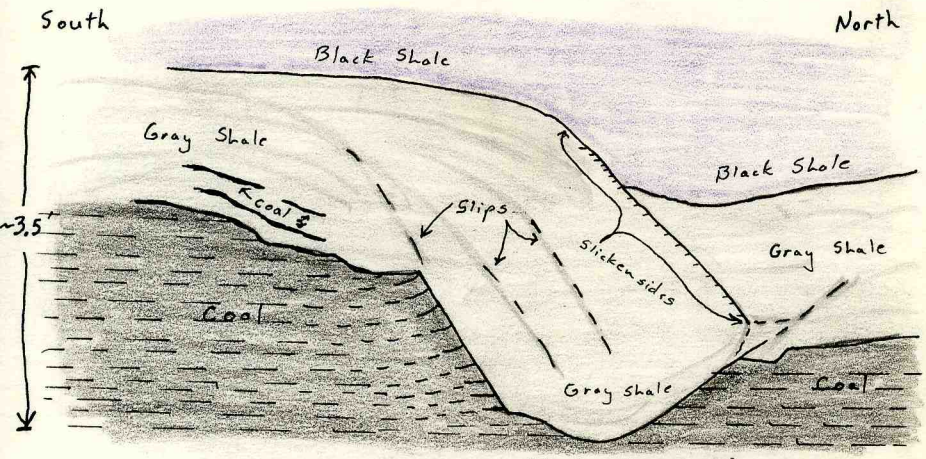


Gray shale roll under black(Anna) shale roof. The roll material is a medium gray shale/claystone that has weathered to a sulfur yellow color. It is mod soft, and appears prone to slaking. It contains several stringers or small coal riders. Numerous signs of soft sediment deformation. Top of coal appears eroded. The contact between the black

(cont. next page)

shale roof and the roll material is often slickensided, or marked by a thin coal stringer. The black shale is hard, brittle, laminated, and slickensided. There are numerous joints trending N75E, as well as many concretions and slip fractures. The roof appears hard to hold because of all the intersecting slips and joints. The blue-gray oxidation, so characteristic of the Anna, is omnipresent.

Stop P: (one entry west of Stop Q) Exposed gray shale roll on rib. Conditions are similar to those at Stop Q, black shale roof, eroded coal, and deformed gray shale roll with coal stringers. There is a noticeable bending of the coal lamina (banding) where they encounter the roll. They are nearly horizontal near the bottom of the roll, but tend to curve, or bend upward near the top of the seam. As before, much of the contact between the roll material and the roof rock is slickensided. Much of the gray shale has weathered yellow. A sketch of the structure follows:



(End of notes)

John C. Moore Corporation, Rochester, N.Y. 14604
MOORE'S MODERN METHODS
FORM 180 W p.1 of 12, plus 2 maps

Mine Notes-Old Ben No. 26-Franklin Co.

Trip — Feb. 10-11, 1982 by Rich Cahill, Steve Danner and Phil DeMaris (notes). Escorted underground by Jim Minton, Chief Surveyor.

Coverage — Introduction
Sampling and mapping on 12th-20th E.S. Mains
Short summary
Samples: OB26-A-1 to 26
(Last samples for O.B.24 Contract Report)

Introduction

Purpose of this trip is to get last samples needed for geochemical analysis on Old Ben No. 24 project, since O.B. 24 is closed (idle). We went to the extreme S.E. corner of the mine which is about 1¼ mile from the north end of main study area in O.B. 24. After confirming that we have the "transitional" roof type here, we will take channel samples (and respective roof samples) under both Energy and Anna shale roof, and get fresh samples of channel-fill material, etc. "C" Portal is where we entered, on S. side of mine.

While we were being briefed, I recorded information on Longwall panels. First panel (600' wide) was on N. side of mine (in Sec. 26) and is mined out. 2nd panel (in Sec. 34 between 36th and 37th S.) is about ½ done; at the north end it was narrower (100'?)-they truss bolted the entries and plan to mine through it. There is a 3rd panel laid out next to the 2nd, which is now being developed, and another panel is planned alongside if the N-S fault is far enough East. On the north side there is a short, but wide panel planned: 681' wide and running from 1885' (set up) to 294' (probable stop) or about 1590' length.

I spoke to Mark Cavinder-he said there were coal balls in O.B. 27 just into the N. Mains; 4-6 c/c in on 8th-10th N. Mains. They cut (slowly) through it; he said "it cost (them) a ripper head" to get through it.

 p 2 of 12, plus 2 maps

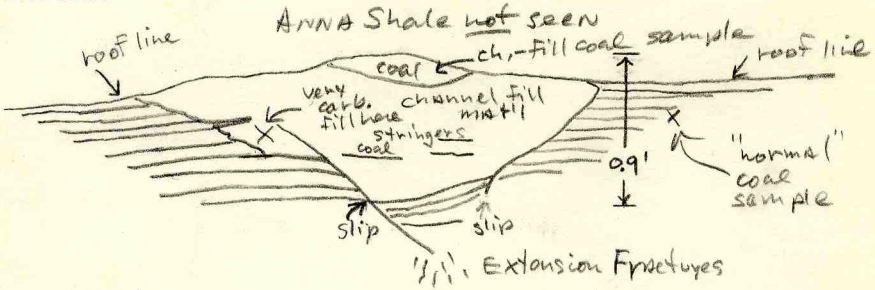
Sampling and mapping on 12th-20th E.S. Mains

Area examined is at "end" of E.S. Mains, which are currently just past the 42nd N. entry; coal locally has fractures called "goat beards" by Keyes and Krausse which were found near major faults (Rend Lake Fault System) in O.B. 24. We checked at face (8100' E. is maximum plus)-fault has not been encountered. See Field Map A.

Site A. Very dark gray shale (Anna)-thought it was dark Energy at the time-sampled (-A-1).

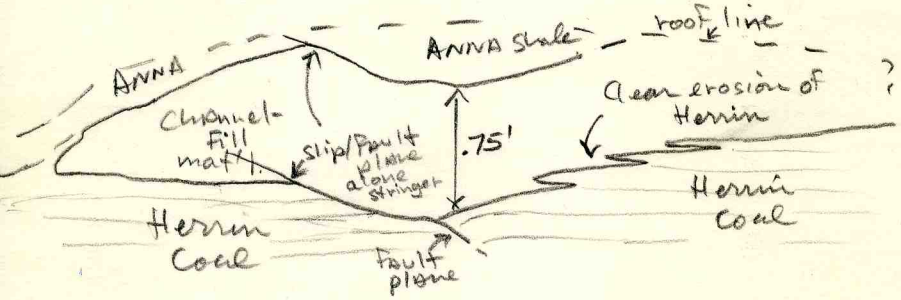
Site B. Roof light-medium gray shale (Energy)-1" thick coal stringer up 0.4' to 1.0' above Herrin. (In retrospect, very thin Energy and Anna above just to N., this could be channel-fill material). Danner finds brachiopod (possible pectin), a few plant compressions also present, including Lepidodendron.

Site C. Erosional channel ("roll") cut 0.9' minimum into Herrin; coal ball under it (O.B. 26-A-4) sampled. Channel-fill material is weak shale (sulfates have weathered out) with coal stringers and probable Allochthonous coal capping the fill. Expected Anna roof not seen and exposure laterally ends in top coal as well. Top coal (-A-2) and coal above fill (-A-3) sampled. Sketch:



Site D. Deepest point in very wide "roll" (erosional channel) showing clear erosion of Herrin peat

here, but totaling less than a foot. Several low angle (about 20° dips) faults in channel-fill material, several following coal stringers. Sketch from N. rib:



Moving from site D. west to E., weathering of channel fill materials has exposed almost continuous exposure of channel fill material which is easily mistaken as a roof type-no true roof seen between the two sites.

Site E. Best exposure of Anna roof in vicinity. Slightly over 1' seen and it has A/C's, several of which (smaller ones, generally) have bioturbation "tubes" as their core; a couple more typical disk-shaped Anna concretions up to 1' across also seen. Section described:

1.10' Anna Shale, banded, not fissle, some low-angle slips, calc./apatite band @ 0.4' above contact, 0.2' coal stringer @ 0.5' above contact. Contact sharp w. local bioturbation/deformation on contact

.30' Channel-Fill material (reworked Energy Sh), dk. gray w. coal stringers, some as lenses 0.6' long.

~1' top of Herrin Coal with coal balls, generally small

Site F. Coal description, channel sample, and other samples taken here (-A-6 to -9). Column:

ANNA shale roof, sharp contact to HERRIN (-A-8)
← top .1' obscured by roof dust

1.17' coal NBB, well cleaved, numerous calc.-filled fractures MAX. vitrain band .03', average .01'. Finely banded fusain, clarain uniformly banded.

.02' shale band, med/dk gray, variable thickness, locally heavily pyritized

1.49' coal NBB, sim to above, occasional "goat beard", more pyritic than above, occasional .02' fusain lenses (more than top bench), prominent vertical fractures

.05' bone band, variable thickness, with vitrain interlaminations at contact

.81' coal NBB, similar to above, predominantly thin banded, lots of cleat calc., more pyrite than above bench, .03' dull band

.10' fusain lens, little mineralization, appears (near middle to be fusainized stem (phytoral)

.74' coal NBB, sim to above, pyr. goat beards + vert fracts.

.06 fusain lens, common edge of fusainized lens (phytoral).

.18' coal NBB

.03' fusain lens, edge of fusainized lens, grades laterally to vitrain band

.72' coal NBB (SBB?), sim. to above, thin banded, less vitrain than above, clarain + fusain predominate

.17' bone band, dk. gray to black - fine bright coal stringers, unbanded, variable thickness.

.72' coal NBB, sim. to above, strongly cleated + much calcite, less pyrite than above, one vit. band .09' thick, 0.24' from top of bench.

.10' shale band, "blue band" (excluded) med. to dark gray w. vit. stringers, smooth texture; lower contact fairly sharp, occasional thin pyrite. 0.14'. (A-7)

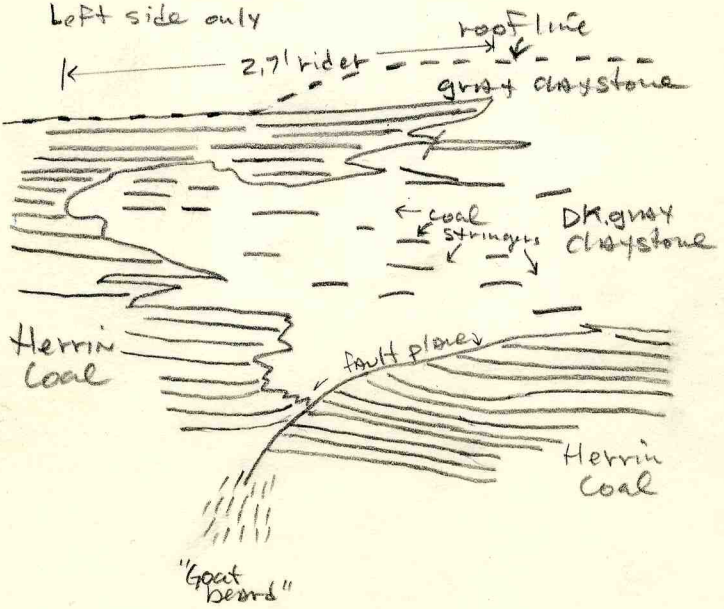
1.73' coal NBB, yellow oxidized in part, less cleat than above + harder than above, clarain rich, shale + pyrite interlamination in bottom 0.10', occas. small fusain lens.

TILL Claystone, med. gray with dk. gray mottle, slickensided, moderately soft, root(?) debris, slightly silty. (-A-6)

T = 8.09'

[See Donner desc. For more details]

G. Found linear "roll"-thought it might be of deformational origin, but no roof (certain) or tidal material was seen. ~~Subsequent exposures at H (where tidal was seen.~~ Subsequent exposures at H (where tidal material was found) and at L & R confirm this as an erosional channel. Sketches:



H. Erosional channel continues with both well-developed tidal material ("Bs. Limestone") and up to 0.2' thick coal atop it on west side. Sampled tidal "limestone" in coal below channel (thought it was c.b.- is carbonate rich (-A-11); appears to have been deformed (or burrowed?) into place: odd mineralogy will be checked. Danner checks into c/c to west and samples more argillaceous tidal fill (-A-12). It appears that both the fossiliferous shale fill and the tidal limestone (both "Bs. Limestone") have been injected into the coal along bedding. The coal over the flanks of the channel fill (8-12' wide) looks normally bedded; apparently undercut in part.

J. Probable Anna roof (not fissile) over 0.9' thick Energy Shale; contact dips slightly toward site H.

K. Only 6" of gray shale (Energy) with Anna over it (about 2.0' Anna to base of Brereton); Energy/Anna contact is level here (not so seen in O.B. 24 by me) over the width of the entry-only slight bumps on contact.

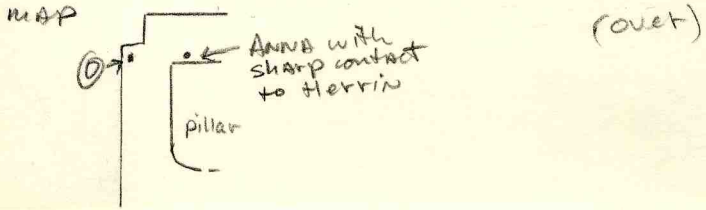
L. Cleat calcite sampled (-A-14) here in fault effected area i.e. extension fractures ("goat beards") and in-seam low/angle slips, one displacing blue band 0.2'.

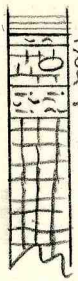
Day 2

M. Visited freshly mined area (40th-42nd N. to ~360'N.). Topographically high area with no certain roof exposed. Considered "roll" here running E-W to be of deformational origin because low angle slips push medium gray shale (Energy?) with coal rider (appearing autochonous) into top of coal. No verifiable coal loss, no typical roll-fill lithologies seen, and no Anna seen to 1' above Herrin.

N. Next c/c north roof is still lt.-medium gray shale, with lots of plant compressions; disturbed contact and pyrite nodules present. Probable pyritic coal ball in coal rider. Slips common in bottom 1½' of the roof.

O. At corner about 360' N. on 40th N. there is Anna Shale roof with a sharp, level contact to the Herrin. On the west rib there is a limited exposure of an unusual sequence of units. "Bs. Limestone" has been bolted up under top coal with coal balls (Rich takes picture) Anna sampled (-A-15). Section:





Unusual exposure, prob. due to lateral injection of Bs. Ls. along peat bedding from channel.

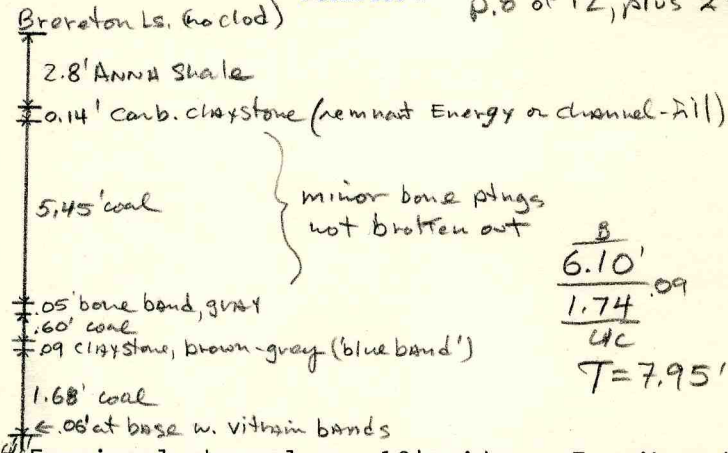
O. South At about 265' N. Anna Shale roof was seen. At about 200' N. Anna was again roof; sharp contact present and locally "Base Limestone" seen on the Herrin, reaching 0.3' thick and being quite crystalline (-A-16A). Anna is dark gray and tough. At next crosscut south there is medium gray shale roof, with plant compressions and thin riders to ½' up. On W. rib here there is Anna roof; Anna core. Sampled (-A-16B)

P. East Fresh cut overcast site, heavily dusted. Believed it to be 4' thick Energy (as at base), but after getting ladder I found that there was only 1' of Energy Shale with coal stringers, with sharp contact to Anna Shale which is well-jointed unit and about 2½' thick. The stable unit at the top is Brereton, which is visually confirmed by limestone-filled, pyrite-edged "tubes" in the top of the Anna. Sampled Anna (-A-17), Energy (-A-18), a chip of a probable coal ball (-A-19), and the "blue band" (-A-20).

P. West On the other side of the overcast (about 60' away-see Danner's notes) there is only remnant Energy or perhaps even "roll-fill" material below the Anna roof. Simplified section:

(over)

p.8 of 12, plus 2 maps



Q. Erosional channel ca. 10' wide on E. rib under Anna roof with Anna concs. from 0.6'-1.0' diameter. Channel as mapped across 3 entries is biased toward where thickest fill is-weathering shows the flanks to be wider. Nice 3'+ long under cut and deformational rider on the NE side. Thickest fill is 1½' with large knobs of "Bs. Limestone" with compactional faults around them; fill is medium gray mudstone with coal fragments-sampled (-A-21). Coal clearly eroded, but channel is a maximum of 1½' below normal top of Herrin. Channel-fill material is all weathered Canary yellow. Odd concretion (-A-22) sampled from fill. Cleat calcite (-A-23) under channel fill sampled on 37th N. (western-most entry), as well as pyrite-rich coal (-A-24) and Anna roof (-A-25).

R. Erosional channel "right on target" as predicted from Site G., examined yesterday. Exposure wide on NE rib corner (ca. 15') with large "bs. Limestone" spheroids, one held up by roof bolt. Anna roof seen ca. 20' to east (but not exposed at corner) as well as remnant Energy Shale lense 0.4' thick, ca. 3' long.

S. 2nd channel sample site (C21722)-well fractured coal. Description of column done here-only other sample was of Energy Shale roof (-A-26 and C21764).

S, cont'd

Energy, med. gray, moderately carb. (1½' min.)

.74' coal NBB, thin banded, clarain predominant, w. well-dev. cleat, much calcite. Little fusain.

.005' fusain

.75' coal NBB, sim. to above, calcite + goat-beards .1 to .2' long; occas. fusain lenses (.02' max. th.); kaolinite prevalent on cleat,

.03 fusain lens – grades laterally to clarain.

.47' coal NBB, sim. to above

.17' coal dull-banded

.14' coal NBB

.04' dull coal in bone band, appears local

.83' coal NBB, predom. thin bnd. clarain + streaks of pyrite and pyr. shale.

.06' bone band with vitrain streaks

.25' coal NBB, predom. clarain w. sev. "patches" fusain,

.025' bone band, sim. to above,

1.22' coal NBB, sim. to above; calcite + kaolinite prevalent, lg. pyr. nodule (excluded).

.04' bone band, w. streaks of vitrains.

.41' coal NBB, moderately cleated, calcite, kao. + pyr in cleats as above.

.03' bone band

.58' coal NBB, sim. to above

.15' bone band, w. two thin vitrain bands, laterally grades to bone with fusain.

.82' coal NBB, sim. to above; lns fusain lens, .05' max th, several pyritic "goat beards" through bench.

.07' claystone ptng. (excluded) med. gray, carbonaceous in part, (Blue band) Fair + sharp contacts above + below.

1.97' Coal NBB, predom. clarain, occ. fusain, much calcite on cleat. Lg. pyritized fusain lens .15' max th. excluded @ .70' down. Sharp contact to u/c.

u/c med dk. gray, friable w. carb. flags, + occas. vitrain streaks. [See Danner desc. for more details]

T = 8.80'

Short Summary

The roof here is very similar or identical to that at Old Ben No. 24. Only rough mapping is possible based on data gathered on this trip (see map B), but the map is quite compatible with areas mapped in O.B. 24. The two channel samples were found to have 0.5% difference in Total Sulfur and are 400' (±10' mapping error) apart. Further research should follow up on this difference and more dramatic findings in the R.A.C. at Orient No. 3-this was all judged "inappropriate" to report in the contract report.

Samples: Set A complete

OB26-A-1	Site A	Anna shale roof, very dark gray, slightly fissile — mistaken as as dark Energy.
-A-2	Site C	Coal next to erosional channel "roll" (control-for petrography)
-A-3	Site C	Coal over center of channel (for petrography)
-A-4	Site C	Coal ball in top coal below "roll" (eros. channel)-normal c.b. (cut).
A-5	Site E	Top coal coal-ball under broad eros. channel with thin fill, medium sized (C21758)
A-6	Site F	Underclay of Herrin sampled; light-medium gray claystone with carbonaceous Stigmaria and other root traces, slickensided, soft, slightly silty.
A-7	Site F	"Blue band" in oriented block, for radiograph, .08', but variable with thin pyrite band in it.
A-8	Site F	Anna shale roof over channel sample (C21759)
A-9	Site F	Anna Shale concretion (for SKD)
A-10	Site G	Cleat calcite for Tina Tsui
A-11	Site H	"Bs. Limestone"-injected? (in retrospect, or burrow-fill seems

more likely) into normal Herrin Coal (has odd mineralization reminiscent of sphalerite).

-A-12 Site H Tidal channel fill ("Bs. Limestone"); very argillaceous facies with lots of shells (C21760) forced along bedding.

-A-13 Site H Coal with thick vitrain band nearly 2 cm. thick (has very thin intertinite lenses internally)

-A-14 Site L Cleat calcite from fault disturbed area (Rend Lake F.)-lots of "goat beards" and blue band displaced 0.2' (for Tina Tsui)

(Day 2)

-A-15 Site O Anna shale over "Bs. Limestone"; thin channel-fill seq.?

-A-16A Site O(south) "Bs. Limestone" on Herrin/Anna contact, microcrystalline, argillacous with small shells (could be burrow-fill judging from piece sampled.)

-A-16B Site O(south) Anna concretion from roof formed on pyritized bioturbation trace above west rib. (C21761)

-A-17 Site P(east) Base of Anna Shale roof over thin Energy; Black, but non-fissile (mistaken for dark Energy), with vitrain sheets. (for XRD)

-A-18 Site P(east) Energy shale under Anna, weak medium gray, with vitrain stringers (for XRD)

-A-19 Site P(east) Small pyritic coal ball(?) from top coal

A-20 Site P(east) "blue band" gray-brown claystone-bulk sample for chemistry (C21762)

-A-21 Site Q Channel-fill material ("roll")-gray shale from 39th N. (C21763)

A-22 Site Q U/I pyritic nodule (fossil?) from

 p.12 of 12, plus 2 maps

channel-fill material

A-23 Site Qwest Cleat calcite under erosional channel. (Tsui)

A-24 Site Qwest Coal with pyritic "goat beard" (intense extension fractures)

A-25 Site Qwest Anna shale roof

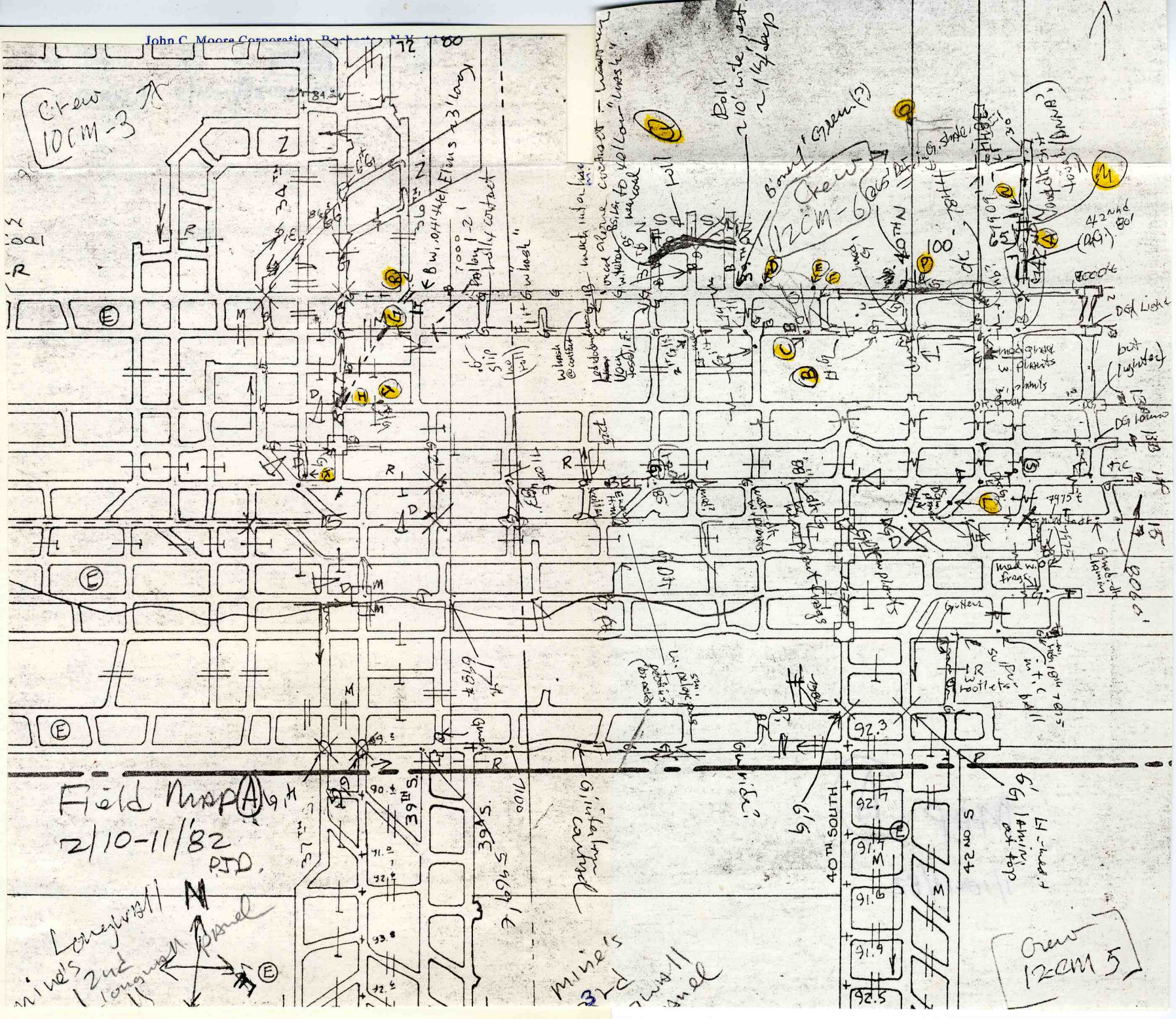
A-26 Site S Energy Shale, medium gray, carbonaceous. (C21764)

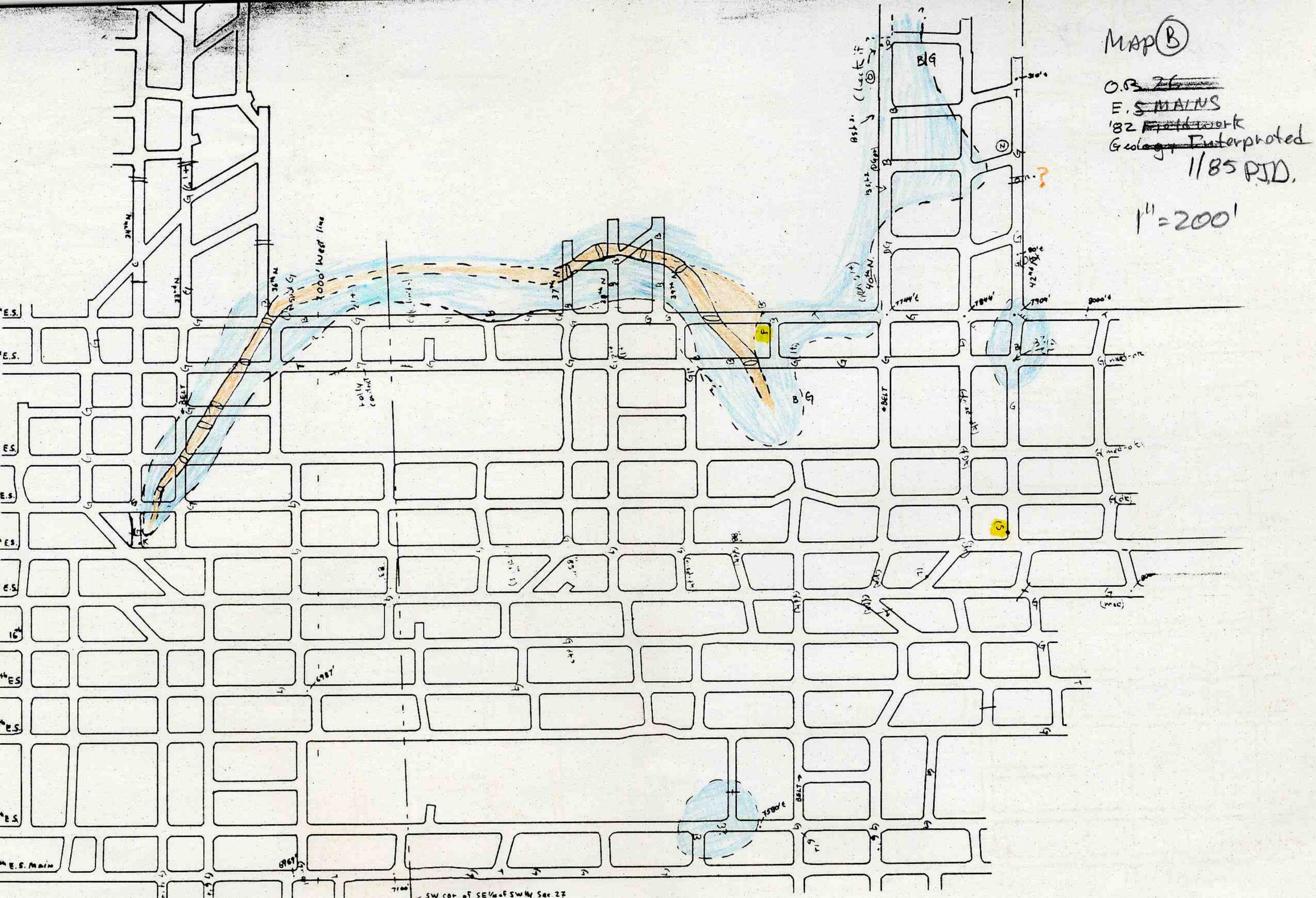
Channel samples taken on this trip (see Danner's notes) are:

C21721 Site F Herrin under Anna roof

C21722 Site S Herrin under Energy roof

Typed 1/30/85 for RJD.
(of 2/10-11/82 visit!)




Map B
O.B. 26
E.S MAINS
'82 Fieldwork
Geology Interpreted
1/85 PJD.
1" = 200'
2000' West line
40th N.
42nd N.
37th N
38th N
39th N
36th N
34th N
SW cor of SE1/4 of SW1/4 Sec 27
7580'E
7744'E
7904'E
8000'E
BELT
E.S. Main

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

Old Ben Coal Corp.
Mine No. 26

Franklin County
3/6/85

The following information was given to me by Jim Cambell, an exploration geologist with Old Ben.

For some time now the engineers at Old Ben Mine No. 26 have been aware of the fact that the mine's slurry pond is beginning to fill up. It appears that someone suggested that instead of building a new slurry pond, they simply empty the old one into one of the abandoned mines in the vicinity of Mine No.26. The logical choise was Old Ben Mine No. 16, which is immediately west of Mine No.26, and was abandoned in 1924.

In February of this year, Rector-Stone was contracted to drill a test hole down to Mine No. 16 at a location about 200 feet from the slurry pond. The mine was encountered at a depth of 642 feet. The tool dropped 5 feet after penetrating the mine roof. Initial air pressure was so strong that the blow-out protector closed immediately...Initial air flow was approximately 3,000 cubic feet /min. An air sample was analyzed and found to be about 70% methane. A caliper log was run; it revealed a sharp closure at the roof line. A neutron log indicated that there was about 3 feet of water in the mine.

The well is currently being vented. Soon they hope to plug the hole just above the mine, then ream out the hole and install casing all the way down to the plug. Once the hole is fully cased, they will drill out the plug and prepare for injection. A sled-mounted pump will be used to pump the slurry from the pond to the well. No doubt several other holes will be drilled for observation and injection.

S.K. Danner

A McGraw-Hill Publication

VOL. 14 NO. 26 June 27, 1988

COAL WEEK

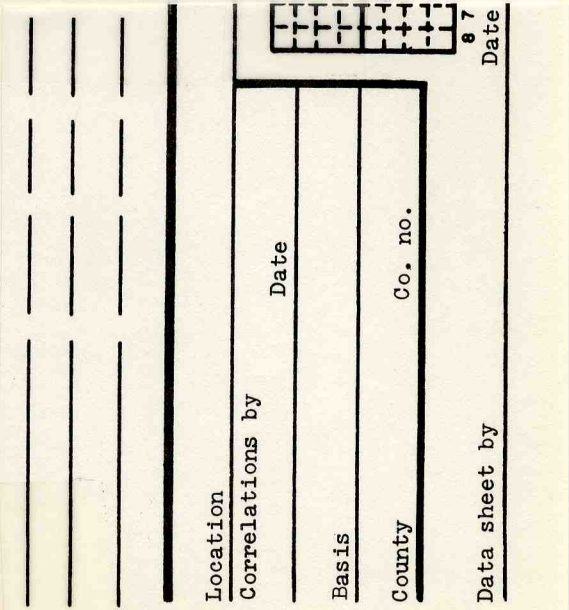
An Intelligence Service for Executives Covering US Steam Coal Prices, Markets, Politics & Economics

SPRINGFIELD MO TAPS OLD BEN FOR 2 YEARS; 1ST YEAR MINE PRICE $20.15/T, $20.85/T IN 2ND

Springfield MO City Utilities's board of directors has chosen Old Ben Coal Co. to supply its Southwest and James River power stations with a total of 300-500,000 tons of coal over the next two years. The FOB mine price of the coal, coming from Old Ben mines 24 and 26 in southern Illinois, will be $20.15/ton for the first year and $20.85/ton the second year.

The board last week rejected all bids which had been solicited on an additional three-year, 250-400,000 t/y coal supply contract which would have gone into effect April 1, 1990. A July 1, 1988 price escalation allowance on the three-year contract bid had been allowed, but the offers were rejected, a Springfield official said, when it appeared that vendors had escalated their prices (6-13-88 *Coal Week*) first and then re-escalated them on the July 1 basis.

Instead, Springfield expects to resolicit that coal in about a year. Burlington Northern Railroad deliveries of the Old Ben coal will begin as soon as possible, with first-year tonnage ending March 31, 1989, when the second year tonnages commence. Old Ben will supply an 11,700 Btu/lb., 2.7 percent sulfur coal, with other solicited specs being 9 percent ash maximum, 13 percent moisture maximum, 35 percent volatiles.



Company No.

Farm No.

Elev. of by Total depth Year drilled

For Method

Kind of records

Remarks

Strata	Depth	Elev.	Thk.	Remarks

Old Ben Coal Co.'s No. 26 mine in southern Illinois will continue for the next 19 months to be the sole source of coal for **Iowa-Illinois Gas & Electric Co.'s** Riverside generating station. In March, the utility invited 32 vendors in Iowa, Illinois, Indiana, Kentucky and West Virginia to make delivered price offers. Finally, Old Ben won out and began deliveries about June 1 via a **Burlington Northern/Davenport, Rock Island & Northwestern** arrangement. Deliveries will continue through 1989. The coal to be delivered is on specs of 11,700 Btu/lb., 5.4 lbs. SO2/mmBtu (2.7 lbs. sulfur/mmBtu), 13 percent moisture maximum, 8.5 percent ash maximum. The minimum tonnage to the Riverside peaking station is 150,000 tons this year and 125,000 tons in 1989.

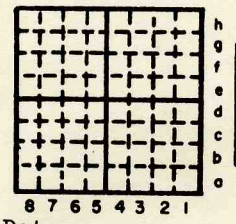
Franklin 5S 2E Sec 20

Location 1988

Correlations by Date

Basis

County Co. no.



Sec.

T. N. S.

R. E. W.

Data sheet by Date

COAL WEEK, Vol. 16 No. 31 July 30, 1990

ZEIGLER CONCLUDES OLD BEN PURCHASE; B CANYON DROPPED, PRICE AT $95 MILLION

Zeigler Coal, became Illinois's largest coal producer last week by acquiring nearly all of British Petroleum's remaining coal operations in the US.

The previously announced purchase price for BP properties Old Ben and Franklin Coal, a holding and sales company, was $115 million, but it was reduced just before the sale closing (see related story page 2). Sources said the final base price was $95 million with an additional $10 million to be paid by Zeigler if it reaches undisclosed production levels.

Zeigler president Michael Reilly predicted his privately-held company's leaner managerial approach would boost operations at Old Ben mines in Illinois, Indiana and West Virginia. "In a year, you're going to see a big difference in Old Ben," Reilly told *Coal Week*. "It will be a lot more efficiently run." Old Ben's office in Cleveland will be closed within a few months and layers of management are being trimmed up and down the corporate hierarchy.

Combined Illinois offices at Benton

Zeigler plans to combine the current operations office for its three southern Illinois mines with Old Ben's Benton IL office, which had responsibility for four mines. The two former Old Ben mines in Indiana and Mine 20 will be grouped together.

Despite last week's announcement by a southern Illinois politician, Reilly insisted that no decision has been made to reopen the Old Ben No. 21 mine, closed since the end of March. No. 21 coal is "several dollars a ton" higher than what Zeigler can sell it for a profit, he said. "We have to find a way to get that cost down." Sources told *Coal Week* the BP-Zeigler sale agreement contains an option that could serve as a disincentive for the reopening of No. 21. "If Zeigler doesn't operate 21, they don't pick up some of the liabilities associated with the closing of 21," a source said.

Most Old Ben employees to stay on at Zeigler

Reilly said the "vast majority" of Old Ben and Franklin Coal personnel would stay on with Zeigler, but he didn't provide any numbers. According to sources, about 15 people at Old Ben's 80-person office in Cleveland were offered positions with Zeigler. At Old Ben's Benton office, 17 or 18 people were terminated, including high-ranking officials. The fewest cuts came in the coal sales group.

Reilly said his immediate goal is to "mine everything we can sell." He hopes the combined operations produce about 18 million tons a year. Zeigler has produced about 4 million tons a year and Old Ben about 14 million tons. Long range, Zeigler wants to continue growing. Said Reilly: "I'd like to expand in the West and expand in the East, but not this month."

Zeigler 26

Post-Dispatch
8/21/90 p.9C

88 Are Laid Off At Zeigler Coal

Nearly 90 workers, mostly miners, were laid off Monday by Zeigler Coal Holding Co. at two mines near Benton, Ill.

The layoffs numbered 47 at Mine 26 and 41 at Mine 24. Zeigler bought the mines about a month ago from Old Ben Coal Co. The two mines had employed 730 people prior to the job cuts.

"The jobs were cut because the manning was more than was really needed," said Michael Reilly, president of Zeigler. "In order to operate the mines in a competitive manner, the way Zeigler operates other mines, the manning had to be reduced."

Zeigler acquired three operating mines in Illinois from Old Ben, plus another mine that was closed, plus two mines in Indiana and one in West Virginia.

Reilly said the company would like to open the closed mine but had not yet determined whether that was feasible. He said further layoffs might occur as manning is studied.

"We would like to take a positive step and reopen the closed mine, but that decision has not been made at this time," he said.

John C. Moore Corporation, Rochester, N.Y. 14604

FORM 180 W

SAMPLE HISTORY

Plant sampled: **Old Ben No. 26** Date: **Nov. 18, 1992**

Company: **Old Ben Coal Co.** Sample ID: **OLDBEN26 C32803**

David M. Young, President
500 N. DuQuoin, Benton, IL 62812
Div, Zeigler Coal Company

Company representative: **Bill Tate and Chris McCann**

Mine (source of sample): **Old Ben No. 26** Collected by: **Wayne T. Frankie**

Seam identification: **Herrin No. 6** Time of closure:

Mining period represented (dates):

Panel(s) & location(s) in mine: **Mining consists of 2 continuous mining units and one longwall.**

Mine locations (descriptive):

¼ or footage section twp rge

Franklin

Type of Preparation Plant: **built in 1987 by Norton Hamilton Inc., Combination heavy media and wash box, one circuit no A and B side. Plant rated at 1500 tons of raw coal per hour, the have run the plant at 1300 to 1400 tons per hour. At time of visit they were running the plant at 1000 tons per hour. Plant reject 24 to 27 percent normal, at time of visit reject was running at 32 percent.**

Sampling point: # increments:

Belt (describe position in plant) **sampled at train load-out**

Train Truck

Company's sampling device (**yes**)
Type:

Other (describe) **sample was collected by company**

Procedures (describe other aspects):

Additional Data:

News Gazette 10/19/95

Zeigler may close two mines, idle another

FAIRVIEW HEIGHTS (AP) — Zeigler Coal Holding Co. may close two Franklin County mines and idle one in Randolph County next year, affecting up to 710 workers.

That represents 11 percent of the state's 6,200 coal mining jobs. And an additional 160 Zeigler jobs could be lost in 1997, when the Spartan Mine in Randolph County is expected to run out of coal, the company said Thursday.

Old Ben Mine No. 26 near Sesser is expected to run out of coal in the third or fourth quarter of next year, Zeigler spokesman Vic Svec said. And the Old Ben Mine No. 24 near Benton probably will close in the first quarter of 1996, he said.

The 260 workers at Mine No. 26 and the 300 at Mine No. 24 got 60-day layoff notices in July but learned in August that the mines would stay in production for the rest of the year because of stronger-than-expected coal sales. But Zeigler does not expect enough sales next year to keep both mines open, Svec said.

And in Randolph County, Zeigler Mine No. 11 near Coulterville and its 150 workers probably will be idled indefinitely next year, Svec said. It could reopen in 1997 when the Spartan mine runs out of coal, he said.

Zeigler's contract with the Tennessee Valley Authority, the primary customer for the two Franklin County mines, expires next year and probably will not be renewed, Svec said.

"We are making a last-ditch effort to find a home for that coal, but given the indicators that we've seen, I'd be lying if I said we were optimistic," he said.

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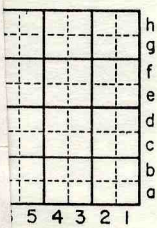
County News Ga



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From "Coal", June 1996

OB#26 may have gained a new, albeit temporary, lease on life. The mine had been slated for closure in Sept/Oct. 1996. But Zeigler obtained another block of coal from a property owner that will extend No. 26's existence.
No. 26 would be the last active coal mine in Franklin Co., for the first time since the early years of this century.

From "Coal Week, Jan. 13 1997:

State and federal mine-safety inspectors are trying to determine what caused a fire on a coal-conveyor belt at **Zeigler Coal Holding's** Old Ben No. 26 underground mine near Sesser IL apparently just hours after the 28-year-old mine ceased active operations New Year's Eve. More than 100 union miners recently were laid off at No. 26 in preparation for the mine's planned end-of-1996 shutdown attributed to the 1990 Clean Air Act Amendments' impact on the mine's high-sulfur coal. But another 28 miners were being retained to recover mining equipment. Because of the fire, however, they lost their jobs last week, too.

After visiting the mine Jan. 2, Leroy Mumbower, a **United Mine Workers of America** subdistrict board member, told *Coal Week* that Zeigler had begun to seal the mine's shaft. "The fire is out of control," Mumbower said, adding Zeigler decided to go ahead and seal the mine because production had ceased anyway.

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According to Zeigler spokesperson Jeannie Riffe, the blaze was discovered the day after mining ceased at No. 26. Neither she nor Mumbower would speculate on what started the fire. "We're still evaluating the cause and the extent of damage," Riffe said.

Officials with the Mine Safety and Health Administration and Illinois Department of Mines and Minerals, both investigating the blaze, could not be reached for comment late last week.