

Form 180 Blue

1944

Old Ben Coal Company- Mine No. 27

HERRIN

Old Ben Mine No. 27
(Underground)

MINE INDEX NO. 975



Sec.	25
T.	7
R.	3
Index No.	

FRANKLIN COUNTY



(Sheets) COAL PRODUCTION (Sheet)

Period				Tons	
Mo.	Day	Year	Mo.	Day	Year
		1978			
		1979			
OLD BEN COAL CO.		1980			
		1981	1	004	219
MINE NO. 27		1982	1	116	223
		1983			0
Idle as of December		1984			0
		1985			0
D.M.M. abandonment		1986			0
on	1984	1987			0

SUMMARIES

No. to No.

Railroad, Wagon, Strip, Idle, Abandoned

Sec. 25

IDENTIFICATION

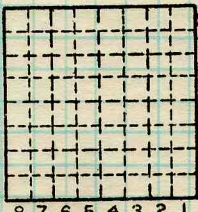
County No. _____

Coal No. 6

Coal Report No. _____

Quad.

County Franklin



T. 7 S.

R. 3 E.

Index No.

COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA



Mine Notes - Old Ben No. 27, Franklin Co., Ill.

Trip: 9/4/81 dx Phil DeMaris, accompanied by John Liezak, Jim Campbell & Marion Gordon of Old Ben Coal (Evansville office) and John Halstead of the Benton office

Coverage:

Introduction

Bottom Area

E-West Longwall panel, incl. traverse

N. Mains mapping

Roof conditions; summary

Samples; Set "A" begun (-1 to -3)

Introduction

The superintendent is Alfred "Whitey" Lynch; he was busy with W.E. Haynie on a skip-shaft problem when we arrived. John Halstead, who I first met in 1976 at No. 24, was our guide. We plan to go to N. Mains (improving? roof conditions), S. Mains (bad roof conditions) and the far E. end of the E-W longwall, begun under limestone roof. The other longwall crew is running N-S panels on the S. side of the mine they are halfway through their 2nd panel.

"Bottom" area

We had some problems getting a charged man-trip, so there was a little time to look around. I saw a channel-like feature (like O.B.24 rolls) but without the Anna roof on both ribs. Halstead indicated "rolls" were also fairly common at this mine also. This deserves further investigation. I checked the "Blue band" in a couple spots; it was running 0.8 to 1.0' above the underclay; exposures of the u/c/ are more common than at O.B.24. B.B. is in normal thickness range. John Halstead claims that the B.B. thickens to 1.0' toward the Walshville ch. in Old Ben No. 21; this should be checked out.

At some places point anchors have been use (these are 7' rebar bolts); I think this was used near E-W longwall.

E-W Longwall panel

We stopped just short of the face; the crosscuts have been angled at the headgate side. A 6' fall in the c/c just N. of the face shows 2 large NNE-dipping slips about 2½' apart.

Traversed face; headgate is centered at crosscut believed to be 3 c.c. from set up room; were at 2 c/c/ from set-up room on 8/28. 107 shields.

Shield	Coal th.	Description
early	-	Traverse begins in Energy Roof
33/4	-	Anna roof contact; coal balls & riders are present. Sketch:
38	$\frac{4.6'}{0.8'} = 0.06$	$\frac{B \ 2.0' \text{ (locally thicker)}}{u/c}$
		5.46' total Herring thickness
43	-	Anna roof; Brereton 'boss' above it being cut.
49	-	Anna roof; Brereton 'boss' above it is being cut by shearer.
58	-	"Roll" begins at face; shale is in seam at least 4'.

- 64 - "roll" ends here with much deformation at edge. Rider on this side has sharp contact to Anna; both roll material and rider coal sampled (-A-2 and -3, resp. at 63; Anna has concs. & is at least $1\frac{1}{2}$ ' thick.
- 66 - Anna roof with concs. present; coal streaks and pyritic shells in bottom 1' of Anna; Anna is 2' thick at 69.
- 74 - Anna roof; weak ls. boss.
- 76-7 - Little spot of orig. Energy sh. roof, 0.4' thick, 9' long.
- 82 - Anna roof; pyritic coal balls in top coal.
- 82/3 - Energy sh. contact; top of seam drops a foot.
- 100 g Energy roof; 2' cut here; a pyritic band ca. 1.2' above the Blue Band here
5.6' B.B. is pyritic
- (below pan)
level - could it measure
- 103 - Energy roof; small rider up to South here.

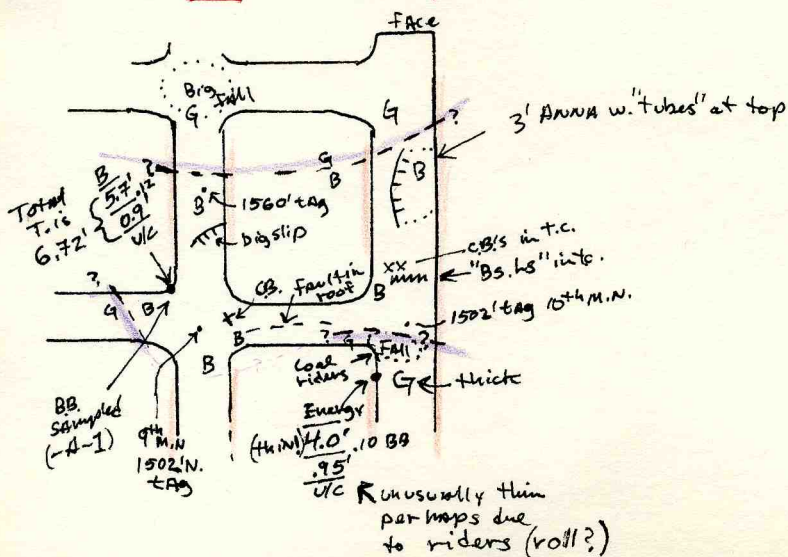
(Fall at tailgate; needs clearing)

Face was not running; reason unknown. Face boss is Curt Settlemoir, pron. "-meyer".

N. Mains

We parked on unkn. entry near 1340' tag. There is a clear difference in roof stability between the main entries and the crosscuts. The

immediate roof cannot be held on the mains when it is Energy sh. Slips are ubiquitous; they are medium to low-angle & run all directions; those at the base of the shale are nearly horizontal. Roof is held better in E-W crosscuts, but this is not due to lithology. Several indicators (i.e. random orientation, low slip angles & irregular top of the seam) argue that the widespread slips are due to deformation during compaction; the same type of slips can be found at O.B. 24, but in much lower density. The directional bias in falls is difficult to assess, but seems to be a "real" effect; study will be hampered by the low-angle slips and slips at lithologic contacts. At next crosscut (1502" - see map) Anna is roof; it is dk. gray and well slickensided w. low-angle faults. Coal balls present in t.c. Anna is jointed N.80°E. where not deformed/faulted. Anna roof runs E-W and is not very wide; it is a topo. high with locally steep dips (ca. 15°) on both sides. This unfortunately is their "better" roof; although there is ls. to bolt to, prebolting falls are as common as in the Energy sh.; they are shallower, however. Sketch:



Roof conditions; summary

Roof falls; many are independent of probable regional effects; they simply are low-angle compactional faults; their effect on the Anna is also pronounced (The worst Anna roof I have seen). The only place I saw the base of the Brereton was on the longwall, where 'bosses' were developed; cannot judge how common this is. Anna was not seen to be missing; only 3 Anna roof areas were seen, however.

Under Energy sh. roof, saw a 'roll' I couldn't explain; ^{it is not a post-Energy depo. roll which has been covered} No tidal facies seen in the large roll ^{on longwall} under Anna roof, but a spot of "bs. ls." was seen in mapped area.

It was common to have small riders in the base of the Energy; an irregular contact to the Herrin was also fairly common.

Out at 1:30 P.M.

Samples; Set "A" begun

- OB27-A-1 Blue Band (coal to base) from 9th Main North at 1502' crosscut.
- OB27-A-2 From #63 on longwall - roll material
- OB27-A-3 From #63 on longwall - coal from rider over edge of 'roll'.



FORM 180 W

Old Ben Coal Co. - Mine No. 27, April 15, 1982.
 Notes by John Nelson with Phil DeMaris - Jim Minton
 from Old Ben.

Mine has two longwall faces and seven continuous-miner units. All miners are now on development work. There are no pillaring sections at present although three panels have had the pillars extracted. The continuous miners all are rippers - no boring machines.

Development work is slow because of difficult roof conditions, especially on north-south headings. They are getting water in the longwall faces. Large masses of coal balls have slowed development in the Main North, and also in 3rd South Panel (longwall) off Main West, and in the longwall panel due east of the shaft bottom. Mining coal balls is very hard on equipment.

Mapping on 1"-100' maps in Main North Entries just north of bottom:

(1) General observations in 8th Main North entry near the 70' survey tag:

Description of coal seam (Herrin No. 6):

TOP: Footages from top of seam given.

0.83' Coal - Normally bright banded, brown and white calcite on cleat.

0.84' Fusain - Fairly continuous parting.

1.31' Coal - Normally bright banded, calcite as above.

1.32' Shale - Dark gray, discontinuous.

2.96' Coal - Normally bright banded, as above.

2.99' Fusain - Hard, with pyrite, fairly continuous but varies in thickness. Local lenses of dark shale.

6.00' Coal - Normally bright banded, as above.

6.07' Shale (Blue Band) - Olive-gray, mottled, smooth, mottled faintly, contains particles of coal.

4/15
FORM 180 W

- 2 -

6.94' Coal - Normally bright banded, as above.
Floor - Claystone - Medium gray, moderately soft, smooth, non-calcareous, contains occasional pyritic nodules and fragments of carbonaceous matter. About 1 foot exposed.

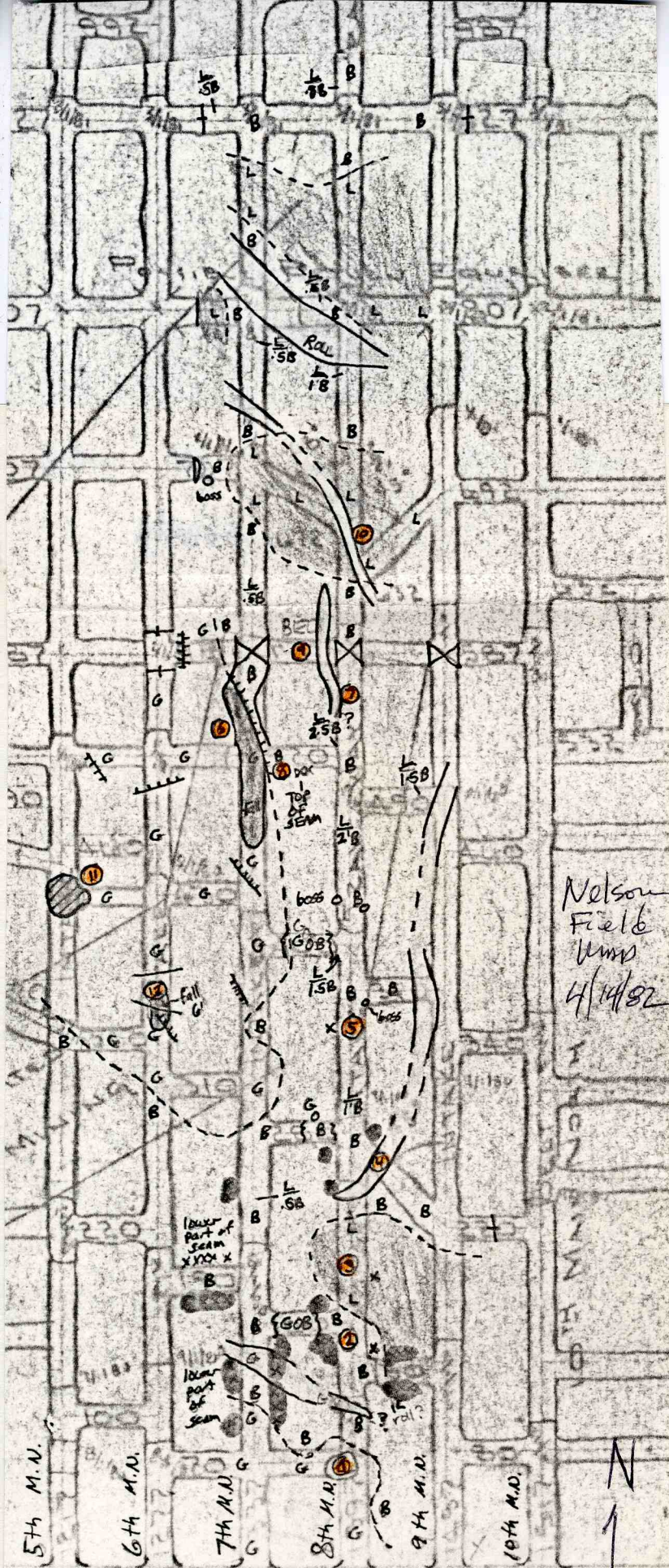
The roof right here consists of Energy Shale which is medium to medium-dark gray, moderately firm, poorly bedded; laminations indistinct or lacking, smooth to finely silty, non-calcareous. It weathers yellowish to brownish and contains occasional pyritic nodules but little or no siderite. This shale is badly broken and falls 3-4 feet above the top of the coal but lacks regular joints. Streaks of coal frequently splay off the top of the seam into the shale.

Above the Energy Shale is Anna Shale; black, firm, smooth and brittle, weathers light bluish. Locally it contains shell debris at the base, and occasional streaks of coal. It overlies the Energy Shale with a sharp and clean, irregular contact as shown on the map. North of this point the Anna Shale comes down directly on the coal and has fallen away to expose the irregular bottom of the Brereton Limestone. The Anna Shale in places shows joints a few inches apart trending N 75° E.

The lower surface of the limestone is almost "bossy" in places.

About 50' north of Stop 1 there is a lens of gray shale about 6 feet long and 1 foot thick between the Anna Shale and the coal. It is offset by several small "slips." This feature does not appear on the east rib, but Phil found what he thinks are eroded remnants of it.

The limestone is medium gray, fine-grained, very hard and slightly argillaceous.



Nelson
Field
ump
4/14/82

5th M.N.
6th M.N.
7th M.N.
8th M.N.
9th M.N.
10th M.N.



Lower part of SEAM
X 100 X

Lower part of SEAM

roll?

TOP OF SEAM

25B?

Roll

boss

boss

boss

boss

boss

boss

boss

boss

G 1B

G 2B

G 3B

G 4B

G 5B

G 6B

G 7B

G 8B

G 9B

G 10B

G 11B

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L 200B



FORM 180 W

- 3 -

(2) Accumulation of coal balls in the middle portion of the seam. They are tawny brown calcite and vary from spherical to elliptical, less than an inch to about a foot long. They are most numerous 2 to 4 feet from the top of the seam but scattered ones occur lower in the seam.

(3) Coal directly overlain by limestone. Measured section:

Limestone

- 0.91 Coal - Normally bright banded
- 0.94 Shale - Gray, firm, lenticular
- 5.43 Coal - Normally bright banded, occasional discontinuous fusain
- 5.51 Shale (Blue Band)
- 6.24 Coal - Normally bright banded

There are flattened lenses of fossiliferous limestone in the top of the coal, and stringers of coal in the base of the limestone. The exposed portion of the limestone is extremely nodular.

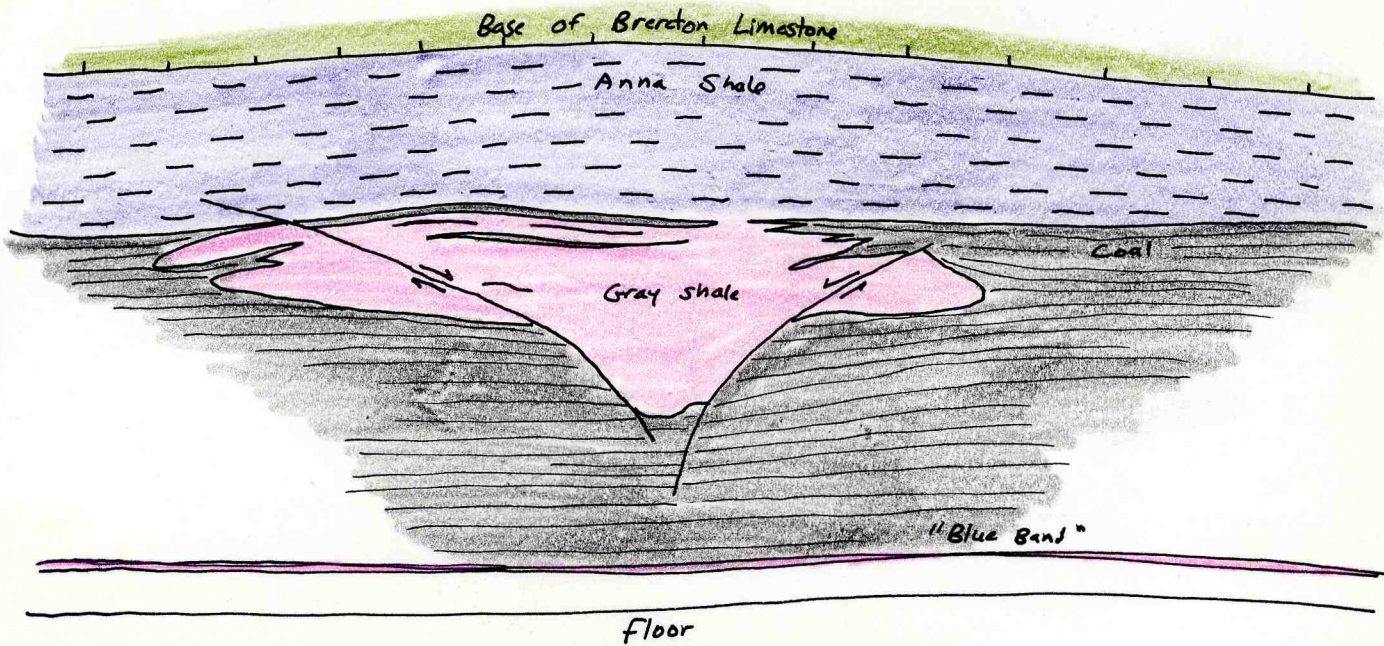
(4) Roll - see sketches (over). It is large and prominent in the 45-degree crosscut but is very inconspicuous on the west rib of the 8th Main North. As shown in the sketches the roll is filled with gray shale, with fairly continuous streaks of coal at the top, and is entirely overlain by Anna Shale that is not involved in the roll (although locally displaced on small slips).

This roll is similar to those at Old Ben No. 24, Orient No. 4 (western part) and other mines in the area. It obviously was formed before the Anna Shale was deposited, and I would interpret it as a mud-filled

STOP 4- Northeast rib of crosscut

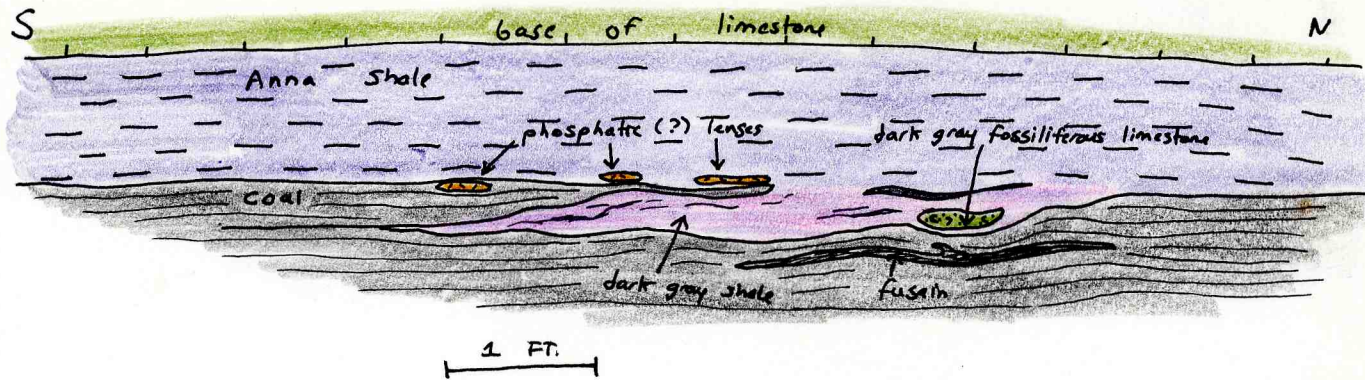
NW

SE



Roll is about 10 feet wide

415
MODERN METHODS
FORM 180 W



STOP 4- sketch of west rig
 where last remnant of roll
 is seen.

4/15



FORM 180 W



Roll at Stop 4; compare with sketch. Depression in top of coal seam, filled with yellowish-gray shale containing stringers of coal, and overlain by black fissile shale.



FORM 180 W

- 4 -

channe-like feature that developed either during the last stages of peat formation or immediately after peat formation, contemporaneous with deposition of the Energy Shale.

(5) Measured section of coal:

Limestone

Anna Shale, 0.8'; phosphatic lenses, appears bioturbated at top.

0.67' Coal - Normally bright banded
 0.68' Fusain - Fairly continuous
 0.95' Coal - Normally bright banded
 0.98' Shale lens - Gray, firm
 5.53' Coal - Normally bright banded, clean, good cleat with calcite
 5.60' Shale (Blue Band)
 6.27' Coal - Normally bright banded.
 Underclay

(6) Here on the 7th Main North Entry south of the overcast at survey footage 587' is some of the most spectacular development I have ever seen of the "wedge-type" Energy Shale. The Energy Shale increases from 0 feet on the east rib to at least 6 feet and probably more on the west rib. As I sight northward toward the overcast the upper surface of the gray shale dips 22° to the east-northeast. The Anna Shale overlies this with a knife-edge contact and its bedding dips parallel with the contact, also 22° ENE. The bedding of the Energy Shale is truncated in a classic angular unconformity. There are large compactional faults running parallel with the boundary and dipping more steeply than the contact, offsetting the Anna Shale but not the coal.

4/15



FORM 180 W



View at Stop 6, showing the angular unconformity between the black, fissile Anna Shale (right) and gray, horizontally bedded Energy Shale (left). The erosional surface dips eastward at 22 degrees.

MN-04-003.HP



FORM 180 W

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This mine is well-known for having bad roof conditions in north-south headings, and my observations so far confirm this. The Energy Shale is almost impossible to hold in this entry and has fallen 5 to 8 feet above the coal. The Anna Shale is also slabbing away severely, and in most of the 8th Main North, it was taken down before bolting. Limestone forms stable roof. Conditions are a little better in the E-W crosscuts but the Energy Shale still makes ragged top, falling out in irregular slabs and blocks 1 to 2 feet thick. Anna Shale in crosscuts likewise is ragged but not quite so bad.

I have been looking for "kink zones" but so far have not seen any. The shale breaks in irregular blocks or slabs, as noted, and no compressional zones, crushing or sagging are evident. I would attribute failure of the Energy Shale to moisture-slaking in intake air. Anna Shale has deteriorated markedly less than Energy Shale in this area, but where Anna Shale overlies thick Energy Shale the bolts did not penetrate the former. The parallel joints, as noted earlier, trend N 70-75° E and locally are spaced less than an inch apart. They evidently contribute to failure of the Anna Shale. The Energy Shale is not noticeably jointed.

This Energy Shale is medium-dark gray, smooth to finely silty, and contains faint parallel laminations, many of which are brownish due to siderite. Small round or oval non-calcareous lenses are scattered throughout the unit. It appears to have uniform lithology, as far as I can tell.



FORM 180 W

- 6 -

(7) A roll or lens of gray shale is seen on the west rib of the 8th Main North about 20 feet south of the overcrest. The feature is about 15 feet wide and I am unable to find its continuation to the south but I believe it links with the roll at Stop 9. Thus, this is a roll viewed nearly parallel with strike.

The gray shale resembles Energy Shale but lacks recognizable bedding and has weathered to a clay-like consistency. It is about 1 foot thick and interfingers with the coal at its lateral margins. The gray shale is sharply overlain by Anna Shale. The lower surface of the Anna Shale sags slightly into the center of the gray shale, but the laminations in the Anna Shale are continuous and undeformed.

The angular unconformity observed at Stop 6 suggests that this is an erosional remnant of Energy Shale that is preserved because it was deposited in a depression in the top of the peat. The depression in the peat in turn was due to scouring away of the top layer of peat before the gray shale was deposited - or alternatively, the gray shale is in part contemporaneous with the peat.

Careful observations and measurement might disclose that some of the peat, as well as the Energy Shale, was eroded before deposition of the Anna Shale in this area.

(8) South rib of crosscut south of Stop 6. There is a continuous parting of shale and pyrite near the top of the coal. At the northeast corner of the pillar, under Anna Shale very near the edge of the Energy Shale, there is 1.68 feet of coal above the parting.



FORM 180 W

- 7 -

10 feet to the east this interval decreases to about 0.95 feet. Also, right at Stop 6 a thin fusain parting is 0.7 feet below the top of the coal under Energy Shale and 0.5 feet below the top 10 feet away under Anna Shale. These findings confirm our suspicion that peat was removed by erosion before the Anna Shale was deposited.

Several small coal balls near the top of the seam at Stop 8.

(9) Small north-trending roll apparently connects with the feature seen at Stop 7, where it was viewed in longitudinal section. The interesting feature here is the bedding in the roll (see sketch and photo). In the low part of the roll the gray shale shows distinct bedding planes that dip $20-25^{\circ}$ to the west. These beds are truncated beneath the nearly horizontal lower surface of the Anna Shale. Note that the Anna Shale also is tilted and folded; but this is due to movement along slips that formed during compaction of the sediments.

(10) NNW-trending roll in 8th Main North. This roll is similar to others we have seen today except that there is little or no Anna Shale above it. The coal is overlain directly by Brereton Limestone on both sides of the roll, and the gray shale in the roll is overlain by limestone, or at most a few inches of Anna Shale. I cannot find the continuation of the roll from Stop 9. It probably dies out inside the pillar.

(11) Enormous roof fall (not cleaned) at intersection of 5th Main North and crosscut at survey footage 427'. This fall is at least 20 feet high and all that I can

4/15



FORM 180 W



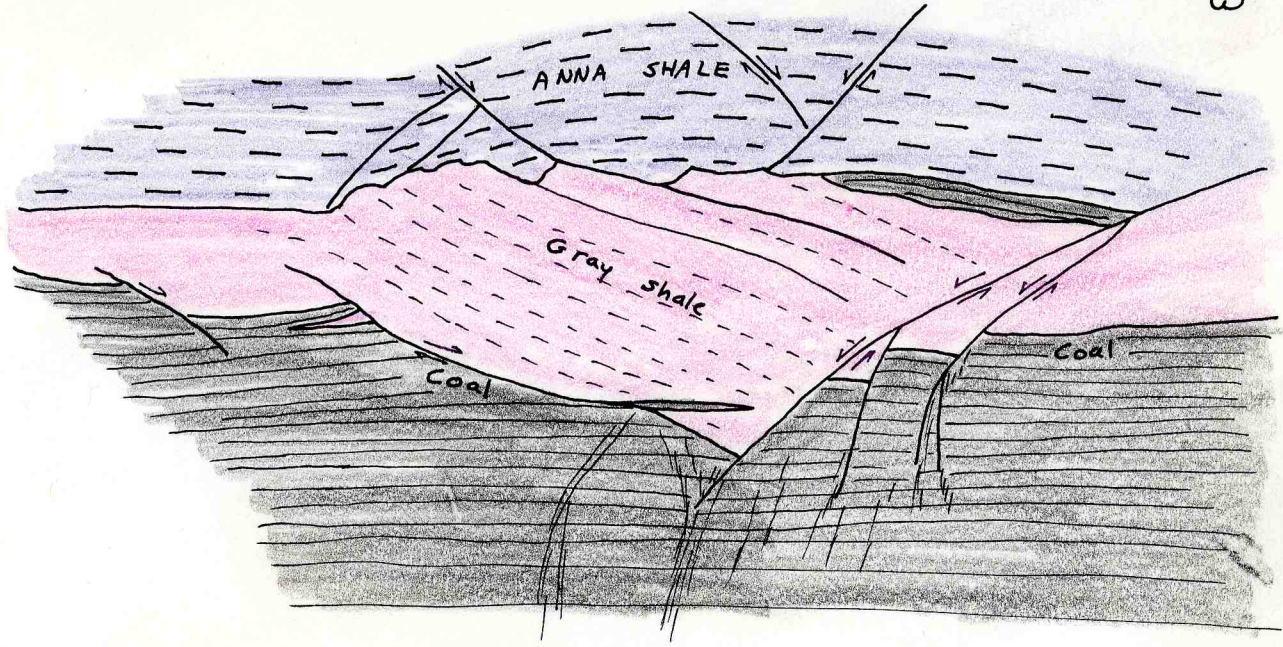
Roll at Stop 9. In the vicinity of the ruler, the bedding of the soft, yellowish-gray shale filling the roll appears to dip toward the right (west) at roughly 15 degrees. The top of the roll and the tilted edges of the beds are truncated at the base of the Anna Shale.

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STOP 9 (compare with photo)

E

W

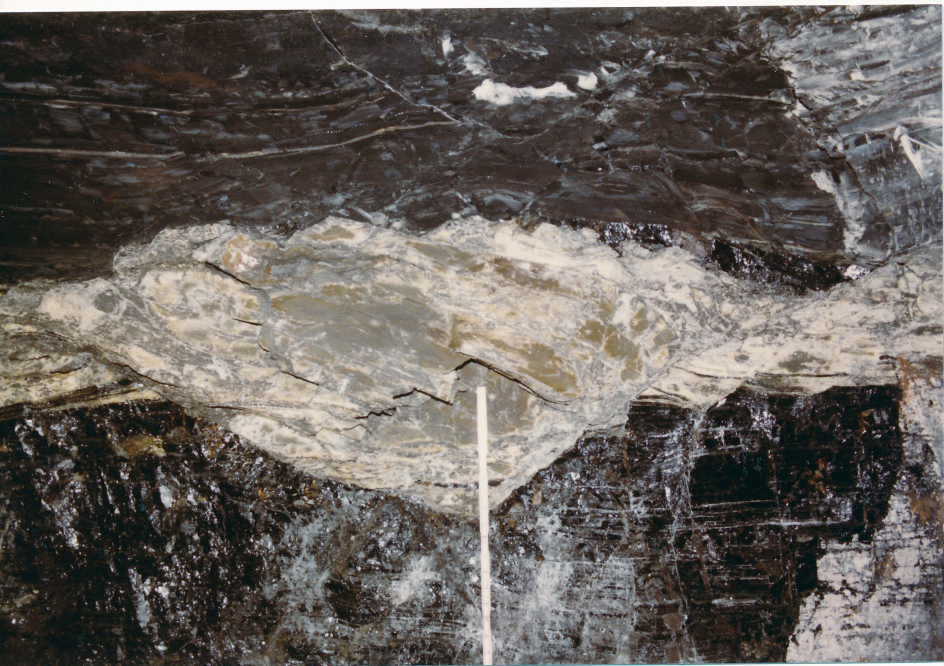


2 FT.

4/15



FORM 180 W



Closer view of roll at Stop 9.

MA-04-005.418

4/15



FORM 180 W



Large roll at Stop 12; compare with sketch. This roll, and the overlying rock, are entirely gray shale. The rolls shown in the other photos must have resembled this originally, but in an episode of erosion most of the gray shale was removed. Only the shale down in the depressions escaped erosion before the next unit, the Anna Shale, was deposited.

mn-04-006.tif

4/15
FORM 180 W

- 8 -

see is Energy Shale, although there might be black shale at the top. At the edge of the fall I saw a coalified log in the shale about half a foot above the top of the coal; also a pyritized mass of pelecypod shells, probably Mytilus sp.

In most places the contact of the shale to the coal is sharp and regular, but locally thin "riders" of coal splay off the top of the seam into the shale; or small roll-like structures occur - none as large as the rolls described in previous notes. Also, compactional faults occur sporadically.

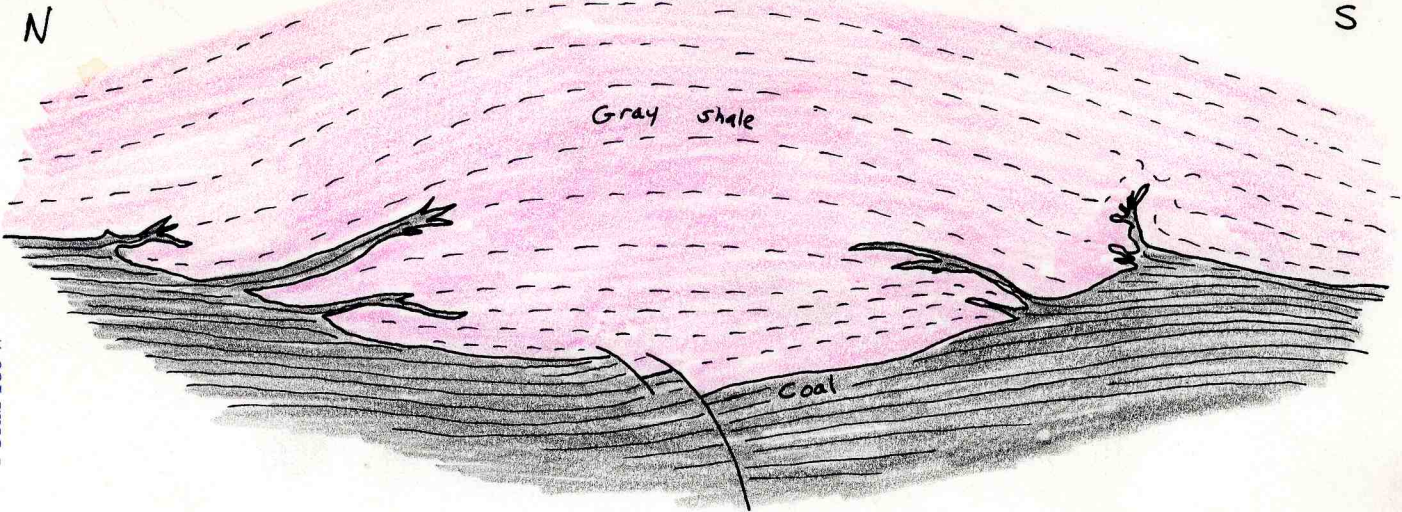
(12) Here is a broad shallow roll entirely within the Energy Shale (see sketch, over). On the east rib it is roughly 20 feet wide and up to 2 feet deep; it is less prominent on the west rib. The upper layers of coal splay upward toward the center of the roll from both sides, and the coal is depressed under the center, with a small set of compactional faults. The bedding in the shale above the roll is arched broadly upward.

This structure resembles the other rolls I have seen except that all of the exposed rock is Energy Shale. Other rolls may have formed in the same way but had their tops truncated by erosion.

Toward the end of the visit I noticed in several places that the coal appears to drop in elevation as one passes from Anna Shale to Energy Shale. We should check to see if this is a consistent trend.

We should also try to determine whether any rolls extend from areas of thick Energy Shale to areas of no Energy Shale.

STOP 12 - EAST RIB



Width of view about 20 feet.
Depth of roll somewhat
exaggerated relative to width.



FORM 180 W

- 9 -

Another project would be to make a series of detailed descriptions and measurements of the coal, going from limestone roof to Anna Shale to Energy Shale.

This region is almost ideal for mapping - excellent quality of exposures, nearly continuous views of the roof often showing 2 or 3 units, yet few large falls or gob piles that would make large areas inaccessible. Mapping conditions are much better than at Old Ben No. 24, where most main entries are mined with boring machines that leave top coal in the entries.



FORM 180 W

- 10 -

Photos (fresh roll of film)

- A. Lenses of Brereton Limestone interfingering with top of coal at Stop 3. Note small coal ball left of hammer handle. ↑
- B. Roll at Stop 4 (same view as 1st sketch). *See DeLunne's notes*
- C. Small nodule in top coal - Phil's Note G. ↓
- D. (2 photos). Angular contact and "slip" at Stop 6. *(only one in notes)*
- E. Roll at Stop 9 showing tilted truncated bedding of gray shale in roll on south rib of crosscut (2 photos).
- F. Large roll in gray shale (Stop 12).

Other "tourist" photos follow

Nelson holds negatives

4/15



FORM 180 W



The common prep plant, shared by Old Ben Mines
No. 25 and No. 27.

Mn-04-007.tip



4/15

FORM 180 W



Man-and-materials shaft at Old Ben Mine No. 27

mn-01-008.tip

4/15



FORM 180 W



Phil DeMaris

Mine Notes - Old Ben No. 27, Franklin Co.

Trip: April 15, 1982 by Phil DeMaris and John Nelson, accompanied by Jim Minton of Old Ben Coal.

Coverage:

Introduction

N. Mains Mapping

Samples - Set "B", complete

Introduction

Purpose of this trip is to map a small area for comparison to mapped areas in O.B. 24. Before going underground we spoke to Kenneth Behn, Longwall co-ordinator, concerning problems with coal balls; they have same problems of high bit replacement rates and coal balls dense enough to blast. Behn reviewed known coal ball locations, which include:

1. just into N. Mains on intake air (in area to be mapped)
2. vic. 1600' N on 1-3rd N. on return air.
3. at face of 3rd longwall panel- this is the long E-W panel.
4. in the recovery rooms of the 2nd (N-S) longwall panel, and some further S. in the development entries (8th S. @ 463', 6th S. @ 477')

N. Mains mapping

We walked to the mapping area, a short distance from the bottom. On the 7th M.E. we saw several erosional rolls in Anna roof areas in the vic. of 900' E. High angle truncation of Energy Shale areas seem more common here than at Old Ben No. 24.

p. 2 of 2, plus 1 map + photos

A. Erosional roll down about 2' into coal with rider on S. side. Roll-fill mat'l is med-dk. gray shale with only 0.2' of fossiliferous 'tidal' mat'l at top just under Anna contact. Small, compactional mini-riders on N. side. Tidal core of channel is thicker on W. side of entry, but is still fairly thin. No coal balls seen, but area heavily dusted. Anna shale shows strong "tube" bioturbation; "tubes" weather .08'-.11' wide, and this kind of bioturbation extends to the base of the Anna. This type of bioturbation has the potential to create mixed coal balls in the Herrin peat and we are hoping to find some.

B. Shallow ls. 'boss' (Brereton) which came through 0.5' Anna and 0.3' into top coal before being cut off during mining.

C. Coal balls found on W. rib, 8' N. of 'boss'. Just to N. there is Brer. roof with small bosses into top coal. Coal balls are normal, with unusual distribution:

↑ ls.
1.90' coal (BBC) no c.b.'s

*.02 fusain (bench point)

Scattered long coal balls
0.15 to .55' down

Coal
2.30'
(NBB)

$\frac{5.55'}{0.85'} = .09' \text{ bb}$

Scattered sm. c.b.'s 0.1' to 0.7' up

T = 6.49'

*.04' shale band ("steel" band)

.63' coal (no c.b.'s)

*.04' bone coal band ("steel" band)

.62' (no c.b.'s)

*.09' shale band; grad. lower contact

(large coal balls)
0.85' to base of seam

underclay

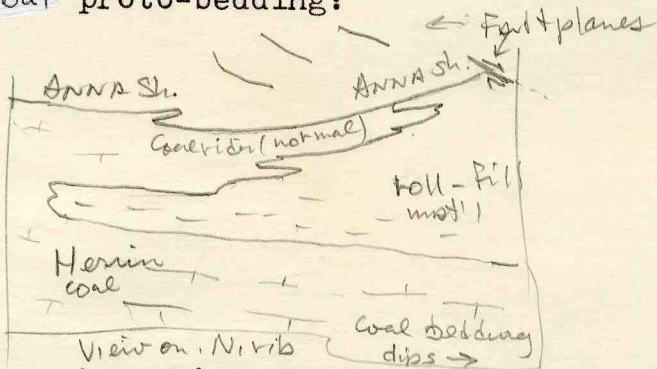
Around corner into cross cut coal balls are found at underclay/coal contact and could be easily sampled. B.B. to u/c is 0.8 through one thin coal ball

p. 3 of 6, plus 1 map + photos

D. Small ls. 'boss', no Anna seen.
Coal ball in top coal right under the 'boss' sampled (-B-1); probably a coincidence but worth checking.

E. Coal ball in top coal and trace of roll-fill material on E. rib. At point, 1.30' Anna to Brereton Ls. with persistent E-W jointing (actually ca. 100° strike). Bioturbation "tubes" in Anna here show abrupt horizontal translations (compactional?) and are slightly sinuous. Anna has two calcite/apatite bands here, up 0.2' and 0.35' from base of Anna; block of coal and basal Anna sampled (-B-2).

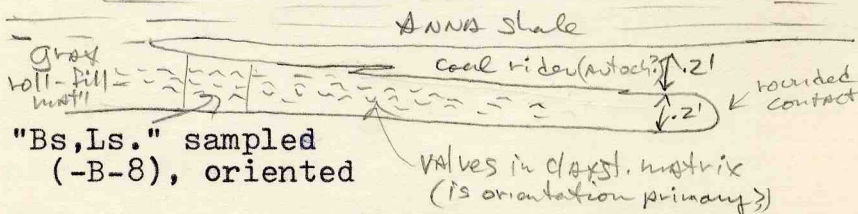
F. Wide exposure of erosional roll with very pyritic coal ball underneath. Sketch of N. rib in crosscut showing W. side of erosional roll with probable compactional deformation/injection? of roll-fill material along coal proto-bedding:



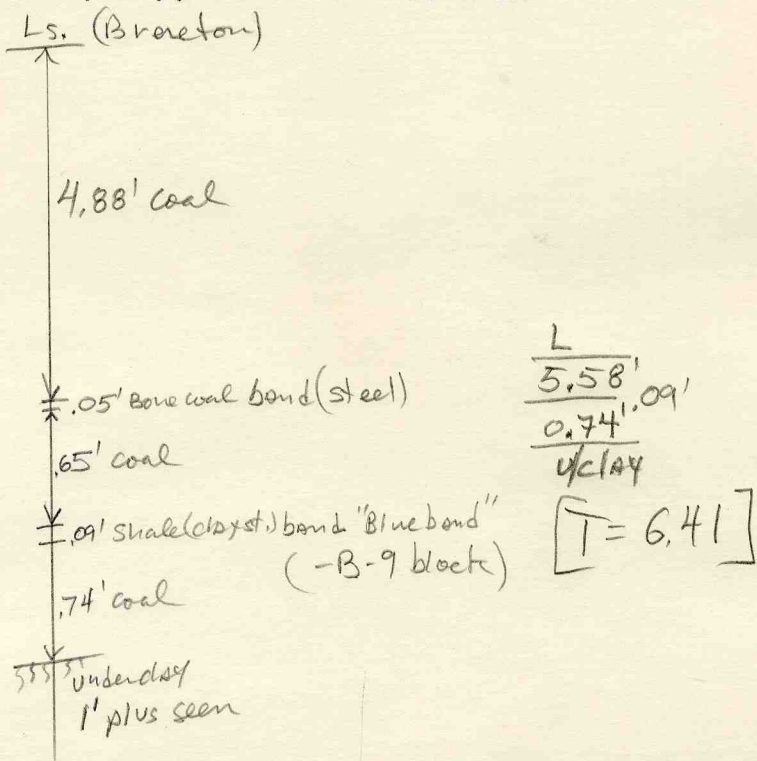
G. Here Anna bioturbation 'tubes' are found near the top of the coal and also forming "core" of a small Anna concretion, 0.2' above base of Anna and 0.45' diam. Top-coal coal balls (-B-5, -6, -7) sampled and Anna 'tube' close above (-B-3). John photographs a top-coal bioturbation trace; (see photos) no peat mineralization was found.

p. 4 of 6, plus 1 map & photos

H. Edge of erosional roll seen on N. side of pillar. Fossil-rich claystone (a.k.a. "bastard limestone") appears to be injected 5 feet along peat/coal bedding plane, or at least remobilization of deposited material pressed along bedding. Key feature in diagnosis is the rounded contact to coal. Sketch:



I. Normal section near edge of eros. roll which continues in pillar. Blue band sampled (-B-9) Measured section:



p. 5 of 6, plus map & photos

J. Limestone roof area over edge of "erosional roll". Roll-fill mat'l plus uncertain carb. material (trace of Anna?) total 1.0'. Brereton has 0.1' of clod-like material here, at base.

K. Coal thickness taken here:

$$\frac{\frac{B}{5.22'}}{0.65'} \cdot 13' \left[T = 6.00' \right]$$

u/clay

L. Sampled coal (allochthonous?) over $1\frac{1}{2}$ ' roll-fill material (-B-10).

M. Thin Anna roof with bioturbation taces; nice photo site; took marine material from top of coal; appeared to have permin. fusain in field, but needs examination. Site revisited on next trip. Sample taken (-M-11).

Samples

- OB27-B-1 Site D. Med.-sized coal ball right under ls. 'boss' at top of seam.
- 2 Site E. Coal/Anna contact for possible. block mount.
- 3A,B Nelson's #3 Limestone-filled bioturbation tubes into top coal; "smoking pistol" site for "faunal" coal ball refutation; (see photos)
- 4 Site G. Anna bioturbation "tube" in two pieces.
- 5 Site G. Top-coal coal ball near "tubes"- white side up.

p. 6 of 6, plus map and photos

- OB27-B-6 Site G. Large top-coal coal ball
near 'tubes'- white is up.
- 7 Site G. Two small top-coal coal
balls near 'tubes' - white up.
- 8 Site H. "Bastard limestone" at
side of erosional roll; oriented
white side up.
- 9 Site I. Blue band, oriented, for
block mount and clay min.
- 10 Site L. Coal over eros. channel
(allochthonous?) for block mount.
(P-)
- 11 Site M. Marine mud into top of
coal, erroneously called a
"faunal coal ball".

Typed 8/84 using "bone" coal ^{where} "durain band" was
erroneously used before.

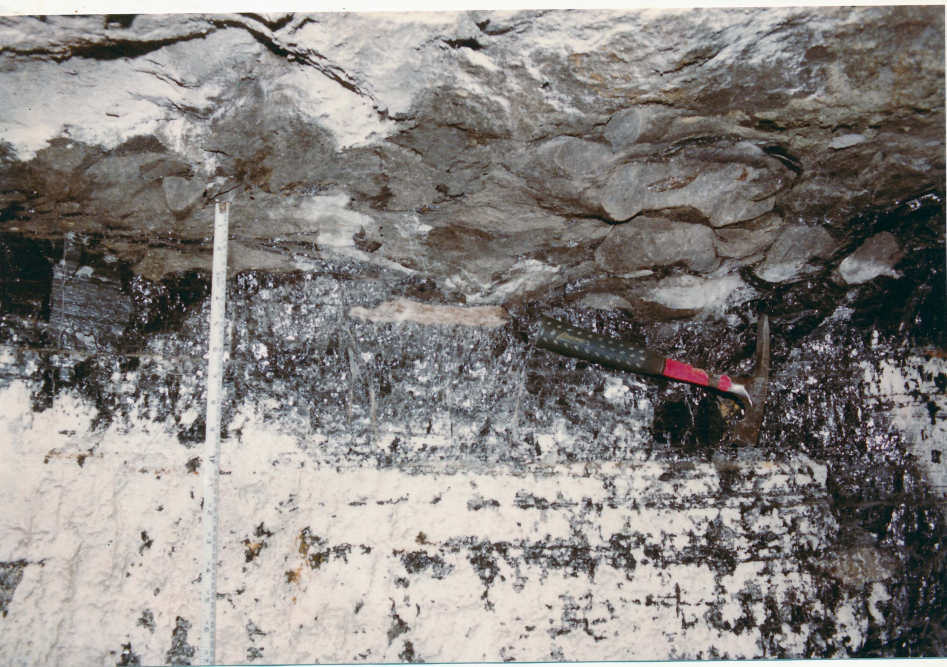
Photos 4/15/82



Site G₁. Bioturbation trace in top of Henric,
now heavily pyritized, but prob. began
as calciferite. About .09' down (me.).

mn-ou-009.tif

Photos 4/15/82



Nelson's Site 3

Tubi-Dorm masses at base of Breketon and into top coal. Believed to show mechanism that produces "mixed coal balls" by introduction of fine mud into peat. No mixed c.b.'s seen here; one at hammer head appeared to be normal. For mixed coal balls see next visit.



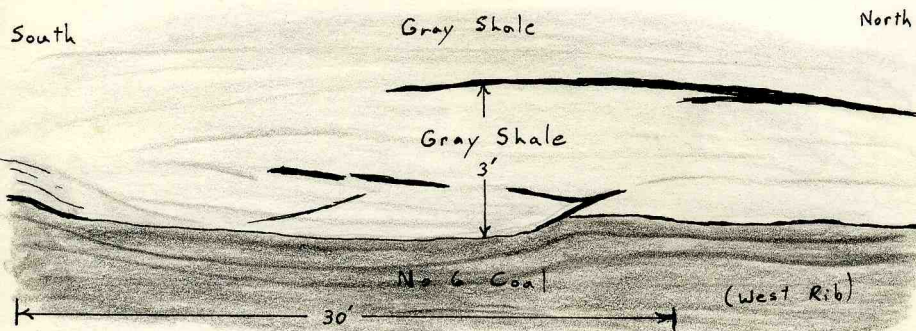
FORM 180 W

Old Ben Coal Co.
Mine No. 27

Franklin County
May 19, 1982

Notes by Steve Danner. Mapping partner - Phil DeMaris. Our guide on the first day was Joe Kelly. Jim Minton was our escort for the second day. The purpose of this visit was to map a small area in the Main North entries and to collect coal balls from below the Blue Band. See DeMaris's notes for exact location of mapping area. A reduced copy of the mapping area is enclosed to show locations of the stops.

Stop #1: Pseudo-roll in pillar rib. This is not what I would call a classic roll. A maximum of only 0.5' of coal is displaced at the top of the seam. The material in the roll appears identical to the roof rock which is the gray Energy Shale. The coal stringers extend another 15-20' beyond the end of the roll structure. (see sketch below) The roof in this entry is rather unstable and slabby, and requires cribbing. A large fracture near the south end of the roll is probably contributing to the ragged roof.



Stop #2: "Finger rock" roof. There is an area about 30-40' long where the gray shale roof has small

XRD ⇒ Pyrite and siderite predominate in roughly equal portions; quartz + muscovite ^{are} minor components.



FORM 180 W

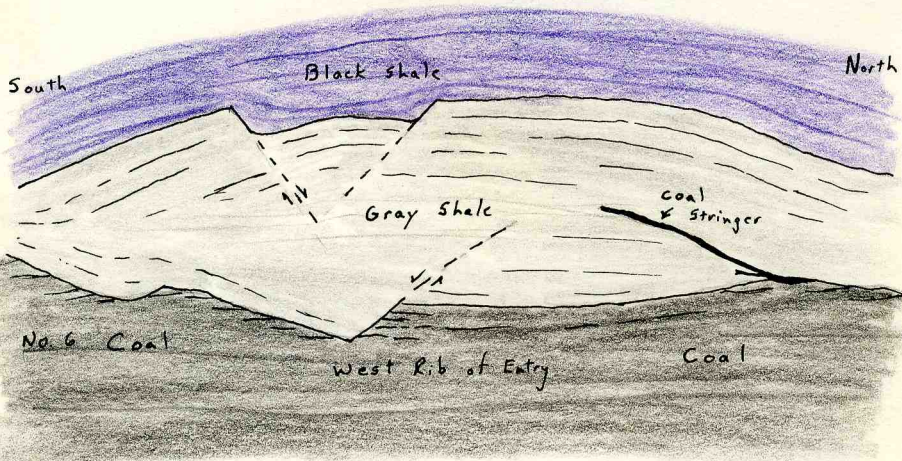
Old Ben No. 27 -----

page 2

finger-like concretions projecting downward at angles of 30 to 45 degrees from horizontal. Their orientation is remarkably similar, pointing N 60-70° W. The concretions are from $\frac{1}{2}$ to $1\frac{1}{2}$ inches in length with oval cross-sections. An average cross-section is about $\frac{1}{2}$ inch by $\frac{5}{16}$ inch. Some have a yellowish rind with a dark gray core. The roof rock surrounding the "fingers" is typical of this part of the mine. It is the platy, jagged gray shale; it is hard, dense, and shows little alteration or weathering. Samples of the "fingers" and roof rock have been collected.

(See p 1)
For XRD on
"Finger locks"

Stop #3: Mega-roll: Roll is about 40' wide, 5' thick, and displaces about 3' of coal. Roll material is gray shale, while roof is black (Anna) shale. The banding (bedding) in the top of the coal is sharply truncated by the roll. There is little or no apparent deformation. It appears that the coal was eroded in small benches, in a st





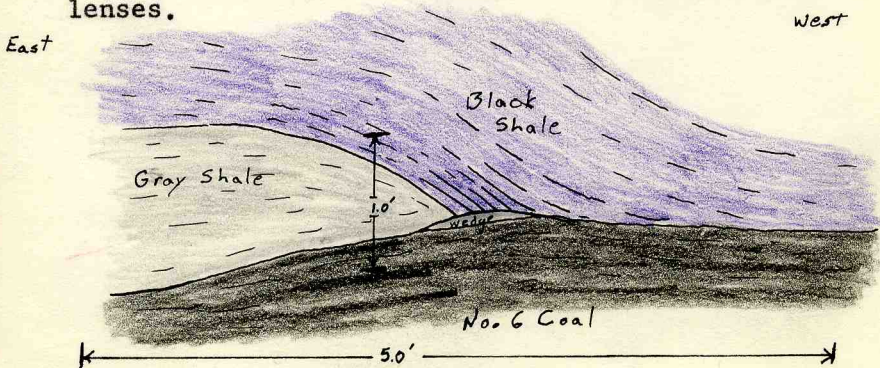
FORM 180 W

Old Ben No. 27

page 3

Stop #4: Here we have yet another roll. This roll is at least 300' in length. Its width varies from a little over 10' to almost 30'. At this location it contains a maximum of 3.2' of gray shale. This is overlain by 1.5' of black (Anna) shale, which is capped by the Brereton Ls. Roughly 3' of coal is displaced by the roll, leaving about 3' of coal in the rib. The banding at the top of the coal is sharply truncated, indicating an erosional contact. It appears that the coal was cut down in steps or benches. The roll seems to terminate as abruptly as it began.

Stop #5: Terminus of gray shale lens. (see sketch) While there are numerous gray shale lenses in this area, this one has a somewhat unusual terminus. The overlying black shale tends to be conformable with most of the gray shale lens. At the terminus however, the black shale displays a sharp unconformity. Apparently a wedge of the gray shale squeezed out beyond the end of the lens before either of the shales had lithified (soft-sediment deformation). This wedge truncated the bedding in the black shale, giving the appearance of an unconformity. The gray shale has fallen out of the roof of the entry at this site, which attests to the fact that transition zones such as this cause roof control problems. The interface between the gray and black shales is often slickensided near the termini of these gray shale lenses.





FORM 180 W

Old Ben #27

page 4

Stop #6: Bastard Ls. A small lens of "bastard limestone" occurs between the coal and black shale roof on the northeast corner of this intersection. The limestone appears to be a micrite containing abundant fossil fragments. The lens attains a maximum thickness of about one foot. This is the place I have encountered this limestone in the mapping area.

Stop #7: Longwall panel #1. The longwall panel has been shut down for the day so that the miners can replace one of the drums on the shearer. It seems that they have encountered "coal balls" in the seam. Since the coal balls are so much harder than the coal, they tend to "chew up" the carbide bits in the shearing drums, as well as damage the bit holders. The miners are hoping that the new drum will be able to withstand the abuse better than the old one. The new drum has a different bit configuration.

Since there is no mining going on in this panel DeMaris and I are allowed to roam the longwall face. The panel is over 400' wide and has a gently rolling floor. The roof appears to be predominantly black shale. The roof/coal contact ranges from sharp to rapidly gradational. There is at least one prominent gray shale roll along this face (see sketch). Clusters coal balls can be seen at various locations along the face. It appears that they are not restricted to any one horizon in the seam. There will be 3 or 4 coal balls a foot or two above the floor at one spot, and then several more a foot or two from the roof at the next spot, and then some near mid-seam.

We feel that at least one cluster of coal balls may be related to burrowing along the roof/coal contact. The coal balls are located in the upper

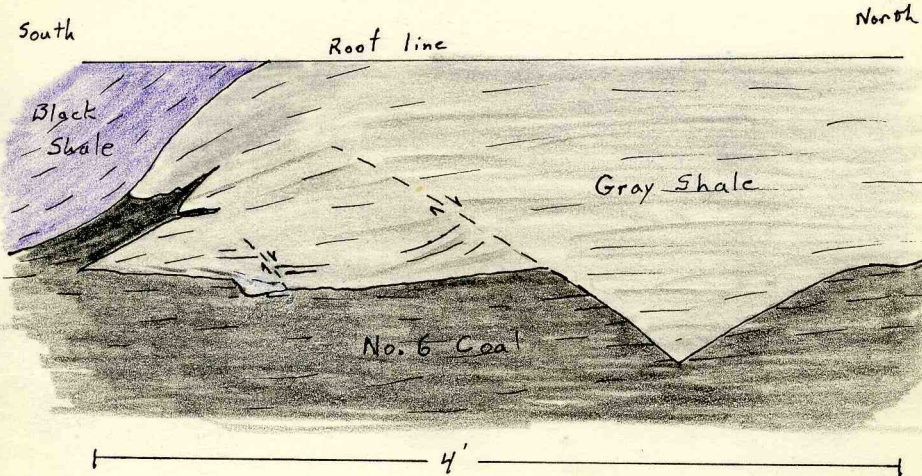


Old Ben #27

page 5

2 to 3 feet of the seam. Several lime-filled burrow tubes are exposed in the black shale along the top of the coal. These burrows could have served as conduits for the lime solutions or lime muds that permeated the peat and later became coal balls. An additional argument for this hypothesis is that at least one of the coal balls contained patches of fossiliferous ls (shell fragments). Allogenes such as the shell fragments could not have filtered down through the peat, so they must have been piped in through some conduit such as the burrows. DeMaris has samples of these coal balls.

The following sketch is of the gray shale roll I encountered in the longwall face. It was located in front of shield #53. DeMaris's notes should indicate the position of the face at the time of our visit.





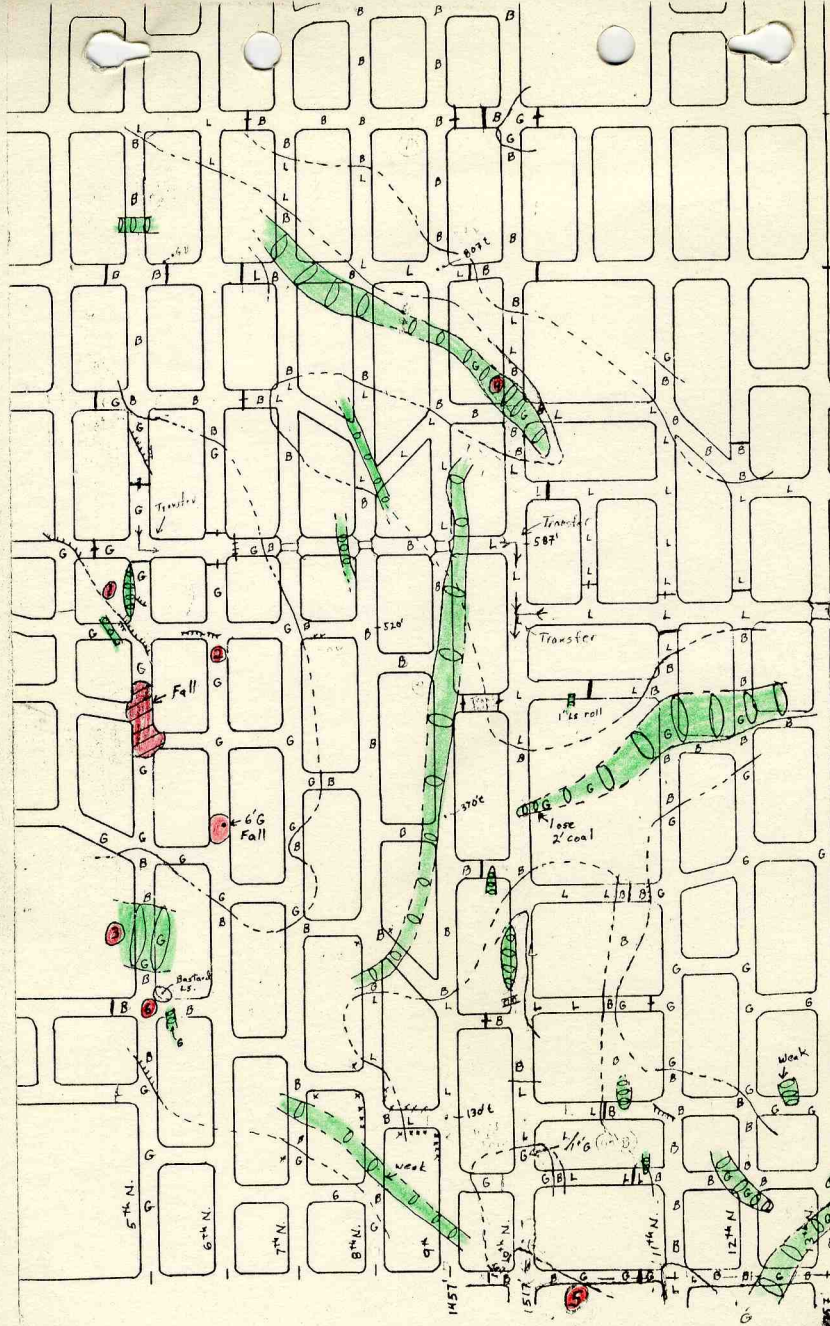
127'
Old Ben
No. 27

807'

3rd E.

2nd E.

1st E.



5th N.

6th N.

7th N.

8th N.

9th N.

10th N.

11th N.

12th N.

13th N.

14th N.

15th N.

16th N.

17th N.

18th N.

19th N.

20th N.

21th N.

22th N.

23th N.

24th N.

25th N.

26th N.

27th N.

28th N.

29th N.

1457

1517

1744

1744

1744

1744



927'

Old Ben
No. 27

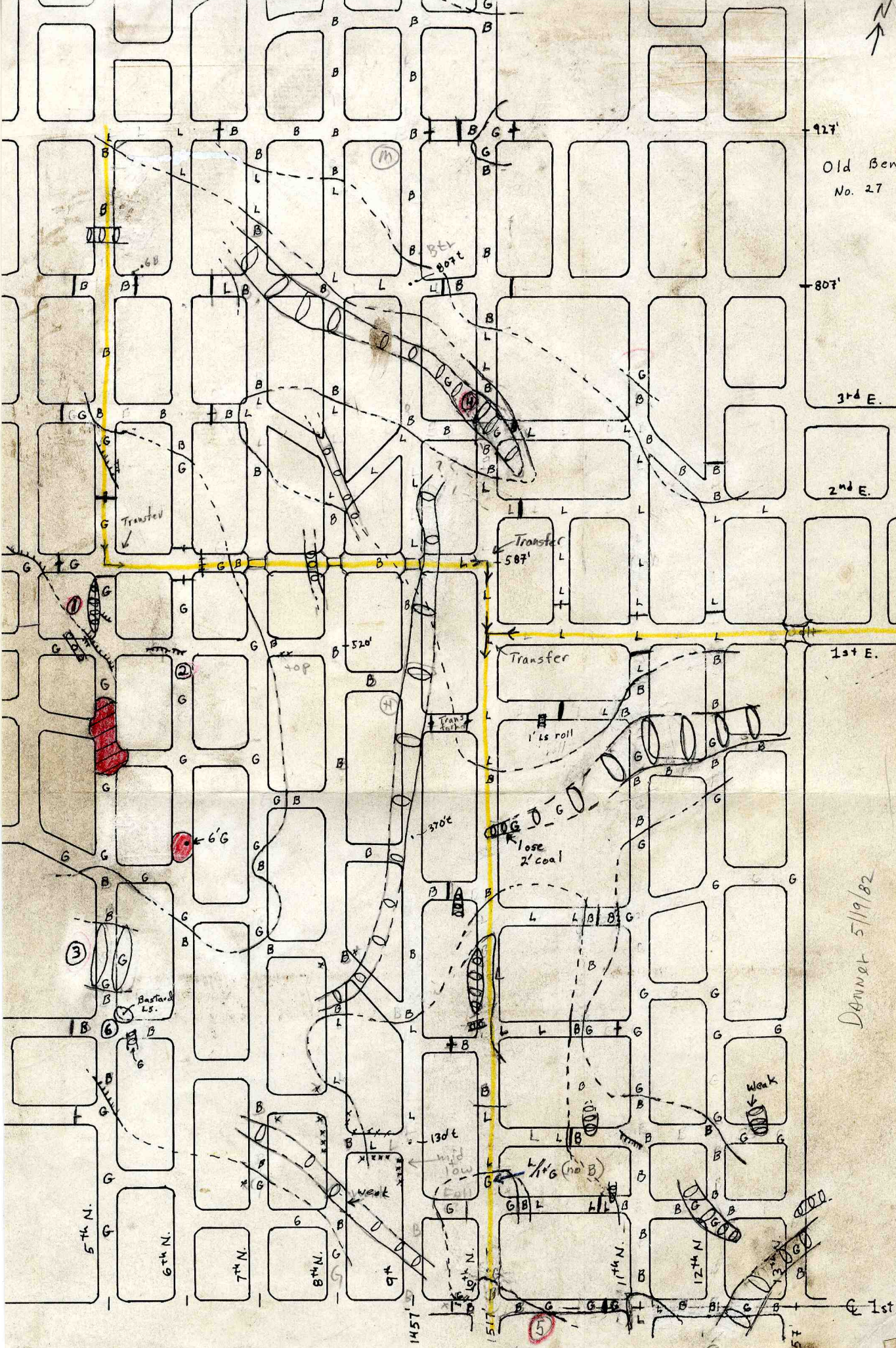
807'

3rd E.

2nd E.

1st E.

Dannet 5/19/82



Transfer

Transfer
587'

Transfer

520'

370t

130t

1457

1517

357

68

807t

40p

6'G

Bastard
L.S.

Went

L/G (no B)

Went

3200

3

6

11

4

5

5th N.

6th N.

7th N.

8th N.

9th N.

10th N.

11th N.

12th N.

1st E.



FORM 180 W

Mine Notes - Old Ben 27 - Franklin County

Trip: May 18-19, 1982 by Phil DeMaris and Steve Danner, escorted by Joe Kelly (18th) and Jim Minton, Chief Surveyor (19th), both of Old Ben Co.

Coverage: Introduction
 Mapping in N. Mains
 Coal ball samples (day 1)
 Continued mapping (day 2)
 Longwall traverse at 4375'E.
 Samples: Set C (-1 to -27 complete)
Appendix: Study Area compilation

Introduction

Purpose of trip was to wrap-up the mapping of a small comparison study area with coal balls to contrast with conditions in O.B. 24, being reported on in DOE contract reports. We were also looking for "mixed" coal balls, since bioturbation below Brereton more commonly reached the Herrin peat here than in O.B. 24. Some samples suitable for chemical analysis (including Anna Shale) were also collected but were too late to analyze; some samples collected were pictured in Part II of the report. I also collected a couple of coal balls with attached coal for R. Winston and a set of coal balls for T. L. Phillips to do peat analysis (peels and balls (?) to Paleoherbarium).

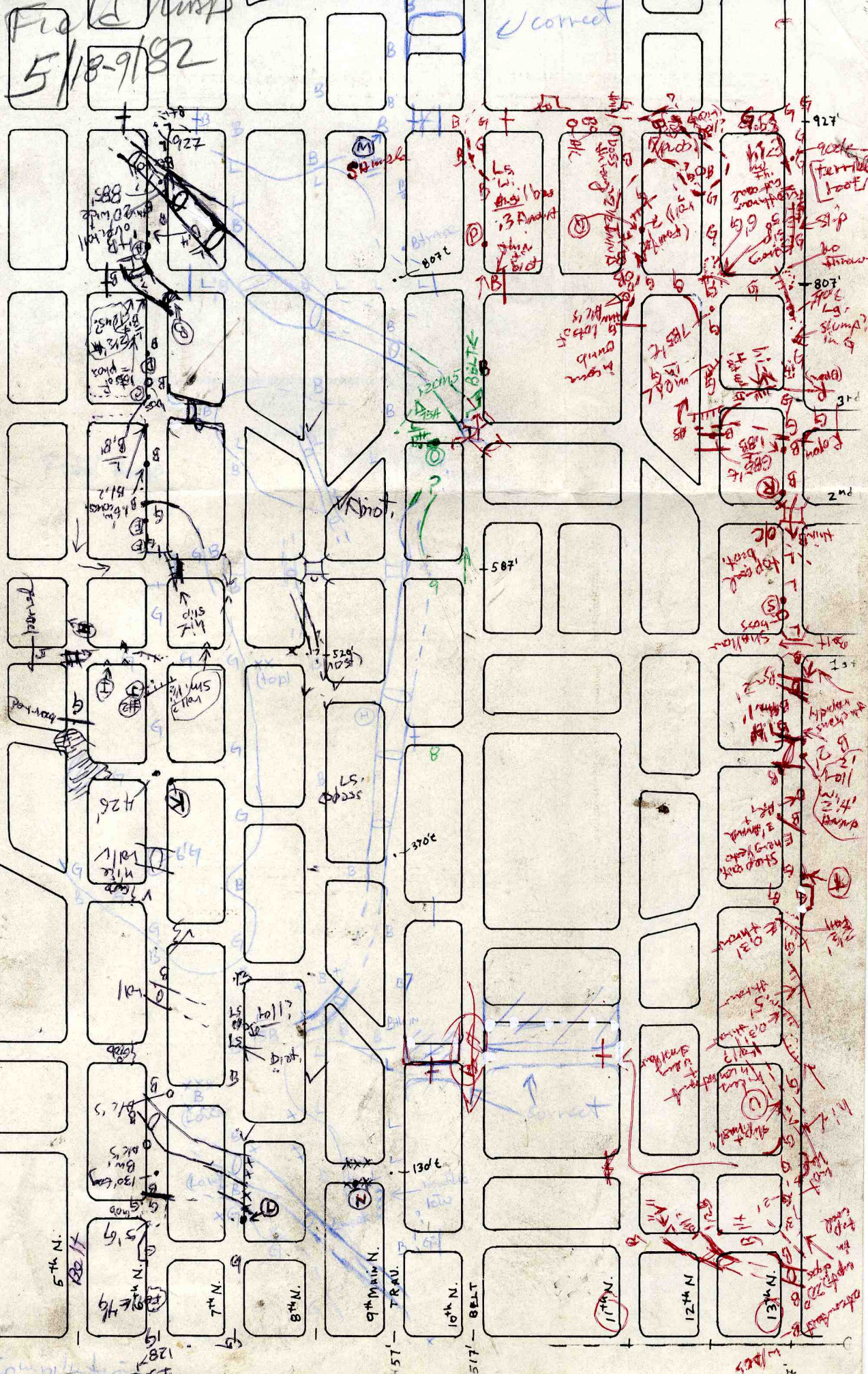
Mapping in the North Mains

We returned to area Nelson and I began to map in April - 5th N to 13th N. from 1st Main E. ("zero") to 927' cross cut. Joe Kelly, who recently worked in O.B. 25, said the coal is thicker (like O.B. 25) on the west side of O.B. 27 and the roof is better.

We begin on 6th N., working south. All original measures are metric, accurate to 1/2 cm or better.

Field Map
5/18-9/82

correct



Comp

57' - BELT

13th N.

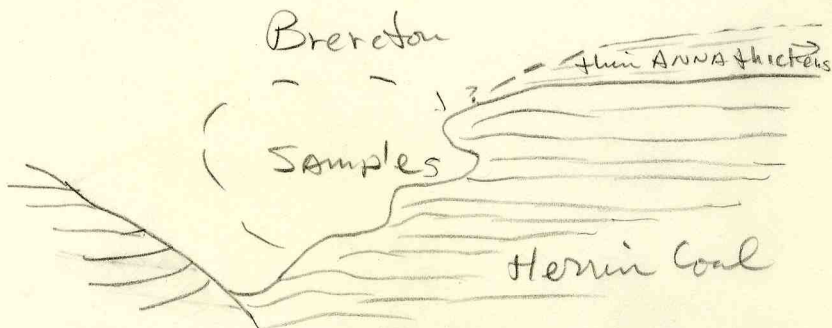


FORM 180 W

Old Ben 27

-2- of 16, plus 2 maps DeMaris

- A. Thickness at 835'N. under thin Anna roof: 5.22' above b.b., .08' blue band, .79' below b.b., T = 6.09'
- B. Weak show of a wide erosional roll on southeast intersection corner; 0.5' claystone and impure coal with relatively conformable appearance. No slips here; thickens to 1' gray claystone to south along rib. Is 2½' on opposite corner.
- C. A trace of light gray shale/claystone here - probable roll-fill material.
- D. Brereton locally pushed into (bioturbation?) top of the Herrin coal. Fault formed under Brereton mass. Anna generally displaced (soft-sedimentary deformation) or mixed in, but is present away from center of feature.



Feature looks like a "boss" (à la Crown II), but bioturbation traces are present in feature. May be bioturbation-induced flow, or unusual area of intense bioturbation in limited area. Something similar once seen on longwall traverse in O.B. 24. Samples of Brereton (C-1, -2, -3) collected.

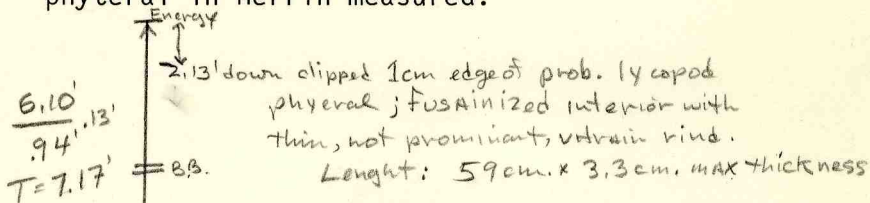


FORM 180 W

Old Ben 27

-3-of 16, plus 2 maps DeMaris

- E. Coal thickness under Energy roof taken, and lycopod phyteral in Herrin measured.



- F. Energy shale is medium gray with yellow-weathered shell traces and nodules. Thin coal riders rise up to 0.8' above contact; only a few such were seen. Site G. inadvertently skipped.

H. (Danner's 1) Broad feature at base of Energy shale with lens-like "roll" appearance, but composed of similar material. Feature runs NNW-SSE and has weathered yellow (sulfates from pyrite?); banded coal stringers and riders up to 2 inches thick (thus, composed of peat) are common. Shale above the feature is typical nodule-banded light gray Energy shale. Feature must be related to original distribution of Energy shale; why it should be sulfur-rich is a puzzle.

I. Another thin "roll" feature at base of Energy (as above) on S. rib (0.85' thick) but not on opposite rib. Laterally a pair of even shallower features running roughly N-S can be seen. Such features were rarely seen at O.B. 24 due to many fewer exposures; O.B. 25 or 27 would be good place to study them.

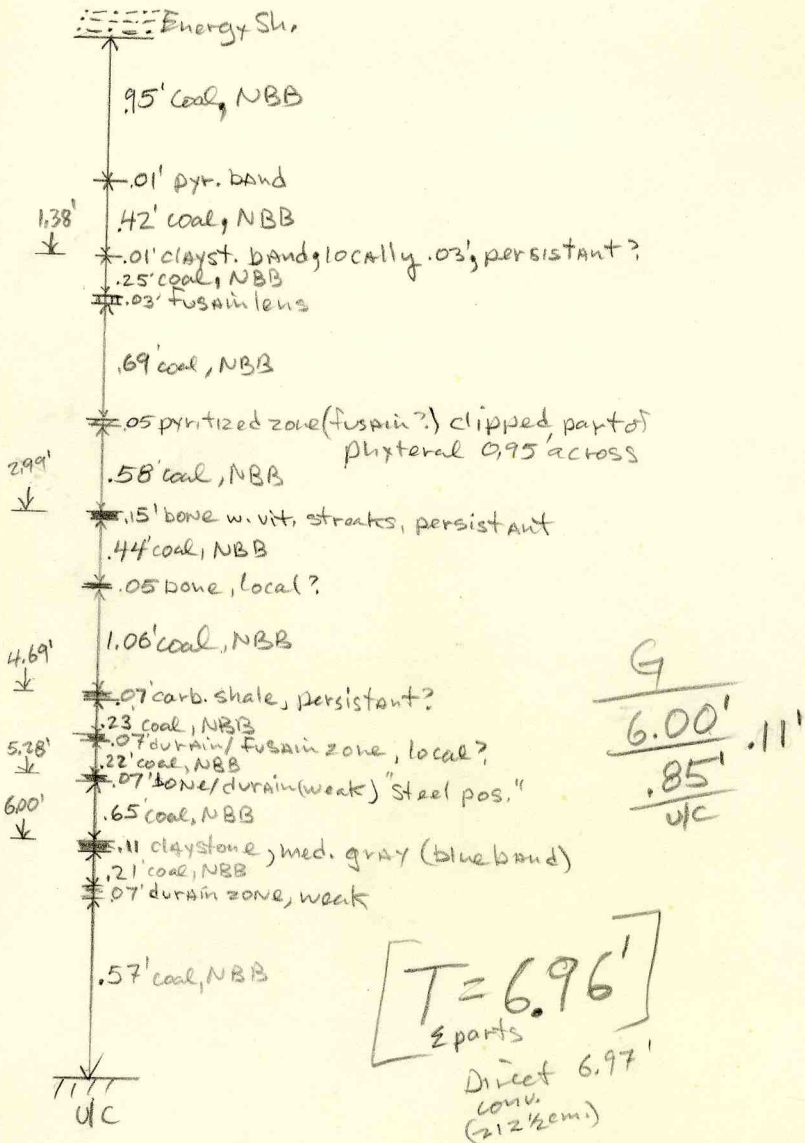
J. (Danner's #2) Odd concretions within the Energy seem to have common orientation, i.e. N60-70°W. similar to nearby fault. They look like burrows, but are too short. Diameter 8-12 mm, sub-vertical and tapering at end. XRD proves these are each small sideritic concretions (see Danner's notes).



Old Ben 27

-4-516 plus 2 maps DeMaris

K. Coal description under Energy Roof at 426' crosscut.



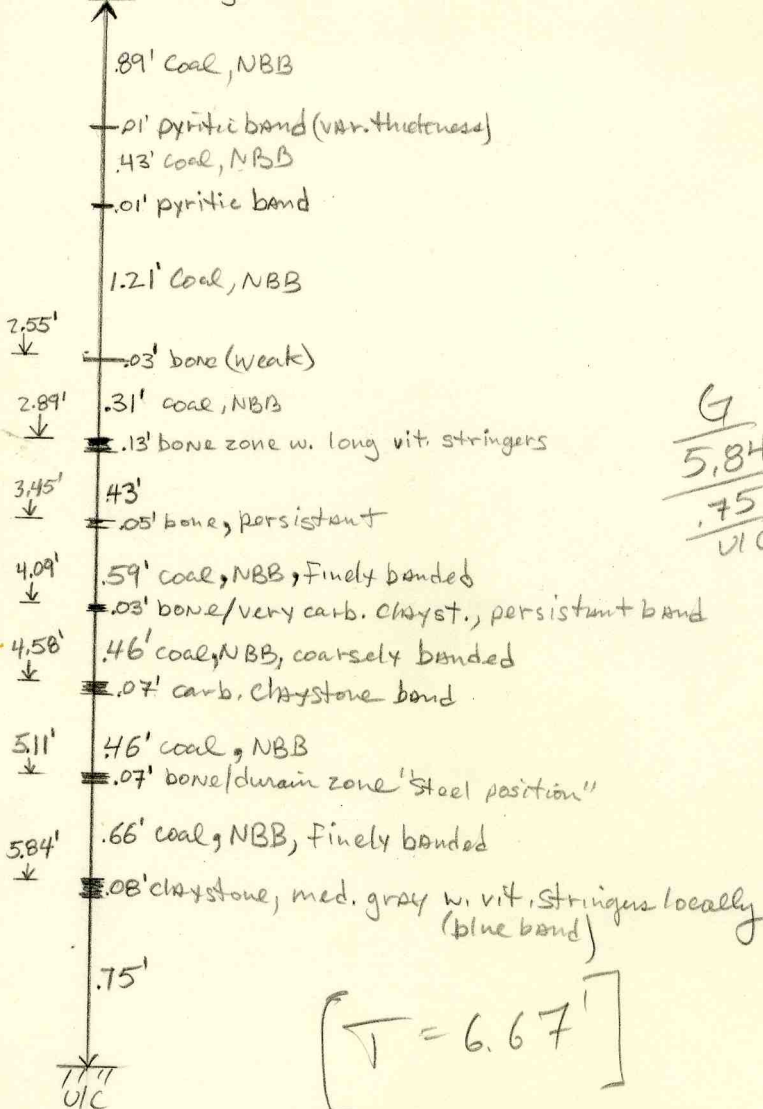


Old Ben 27

-5- of 16, plus 2 maps DeMaris

L. Coal description under Energy Shale roof at 80' N. on 7th N. entry. Conv. from metric.

Energy Shale





FORM 180 W

Old Ben 27

-6- of 16, plus 2 maps DeMaris

L. (Cont)

Just to the north at G/B roof contact coal balls are found around the blueband. A little further north near the erosional roll they are at mid-seam. By the pillar corner they are at mid- to upper-seam. Pattern may be significant to genesis.

M. Revisit of M. of previous trip where bioturbation tubes in coal (mixed or faunal coal balls to some) and associated material were to be sampled. Look around area showed some odd low-angle slips in coal with pyritic mineralizations. Mineralized wood (poor quality) about 20 cm. down into Herrin taken (C-4). Sample sought after on first visit was chipped out (C-5). It is a "mixed" coal ball - appears to be a Brereton-filled bioturbation trace in the Herrin. Oriented sample has coal to top and bottom. See previous notes.

I also sampled base of Anna shale where 0.55' thick and quite bioturbated at top. Block of basal $4\frac{1}{2}$ cm. sampled (C-6) which has calc/apatite band at top. Broken sample excluding basal 1 cm. and calc./apatite band (C-7) sampled for possible chemistry or DOM work. A separate bioturbation trace into top coal also sampled (C-8A).

C-5 is the key sample. Tubular trace extends "into the rib" after removal of 2nd large piece. The dull fusain-like appearance of the material may be deceiving; did not see much real mixing here, although sliced block mount will determine that. Shells in the limestone are mostly pyritized. Trace itself is about $3\frac{1}{2}$ cm. in diam. and turning fairly abruptly i.e. est. 15 cm radius.



FORM 180 W

Old Ben 27

-7- of 16, plus 2 maps DeMaris

N. In midst of most concentrated coal balls; I took a suite of coal balls in 3/4' between floor and blueband for T.L.P.'s peat analysis. One sack and 2 buckets taken from whole crosscut area; coded red with white top when known. One sack random coal balls, all from above blueband, taken and coded green, with white top (up) when known. R. Winston's samples are white top only; one big block and several small ones.

Samples for my own work were taken. One coal ball which sat on the underclay was sampled before being cut at Paleobotany Lab (Herb. No. 27788A-D); one slice for carbonisotope sample (C-8B) and underclay off base for XRD analysis (C-9), to check carbonate levels. Also sampled Brereton limestone in Herrin top coal (faunal coal ball) to east side of crosscut (C-10), and a concretion (coal ball?) in top coal just below Anna Shale (C-11).

This highly productive day (especially in sampling) allowed us flexibility on day two to visit longwall face.

Continued Mapping in N. Mains (Day 2)

Jim Minton was showing us and two students around (Jeff Helbing - Platteville (WI), mining engineer, and Dan Chady - SIU Mechanical Engineer). He indicated concentrated coal balls had been hit on the longwall panel, which we can look at as time allows. Panel being mined is the southernmost one of the two finished E-W panels, between the 3rd and 4th E. off S. Main. We agreed to map til 1:30 in N. Mains, and then look at the longwall. I will map the 11th and 13th, Danner will finish 10th and 12th Entry.



FORM 180 W

Old Ben 27

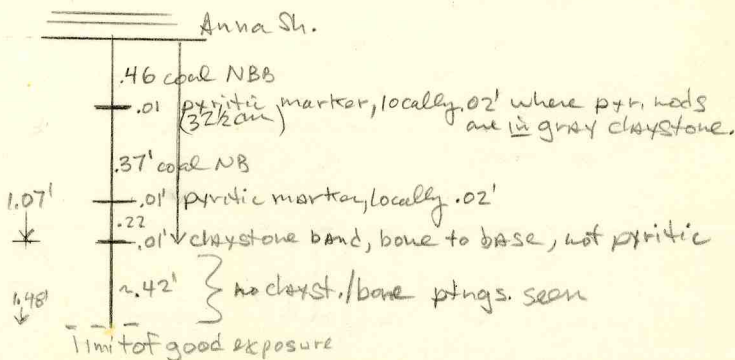
-8- of 16, plus 2 maps DeMaris

- O. Good exposure "on the way in" at area checked for erosional roll material; N-S roll seems to vanish. Coal is thin and was measured.

B thin (2.4), no clod, but some bioturbation at Brar, contact

$$\begin{array}{r} 5.20' \\ - .75' \\ \hline \text{v/c} \\ \hline \end{array} \quad [T = 6.11']$$

- P. Nice top-of-seam exposure (undusted!) described: Anna is 0.8' thick with phosphatic bands at 0.18' and 0.30' above contact. Traces of similar-appearing material at contact also (C-12A, B, C). Partial desc.:



No shale/bone partings seen from 33 to 55 cm down, limit of good exposure.

- Q. Thickness taken just under edge of Energy Shale wedge (.33' here):

$$\begin{array}{r} 6.10' \\ - .72' \\ \hline \text{v/c} \\ \hline \end{array} \quad [T = 6.89']$$

- R. Top and bottom of Anna Shale sampled where 1.9' thick. Bottom 0.4' is C-13 and 0.1' thickness; 0.3' down from top of unit (to escape worst of bioturbation) is C-14.



FORM 180 W

Old Ben 27

-9- of 16, plus 2 maps DeMaris

S. Fall exposes base of Brereton. It is medium gray, biomicrite (.15-.2) with clay-rich zone above it with scattered large crinoid columnals. Sample C-15 includes crinoid and Herrin contact. I checked for bioturbation of top coal - found only a little tube-like feature max 0.2' deep.

T. Thickness under Energy roof taken:

$$\begin{array}{r} 9 \\ 5,25' \\ \hline .84' \\ \hline 41c \end{array} \quad [T = 6.17']$$

U. Linear feature under Energy roof seen; hard to track but appears to be running NNW-SSE. Only identifiable using (weak) bedding of Energy which arches up within and over the feature; coal riders not consistent, i.e. angle formed doesn't always open toward center, plus ripped off rider (= stringers) are also present. Peat loss, if present, is minimal under this feature. See comments on similar feature at Site H. "Roll" is not appropriate for these since there is little if any protruberance down into Herrin Coal.

We finished mapping on 12th and 13th and then had lunch.

Longwall traverse at 4375'E.

Head gate pillars on 100' centers, next on 72' centers. They try to leave $\frac{1}{2}$ ' of floor coal for stability. In this panel they are mining west, beginning in thinner coal. Measured headgate (12th E.) mining height was 7.0'; they are cutting roof across much of the face because the shlds will not depress further. Shields are numbered 1 to 121 from S. to N.



FORM 180 W

Old Ben 27

-10- of 16, plus 2 maps DeMaris

Shield	Description
9/10	Thin Anna roof; Brereton exposed. Coal balls at $\frac{1}{2}'$ and $2'$ from top of Herrin; medium sized and pyritic. $\frac{\frac{1}{B} 0.8' \text{ w. biot. tubes + phos. bands}}{5.02' .08'}$ $\frac{.33' .08'}$ Bone band at "Steel" position, $0.59'$ above blue band.
14	Mid-seam coal balls $1\frac{1}{2}'$ to $3'$ above floor; floor is just above blueband ($5.12'$ Herrin exposed), because steel band (bone here) is $0.52'$ above floor.
16	Coal balls in top coal under Anna roof and large coal balls low in seam.
18/19	Just past center of erosional roll, low, cutting exposes only $.62'$ coal below blueband. $\frac{2' \text{ roll in fill, impure coal at top}}{4.2' \text{ coal w. coal balls}}$ $\frac{.62' .08 \text{ bb}}{etc}$
23	Top coal; by accident cutting underclay. Blue band $0.13'$, coal below only $0.64'$. No nodules seen in underclay.
27	Still in top coal; mid seam coal balls present
38/39	Longwall down so full seam desc. done under Anna roof. Traces Energy on shield top.



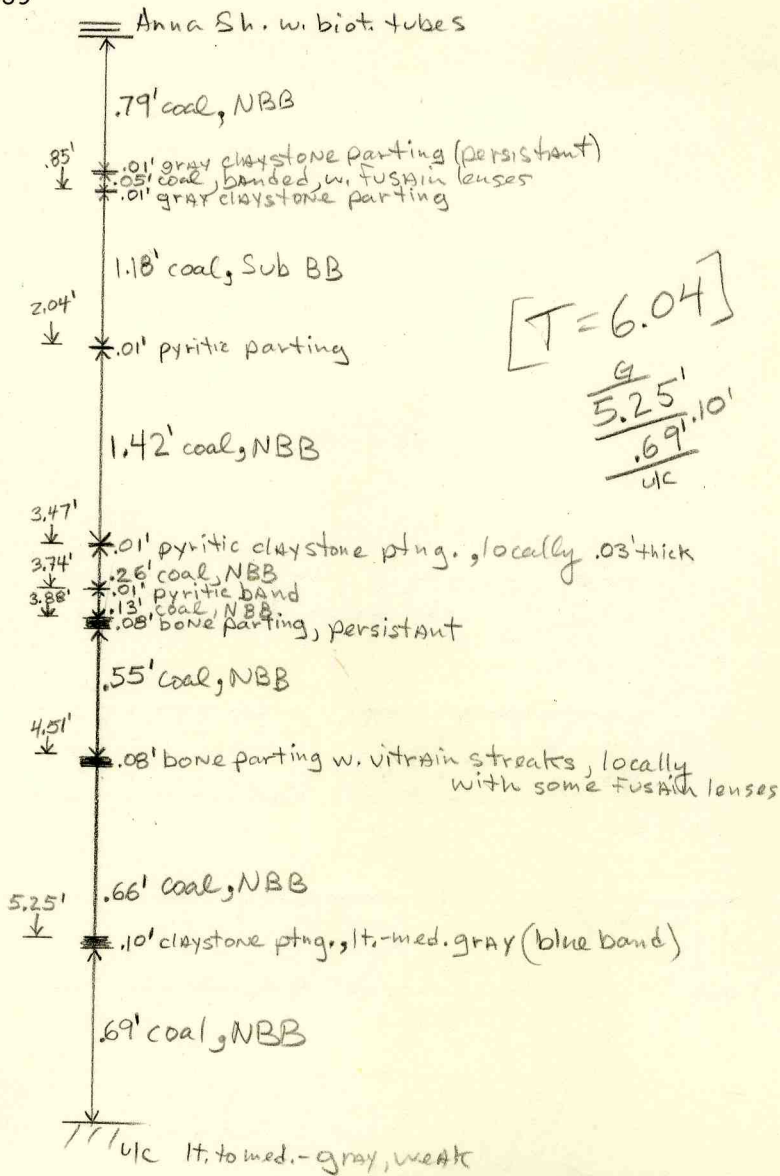
FORM 180 W

Old Ben 27

-11-of 16, plus 2 maps DeMaris

Shield Description

38/39





FORM 180 W

Old Ben 27

-12-of 16, plus 2 maps DeMaris

Shield	Description
43/44	Anna with bioturbation tubes; Danner finds "mixed faunal" coal ball. Tubes represent burrows into top coal showing various effects, but a few show secondary mineralization of peat. Coal is boney at top. Large collection made of material (C-17 through C-27 inclusive).
47	Anna roof; top-coal coal balls
50	Anna roof, over 1' seen. No coal balls seen in well-exposed face. Actual mining height here is 6.4'.
51/52	Anna in sharp contact to Energy; Anna "leaves" at 12-14° angle to top of coal. Coal rider over 2' long and 0.33' max. thickness present (exact relation of rider to Energy unclear from notes. P.J.D.)
55	Energy roof; slip (compactional?) with 0.8' displacement dips North at about 45°; topo change from roof change contact totals about 2½' down to N. (top of seam basis). This is typical of transitional roof, as is the compactional fault.
59	Energy roof, irregular contact

$$\begin{array}{r} G \\ 5.97' \\ \hline .33' \\ \hline \end{array} .08'$$



FORM 180 W

Old Ben 27

-13-~~8~~16, plus 2 maps DeMaris

<u>Shield</u>	<u>Description</u>
70	Energy roof, medium gray; thin coal rider up to N. at 68/9
80	Energy roof; slip dipping N. at 78/9 with medium angle and throw of 0.7'. Contact otherwise level.
90	Energy Shale roof with thin "rider" coal (see comments at 96) 0.3' above Herrin Coal. It begins mid-89 and runs past shield 100.
96	Energy Shale roof with thin "rider" coal. I sampled the coal which is quite impure (about 40% ash by LTA) and is .07' thick where sampled (-C-16). It is unconnected and clearly younger than the Herrin Coal, and thus represents a failed swamp re-establishment. The coal thins to nothing at 103 (13½ × 5 foot shields) and thus is 68' long as exposed with the horizon continuing (to 104/5) another 7' as a band of pyritic concretions, probably formed on decaying plant remains. Maceration 2766.
110	Energy Shale roof with pyritic nodules at contact.
114	Energy Shale; small coal rider up to north.
121	Last shield; Energy Shale with rider and stringers to 1' above Herrin. Tailgate has large cribs made of 8" x 8" (oak?) beams at mid-entry.



FORM 180 W

Old Ben 27

-14- of 16, plus 2 maps DeMaris

Samples: OB 27 set C (-1 to -27 complete)

<u>#</u>	<u>Site</u>	<u>Description</u>
-C-1	D	Brereton injected/carried into the Herrin under a "boss". Tapering piece with coal at top and bottom (not oriented).
-C-2	D	Brereton with carbon (coal?) traces
-C-3	D	Smaller piece of Brereton/Herrin contact (for casting?)
-C-4	M	Coal ball of degraded peat, pyritic, oriented.
-C-5	M	"Mixed coal ball" - probable bioturbation trace in Herrin with coal to top and bottom; oriented; see previous notes.
-C-6	M	Base of Anna Shale where 0.55' thick. Block (oriented) of basal 4½ cm including calc./apatite band at top.
-C-7	M	Base of Anna Shale for crushed sample. Similar to C-6 except excludes basal 1 cm (coaly) and top calc./apatite band.
-C-8A	M	Bioturbation trace in top coal (Herrin).
-C-8B	N	Coal ball at base of Herrin, for C isotope analysis (Paleoherb. #27788).
-C-9	N	Underclay of Herrin off base of C-8B (#27788A-D). XRD.
-C-10	N	"Faunal coal ball" - Brereton limestone in Herrin (top coal) from E. side of N.



FORM 180 W

-15-of 16, plus 2 maps DeMaris

Old Ben 27

#	Site	Description
-C-11	N	Concretion (c.b.?) in top coal just below Anna Shale.
(Day 2)		
-C-12	P	A = Calc./Phos. band about 1 cm. thick 0.18' above base of Anna. B = Small brach. (?) in Anna C = Bioturbation trace in Anna
-C-13	R	Bottom 0.4' of Anna where 1.9' total thickness.
-C-14	R	0.1' thickness of Anna beginning 0.3' down from top of Anna.
-C-15	S	Base of Brereton with Herrin contact and crinoid columnal in top argillaceous zone.
-C-16	Shield 96	Coal within Energy Shale, .07' thick, 0.3' above top of Herrin for L.T.A. (L02332 = 39.9%) and palynol. (Mac. 2766).
-C-17	Shield 43/44	Large sample with multiple mixed coal ball in coal matrix; prob. Anna roof on one side.
-C-18	43/44	Mixed c.b. with coal at top and bottom (Photo used in Contract Report, part 2).
-C-19	44	Mixed coal ball, oriented "up".
-C-20	43/44	Mixed coal ball with fusain.



FORM 180 W

-16- of 16, plus 2 maps DeMaris

Old Ben 27

<u>#</u>	<u>Site</u>	<u>Description</u>
-C-21	43/44	Round coal ball, type unknown; traces of clastics on it.
-C-22	43/44	Small coal balls with fusain in coal matrix.
-C-23	43/44	Mixed coal ball with prominent gastropod.
-C-24	43/44	Coal ball of partly compressed stem or root-interior appears to be fusainized.
-C-25	43/44	Mixed coal ball similar to -19 and -23.
-C-26	43/44	Mixed coal ball
-C-27	43/44	Mixed coal ball

Written up 5/87 PJD

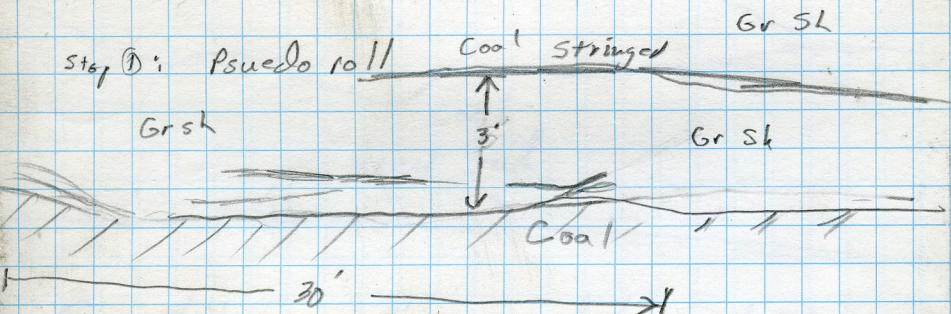
Compilation follows as an appendix

Old Ben C.C.
Minc No. 27

May 17, 1982
Franklin County.

Guide: Joe

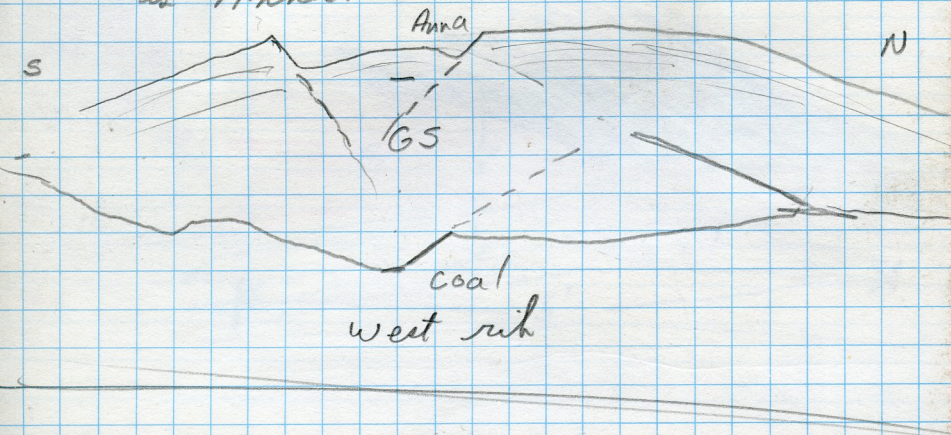
Purpose of visit: Roof mapping & collect
coal balls



This phenomenon appears to be the
long profile of a half ass roll.
It dips into the coal about 0.5'
Top is rather unstable; several cicles
in entry

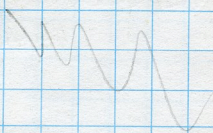
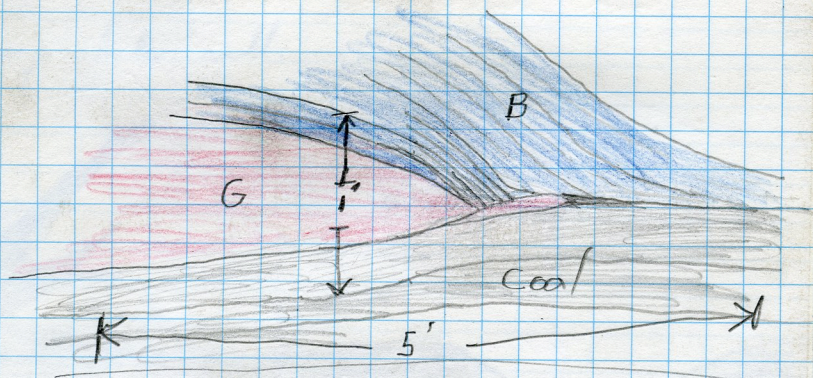
- (2) Projector in roof: a small area of roof in
the entry contains numerous small finger
like projectors. It looks like
a bunch of fingers pointing down
out of the roof 30-45° from horizontal
they point N60-70°W. Sample taken

- ③ mega roll - 40' long, 5' thick,
displaces up to 3' E of coal.
Roll material is gray shale, roof
is Anna.



- ④ roll - 3.2' gray shale, coal stringers,
1.5' black shale, 2' ls caprock
Displaces all but 3' of coal
coal banding truncated, appears
to be erosional channel
cut down in benches or steps

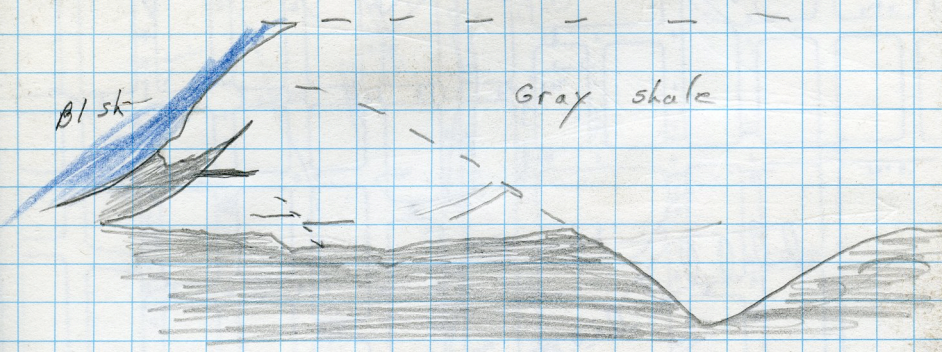
Step 5: Transition zone - B to G



Longwall No 1:

Shield #53:

Gray shale roll:





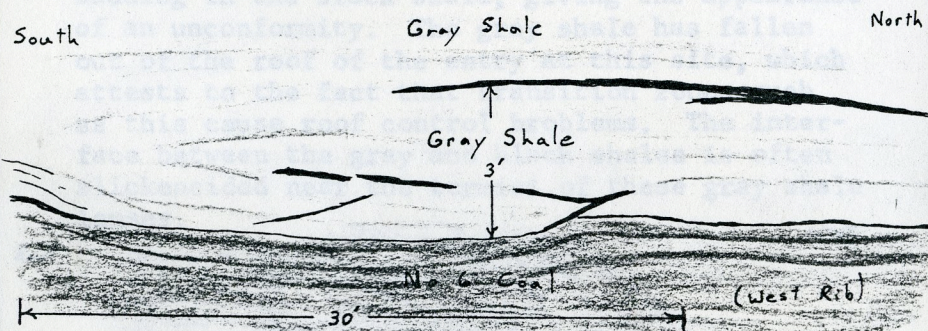
FORM 180 W

Old Ben Coal Co.
Mine No. 27

Franklin County
May 19, 1982

Notes by Steve Danner. Mapping partner - Phil DeMaris. Our guide on the first day was Joe Kelly. Jim Minton was our escort for the second day. The purpose of this visit was to map a small area in the Main North entries and to collect coal balls from below the Blue Band. See DeMaris's notes for exact location of mapping area. A reduced copy of the mapping area is enclosed to show locations of the stops.

Stop #1: Pseudo-roll in pillar rib. This is not what I would call a classic roll. A maximum of only 0.5' of coal is displaced at the top of the seam. The material in the roll appears identical to the roof rock which is the gray Energy Shale. The coal stringers extend another 15-20' beyond the end of the roll structure. (see sketch below) The roof in this entry is rather unstable and slabby, and requires cribbing. A large fracture near the south end of the roll is probably contributing to the ragged roof.



Stop #2: Finger rock roof. There is an area about 30-40' long where the gray shale roof has small



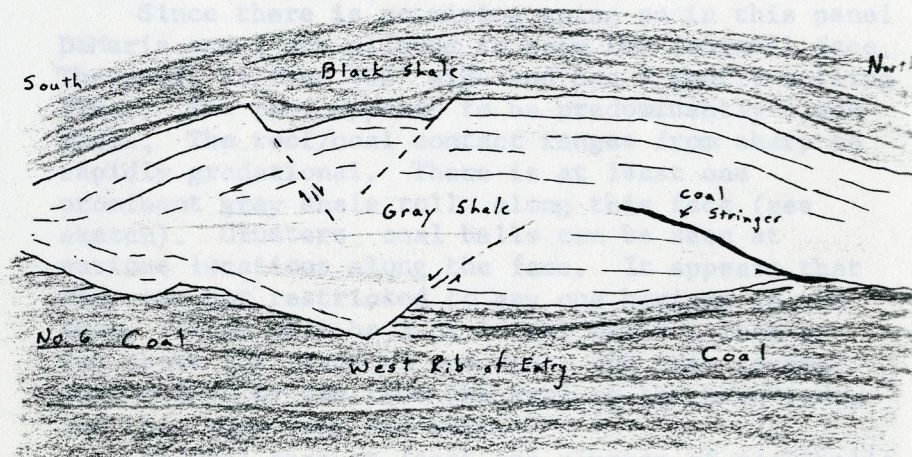
FORM 180 W

Old Ben No. 27 -----

page 2

finger-like concretions projecting downward at angles of 30 to 45 degrees from horizontal. Their orientation is remarkably similar, pointing N 60-70°W. The concretions are from ½ to 1½ inches in length with oval cross-sections. An average cross-section is about ½ inch by 5/16 inch. Some have a yellowish rind with a dark gray core. The roof rock surrounding the "fingers" is typical of this part of the mine. It is the platey, jagged gray shale; it is hard, dense, and shows little alteration or weathering. Samples of the "fingers" and roof rock have been collected.

Stop #3: Mega-roll: Roll is about 40' wide, 5' thick, and displaces about 3' of coal. Roll material is gray shale, while roof is black (Anna) shale. The banding (bedding) in the top of the coal is sharply truncated by the roll. There is little or no apparent deformation. It appears that the coal was eroded in small benches.





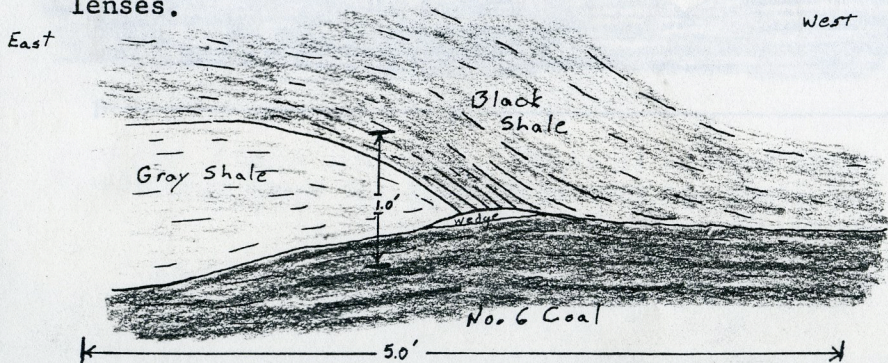
FORM 180 W

Old Ben No. 27

page 3

Stop #4: Here we have yet another roll. This roll is at least 300' in length. Its width varies from a little over 10' to almost 30'. At this location it contains a maximum of 3.2' of gray shale. This is overlain by 1.5' of black (Anna) shale, which is capped by the Brereton Ls. Roughly 3' of coal is displaced by the roll, leaving about 3' of coal in the rib. The banding at the top of the coal is sharply truncated, indicating an erosional contact. It appears that the coal was cut down in steps or benches. The roll seems to terminate as abruptly as it began.

Stop #5: Terminus of gray shale lens. (see sketch) While there are numerous gray shale lenses in this area, this one has a somewhat unusual terminus. The overlying black shale tends to be conformable with most of the gray shale lens. At the terminus however, the black shale displays a sharp unconformity. Apparently a wedge of the gray shale squeezed out beyond the end of the lens before either of the shales had lithified (soft-sediment deformation). This wedge truncated the bedding in the black shale, giving the appearance of an unconformity. The gray shale has fallen out of the roof of the entry at this site, which attests to the fact that transition zones such as this cause roof control problems. The interface between the gray and black shales is often slickensided near the termini of these gray shale lenses.



FORM 180 W

Old Ben #27

page 4

Stop #6: Bastard Ls. A small lens of "bastard limestone" occurs between the coal and black shale roof on the northeast corner of this intersection. The limestone appears to be a micrite containing abundant fossil fragments. The lens attains a maximum thickness of about one foot. This is the place I have encountered this limestone in the mapping area.

Stop #7: Longwall panel #1. The longwall panel has been shut down for the day so that the miners can replace one of the drums on the shearer. It seems that they have encountered "coal balls" in the seam. Since the coal balls are so much harder than the coal, they tend to "chew up" the carbide bits in the shearing drums, as well as damage the bit holders. The miners are hoping that the new drum will be able to withstand the abuse better than the old one. The new drum has a different bit configuration.

Since there is no mining going on in this panel DeMaris and I are allowed to roam the longwall face. The panel is over 400' wide and has a gently rolling floor. The roof appears to be predominantly black shale. The roof/coal contact ranges from sharp to rapidly gradational. There is at least one prominent gray shale roll along this face (see sketch). Clusters coal balls can be seen at various locations along the face. It appears that they are not restricted to any one horizon in the seam. There will be 3 or 4 coal balls a foot or two above the floor at one spot, and then several more a foot or two from the roof at the next spot, and then some near mid-seam.

We feel that at least one cluster of coal balls may be related to burrowing along the roof/coal contact. The coal balls are located in the upper



Old Ben #27

page 5

2 to 3 feet of the seam. Several lime-filled burrow tubes are exposed in the black shale along the top of the coal. These burrows could have served as conduits for the lime solutions or lime muds that permeated the peat and later became coal balls. An additional argument for this hypothesis is that at least one of the coal balls contained patches of fossiliferous ls (shell fragments). Allogenes such as the shell fragments could not have filtered down through the peat, so they must have been piped in through some conduit such as the burrows. DeMaris has samples of these coal balls.

The following sketch is of the gray shale roll I encountered in the longwall face. It was located in front of shield #53. DeMaris's notes should indicate the position of the face at the time of our visit.

