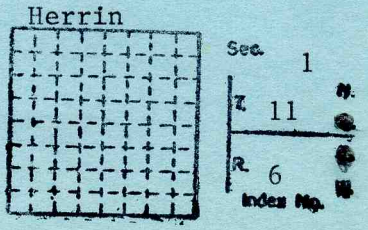
Freeman United Coal Mining Company

Crown III Mine



Mine Index 996

Macoupin (nr. Girard)

MOORE'S MODERN METHODS

Mine Name or No., Crown 3 mine

mile from

Operator, 19

Operator, 19

Entrance, Elev., ft. {above, below,

Depth to bottom coal, ft. Alt.

SURFACE DATA.

A. Topography, See

B. Surficial materials. (1) Character,

(2) Thickness, (3) Effect on mining and shaft-sinking, of former drainage lines, underground water strata, etc.

See

C. Outcrops, (1) Character, See

(2) Structure, See

(3) Fossil horizons, See

Collection No.,

(4) Evidences of subsidence, See

D. Note collection of mine maps, drill records and shaft logs.

See drill record sheet,

E. Notes on surrounding area,

Railroad, Wagon, Idle, Abandoned

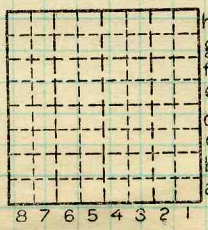
IDENTIFICATION

County No. 241 Coal No.

Part

Quad.

County



Sec. 36

T. 12 N. S.

R. 6 E. W.

Index No.

L.—SURFACE SHEET (Geol.)

(Sheets) COAL PRODUCTION (Sheet)

FREEMAN UNITED C.M.C. "CROWN III"

Period Mo. Day Year	Mo. Day Year	Tons		Cumulative
First production July 1981.	1981	239	278	
Idle as of June 1982.	1982	264	938	
	1983		0	
	1984		0	
	1985	600	900	
	1986	1,084	407	
idled due to contract buyout over early summer →	1987	740	164	
	1988	idle		
	1989	idle		
plans made to reopen →	1990	idle		
Prod began Aug –	1991			
	1992			
	1993			
	1994			
	1995	1,130	730	
	1996	1,292	620	8,832,223
	1997			
12/17 ended 92-day strike! →	1998			
	1999			

SUMMARIES

No. to No.

Railroad, Wagon, Strip, Idle, Abandoned

IDENTIFICATION

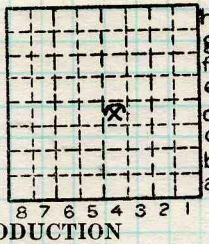
County No.

Coal Report No. S-21

Coal No. Herrin (No 6)

Quad. Farmersville (7.5') Quad.

County MACOUPIN



Sec. 1

T. 11 N.

R. 6 W.

Index No.

COAL MINE—PRODUCTION

ILLINOIS GEOLOGICAL SURVEY, URBANA

(2732—2M—7-41)

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

MOORE'S MODERN METHODS

FORM 180 W

Company: Freeman United C.M.C.
Mine: Crown III
Address: P.O. Box 716, Farmersville, IL 62533
Telephone: (217) 627-2161
Location: 3 miles west and one mile south of Farmersville, Macoupin Co., IL, or center of Section 1, T.11N, R.6W, Macoupin Co.
Location of man & materials shaft: 370' south and 320' east of the center of Sec. 1, T.11N, R.6W; or NW NW SE Sec. 1; or 2270' from the South line and 2320' from the East line of Sec. 1.
M&M shaft depth: 360' to coal
Coal mined: Herrin (No.6) Coal
Mining method: Room and pillar by continuous miner

Crown III Mine July 29, 1981 Notes by John Nelson

Only the slope and the man-and-materials shaft have reached the coal; the third air shaft is not yet connected. Freeman is operating one Jeffrey continuous miner for developing the bottom area. The slope and shaft are connected underground and mining now is proceeding on the north faces.

The shaft is 360 feet deep to the coal. The coal seam is about 7 feet high. In most of the bottom area some of the underclay and most or all of the Anna Shale are removed to provide extra clearance.

At the first sampling locality, tension re-bars are used for roof support. These are threaded rods, 5 or 6 feet long, inserted in holes drilled into the roof, and held in their upper portion by resin cartridges as in standard resin bolting. A metal plate is placed over the base of the bolt and held in place by a large nut, torqued to about 200 foot-pounds.

In the small area that we observed, the roof shows considerable variability much as at Crown II. Most of the area has Anna Shale, up to 3 feet or thicker and overlain by the Brereton Limestone. Several limestone "bosses" were noted. The roof at sampling locality 1 is Energy Shale. This shale occurs, as usual, in a lens-shaped body overlain with apparent unconformity by Anna Shale. The Energy Shale is medium-dark gray, smooth, fairly soft, and finely laminated. It is penetrated by greenish mottling or streaks, in places resembling synaresis as in the Lawson Shale. The Anna Shale above the Energy Shale is less than a foot thick, and is dark gray, poorly bedded, containing numerous phosphatic nodules. The limestone contains partings of greenish micaceous shale.

The floor is greenish-gray to olive-gray claystone, where observed. No problems yet with heaving or squeezing. No roof falls of any note, and no water seepage noted.

Freeman United Coal Co. Crown III Mine 7/29/81

Notes by John Nelson on a visit with Steve Danner, Suzanne Russel, and John Hamilton. Accompanied by the Asst. to the Superintendent.

The purpose of this visit was to collect a full-seam column sample and a channel sample at each of two sample sites. The coal is the Herrin (No.6) Coal.

Sample Site #1: Location: 2573' from North line and 2615' from West line of Sec. 1, T.11N, R.6W, Macoupin County.

Channel Sample C-1: (C21545)

Roof Shale: (Energy Shale) dark gray to black w/ greenish-gray mottling and streaks; hard; finely laminated; slightly silty; slabby fracture; somewhat brittle; soapy texture.

1.33' Clarain: moderate cleat development w/ calcite, kaolinite, and pyrite on cleat; occas. pyrite stringer; vitrain bands less than 0.01' thick.

0.05' Shale: variable thickness; contains stringers of pyrite. (Excluded from sample.)

0.90' Clarain: vitrain bands thicker than above, up to 0.03' thick; contains a few pyrite stringers; kaolinite on cleat.

0.03' Pyrite lens: contains stringers of bright coal. (Excluded from sample.)

1.22' Clarain: several vitrain bands 0.015' thick; several pyrite stringers; calcite and kaolinite on cleat.

<0.03' Pyrite lens: contains stringers of bright coal.

(continued on next page)

Crown III Mine Sample C-1 continued

0.56' Clarain: contains several vitrain bands up to 0.015' thick; calcite on cleat.
0.06' Pyrite & shale: contains a little coal. (Excluded from sample.) (BB.)
0.57' Clarain: maybe duroclarain; calcite, pyrite, and kaolinite on cleat.
0.05' Fusain
0.63' Clarain: not as bright as upper clarain units; contains a few pyrite stringers; more pyrite on cleat than above.
0.05' Pyrite lens: thins laterally. (Excluded from sample.)
0.64' Clarain: vitrain bands thicker than above w/ two bands up to 0.03' thick; some fusain lenses up to 0.03' thick.
0.08' Shale: contains vitrain stringers. (Excluded from sample.
0.41' Clarain: or duroclarain; vitrain content increases at base of unit; some pyrite and calcite on cleat.

Floor Claystone: med gray; moderately soft.

Total thickness of coal: 6.61'

Sample Site #2: Location: 2090' from South line and 2612' from East line of Sec. 1, T.11N, R.6W, Macoupin County.

Channel Sample C-2: (C21546)

Roof Shale: (1.5' thick & capped by a medium dark gray limestone) grayish-black w/ greenish spots and mottles; smooth and poorly bedded; numerous phosphatic lenses and laminae in the upper part of unit. Anna?

(continued on next page)

Crown III Mine — Sample C-2 continued

1.15' Coal: NBB; hard; about 33% vitrain, remainder is mostly clarain w/ some durain; no visible fusain; abundant white calcite and a little pyrite on cleat.
0.02' Pyrite: fine-grained; light brassy color; thinly laminated w/ dark shale; discontinuous band.
1.35' Coal: similar to above; contains a few laminae of fusain and pyrite.
0.06' Shale: dark olive-gray; hard; smooth; contains laminae of pyrite; discontinuous band. (Excluded from sample.)
0.62' Coal: similar to above.
0.02' Fusain: lenticular; soft; no visible mineralization.
0.35' Coal: similar to above.
0.08' Shale: brownish-gray; very hard w/ abundant disseminated pyrite; lenticular band. (Excluded from sample.)
0.75' Coal: similar to above; less mineralization on cleat.
0.07' Fusain: mid-hardness; no visible mineralization; lenticular.
0.11' Coal: similar to above.
0.06' Fusain: mid-hardness; lenticular.
0.59' Coal: no mineralization on cleat.
0.01' Fusain: contains a little pyrite.
0.63' Coal: trace of calcite.
0.02' Pyrite: lenticular; contains irregular streaks of coal = Blue band
2.40' Coal: w/ minor amounts of calcite and pyrite

Floor Claystone: med. dark gray; smooth; slickensided; contains particles of coal.

Total thickness of coal: 8.29'

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

mn_act_macoupin_11.tif

Headframe for man-and-materials shaft, and fan, at main portal of Crown III Mine.

mn_act_macoupin_12.tif

Control panel for hoist

mn_act_macoopin_13.tif

Hoisting drum for man-and-materials shaft at Crown III Mine.

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

Freeman United Coal Co. Crown III Mine
Macoupin County 1/21/82

Notes by Steve Danner on a visit with Dick Harvey and John Steele to Crown III. The purpose of the visit was to collect as many channel and bench samples as time would allow. Our guide was Dave Beerbower, the mine superintendent.

Sample Site No. 1: 1275' from North line, 2315' from East line, Sec. 1, T.11N, R.6W, Macoupin County. In-mine location: 1200' north of the man-shaft in the 12th entry of the Main North, west rib.

Roof: Shale-dark gray to black, with patches of greenish-gray mottling; laminar bedding, well-bedded; numerous light-colored lamina or bands (phosphatic?), as well as occasional gray nodules; silty and carbonaceous; numerous slickensides; irregular contact with coal.

1.56' Coal: N.B.B.; black, hard, thin-banded; pyrite on cleat and pyrite goatbeards; shale stringer 0.36' from top, fusain parting 1.1' from top, and pyrite lens 1.6' from top, all about 0.02' thick; thickest banding about 0.03' thick.
0.04' Durain: dull lustre, finely laminated.
0.06' Shale: medium dark gray; pyritic with coal stringers. (Excluded from sample)
1.37' Coal: N.B.B., similar to above; small cleat; banding generally less than 0.02' thick; less vitrain than above, one vitrain band 0.03' thick, cleated with no minerals; fusain lens 0.08' thick, 0.83' from top of unit.

Crown III Mine

0.04' Shale: very pyritic; lenticular, variable thickness, discontinuous.(Excluded from smpl)

0.65' Coal: N.B.B., similar to above; banding less than 0.01' thick; contains one fusain lens 0.05' thick; possibly calcite on cleat.

0.09' Shale: (Blue Band) dark medium gray, moderately hard; contains some coal stringers; little or no visible mineralization; continuous. (Excluded from sample)

2.15' Coal: N.B.B., similar to above; thin- banded; cleat better developed than above; some pyrite and calcite on cleat; numerous fine, vertical, pyrite veinlets; 0.02' thick pyrite-shale parting 0.26' from top of unit.

Floor: Claystone- light to medium greenish-gray, moderately soft, slickensided; some carbonaceous debris (stigmaria?); reported to be only one foot thick at best, appears to be underlain by a hard underclay limestone. Water spills tend to stand for days and weeks with little or none being absorbed by the underclay. It is doubtful that this floor would heave much at all.

Total thickness of coal: 5.92'

Sample numbers:

Channel sample 1: C21644 (full seam)
Bench sample (upper): C21646 (uppermost 1.56' of coal)
Bench sample (middle): C21647 (middle 2.02' of coal; excluded 3 shale partings)
Bench sample (lower): C21648 (lowest 2.15' of coal)

Sample Site No. 2: 1615' from North line, 2505' from East line, Sec. 1, T.11N, R.6W, Macoupin County. In-mine location: 1420' inby the 9th entry of the Main North, 20' east of intersection, north rib.

Roof: Limestone: medium gray, nodular, hard, argillaceous; greenish slip fractures between nodules; forms occasional bosses that protrude down through the underlying shale for 2 to 3 feet, must be shot down to allow adequate clearance for buggys and man-trips.

Shale: 0.4' thick; green and gray mottling; soft to moderately hard; soapy texture; bedding obscured; appears to slake readily.

Shale: 0.5' thick; dark gray with numerous light lamina; finely laminated; numerous slickensides; slabby fracture; contains scattered nodules; weathers similar to Anna Shale with a blue-gray surface oxidation; moderately sharp, undulating contact with the coal; slightly silty.

1.26' Coal: N.B.B., black, hard, banding generally 0.01 to 0.02' thick; more vitrain in upper half of unit; pyrite on cleat and in discontinuous lamina; some calcite on cleat; 0.04' thick fusain lens 0.04' from top of unit; occasional fusain lamina or parting; 0.04' thick lens of dull coal 0.74' from top of unit; irregular contact with underlying shale parting.

0.11' Shale: medium gray, moderately hard, rather smooth texture with only a trace of silt; contains stringers of bright coal and small nodules of pyrite; continuous; variable thickness. (Excluded from sample)

Crown III Mine

2.16' Coal: N.B.B., similar to above; moderate cleat development; some calcite on cleat; generally thin banded; numerous thin bands of dull coal; overall brightness less in lower half of unit; some pyritic lamina; vitrain bands average 0.02' thick, some up to 0.04' thick.

0.30' Dull Coal: finely laminated; contains some fusain; 0.03' thick pyrite parting at very top of unit.

0.30' Coal: N.B.B., similar to unit above dull coal.

0.07' Shale:(Blue Band) med dark gray; moderately hard; brittle; silty; variable thickness; carbonaceous; pyrite nodules locally; mod sharp contact with coal. (Excluded from sample)

1.30' Coal: N.B.B., similar to above; much calcite & kaolinite on cleat, some cleat pyrite; thin-banded; vitrain bands up to 0.02' thick; attrital coal finely laminated.

0.09' Fusain: pyritic; discontinuous; variable thickness; pyrite is finely disseminated or locally concentrated in streaks and nodules.

0.66' Coal: N.B.B., similar to above; sharp contact with underclay.

Floor: Claystone: medium gray with a greenish cast; mod soft; some carbonaceous debris; slickensided.

Total thickness of coal: 6.25'

Sample numbers:
Channel sample 2: C21645 (full seam)
Bench sample (upper): C21649 (uppermost 1.26' of coal)

(cont. next page)

Bench sample (middle): C21650 (middle 2.76' of coal; excluded 2 shale partings)
Bench sample (lower): C21651 (lowest 2.05' of coal)

The following rock samples were collected, numbered, described, and filed by Dick Harvey, Room 219, I.S.G.S.

1-21-Jan 82: Roof, sample site 1. Shale: black with greenish-gray mottling; silty; medium bioturbated lamina/lenticular and fabric lamina with large gray nodules scattered in unit. Located 6-10" above coal.

2-21-Jan 82: Roof, sample site 1. Shale: black with greenish-gray mottling; irregular color laminated by bioturbation and irregular fabric. Located 1-6" above coal.

3-21-Jan 82: Underclay, sample site 1. Claystone: greenish-gray with carbonaceous rootlets. Located 2-4" below coal.

4-21-Jan 82: Roof, sample site 2. Limestone: gray mottled light gray; fine-grained; breccia by algal structures. Located in large bioherm (boss) in roof over Herrin Coal.

5-22-Jan 82: Roof, sample site 2. Shale: black with fine greenish-gray lamina; silty; discontinuous but pronounced lamina by color (1-2mm). Located 2-8" over coal.

6-22-Jan 82: Blue Band, sample site 2. Shale: dark gray, silty, carbonaceous; lenticular fabric and color laminated; pyrite mineralized in most parts.

1-23-84

Coal plant planned in Macoupin County

SPRINGFIELD (AP) — An $800 million coal gasification plant planned for Macoupin County could provide up to 2,500 temporary construction jobs and permanent work for another 850 people, officials say.

Officials of Coal Gasification Inc., which plans to build the project just west of Farmersville, announced their intentions at a Statehouse news conference Friday.

Company president Robert C. Meissner said the facility would use 1.7 million tons of coal every year from the now-closed Freeman United Coal Co.'s mine No. 3, adjacent to the plant site.

Of the estimated 850 permanent jobs, about 350 would be miners needed to reopen and operate the Freeman mine, he said.

"If we don't put this kind of facility in central Illinois our kids will have no place to work," said U.S. Rep. Richard Durbin, D-Springfield.

Company officials hope to break ground on the project by next spring and complete construction by 1988.

The coal would be used to produce anhydrous ammonia, a widely used farm fertilizer, and sulfuric acid.

From Champ News Gazette July 23, 1984

Mine originally operated by: (1)
Date
Original name or number:
Illinois Coal Report p.
LATER OPERATORS
Date
Name or No.
...Wagon, Strip, Idle, Abandoned
IDENTIFICATION
County No.
Coal Report No.
Quad.
County
Coal No.
Sec. T. R. N. S. E. W.
Index No.
COAL MINE OPERATOR
(92753—1M—6-54)

Freeman United Coal Mining Co. - Crown III Mine
Macoupin County - Notes by John Nelson with Phil DeMaris. Guy Gilbert from Freeman. 1/16/86

Mine workings consist of sets of main entries driven north and south from shaft bottom. Panels will be driven east and west from these main entries.

A sandstone channel has been met at the face of the Main South, and nodules or masses of extremely hard black rock in or adjacent to the coal at the face of the Main North - very difficult to mine.

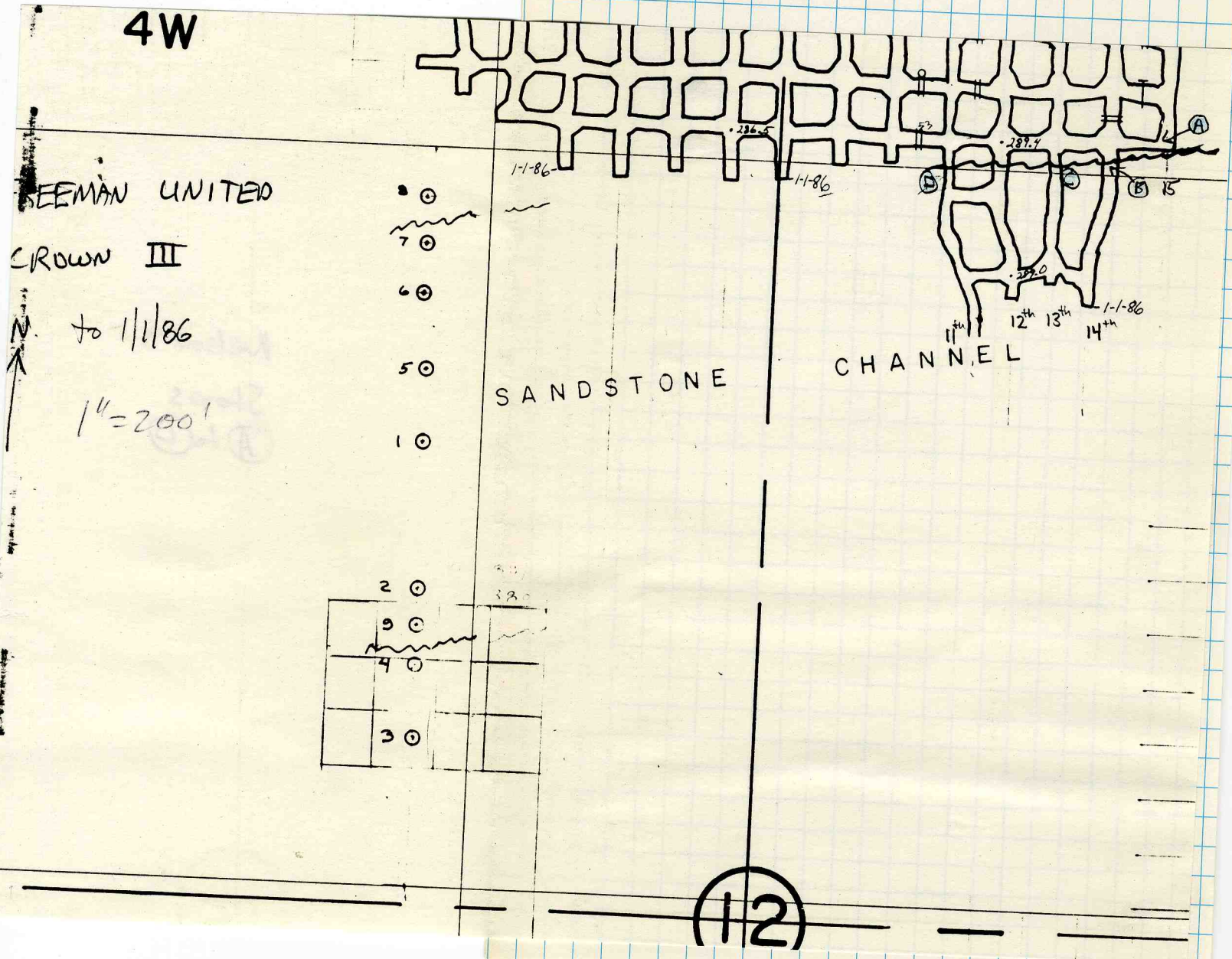
Sandstone Channel

The channel at the Main South trends slightly north of east and is several hundred feet wide. Four entries (No. 11, 12, 13 and 14) are driven partway across the channel, and several others have butted against it. The coal is entirely cut out.

A.) Entry No. 15 (easternmost entry) butted against channel. The coal is cut down from its normal 6½-7 feet thick to about 3 feet thick at the southeast corner of the entry. Heavy rock dust hides the details, but on the east rib the sandstone-coal contact can be seen sloping downward at a 30-40° angle. The contact is a knife-edge. 20 to 40 feet back from the face the sandstone can be seen overlying 1 to 2 feet of black shale above the coal seam. Here the lower surface of the sandstone is nearly horizontal, but knobby. The black shale is smooth hard and brittle, well-laminated, but the laminae are disturbed and the shale is fractured.

1/16/86

4W


FREEMAN UNITED
CROWN III
N. to 1/1/86
1" = 200'
SANDSTONE
CHANNEL
1-1-86
1-1-86
1-1-86
286.5
289.4
289.0
11th
12th
13th
14th
15
A
B
C
D
7
6
5
1
2
3
4

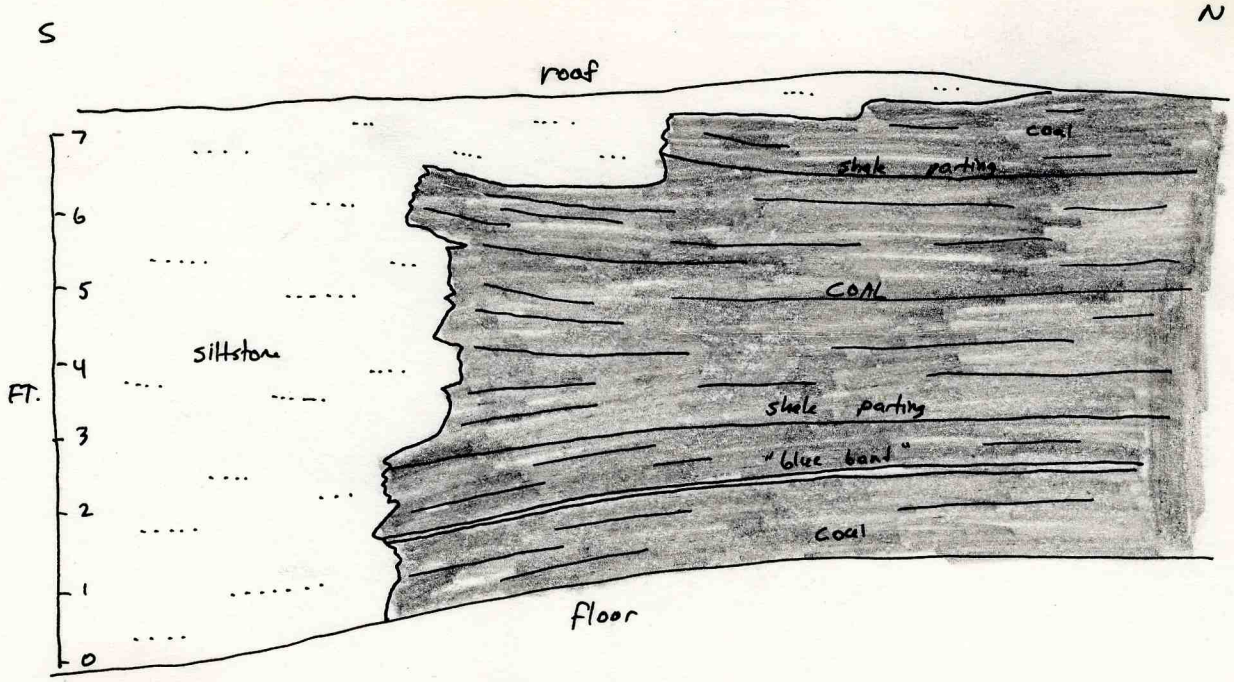
Sandstone Channel (Cont)

The Channel filling at the face actually is largely siltstone, containing lenses and discontinuous laminae of very fine to fine-grained sandstone. The siltstone is light greenish-gray, hard, and finely micaceous; sandstone varies from light gray to brown. Some portions have fine parallel laminations, but the rock appears to have undergone considerable slumping and is cut by many slip-fractures. Large stringers of coal are present in the lower part of the channel-fill.

B.) Entry No. 14 driven into channel. Here the edge of the channel, where it cuts the coal, is practically vertical, and strikes about N.70°E. The cutout is about 3950' south of the main shaft (according to Survey tags). The coal and channel-fill interfinger along the contact, as shown in sketch (over). Next to the cutout the upper layers of the coal are gently bent upward, while the lower layers are gently bowed downward. The channel filling, mainly siltstone as at the last note, has faint discontinuous laminations that are horizontal or slightly folded up to the edge of the cut-out. I do not see any large-scale slumping or lag conglomerate at this stop, although the exposures are not very good because of rock dust.

South of this point the entry is driven entirely in rock and no coal is seen. The face is at about 4120' survey footage. The rock consists of variable gray to greenish-gray irregularly bedded siltstone, silty mudstone and sandstone, containing small irregular lenses of siderite (?) and occasional coarse plant debris. Bedding is more or less horizontal.

Location B- west rib of Entry No. 14



B. (Cont)

There is no water seepage from the walls or roof, but the rock contains numerous slip-fractures which make it rather difficult to support, therefore the roof is ragged.

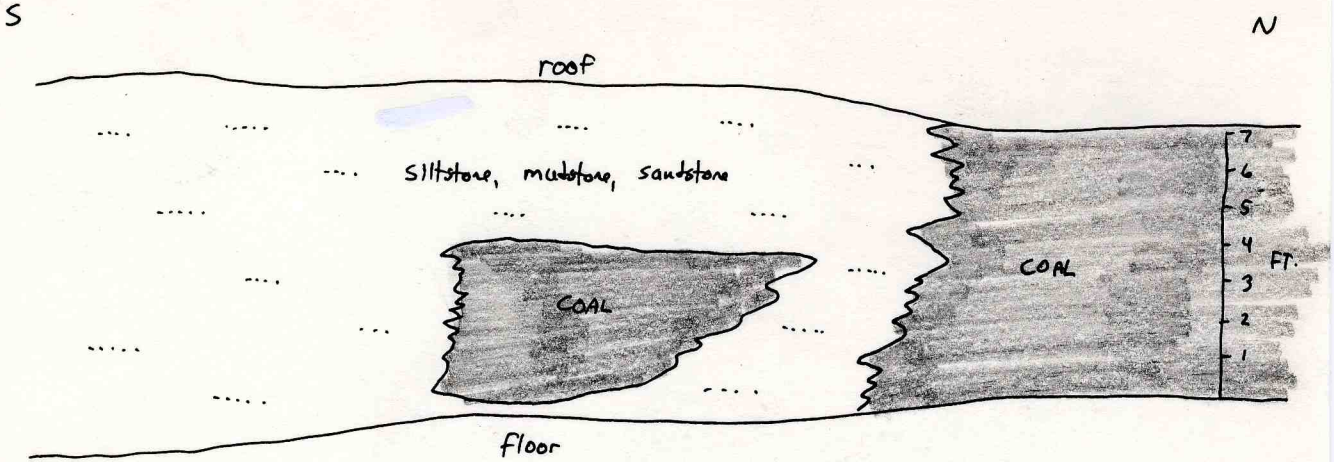
C.) Entry No. 13; the cut-out comes through at about 3970 feet from bottom, by Survey tag. On the east rib the contact appears much as it does at location B. On the west rib it looks about the same, but there is a large block of coal within the channel, separated from the main seam. Sketch on next page shows the approximate situation. This is very difficult to study because a shuttle car is parked close to the rib.

South of this point, the entry is in rock similar to that at Loc. B. In general, there is more sandstone in the lower part of the exposure. Near the roof the rock consists largely of dark greenish-gray weak silty mudstone or shaly siltstone, containing much coarse plant debris - stems and small logs. Downward is mostly siltstone and fine sandstone, with irregular lenticular bedding.

No water seepage. Ribs are fairly solid but roof is ragged.

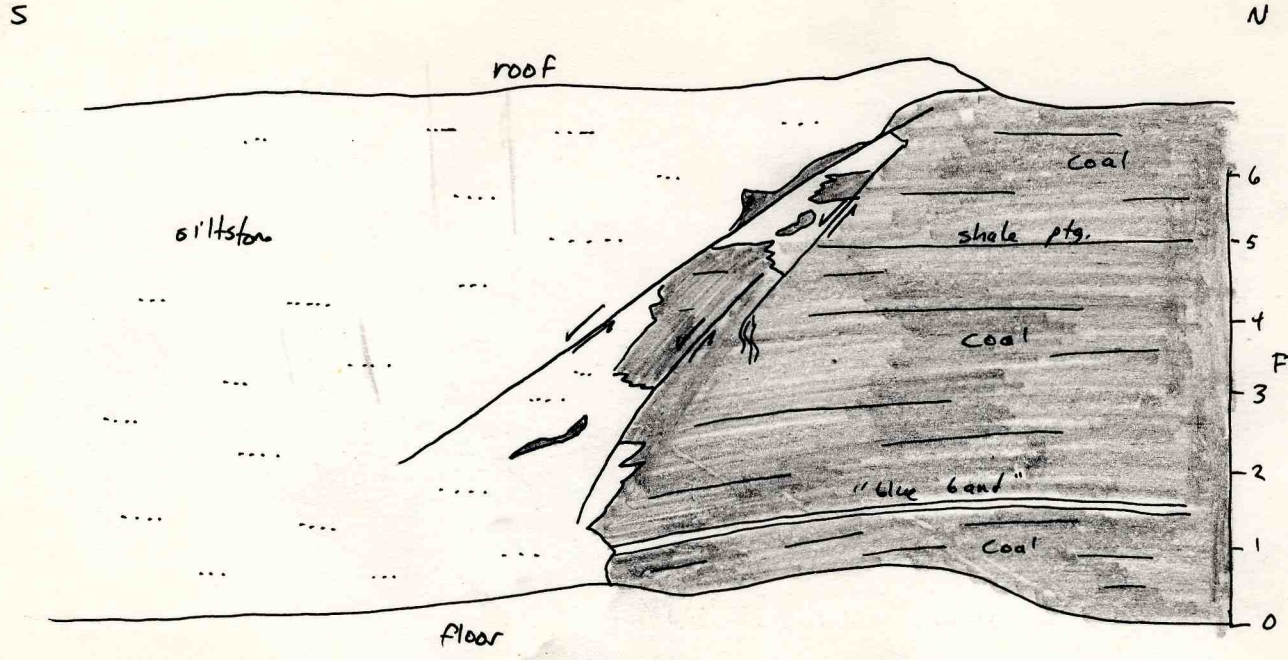
D.) Entry No. 11, Survey footage 4020 feet. The cut-out again is very sharp and nearly vertical. See sketch, page 10. Several slip planes, dipping to the south, partially border the edge of the cut-out. These are small normal faults, with displacement of only a few inches, as shown by offsetting of layers withn the coal; the slips can be seen to die out without reaching either the roof or the floor.

Loc C. West rib, entry no. 13.



this was poorly exposed, no details visible.

Loc D- west rib of Entry No. 11, tag 4020 A.



P.10

D. (Cont)

The very steep, interfingering contact is the most notable feature of the cut-out. Interfingering like this is sometimes evidence that the channel was contemporaneous with peat deposition. However, in this case the channel clearly was younger than the Herrin Coal. We cannot tell from these exposures whether it is Anvil Rock Sandstone or a younger channel system.

"Black Rock" nodules

Pat Peterson, Freeman engineer, told us that the 3rd Panel West of the Main North had been stopped because the coal was extremely hard and difficult to cut with the continuous miner.

We found the black nodules immediately, alongside the travel entry at crosscut 41. They are masses up to about a foot thick and several feet long, in the form of large lenses at the top of the coal seam. They are composed of very dark brown to black very fine, extremely hard silica (?), much fractured; the fractures are filled with calcite, pyrite and possibly other sulfides. Also there are stringers and fragments of dull, mineralized coal within the lenses. There is usually a thin layer of dull, mineralized coal above the nodules, and they are partly surrounded by such coal.

Exploring the vicinity shows this condition to be widespread. The nodules occur individually or in groups, and in places are intergrown to form a layer at or near the top of the coal. In many places where nodules are absent, the top few inches of coal are dull and mineralized and the layering is disturbed. The top surface of the seam undulates. The total thickness of the coal varies from a little less than 6 to about

"Black Rock" (Cont)

6½ feet. The immediate roof consists of a few inches of weak, fractured dark gray, brown to black smooth shale, above which is a thin layer of green micaceous silty shale. The main roof is limestone, medium gray, very fine grained, and knobby to nodular, with a rolling lower surface.

The conditions are really the same as we saw yesterday in the southwest part of the Crown II Mine.

In places it appears that some of the upper layers of the coal have been eroded. Tracing thin laminae and partings shows that the upper layers vary in thickness as the top of the coal undulates. The lower laminae are horizontal and undisturbed; higher ones undulate more strongly, and may be truncated at the top. The uppermost part is mineralized and laminae are difficult to follow.

THE END

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

Field Notes - Freeman Crown III - Macoupin County

TRIP: January 16, 1986 by Phil DeMaris and John Nelson (ISGS) and Guy Gilbert (Freeman)

COVERAGE: Introduction
Channel exposures in S. Mains
"Black Rock" in N. Mains
Conclusions
Samples: C3-A-1 to -13B

Introduction

This is our visit to the "active" Crown III which was idle for a while after an initial visit to the bottom area. The mine has been active just short of a year and has only North and South Mains, both driven to approx. 4th panel position. Acting Supt. is Gary Brown; new Superintendent Neal Merrifield was in transit from Pennsylvania. Todd Grounds (assistant to Supt.) was tied up, so Guy Gilbert was our guide.

We came to see the channel exposures which cross the projected S. Mains, as well as see the "coal balls" in the North Mains. These features were first mentioned to us by 'Doc' Harrell in a letter to John over the summer.

They are about 180' into the channel-fill material; the drilling suggests the eroded coal is 550-600' wide. We want to compare this channel with the mapped channel at Crown II.

Todd Grounds indicated what is called 'black rock' was found locally near the top of the seam as the North Mains have been advanced during the fall and winter. The material is very tough to cut, and they are bolting it up where possible. Todd suggested we visit around the stubs of the panel 3rd W. off North Mains, which we did around 11:00 A.M.

Channel exposures in South Mains

Four entries have been driven into the channel-fill material; the last set of crosscuts under normal roof is the 53rd crosscut at 3922' south. We split up to examine the four entries; John took the 2 eastern entries, and I mapped the two western-most entries (11th and 12th S.).

A. Herrin Coal is abruptly replaced with a siltstone; part of the coal is undercut here by several feet; erosion is likely mechanism.

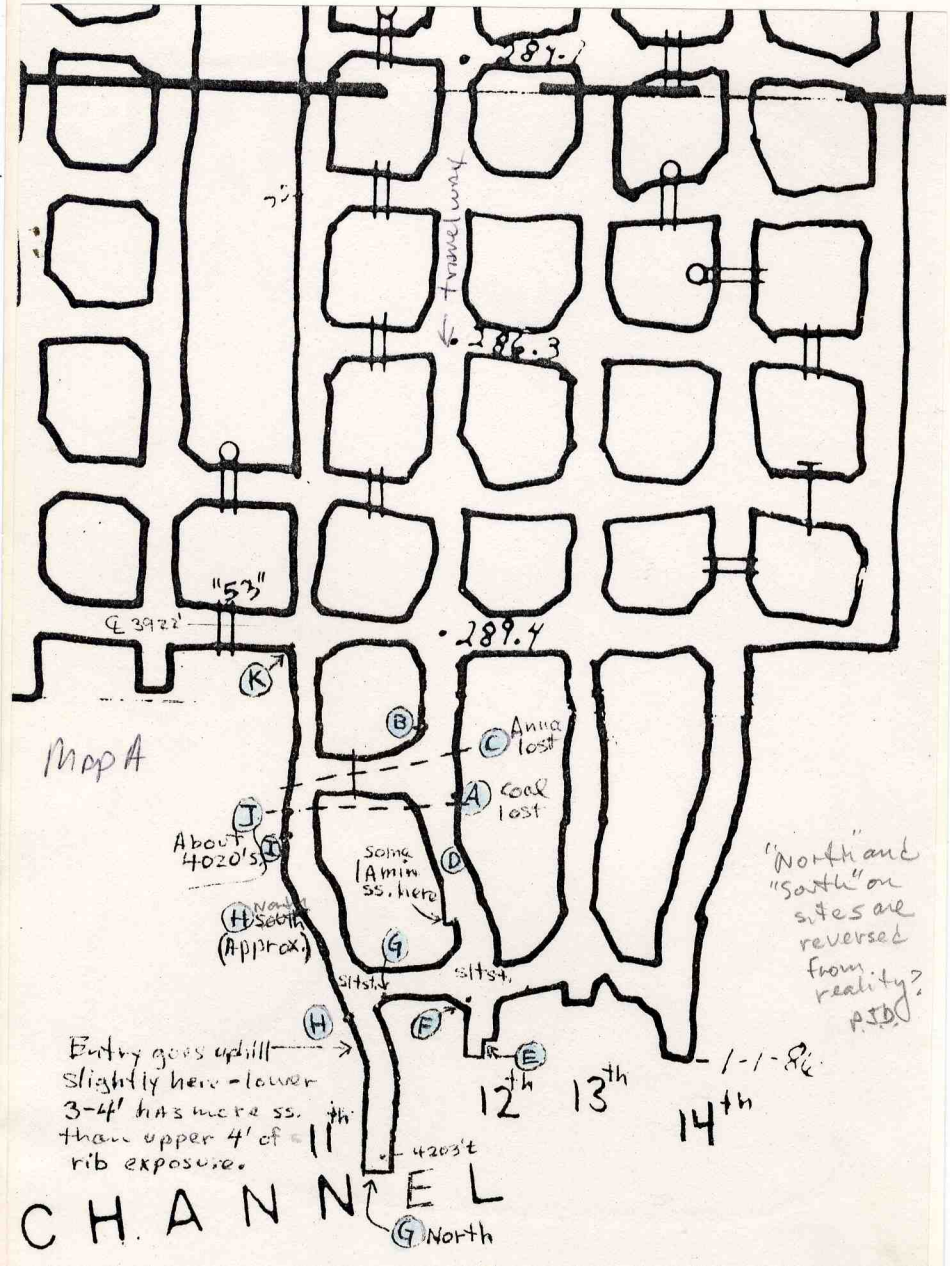
B. I worked north to see where normal roof is lost. Here we have Anna roof over full coal seam, but base of Brereton above it is "rolly" (a sign of deformation).

C. I plotted approximate line of Anna Shale roof loss. Across this line the top of the seam is depressed as much as 1½' and light siltstone (?) replaces the black shale. Heavy rockdust obscures details, but prominent slickensides occuring in roof suggest the power box here could be better placed.

D. Beyond the coal loss line (through A.) the infill on both sides seems generally to be medium-to-light gray siltstone and fine-grained sandstone, laminations seen are within 10° of horizontal.

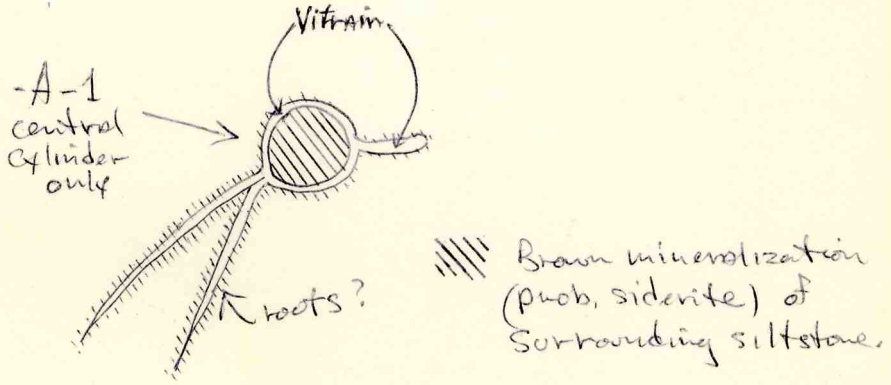
E. At the face of the 12th, where it was only lightly dusted, zones of sideritic (?) concretions are seen in the siltstone, sub horizontal in distribution. Face shows 8' of fairly uniform, light gray, channel-fill with a small contorted coal stringer (from a trunk or two?) at roof level.

1/16/86 Map A



F. Coalified vertical plant structure seen (sample -A-1) in roof. Interior and a zone around probable roots is secondarily brownish, apparently siderititic. Stem interior is 5½ x 6½ cm; vitrain cylinder is 6-8 mm. thick where complete. Identification off etched vitrain in casting will be attempted via Richard Winston for -1 and -2.

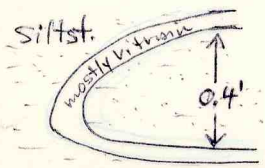
Sketch in plan view, on roof:



Roof has a lot of medium-angle (compactional?) faults locally; this may be generally true but dust obscures roof elsewhere.

G. In lower 1/3 of exposure some coal stringers up to 1" thick on bedding. These probably represent more than single trees, and may well be ripped-up Herrin peat, judging from its position.

H. Large fallen tree trunk about 7½' above floor level running N-S on west rib. Measured at 18' minimum in length and 62 cm (2.03') minimum diam. Center of trunk is infilled with siltstone, and in-fill was 0.4' thick near the edge of the trunk where the coalified cylinder was sampled (-A-2). The sample shows an inner layer 1 cm thick and an outer layer 4-6 mm., locally pyritized, which has a finely striated outer surface. At the south end of the trunk (probably a lycopod from gross morphology) the vitrain splays out over 0.8' vertically. It appears to be more likely abraided at this end than a plant structure, but roots are a possibility. Other end goes into rib, and could weather out another foot or so over time.

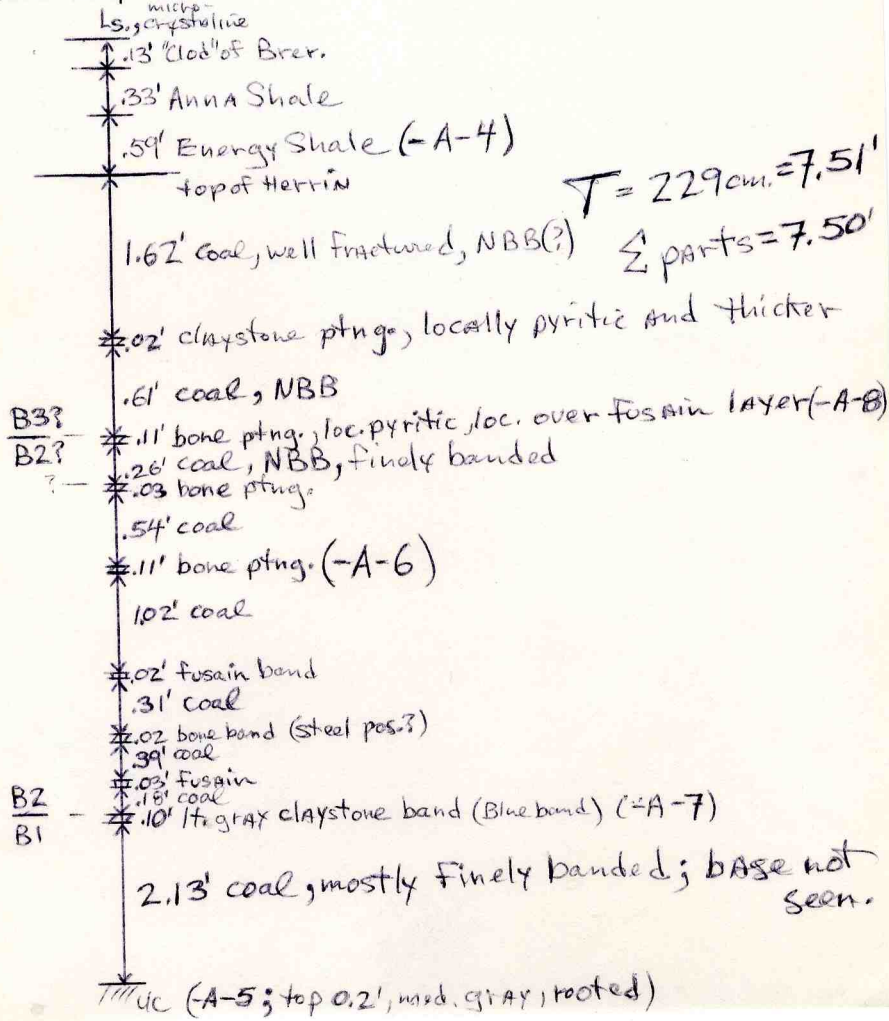


H. North. At least 50' north of H., and about 30' south of pillar corner a band of sideritic concretions were seen and one piece sampled for evaluation (-A-3).

I. Another 10' further north on rib a 4" diameter plant with infilled interior (not a lycopod?) preserved as a "leaner", crossing bedding at about 10°. Siltstone is finely laminated with carbonaceous material on bedding planes, so plant debris is common in interval. This plant was apparently knocked down in situ. Near by a probable Calamities was seen.

J. Loss of Herrin is abrupt here also; it is gone completely across 6' horizontally. This is Nelson's site D. (sketch); he reports this site at 4020' S., paced off from a tag.

K. I did rough seam description just outside channel-effected area on pillar corner in southwest quadrant of 53rd crosscut on 11th S. (3922' S.). Site was heavily dusted. Roof, floor and 3 partings were sampled.

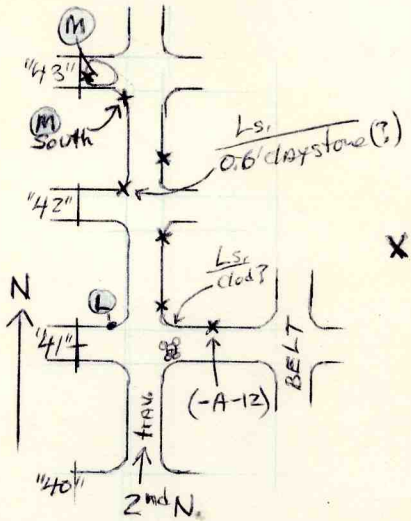


G. North. Went to face of the 11th (vicinity 4220'S.) to get bulk samples of siltstone: from chest height light gray siltstone (taken over 1½' vertically) is -A-9 and about 7½' off floor, medium gray siltstone is -A-10.

"Black rock" in North Mains

We went north to 3rd West panel stubs area and parked at the 41st crosscut on 2nd N. Checking top of seam with hammers produced immediate "finds" in the area.

L. Roof is Brereton Limestone with "rolly" base over thin greenish claystone, and a thin, weak, carbonaceous claystone unit below that. 'Black rock' tests non-calcareous except for late, hair-line fractures. These concretions are found in the top 1' of the Herrin.



X = "Black rock" nodules (silicified peat)

Scale 1" = 100'
1:1200

L. (Cont)

The very dark gray roof unit below the "clod", here unusually greenish, is uncertain. It could pass for Energy except for its weakness and that it is not distributed in patches. It may be Anna Shale, but, if so, it is a weak, untypical facies of Anna; the combined clod/Anna (?)/thickness runs 0.6'-.8' in the area (see note at M. south). Nearby I sampled the Anna (?); it is very dark gray, finely laminated with medium gray clay, but has a somewhat mottled appearance on broken surfaces roughly parallel to bedding. Unit is only slightly fissile and is weaker than typical Anna (-A-11).

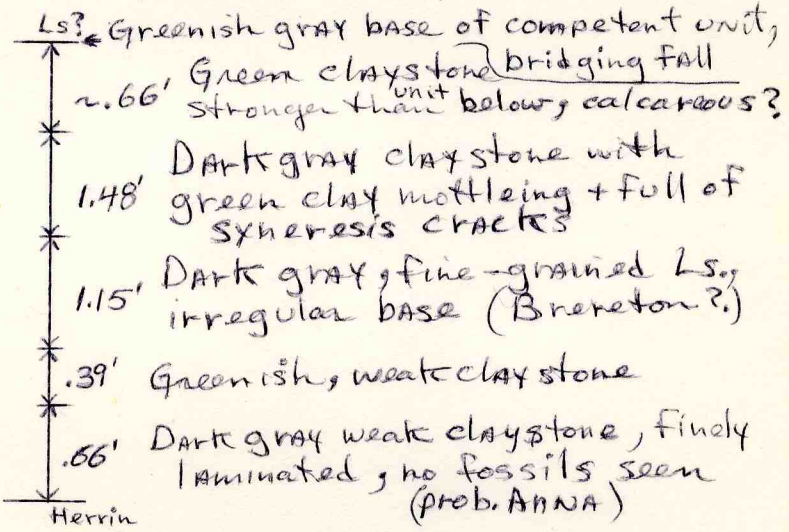
Forty feet east in crosscut I sampled enough "Black Rock" for XRD and chemical analysis (-A-12). Mineralization may be later than most carbonate coal balls from rough estimation of compaction ratio (3:1 or 4:1?); mineralizations are lenticular, almost a band in one case, and dull coal laterally at same position as concretion suggests diffuse mineralization of coal is also possible.

I mapped east of the door and John and Guy went through to check to the west. Roof on east was relatively consistant, and "black rock" was widely distributed, yet individual concretions were spotty in distribution, with only a hint of clustering in one case.

M. Fall in 43rd crosscut with impressive exposure of bolted silicified peat ('black rock') at the west edge of fall. These concretions reach water-melon size and bow up considerably the base of the Anna (?) shale. Thin coal is continuous

M. (Cont)

over the concretions where checked, but it is dull and may be mineralized as well. Measured section on North rib (converted from cm.) is:



M. South. On the South rib corner, John and I identified thin Energy Shale (marine facies) over a 'black rock' concretion. The Energy gets to be 1½' here, and the Anna is 0.8' thick over it; the contact between the two is interfingered, but it appears that it is due to deformation. This exposure strengthens the case that the weak, black shale in the area is the Anna; thus the Anna is the typical roof unit over the silicified peat here. The greenish-gray claystone ("clod") lies above the Anna (usually 0.2-0.3' thick); the top 0.4' of Anna here is bioturbated by organisms from above. Nelson collected an oriented block of coal here (-A-13) adjacent to the silicified peat concretion; it is dull near the top and will be checked by XRD for mineralogy.

Conclusions

1. The channel in the south mains is filled predominantly with siltstone, fine sandstone and silty shale with occasional medium- to large-scale plant debris (both probably lycopod and non-lycopod material), some rafted peat (see Nelson's sketch) or ripped-up peat, and having evidence of occasional plant establishment on channel-fill material (sites F. and I.). Entries were 8' or higher and no carbonaceous shales or channel-fill coal were seen. If this is an Anvil Rock channel as in Crown II one would expect a channel-fill coal or carbonaceous unit above the bulk of the clastics, but perhaps this type of material will be found deeper into the channel or higher within the fill units. The other possibility is that, instead of being a trunk channel for other shallow-cutting Anvil Rock channels to feed, this channel is part of a different system from a younger time which cuts well below Herrin level (as Nelson has recognized in the region). This would explain why the channel is no wider than the channel at Crown II (a typical tributary?) and yet has substantially more coarse clastic-fill material.

2. The "black rock" in the north mains has been confirmed by XRD analysis as primarily alpha-silica within an organic carbon matrix, i.e. silicified peat or silicate coal balls. The dull coal near these coal balls is also high in silica.

These concretions seem to occur widely at the top of the seam, but probably occupy in plan view less than 3% of the area of the seam, based on my limited mapping. The obvious correlation of silicified peat with marine roof is not very useful nor enlightening. It is not useful for prediction because

2. (Cont)

all the roof units at both Crown II and III are marine units, including the Energy Shale. It is not enlightening because the long period of time between peat deposition and the deposition of the last roof unit (Brereton Limestone) leaves much time for influences which allowed silicification to occur. These influences may have left little or no sediment record, as the tidal channels in Franklin Co. mines do, and thus be hard to spot. It is likely that only thorough geologic mapping of an area 1000 feet on a side, and including coal thickness measures, would likely reveal solid evidence for the mode of mineralization.

Samples: C3-A-1 to -13

No.	Site	
-A-1	F	Upright plant structure in channel-fill seds. Vitrain cylinder and sideritic (?) interior. Cast for identification.
-A-2	H	Coalified exterior of large, infilled trunk. Cast to be etched for identification.
-A-3	H north	Sideritic (?) concretion from channel-fill.
-A-4	K	Energy Shale; pectin-rich marine facies.
-A-5	K	Underclay of Herrin, top 0.2'; medium gray, rooted.
-A-6	K	Bone parting in Herrin, where 2½ cm. thick.
-A-7	K	Blue band where 3 cm. thick.

No.	Site	
-A-8	K	Bone parting in Herrin where 3½ cm. thick. Blocks and bulk; both blocks have central bright coal band.
-A-9	G (really south) north	Channel-fill siltstone, from over chest-height range (XRD)
-A-10	G (really So.) north	Channel-fill siltstone from roof level (XRD)
-A-11	L	Base of weak Anna (probably) in area with "black rock".
-A-12	vic. of L	"Black rock" for Chem (C24274) and XRD (3096A) from top of Herrin bulk and band sample; Petrology under P2280.
-A-13A	M	Top of Herrin coal near silicified peat concretion (Nelson); for XRD (3096B); oriented block.
-A-13B	M	Claystone parting 11 cm from roof contact, from subsample of -13A, above. Parting is only 2-3 mm. thick; XRD and carbon only.

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

Freeman United Coal Mining Co. - Crown III Mine, Macoupin County. Notes by John Nelson, visit with Phil DeMaris and Debbie Willard. February 20, 1987.

Channel on Main South Entries

Four entries have been driven across the channel that cuts out the coal about 4000 feet south of the slope bottom.

A.) Entry west of belt, footage about 4350' (paced off from survey tag). South edge of channel. Coal is cut out within a distance of about 10 feet. South of the channel coal is about 7 feet thick and more or less horizontal. The cut-out is poorly exposed due to rock dust, but we can see considerable interfingering of coal and channel fill, and large stringers of coal within the channel fill.

B.) Same entry, at first crosscut north of channel margin.

The channel-fill consists of medium-light gray, firm silty mudstone or siltstone with fine parallel to wavy laminations of very fine-grained light gray sandstone. Numerous beds and large nodules of siderite are present throughout, along with occasional coal stringers.

The strata here are strongly tilted, locally steeper than 45°, probably in a paleo-slump. They are tilted NNW with the dip steepest to the south, gradually flattening out to the north. This extends across the full width of the crosscut and continues over the belt entry to the east. Width of deformed area 75 feet or more, length over 100 feet. Relationships at south edge obscured by rock dust.

C.) South edge of channel on belt entry. See sketch, next page.

As usual, the coal is cut out sharply, with a jagged edge interfingering with the channel fill. A series of low-angle faults that strike northeast and dip northwest cut the coal south of the channel. Roof strata are exposed along large fault south of cross-cut. Above the coal is about 1 foot of black, fissile Anna Shale. This is overlain, with sharp and irregular contact, by dark gray soft mudstone highly striated and veined with green. Nodules of dark gray limestone occur along contact of Anna Shale and mudstone.

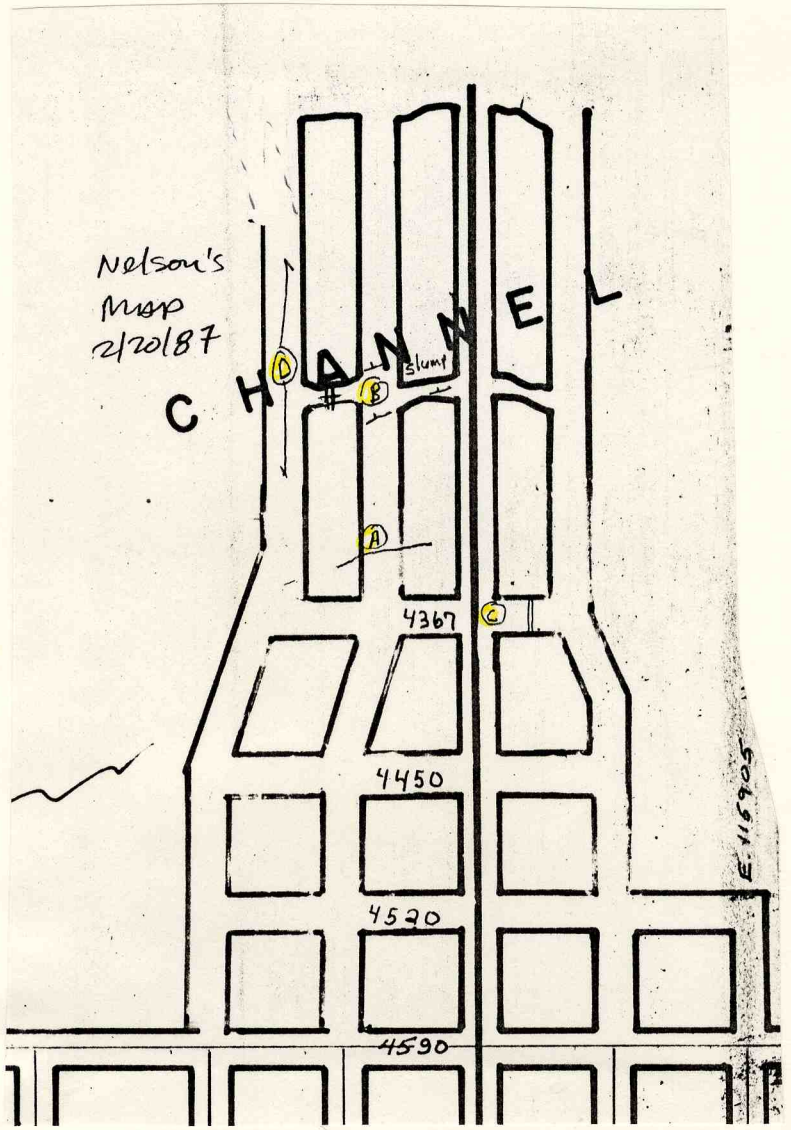
D.) Westernmost (intake-air) entry has relatively clean exposures of channel, little rock dust. Photographs taken of north margin of channel, coal stringers (fossil log?) within channel, and tilted, sheared channel-fill sediments.

The north margin is beautifully exposed and the coal is cut off at roughly a 60° angle, with minor interfingering of coal and siltstone. The contact resembles a fault and in fact partially is a fault.

The channel-fill is dominantly mudstone or siltstone, as of Note B. Numerous low-angle shear planes and microfaults displace it. Some of the larger faults are lined with siderite, which has been sheared by later movements.

Slumping is prevalent throughout but in most places the layers dip only 10-15°. The steepest dips are found near the south margin and continue from location B, just to the east. The strata are tilted 45° or steeper, the tilt is turning westward, and appears to curve around and cross the south margin, passing above the uneroded coal.

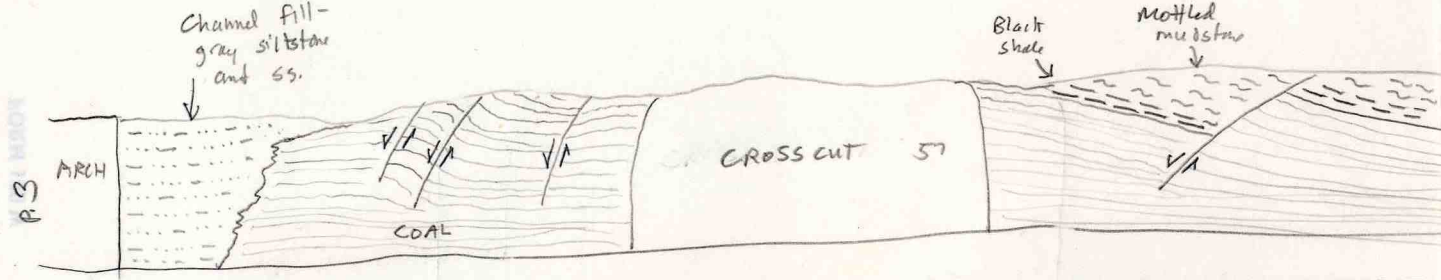
Channel III 2/20/87



Location C - Belt entry

N

S



3rd West off Main North

At the mouth of this panel the coal seam undulates markedly, much more so than in the south part of the mine. The top of the seam clearly has undergone erosion as is shown by truncated layering. In most places the normally banded coal is overlain with angular contact by 1-2 inches of a dull, finely laminated coal. This grades upward into black, soft shale with fine sideritic or phosphatic laminations. The shale is a few inches to about a foot thick, and is overlain by soft, strongly mottled greenish-gray mudstone intermixed with dark gray, dense nodular limestone. This material falls out and leaves a very irregular roof line, but it is not fully exposed here.

The erosional relief on top of the coal is 1 to 2 feet in many places. A few hard black siliceous nodules occur at the top of the coal. Also in a few places a thin layer of soft medium-gray shale, weathering yellow, occurs between coal and black shale.

Return-air entries between 3rd and 4th North Panels

Conditions more or less the same as in 3rd West Panel, but up to about 2 feet of gray mudstone in place between coal and black shale. Mudstone is medium-gray, weathers yellow, soft, smooth, mostly massive, faint fine parallel laminations near base where thickest. No fossils noted. Gray mudstone seems to be thickest on high places, missing on low places.

Above black shale appears to be fairly solid, although nodular-bedded, limestone, no mottled mudstone as in 3rd west.

Contact of black to gray shale is knife-edge sharp, probably erosional. I would say there is definitely erosion of coal also, but "rolliness" is accentuated by uneven compaction.

Pictures from trip on following pages.

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MOORE'S MODERN METHODS
FORM 180 W

Freeman United Coal Mng. Co., Crown III Mine, Feb. 20, 1987. Photos by John Nelson.

North part of mine, showing undulating contact of coal with roof shale. Note apparent truncation of coal bedding.

Same scene, different camera angle.

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FORM 180 W

Same area. Thin layer of dull coal between bright-banded coal and roof shale.May be slight unconformity between dull coal and bright coal, suggesting that the former is transported.

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FORM 180 W

Closer view of same.

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South part of mine; coal cut out in paleochannel. The cutout is steeply inclined and resembles a fault. Here the north margin of the channel is seen, in the westernmost entry that crossed it.

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FORM 180 W

Same view. Bright spot in photo was from my cap lamp.

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FORM 180 W

Margin of channel, opposite side of entry. Irregular contact of coal to siltstone, with fragments of coal incorporated into siltstone.

Same.

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FORM 180 W

South margin of channel. Although the view is somewhat obscured by rock dust, irregular interfingering of coal and siltstone can be seen, along with lenses and stringers of coal within the siltstone. Presence of these indicates that coal was incompletely lithified when the channel was cut.

really? peat is not at all lithified!

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FORM 180 W

Views of channel filling. It is mainly a gray siltstone or silty mudstone containing thin laminae of sandstone, and occasional siderite lenses. Here a large fossil lycopod log is found within the channel.

Sediments filling channel were considerably deformed; apparently they underwent slumping before lithification Shown here, layering dips to north (left) and is offset by numerous small parallel low-angle normal faults.

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MOORE'S MODERN METHODS
FORM 180 W

Closeup, showing faults

More of same

More of same

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FORM 180 W

Mine Notes - Freeman Crown III - Macoupin County

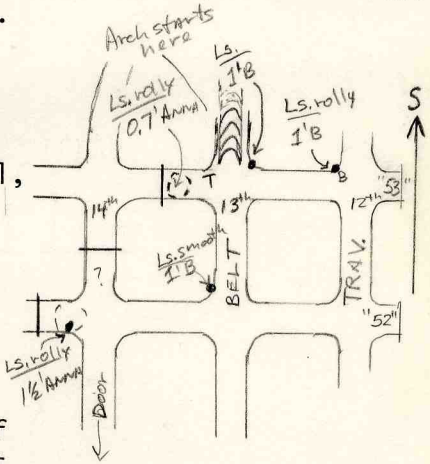
Trip: February 20, 1987 by Phil DeMaris and John Nelson, with Debbie Willard (U. of I.) and Guy Gilbert (Assistant to Supt.)

Coverage: Introduction
Channel crossing S. Mains
3rd W. Stub off N. Mains and vicinity
Crosscut 51 site and hypothesis
Samples: Set B begun; -1 through -3

Introduction

This is our first visit since the channel has been cut back into full Herrin Coal on the south side of the channel. We planned to rough map the new area and show Debbie Willard some larger fossil material. John Nelson also wanted to look on the N. side of the mine around the areas with silicate nodules at the top of the seam, so we went there after lunch.

Channel crossing S. Mains



I checked roof type around the north side of the channel, but did not get into the return entry. However, the Brereton Limestone over thin Anna was still "rolly" (believed due to compaction after partial erosion) back as far as the 52nd crosscut: further mapping and checks of falls is needed. I then went south to join the others, passing through nice syn-sedimentary slumping in channel siltstone (see N.'s B).

A. (see map) On the 12th travelway where ragged edge of Herrin Coal reappears (also N.'s A) I would guess this is about 4320' where coal appears at floor level (N. has edge at 4350', paced from a tag). Coal seam is mostly restored over 8' laterally; heavily dusted area.

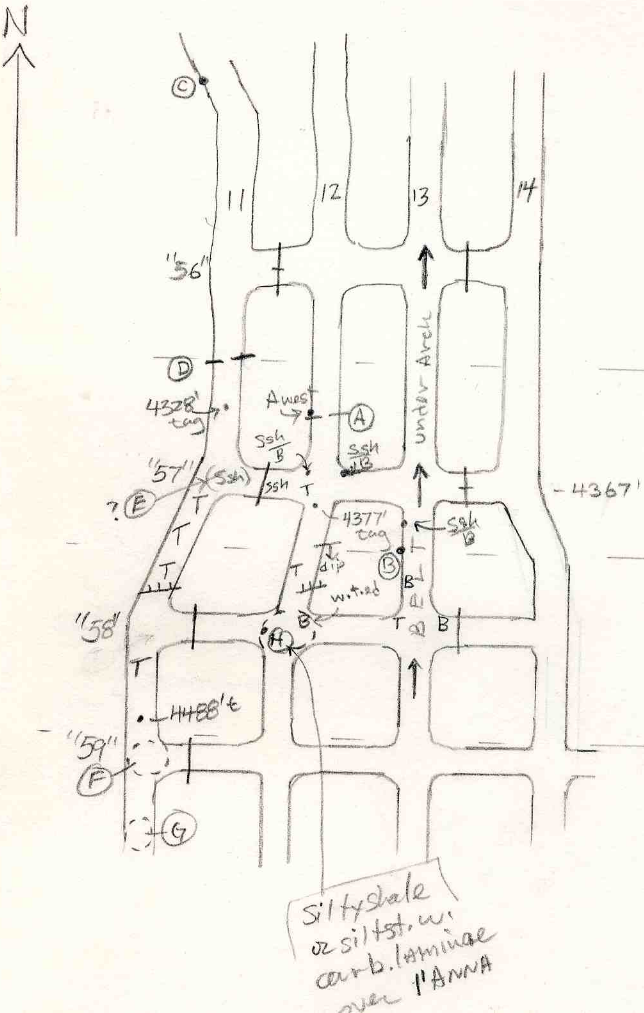
A. West Debbie and I chip and dust off a chunk of coalified rafted peat, a few inches above the ragged edge of contiguous Herrin Coal; the association clearly suggests it is ripped up Herrin peat, since it is banded. The rafted peat is about 7' long and has several narrow gaps with silty shale injection, apparently compaction (or shrinkage?) features. Debbie later took pictures here.

B. Belt entry has good exposures of a gray shale roof which is tougher than the Energy Shale, and should be mapped as silty shale - "Ssh". Here it is seen lying uncomformably on the top of the Herrin, with coal/peat missing over 10-15' laterally and as much as 2' coal now missing. This site confirmed that the SSh was a channel-related deposit, and that the "channel-fill-as-roof" boundary was considerably to the south of "missing coal" channel boundary.

C. We revisited the nice tree trunk in the channel-fill which is perp. to the channel. Debbie sampled coalified/mineralized chunk of trunk; probably siderit-ized section is of interest to her.

D. Southern boundary of peat/coal loss established on the 11th at about 4300's, or ten big paces north of 4328' tag. The fill material is a silty shale, and a Calamites compression was seen in the fill near top-of-seam height and sampled (-B-1).

Map A. 2/20/87



Freeman Crown III - Macoupin County

E. (apparently at 57th cc on 11th) channel-fill silty shale is roof of Herrin.

F. At 59th cc probable silty shale is seen over 2½ Anna Shale. S Sh has some carbonized material in it. Locally there is some clay injection into the top of the Anna, apparently a compactional effect.

G. Fall shows immediate roof is still medium gray silty shale, more stable than the Energy roof; sampled (B-2). Furthest S. point checked. Contact is sharp and appears level.

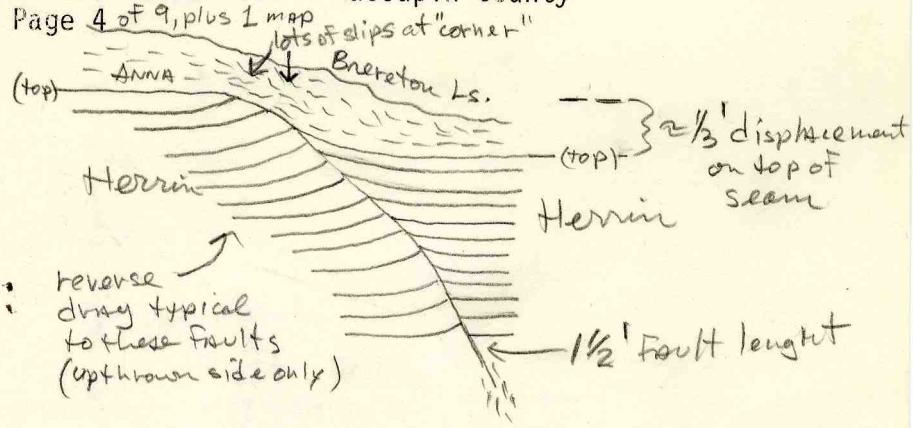
H. Back on travel way (12th), big fall at 58th cc shows silty shale with carbonaceous laminations overlying Anna Shale. Weak trough crosses intersection about WSW-ENE judging by Anna thicknesses. On S. side of fall SSh overlies 1¼' of Anna Shale and the top of Anna is white-topped.

3rd W. Stub off N. Mains

We parked on travelway and went west into panel stub. Locations not specifically mapped because I didn't get the base map.

I. Rolling base of Brereton causes problem cutting in "lows". At first look the low Brereton area appears to trend NNW. Coal loss appears to occur in each low area. Erosion is tempting hypothesis because some sort of flow could explain occasional silicate nodules. Case examined shows that coal loss occurs on low angle slips displacing material away from the low areas. See sketch:

Freeman Crown III - Macoupin County
Page 4 of 9, plus 1 map



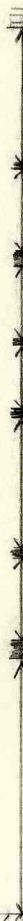
Fault length is about 1½', shows typical reverse drag, and shows 1/3' vertical displacement on the top of the seam. I believe that compression of material under the low point (right) pushes plastic peat and Anna toward the left, rotating the faulted edge of the peat/coal especially at the top of the seam. Anna at the "corner" is full of multiple slip planes, so story must be made from coal behavior.

Only one silicate nodule had been seen so far - it was under thin Anna with Brereton above. We went on into the panel stub 1 or 2 crosscuts. I found a fault (non-tectonic) which displaced the whole seam ½ foot. Plane has 65° dip and appears to be compactional.

J. In vicinity of 141' tag on "C" entry I did a quick coal description. Roof is thin Anna under Brereton with rolly base.

Freeman Crown III - Macoupin County
Page 5 of 9, plus 1 map

J.



T = 6.46' (197cm.)

4.74' / 1.62' .10' blue band

144.5 cm. / 49.5 cm 3cm.

K. 1 crosscut north through a door we came to a small patch of Energy roof of marine facies, as at Crown II. In this crosscut the Energy reaches a maximum thickness of 1½' and has about 1' of Anna over it everywhere. Here we had a debate over the nature of the

K. (Cont)

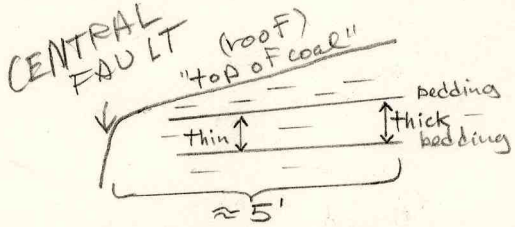
apparent coal loss under the Anna/Brereton roof. The base of the Brereton rolls broadly in these areas and the debate came down to whether the peat/coal was removed primarily by erosion (Nelson's position - see his notes) or the peat/coal has been removed or moved primarily by compaction. The matter is rather complex because even though all planes of coal banding truncation are fault planes, this does not mean the original loss couldn't be erosional. The matter is also complicated by the dull nature of the immediate top of the Herrin Coal. I took a sample of top coal, just out under Anna from the patch of Energy roof (-B-3); coal under Energy Shale here doesn't appear to be as dull. Similar looking material from Peabody River King U/G proved to be partially silicified. Other possibilities include post-depositional degradation of peat and/or mylonization in faulted/deformed areas. No supporting evidence of erosion was offered by John, such as clear linear channeling or any new sediments deposited, and the concentration of siliceous nodules was lower around here than in the areas we examined in our last trip here, which did not "roll" as much.

Most of what I saw could be explained without erosion, but it is true that visual recompensation of movements on individual compactional fault planes never quite "recovers" enough peat/coal on the down-thrown side.

Crosscut 51 site and hypothesis

We eventually ended up travelling south on the return. At a site around "51" crosscut I stopped to get measurements at an apparent "coal loss" site. I compared coal

thickness between in-seam stratigraphic markers (a claystone parting and a thin fusain horizon) continuous under one side of a "coal loss" and found thinned coal well away from the fault plane at the center of the

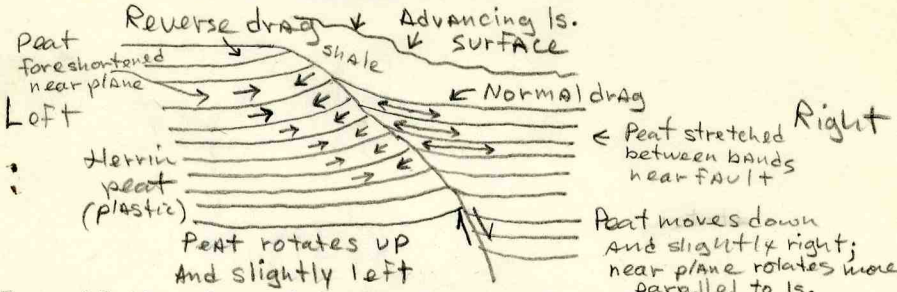


feature compared to about 5' away. Thickness at the flank was around 1/5 greater, suggesting that overcompaction and lateral mass displacement of peat/coal has occurred in these sites.

As a result of this finding I hypothesize that there is radial net movement of peat in a plastic state out from under the lowest "rolls" or shallow bosses at the base of the Brereton during compaction. The movement may occur over a long period of time (accelerated dewatering may be an early effect), eventually producing both plastic deformation and multiple low angle fault planes to allow net mass movement away from the limestone lows.

This is compatible with the whole picture of the area we have so far; the Herrin is commonly fractured by medium to high-angled faults; the smaller ones steepen downward to end in "goat beards" within the upper 1/3 of the seam. Several high-angle faults with ½' displacements were seen including the one displacing the whole Herrin seam discussed earlier; these appear to have short lengths, are curvilinear and thus are considered non-tectonic. Movement on the medium angle faults (which steepen downward) found under the low Brereton areas is compatible with the radial plastic movement hypothesis (above), and can also explain the reverse drag often seen on the

upthrown side of these compactional, using an example similar to fault examined at I.



Even if the above is true it doesn't rule out the creation of siliceous nodules at the top of the seam much earlier. Circumstantial evidence suggests that this mineralization may have occurred after the patches of Energy Shale (marine) were deposited, perhaps at the time when there was some erosion of the Energy Shale patches noted by John. Truncation of Energy Shale bedding was first documented in my notes from August 1978 in Crown II, but this follows the only known erosion of Herrin peat in this area (pre-Anna deposition time), which occurred when the prob. tidal channels with impure limestone fill were cut.

Geochemical analysis of trace elements in the silicate nodules might be useful to determine likely depositional environment. It is difficult to delve into a complex area like this on an ad hoc basis, but a few samples might clarify the picture substantially.

Samples: Set B; 1 to 3

	Site	
-B-1	D	Calamite compression in silty shale; upright but leaning west relative to weak lamination. On loan to D. Willard (U.of I)

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

MOORE'S MODERN METHODS

FORM 180 W

Freeman Crown III - Macoupin County

Samples (Cont)

-B-2	G	Silty shale roof over Herrin at S. edge of channel cut-out.
-B-3	K	Top 0.25' Herrin under Anna; dull at top. For petrographic examination and XRD.

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

Mine Notes - Freeman Crown III - Macoupin Co.

TRIP: May 19, 1987 by Phil DeMaris, Keith Hackley and Barry Fisher with Guy Gilbert, Assistant to the Superintendent

COVERAGE: Sampling and mapping around erosional channel in "South East" section
Quick visit to Main South channel exposures
Samples: Set "B" cont. (-4 to -6)

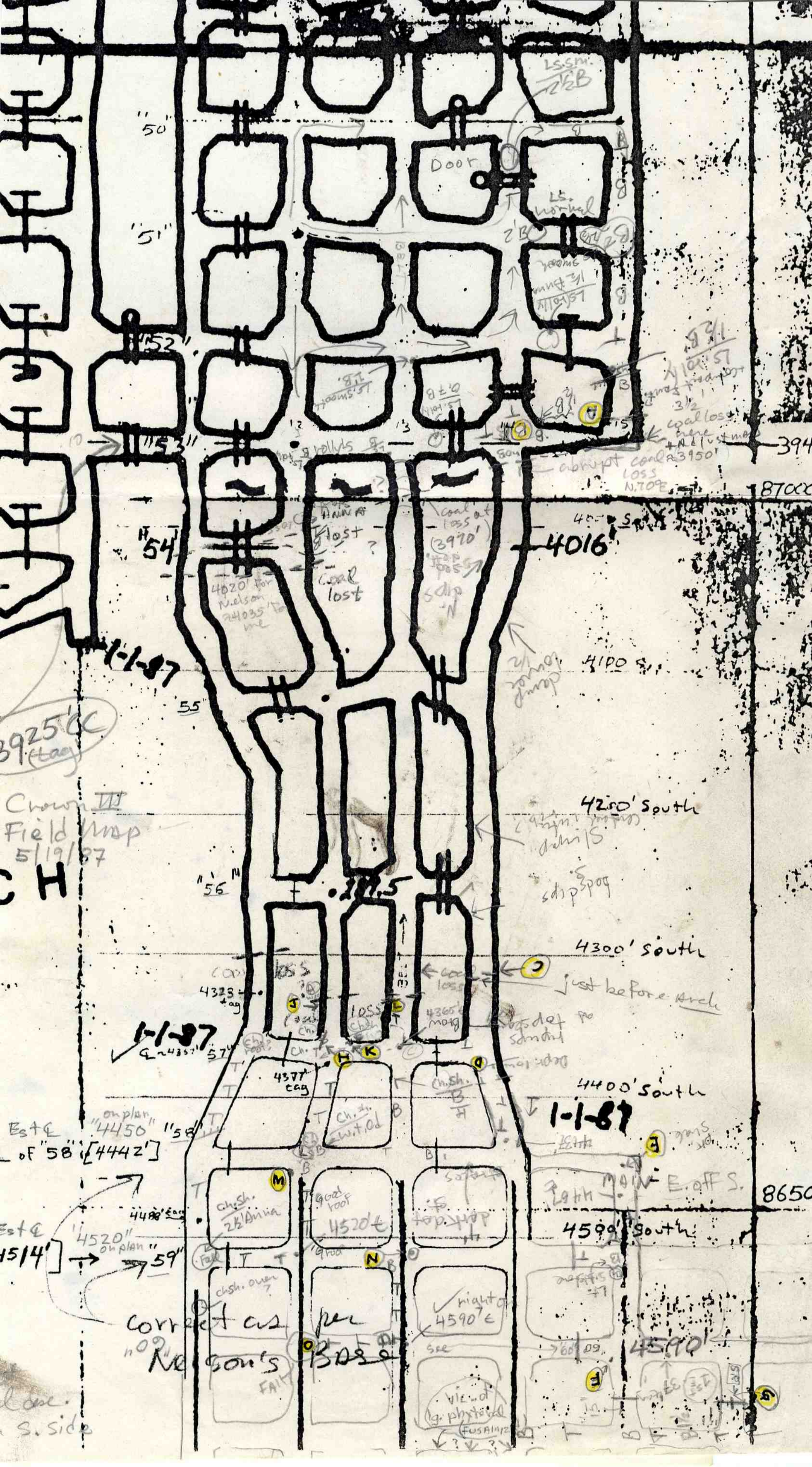
Sampling and mapping around erosional channel in "South East"

Visit is in support of Hackley's work on sulfur isotopes, particularly in finding the "best" feed sample for contrasting organic vs. pyritic sulfur losses during pyrolesis. This mine is being checked at my suggestion to test the "under channel" hypothesis, the best explanation for sample behavior in the nearby Crown II mine.

I planned to map in the AM and select a site for coal collection by noon. We began on the returns (15th S. and then 14th S. when coal is lost) and worked south.

A. (see map A.) Zone in roof near pillar corner marks full loss of Brereton and erosion onto Anna; a few Brereton nodules are found in top of Anna. By mid-crosscut (10' further S.) ½ foot Anna lost. At SE faces ½ of Herrin is gone and the blue band deformed and dropped a foot from compactional deformation. At the face the fill material is a silty shale or impure siltstone with prominent mica flakes. Line of full seam loss can be projected close to this exposure.

B. Claystone from channel-fill injected back North into the Anna and along Anna/Herrin contact. No mica seen, so coarse particles are stripped out preferentially during process of injection. No Anna by pillar


"50"
"51"
"52"
"53"
"54"
"55"
"56"
"57"
"58"
"59"
Door
abrupt coal loss
394
8700
4016
coal lost
4100 S.
Crown III
Field Map
5/19/87
1-1-87
4200' South
4300' South
just before Arch
4400' South
"4450" on plan
[4442']
"4520" on plan
MAIN E. off S.
8650
4500' South
4520' E
4590' E
Correct as per
Nelson's Base

Freeman Crown III -2- of 6 plus 2 maps DeMaris

B. (Cont)

corner. Seven paces south of crosscut centerline the Herrin coal (as peat) was abruptly cut away over a few feet. This is "53" crosscut and the centerline is 3925' S. not 3942' as in projection I was given.

C. Coal was over-ridden here leaving brow ; then they cut lower. Line of full coal loss estimated at 4320' S.

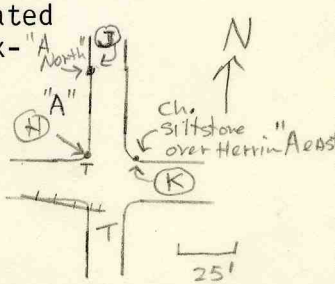
D. In local compactional depression there is a greenish claystone over remnant Anna shale. Claystone has cracks.

E. Back on 15th. Shallow fall shows pyritic dark shale with probable rip-up of top of Herrin. Interpreted as channel-fill roof.

F. 4590' crosscut (60th crosscut) on 15th. Roof is 1½' Anna shale; level but erosional contact to 2' greenish gray siltstone above, with Brereton nodules at base; locally siltstone is a silty shale. Locally slips through Anna related to local lows in channel-filled roof.

G. Fall near door shows 1½' Anna with claystone injection into top. Greenish-gray siltstone above Anna.

H. 12th S. at 57th crosscut is Crown III site for Keith Hackley. Top coal here and about 25 cm less coal than at corner in NE quadrant of the intersection. Top parting here is correlated to "A East" (above), and this site extends exposure to argillaceous siltstone channel-fill. Description:



Freeman Crown III -3- of 6 plus 2 maps DeMaris

Coal core.

(top coal)

.55' NBB, finely banded

.05' claystone, med. gray, pyritic (-B-4) "top parting for correlation across intersection

.25' NBB

.08' claystone, variable thk. [B/c ?]

.28' NBB, some fusain

2.95' .05' bone (Hackley's #3 here or near)

.31' NBB, fine banded

.10 dull coal horizon, loc. with thin claystone traces, and large pyritic nodule to right side

3.20' 1.51' NBB, only thin vitrain bands in bottom half.

.05' claystone, pyritic, locally bone plng. and still pyritic ("steel" pos.)

.57' NBB, finely banded

B2 B1 .11 claystone, med gray, pyritic here and locally (Blue band)

.31'

.02 bone occurs locally

2.40' NBB, fine banded and with some fusain in top half.

Block

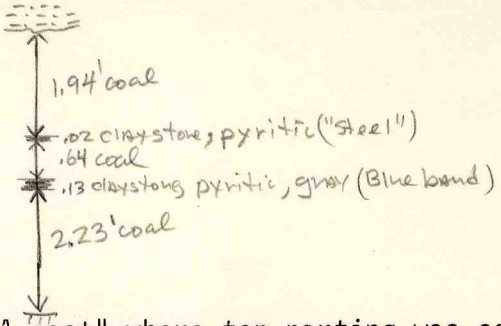
$T = \frac{3.80^{+}}{2.40'} .11'$

U/c "med. gray" (-B-5)

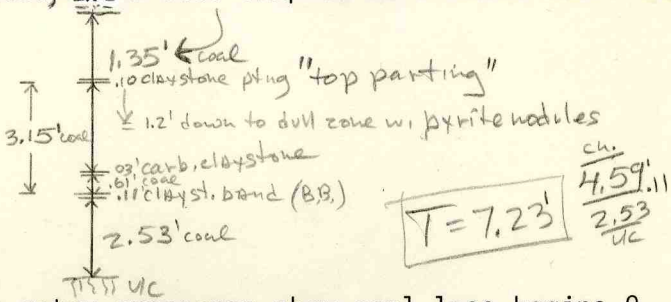
Approx. core positions for Hackley's samples

Freeman Crown III -4- of 6 plus 2 maps DeMaris

J. After lunch we sampled nearer the channel center 30' N. of H. where only 4' of coal is left under channel sediments.



K. Hackley's "A east" where top parting was correlated; 3 coal samples were taken above it.



L. Belt entry exposures show coal loss begins 9 paces N. from pillar corner (vic. 4325' S.) and is quickly lost over 6' on W. rib (vic. 4320' S.); coal loss of E. rib is roughly parallel in position. Coal is impure due to injection of clay near the cutoff. Just to the south, the crosscut centerline and door position are 4368' using 4365' tag. "Anna lost" contact is in top coal here but is probably around 4355' S.

M. Brereton Limestone remnant, 3/4' Anna shale, Herrin is sequence here, with channel sediments of unknown thickness above. Good roof stability - most of area remains bolted top coal.

N. Limited exposures show Anna roof about 1½' with probably rolly-based Brereton above; Anna only confirmed on far side of belt. (4th) used

O. Fall at 60th crosscut shows dark gray shale as immediate roof. Interpreted as Energy Shale. Sequence is 2½' Energy ½' Anna (Sample -B-6) and base of Brereton seen at top of fault. No channel effects seen.

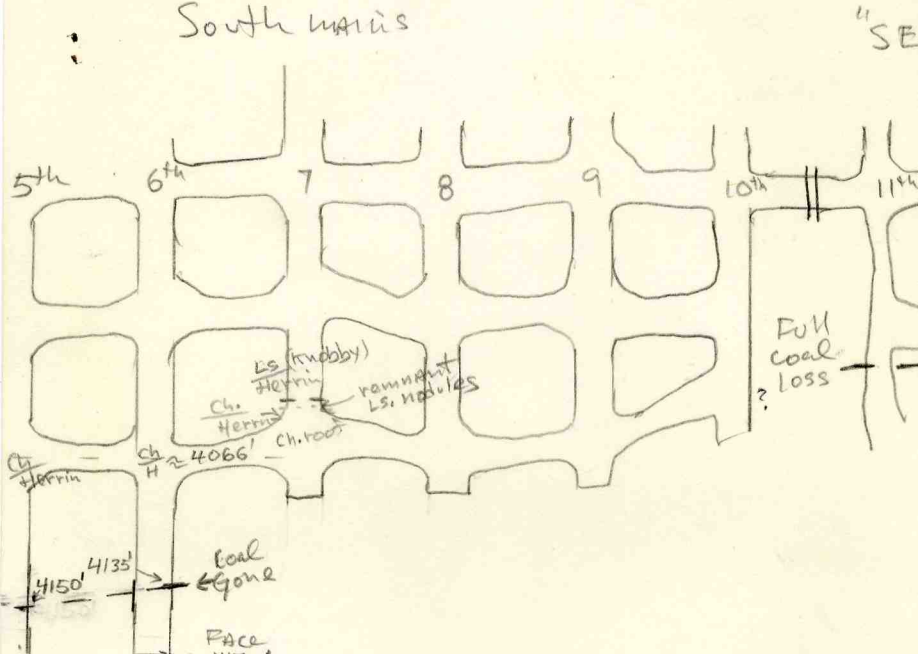
Quick Visit to Main South Channel Exposures

Made a quick visit to look only at new development in Mains South, now advancing into the "no coal" area. Two entries, 5th and 6th S., have advanced short distances. Continuous miner has rock bits and going is slow in the silty shale, locally siltstone or sandstone.

CM examined at 4066' crosscut between 7th and 6th. At the 7th roof to Herrin is channel-fill with contact to Brereton remnants as Herrin roof just to N. (see map). Channel roof over Herrin also at 6th. Face of 6th has advanced about 40' since earlier mining. Coal drops down at 4110' and loss at top noticable. Herrin is gone by 4135' and face is about 4170'. (See MAP B)

In the 5th S. there is a 4124' tag near end of earlier mining, where sandstone is immediate roof to Herrin. Herrin is gone by 4150' S. These positions are more southerly than expected from the drill hole data.

MAP B 5/19/87



Freeman Crown III -6- of 6 plus 2 maps DeMaris

Samples: Set "B" continued (-4 to -6)

	Site	
-B-4	H	Top claystone parting in Herrin, dark gray claystone, much fine pyrite including small lenses.
-B-5	H	Underclay; top 0.1' where dark gray (finely carbonaceous) unbedded, tougher than usual.
-B-6	O	Anna Shale, black with thin greenish clay lenses (bioturb. from Brereton environment is probable).

1987

coal week date?

FREEMAN CASHES IN CONTRACTS; A BUYOUT OR SELLOUT IN THE WINGS?

Lost contracts and an over-active rumor mill are turning 1987 into a forgettable year for Freeman United Coal Company, which has become the center of rumors that it will be bought by Consolidation Coal and speculation that the company is getting ready to get out of the coal business.

Locked into high-priced Freeman contracts during a falling spot market, Union Electric Company negotiated a buy-out in May[8] for Electric Energy's Joppa plant with the Chicago-based coal producer. Union Electric now handles coal buying for Electric Energy. Similar discussions with Hoosier Energy resulted in the Indiana utililty's agreeing to pay $86.5 million to buy up the remaining 22 years of a Freeman contract.

"We hope to terminate the Freeman contract in the near future," said Dale Winter, manager of power supply for Hoosier Energy. the deal is awaiting federal approval.

The Hoosier Energy contract was originally signed in 1977 and renegotiated in 1984. It called for Freeman's Crown III mine in east-central Illinois to supply 1 million tons of coal a year.

Crown III is still operating, though union officials fear cutbacks are likely. When Electric Energy pulled its contract, Freeman's Orient #4 mine was closed indefinitely.

Freeman held a contract to supply Joppa with up to 700,000 t/y through Dec. 31, 1989. The small southern Illinois utility has not yet replaced the Orient 4 tonnage said Electric Energy president George Rice.

Pat Harrington, manager of group purchasing for Union Electric in St. Louis, confirmed the Orient 4 contract was "completely terminated" in May. He declined to reveal terms of the agreement. Harrington did add, however, that the utility is not renegotiating its contract with Freeman's Orient #6 mine.

United Mine Workers officials told *Coal Week* they had heard UE wanted to trim the Orient 6 contract, which they said was in the $42/t range. Even more alarming, union officials said, Freeman may be on the selling block. "Freeman has a cash-flow problem," insisted one union source who said he got his information from a company official.

Freeman vice president Jim Ryan scoffed at rumors that his company might be for sale. "You don't have time to clear up all the rumors," he said with a laugh. Turning serious, Ryan said Freeman is "in business to mine coal" and has no plans to change despite some contractural setbacks.

But one coal industry analyst disagreed, saying Freeman is getting ready to cash out of an Illinois Basin coal market he called "deplorable."

Company No.

Farm No.

Elev. of Total

For

Kind of

Remarks

Farmersville mine expected to close soon, workers say

by Joe Stephens SPRJ/JR 8/27

Workers at Freeman United Coal Mining Co.'s Crown III mine near Farmersville expect the mine to close as early as this weekend.

Freeman United officials say such speculation is premature. But a spokesman for the mine's largest customer, Hoosier Energy Rural Electric Cooperative, said Hoosier has reached agreement in principle to buy out the remaining 17 years of its contract with Freeman United.

Final approval of the buy out could be secured from Hoosier's board of directors and lending institutions by Friday, said Doug Stauch, manager of information services for the cooperative.

Rumors of impending closure are rampant among the 250-some workers at the mine, according to Tom Summers, head of the Taylorville office of the United Mine Workers of America.

Miners say the mine roof is being shored up and equipment is being stored as though in preparation for a long wait, Summers said. Railroad workers reportedly have been told they will not be stopping at Crown III, 20 miles south of Springfield, after Friday.

"We've been hearing the same rumors," said Richard Shockley, director of the state Department of Mines and Minerals. "I've heard nothing official."

Labor contracts do not require Freeman United to notify workers until 24 hours before a shutdown, Summers said.

"They've got these guys hanging out there," he said. "They don't know if they're going to have a job come Friday."

James Ryan, Freeman United's vice president for public relations, would not speculate about the possibility of a shutdown.

"We haven't finalized anything with the Hoosier Energy people," Ryan said. "I certainly think I would know something else in the next couple days."

Talks began more than a year ago over terms of a contract that calls for Crown III to provide 1 million tons of coal a year to Hoosier Energy of Bloomington, Ind.

"There have been many differences of opinion and differences of interpretation (regarding the contract)," Ryan said.

"Wash house talk" at the mine has predicted a contract buy-out for some time, Summers said. Company officials on site have been telling workers "it doesn't look good," he said.

Labor contracts at Crown III require Freeman United to provide workers with health insurance for up to a year after a mine closing, Summers said. The contract does not require any other special assistance, he said.

Closing of Crown III would be the latest in a long string of setbacks to the mining industry of southern Illinois, which has been battered by falling energy costs, imported coal and environmental concerns over the high sulfur content of locally mined coal.

Crown III opened in 1981 and closed less than a year later, Summers said. It reopened in January 1985.

Some miners who were laid off when Crown I mine near Farmersville closed in 1971 remain jobless, Summers said, as do some employees laid off at Crown II mine near Virden in 1982.

Summers estimated that nearly 2,000 former employees of Freeman United mines are out of work in southern Illinois.

"You've got to have markets to sell your products in," Shockley said, "and everybody is fighting for the available markets."

Location

Correlati

Basis

County Co. no.

Data sheet by Date

Sec.

T. N. S.

R. E. W.

g f e d c b a

8 7 6 5 4 3 2 1

Company No.

Farm No.

Total Year

Macoupin will suffer if coal mine closes

8-29-81 - Alton.

By DENNIS McMURRAY
Of The Telegraph

SPRINGFIELD — Macoupin County will lose "six-figure" sales tax income if Crown III coal mine closes, a county official said.

The county doesn't know precisely how much it gets from coal sales, said clerk John Saracco. That's because the Illinois Department of Revenue won't reveal who pays what in sales tax.

But Saracco estimated sales of coal from the Crown III mine near Farmersville has brought in at least six-figures per year. He guessed the county gets close to $1 million from all three coal mines in Macoupin.

If Crown III should close today, county Treasurer Allan Zippay said, "we might have to buckle our belt a little bit."

Ironically, Montgomery County officials this spring sought legislation to win a share of the Crown III sales tax money. The bills, which failed in committee, would change the taxation method.

Macoupin now gets all the taxes because it has the mine opening. The change sought by Montgomery would have taxed the coal at the point underground where it is extracted. Many of the Crown III tunnels are actually under Montgomery County.

Last year, Crown III produced just over 1 million tons, said Art Rice of the Illinois Department of Mines and Minerals. Freeman United Crown II produced about the same amount while Monterey mine, near Carlinville, produced just under of 2 million tons, he said.

The two Freeman United Crown mines have been employing about 250 miners each. Monterey had 463 on the payroll last month, Rice said.

Monterey's coal goes to the Central Illinois Public Service Co. Coffeen power plant. It's use there has been in jeopardy from a U.S. Environmental Protection Agency lawsuit over sulfur pollution. A CIPS official said Thursday progress is being made, however, on exemptions from the EPA and Illinois Pollution Control Board.

Zippay said he still holds hopes a proposed COGA coal-to-ammonia plant will be built in the county and revive the coal industry.

When the COGA proposal was unveiled more than three years ago, Crown III was supposed to be the main coal supplier.

More recently, COGA President Robert Meissner said COGA would buy coal from a number of sources. The proposed site has also been moved away from the original location adjacent to the Crown III mouth.

Meissner has been tight-lipped about COGA's status recently. But sources in U.S. Rep. Dick Durbin's office said finance negotiations for the estimated $600 million plant are still under way.

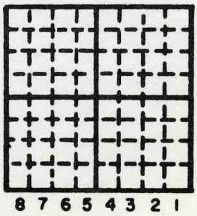
United Mine Workers district representative Tom Summers said Thursday he is skeptical COGA will ever be built, but hopes he's wrong.

Location

Correlations by Date

Basis

County Co. no.



Sec.

T. N. S.

R. E. W.

Data sheet by Date

Crown III 12/23/90

Unusual disposal of ash may allow mine to reopen

Spfld. J-R 12-23-90

By CHRISTINE HAWES
CORRESPONDENT

FARMERSVILLE — Freeman United Coal Co. is attempting to reopen an idle coal mine near here, a venture that could mean a new method of ash disposal and more jobs for Montgomery and Macoupin counties.

Crown III mine, located in Macoupin County just west of Farmersville, closed in 1987 because of poor market conditions and utilities' difficulties with ash disposal, said Francine Williams, media spokeswoman for Freeman. Under the plan now being considered, fly ash would be mixed with water and pumped into another abandoned mine, Crown I, east of Farmersville in Montgomery County.

That form of ash disposal is extremely rare, and the site is the only one Freeman is considering, said Steve Bishoff, Freeman's environmental engineer.

"Nothing is environmentally secure 100 percent of the time, but it's my position that this is a pretty good idea compared with some of the places it's dumped otherwise, which is in municipal landfills," Bishoff said.

Freeman wants to dispose of the ash — called ash slurry when mixed with water — by drilling holes on about 240 acres it owns above the abandoned mine, Bishoff said. Eventually, nearby landowners may be approached about disposing of the slurry through holes on their land in exchange for some kind of compensation, but that step is far in the future, Bishoff said.

"We don't know to what extent we might use this form of disposal. It's important to our future business, but we have to see how it works," he said.

Bishoff said if the ash disposal experiment is successful, companies may be more attracted to buy coal from Freeman because ash disposal is expensive and technologically demanding.

Montgomery and Macoupin counties also will benefit from employment opportunities if Freeman's experiment is successful. The potential for employment is the main reason Montgomery County granted Freeman permission to dump ash slurry down the abandoned mine, said Vernon Schmidt, chairman of the Montgomery County health, welfare and elections committee.

"When they had the mine open before, there were 85 people working there. They think they can get orders with this disposal plan, and they think they can stay open," he said.

Montgomery County waived a $250,000

See ASH on page 32

ASH

From page 31

landfill application fee for Freeman, which would have paid for hearings and other administrative steps necessary for approval of the dumping. Remaining funds would have gone into county coffers. Freeman will pay for the hearings itself, Williams said.

Freeman still needs official approval from the county and from the Illinois Environmental Protection Agency to proceed with the plan. Bishoff said mid-April is the soonest the mine could open, assuming no questions or objections arise. A public hearing will be held, he said.

"I haven't received much negative feedback at all. All I've heard are that people want to get those jobs back in the community and are pretty much willing to approve some of the things we've approached them about," Bishoff said.

DRILL HOLE DATA

Company

Drill Hole No.

Location

Surface
Altitude

Date

Core Study Lo

a. written
b. typewri
c. typewri
d. typewri
e. printed

Company Log

Total Depth
Depth to #
Depth to #

Strip drawn:

Graphic log o

Analysis No.

Description o
Coal No.

County No.

County

N.
S.
E.
W.
k No.

E
W

Mine reopening is 'Christmas in July' for 100 coal miners

By BILL BUSH Spfld. J-R
STAFF WRITER 7-12-91

FARMERSVILLE — About 100 miners will be back at work soon when the Freeman United Coal Co. reopens its Crown Mine No. 3 in Farmersville.

Freeman is doing preparation and rehabilitation work on the mine, which closed in 1987, Francine Williams, spokeswoman for the Marion-based coal company, said Thursday. Officials don't know the exact opening date, she said.

When the mine is back in operation, it will produce 1 million tons of coal a year, Williams said.

"It's real good news," said Tony Kujawa, executive board member of the United Mine Workers of America representing Illinois. "We're always glad to see people getting called back to work. It's like Christmas in July, you might say."

Crown No. 3 opened about 10 years ago and closed in mid-1982, causing the layoff of hundreds of miners. The mine reopened about three years later, only to close again in 1987, when Hoosier Energy of Indiana pulled out of its coal-purchasing contract with Freeman.

Williams had no information on what led officials to reopen the mine, or who the customers would be.

Freeman began recalling employees in April after reportedly signing a coal contract with Archer Daniels Midland Co. of Decatur, but the mining company would not confirm that.

The mine will employ miners basically from the Farmersville area, Kujawa said. About 40 union miners already are employed at the mine, but Kujawa said he doesn't believe any coal-delivery contracts are being fulfilled yet.

The No. 3 mine is 2½ miles west of Farmersville, about 20 miles south of Springfield.

Coal Week Aug. 26, 1991 pp. 1 & 2

FREEMAN TO REOPEN CROWN III MINE; STALEY, ADM SEEN AS CONTRACT BUYERS

A pair of contracts with Decatur Illinois agricultural product companies appears to have allowed Freeman United Coal Corp. to reopen its Crown III underground mine in Illinois following a shutdown of more than two years,

Freeman spokeswoman Francine Williams said the mine, located near Farmersville, has resumed production but is not at full strength. That is expected to take several more months. The mine employs 70 people now; that figure will increase to 110 at full production.

Freeman, a General Dynamics subsidiary, confirmed it has contracts for Crown III's coal but refused to identify the customers.

However, two customers appear to be large, central Illinois manufacturing plants — A.E. Staley and Archer Daniels Midland, both of Decatur. According to Joyce Munie, permit section manager for the Illinois Environmental Protection Agency mine waste division in Springfield, Freeman recently was granted a permit by the state to dispose of coal combustion waste from the two companies at a pair of above-ground sites near the mine's preparation plant.

Coal buyers for the two companies could not be reached for comment. It's also possible that Freeman has other contracts for Crown III that do not include ash disposal.

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

p1 of 6 plus 3 maps

Mine Notes - Freeman Crown III - Macoupin Co.

Visit: November 12, 1991, by Phil DeMaris with Bill Jankousky, Safety Dept. as guide

Coverage: Introduction
2nd N. Panel off E. Mains
South side of Anvil Rock Channel
Summary

Introduction

This visit was made to complete mapping of the Anvil Rock Channel which crosses the south mains. We began with a thorough check of the north end of the 2nd N. Panel; as a result, I was only able to complete mapping on the south side of the channel. I also visited the Engineering department where I saw Steve Pfeiffer (Eng.) and Dave Neighbors (Surveyor); Dave surveys both Crown II and Crown III. Dave supplied clean base-map of area. Visit was arranged through Mine Manager, Jimmy Lee.

2nd N. Panel off E. Mains

We began here because of questions of whether channel sediments had been seen here in the roof. We examined all the northern-most entry stubs and the high Fall on the west side.

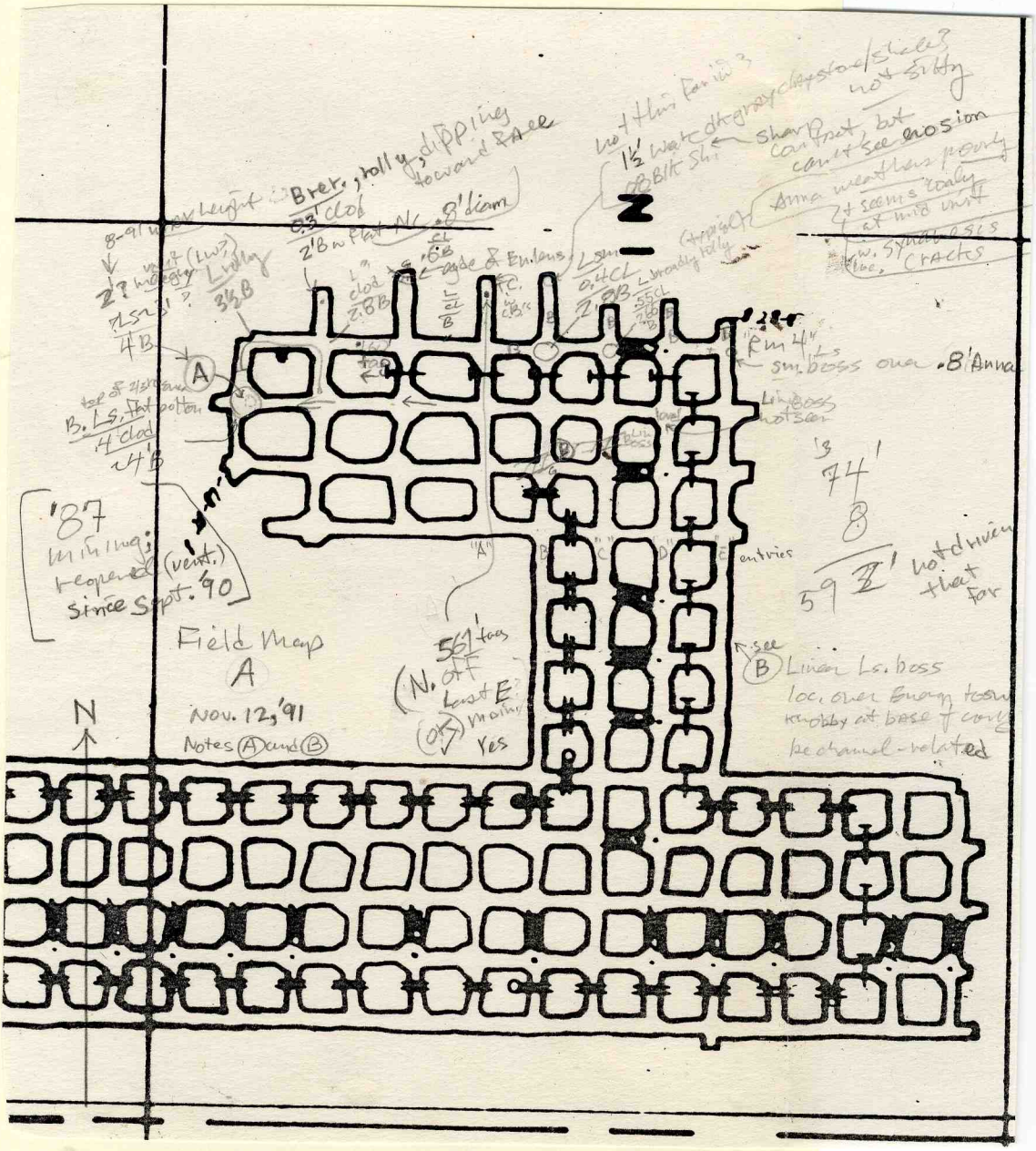
A. (See Map A) Fall about 9′ high (highest in area) examined from side:

base of bridging unit
ca. 2′ med. gray unit
ca. 3′ limestone (Base is Brereton)
4′ Anna Shale
Herrin Coal

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

FORM 180 W

Map A 11/12/91



Could not rule out ss. over ls. at 25′ with Krypton light, but it appears that another competent unit caps the Fall extension. Only over 1/5 to 1/4 of the area of the Fall does the Fall extend past the base of the Brereton.

B. Broad (15′-20′ wide) linear "boss" down to near top of Herrin seen; strikes subparallel to prob. channel position, but no direct evidence of channel was seen. On "B" entry there is Energy roof; roof not noted on belt ("C") entry, so this deformation could be typical deformation over Energy lenses.

Map A. shows the roof at the end of each North stub approaching room 5 position. At least 2 entries are approaching an Energy lens, so reason for base of Brereton dipping in face of western most stub could be either due to presence of thick channel sediments or related to the edge of the Energy lens.

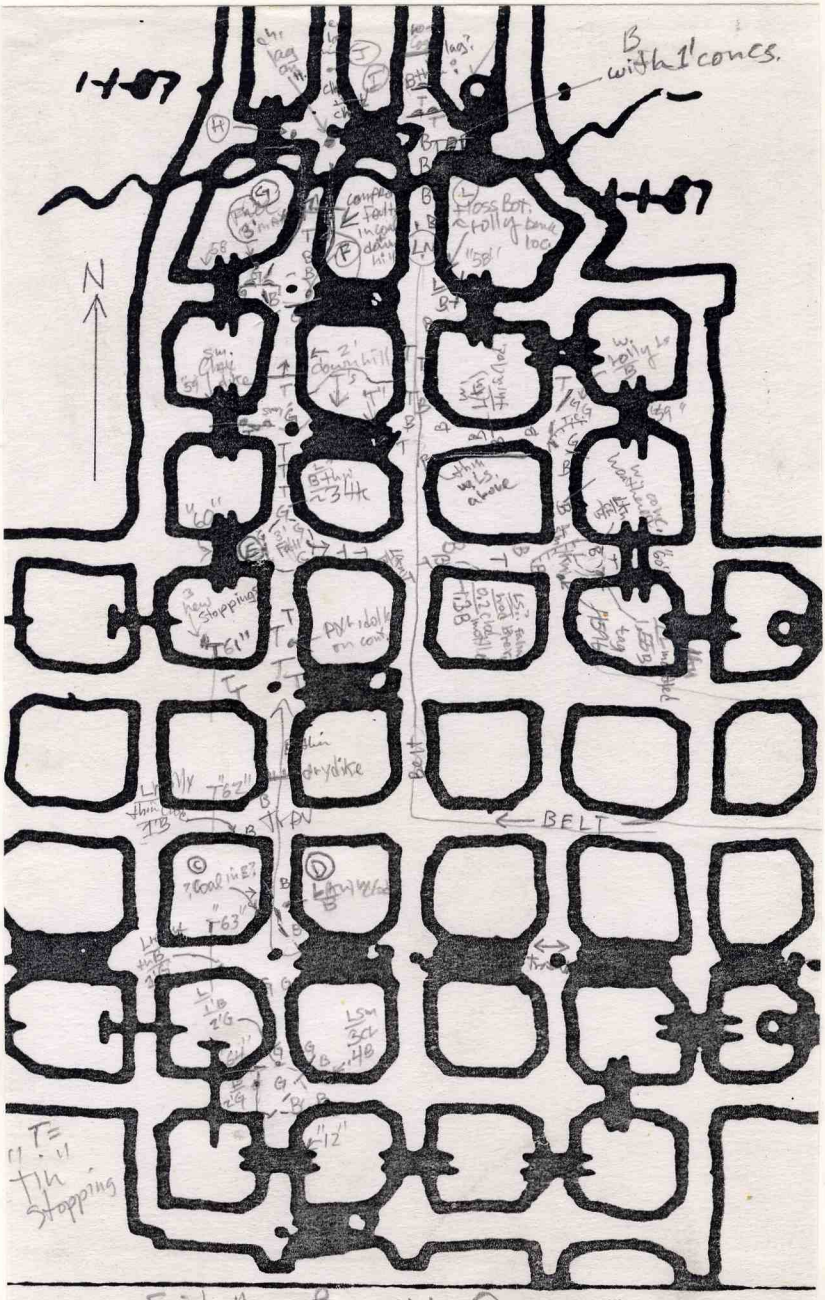
South side of Anvil Rock Channel

I went south to the 64th c/c with the intent to work north checking for indirect effects of the channel on roof stability. Began in area of Energy lens. See Map B.

C. A thin .04′ coal seam (peat) seen near the base of Energy lens. However exposures just to the north show the lateral injection of Energy and along Herrin contact and as far as 1/2 foot below the contact. Therefore the placement of this coal was by deformation, not deposition; the two units are not contemporaneous, as has been established also at Crown II.

D. The bottom bench of the Brereton is locally separated from the rest of the unit on irregular claystone laminae. Base of unit is knobby and some nodules have fallen; others have been cut down before bolting. This appears to have depositional origins, but

Map B 11/12/91



Field Map B — Notes (C) to (D) North

p 3 of 6 plus 3 maps

there may have been deformation here adjacent to the Energy lens to increase the problem.

E. Fall at intersection show fairly normal stratigraphy:

- smooth base of unit (Brer?), not fossiliferous
1/2′ light claystone ("clod" of Brer?)
(thin) weak claystone with small nodules
1/2′ Anna Shale
2′ Energy Shale

F. Odd sequence in roof fall approaching channel. Sequence is:

2′+ mottled unit; 80% greenish clay in 20% dark gray matrix, with (synaresis?) cracks (weathered Anna?)
0.6-0.9′ concretion zone, weathered appearance
0.8′ Anna Shale, black, finely laminated, not very fissile

G. Fall in crosscut with clay dike in top coal dipping North:

1½′+ Anna Shale mottled at top, grad. contact to:
1¼′ Energy Shale

H. First channel siltstone exposure coming from South. Small exposure in center of c/c shows micaceous siltstone cutting thin Anna Shale; on S. rib siltstone is seen cutting Herrin Coal. On S. rib at stopping small exposure shows:

0.7′+ slightly silty gray shale w. low angle slips up to .08′ sandstone lenses, discontinuous, downcutting into:
0.1′ to 0.17′ claystone, slightly darker than above with irregular contact to:

0.5′ siltstone, med. gray, with many small nodules; fines upward; erosional content to:

- Herrin Coal, coal loss appears minor

Note that a channel lag deposits is on the Herrin 20′ to the East.

I. Brereton nodules (remnants) are pressed into top of Herrin. Some coal loss, perhaps 3/4′ because there is only 1.60′ coal above upper (B/C) claystone parting. Two feet of channel sediments minimum are seen above the remnant nodules. There is 0.25′ more coal loss on rib moving 20′ WNW toward the travelway. The claystone partings in the coal have been squeezed into lenses due to irregular compaction in this area--note N. dipping fault just to N.

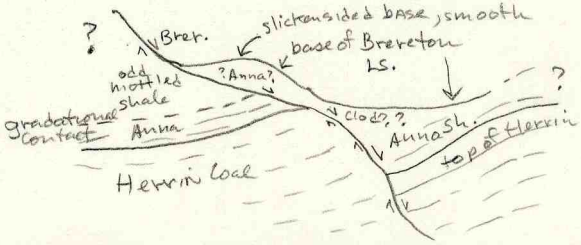
J. Ten paces (30′) N. of centerline of 57 c/c substantial coal loss is seen on both ribs. The blue band is squeezed up to 0.19′ thick behind a fault in the coal dipping 45° North. The coal fishtails and the top half is lost over the next 6′. The bottom 2′ of Herrin is lost on a slip a further 2′ on E. rib; this bottom 2′ is not lost until 9′ further on W. rib. The W. rib shows nice rafted, yet connected, peat (coal) with siltstone/ss. deposited under it and subsequent deformation of parts of the ss. body. Channel sediments are seen up to 4′ above Herrin top position; channel fill has siltstone, but is predominantly medium gray silty shale here. No site K.

At 12:25 I moved to 60 c/c on belt to map to north and small area behind stopping line.

L. Limestone above Anna locally has rolly base. Brereton ls., thought it is not weathered badly, is broken up to some degree by low angle (compactional?) faults, aided by weak coal ribs. Weathering below

channel has had bad effects on Anna Shale--the Anna is almost unrecognizable in some places.

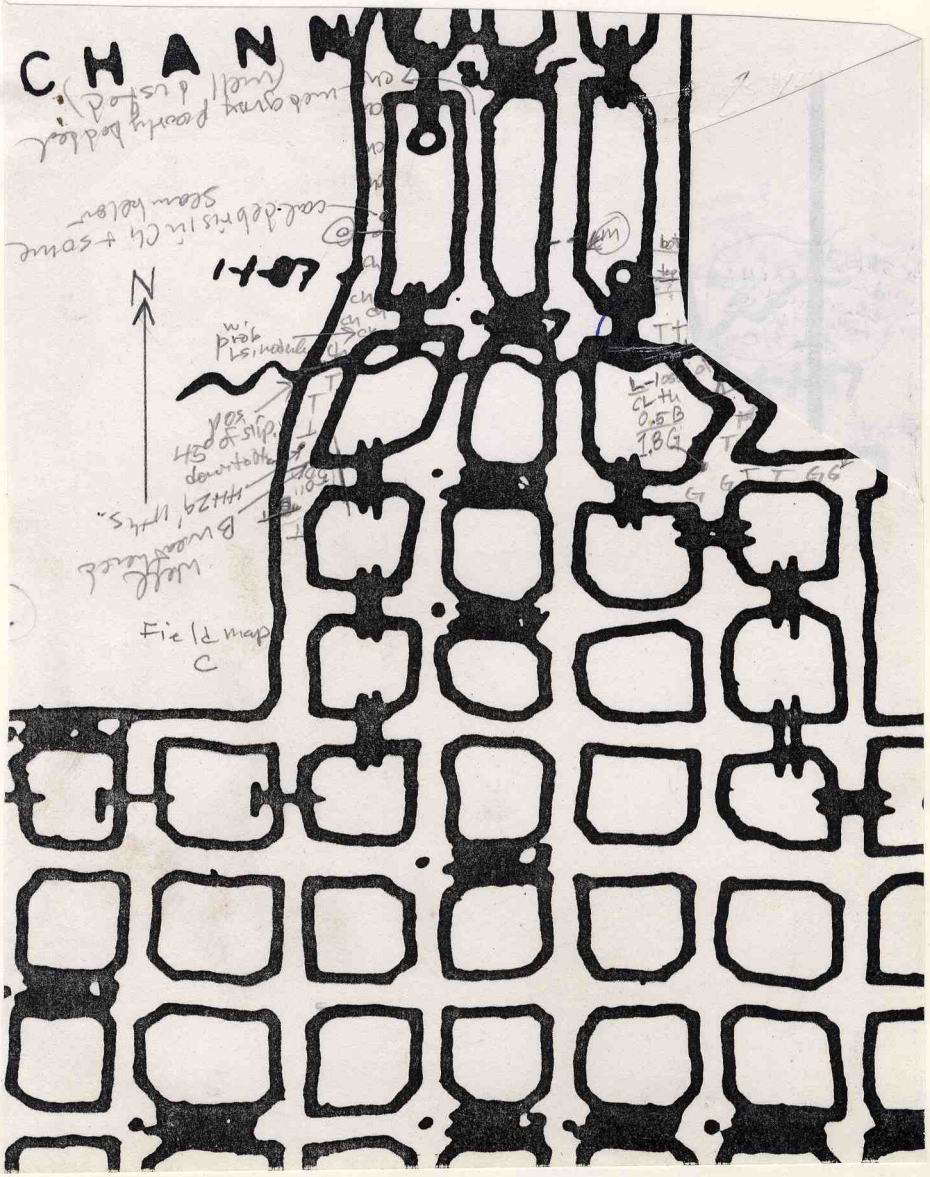
L. No. Full seam mid-angle fault in Herrin with minor displacement, matching one seen to the W. Fall here shows the fault which drops the Herrin also displaces the Anna and base of Brereton: Anna is seen to be altered despite presence of some Brereton although thickness unclear. Sketch from W. rib.:



Further examination of "upper Anna" shows it to be inflated in thickness locally due to downward displacement of base of Brer. The upper material is mostly Brereton "clod" and mobilized fine clastics from within the Brereton which are shot into Anna giving a "synaresis" appearance. This upper material has a horizontal fabric, not vertical. Slickensides have formed on base of Brereton which has deformed plastically; base of Brer looks as expected and remains fossiliferous. Base of Brer. lies 3½' above coal top at thickest. This mechanism explains the odd materials at sites E., F., and L and shows why these materials are weak but not really weathered.

M. (See Map C.) About 12' N. of last clay dike the Herrin seam is eroded away over another 6' laterally. Nice photo spot while belt is inoperative. Channel-fill clastics here are predominantly ss., weakly laminated, with some siderite lenses. This tabular ss/siltstone is succeeded by a weaker siltstone with a sharp, erosional contact. Both ribs show similar abrupt Herrin coal loss. The west rib show loss line back 2-3'

Map C 11/12/91



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from true E-W line, as expected. Roof siltstone is quite solid; there are only minor falls onto the arch, which starts 8′ N. past coal loss line.

N. Significant coal loss starts 8 paces (24′) past centerline of 57 c/c and continues over 10 paces further. The bottom 1/3 of the seam is lost only over the last 6 paces of those 10 paces; both ribs are similar. Nice fishtail here, but area is well rock-dusted. Some coalified plants in channel sediments, more under dust. Large trees (prob. lycopods) seen at bolt level in various orientations; this is 7 1/2′ to 9′ above normal top of Herrin.

O. Most of Herrin Coal seam is still present 21 paces (63′) from centerline of 57 c/c.

Summary

There was no evidence that channel sediments were hit in the 2nd N. panel off the East Mains. The south side of the channel in the South Mains were mapped, and some detail can now be added to the picture. When mapping is completed a better picture of the channel as an exploration target will emerge. Also it appears that some short range predictors can be identified which will be useful where room-and-pillar mining is advanced toward the Anvil Rock channel.

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

Mine Notes - Freeman Crown III - Macoupin Co.

Visit: Dec. 5, 1991, by Phil DeMaris with Roger Nance and Pat Peterson of Freeman and Jimmy Lee, Mine Manager, as guide.

Coverage: Introduction
Quick visit to E. Mains vic. 70 c/c
North side of Anvil Rock Channel
Discussion
Samples: Set "B: completed (to -10)

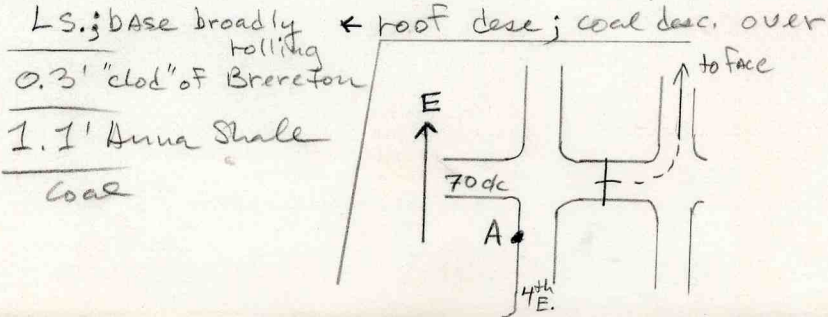
Introduction

I was able to match up with both Roger and Pat for this visit. My goal is to finish mapping of the north side of the erosional channel which progressively cuts away roof, coal, and floor. Roger wanted to check for Energy lenses near the faces of the E. Mains off N., so we headed there first.

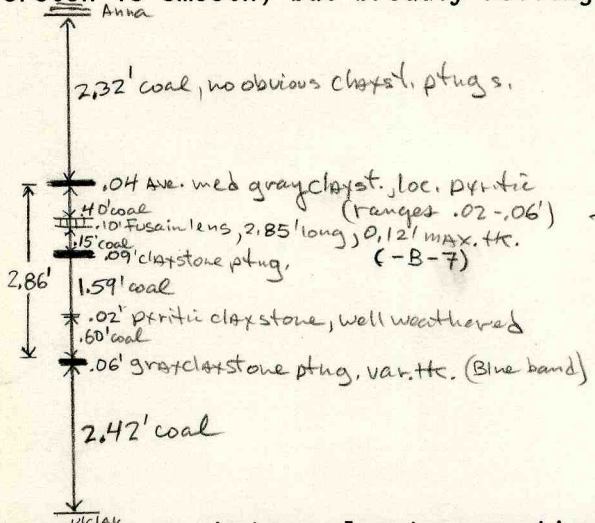
Quick visit to E. Mains vic. 70 c/c

We parked near 5062' tag on 4th E. Main and walked E. About 2 c/c ahead at 70 c/c there is a door to the south.

A. At 70 c/c Lee, Nance and Peterson went through the door and onto the Face (about 2 c/c further) while I did a quick coal description on the 4th.



The coal has rashed on the upper 1/3 of the seam; roof is 1.1′ Anna Shale, 0.3′ "clod" of Brereton, and base of Brereton is smooth, but broadly rolling. Coal desc.:



There were no obvious claystone partings in either the bottom (A) or top (C) bench above the basal B/C parting. I sampled the prominent fusain lens (-B-7); it has only traces of internal vitrain (< 1% of volume). Lens has continuous vitrain rind around most of base; top contact is unclear due to deformation. Bottom of lens is conformable to clarain below.

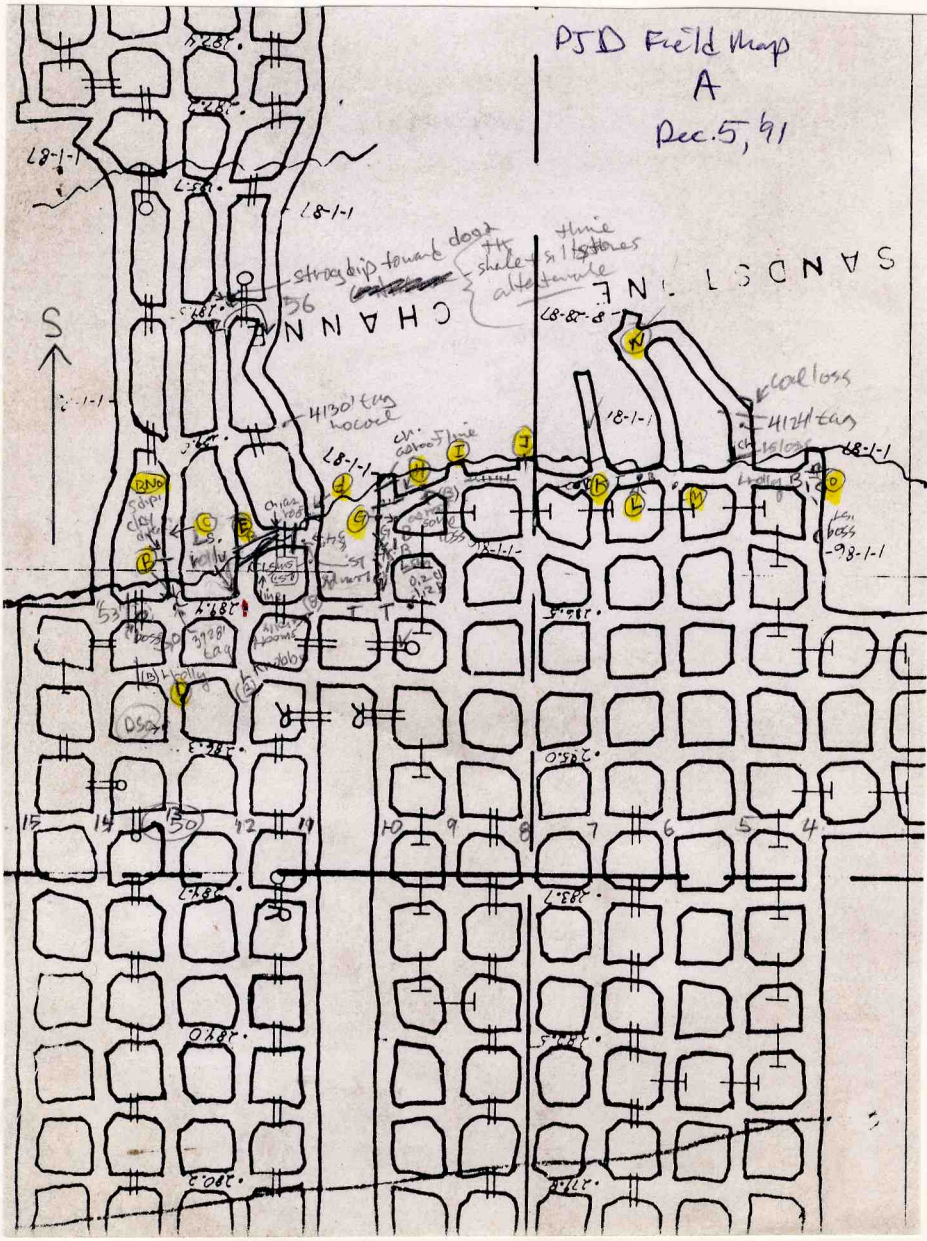
North Side of Anvil Rock Channel

We went to South Mains and began work at 53 c/c on N. side of channel on 12th S., the travelway. Just to E. on 13th (old belt entry) there is a 3928′ tag.

B. At corner there is a small Fall showing:
- Brereton Ls., Knobby base, rolly to WNW
0.3′ "Clod" of Brer.
1.0′ Anna Shale (mapped "B")
- Herrin Coal

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

Around 12/5/91



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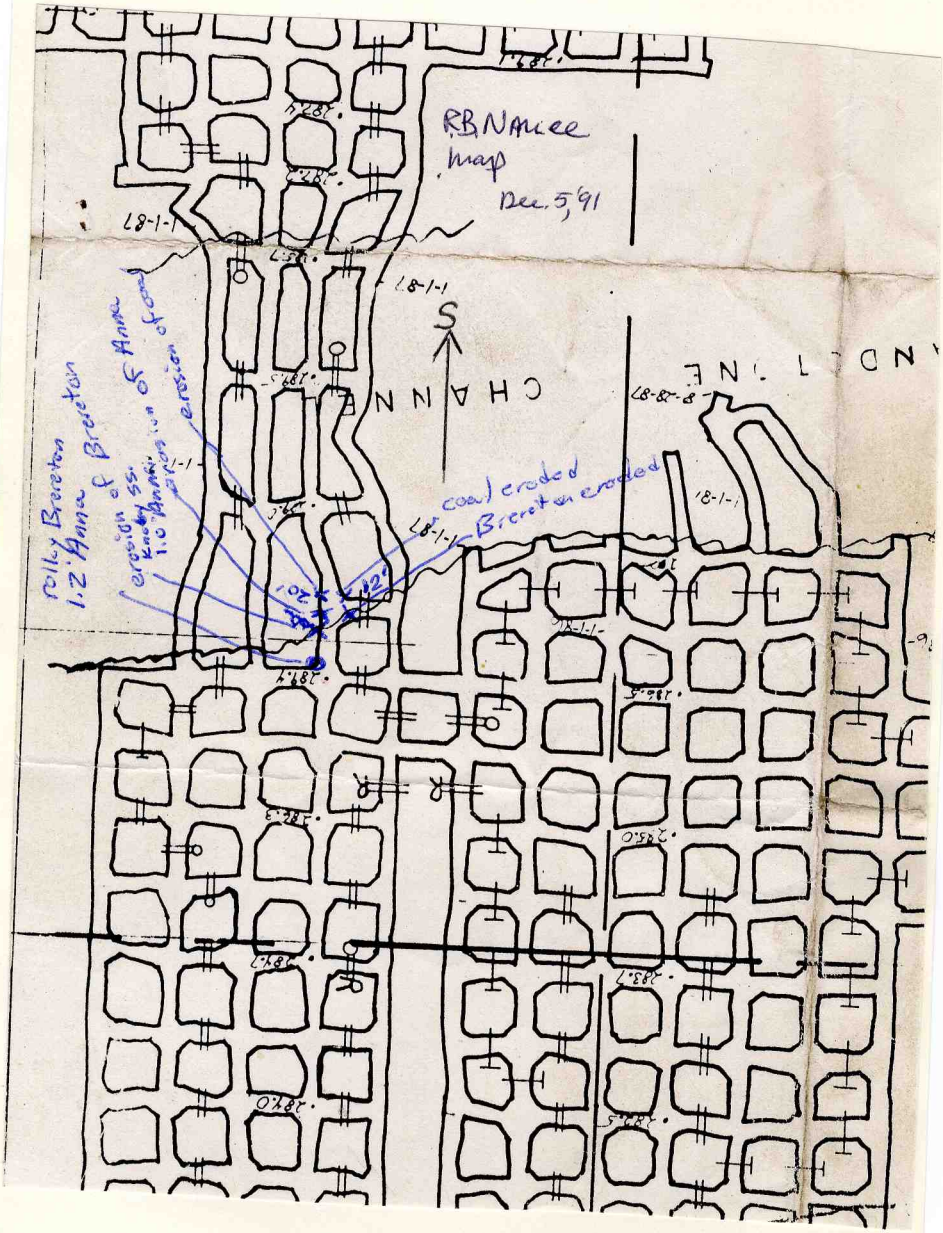
plus 2 maps

B. No. We went S. along E. side of arch. 30 or 40′ from intersection there is a S.-dipping fault and clay dike; significant erosion of coal also begins here.

C. Coal seam fully lost here; position relative to B. No. is unclear from on arch but probably another 10′ or less. Silty shale 1′ above top-of-arch level contains both Calamites (3 cm dia. and 15 cm dia. seen) and clearly tapered tree fern petioles and foliage fragments (Neuropteris?). The large Calamite is upright and leaning ENE in silty shale, prompting discussion. Roger Nance thinks this channel flows to SW across the region (through Peabody 10 and Crown I) while the channel we have mapped in Crown II he believes flows E. to intersect it. He will send copy of his map of the area and also a Crown III drill-hole data map. It appears likely that the Crown II channel also flows to the SW and then S. to join the "big channel" at Crown III somewhere to the WSW of where we are now. Sedimentologic study would clarify this.

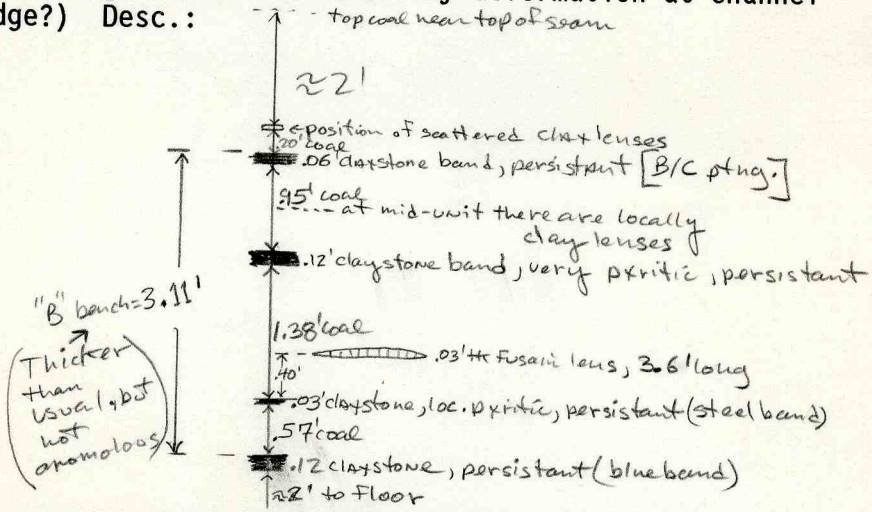
D. Base of Brereton is broadly rolling but still looks fairly normal here. Immediate roof is 1.2′ Anna to 0.3′ clod; a few small vertical separation planes can be seen on base of Brer. Knowing what we know these characteristics may predict the channel, but since these can also occur over Energy lenses these are only two factors among several needed.

Crown III
12/5/91



(ou 15ths.)

D. So. Well-weathered exposure of top 2/3 rds. of coal. (In hindsight this is an unusually thick middle bench [B bench]; is it "inflated" by deformation at channel edge?) Desc.:



E. Exposures on travelway (12th S.) show abrupt changes. From sharp edge of Brereton roof to total loss of coal on E. rib is 28 feet. At mid-entry there is only 5-6′ between Brereton Loss line to Anna Loss line. To the west in c/c the changes are even more abrupt; the distance between Loss of Brer/Anna and full Loss of Herrin Coal is only 15′. Brer. Loss line is very close to Anna Loss line in c/c, but 15′ difference back on the E. rib. On the E. rib in the middle of the 15′ interval there is a steeply dipping fault cutting coal and shale; the fault dips toward the channel.

F. On the 11th S. exposures also show abrupt loss. Anna loss line is on map and coal loss line is only 6′ further out. Calamites seen in channel-fill silty shale and there are root compressions in the sediments at top-of-coal level with horizontal rhizomes that are very probably also Calamites roots. Out in channel-fill, a coalified tree compression was sampled (-B-8).

p.5 of 8 plus 2 maps

G. Separated limestone pillow, apparently on a deformational fault. View of base would call it "rolly" and apparently intact-clay obscures separation. On the W. rib there is 1.45′ Anna, 0.2′ clod, Brer. base rolly and has small pyritic nodules.

H. Large fault with clay along it. Brer. and Anna loss lines are stacked only 5′ S. of this fault, and channel sediments are roof of coal toward end of stub. Pillar corner shows 2′ throw on base of limestone; fault cuts full seam. At far face of stub, Herrin is half-eroded at SE corner but nearly full seam is present on SW side.

I. Herrin Coal fully lost at face, half lost at both pillar corners; Brereton Ls. is lost at mid-c/c. Toward site J. in c/c they mined parallel with a channel-ward dipping fault that drops the seam a couple feet. That this roof is still standing is a testament to the stability of the channel-fill units as roof.

J. Entry was barely stubbed (only 8-10′); Brereton loss line parallels N. rib, and face of stub shows only 1/3 of Herrin left; most of Herrin present just into west c/c. Prominent clay dike on fault where coal loss begins (nice photo site).

K. Intersection is in top coal so loss lines are unclear. 30′ past intersection centerline major coal loss starts at large fault with an impressive clay dike fault close behind it. Coal is fully lost over 10′ further on E. rib, and 16′ on W. rib. Large tree (3′ diam.) in channel seds., lying transverse to channel axis.

L. Silty shale on 0.8′ Anna shale (partial erosion)--contact is level where visible.

M. Channel-fill silty shale without limestone nodules/cobbles is roof to Herrin. 4066′ tag is just S. of c/c center line. At 10′ past (S. corner line?) intersection there is a large clay-dike fault (compactional) which drops top of coal 3′. At 4120′ tag coal is 1/2 gone and fully gone 18′ further (similar on both ribs). There are lots of mid-sized plant debris in the silty shale at roof level.

N. Out in thick channel-fill (impure siltstone here) there were 2 odd vertical coalified features, contorted by soft-sed movement. One looks to have been in life position, possibly an in-filled Calamites judging by thin walls. No identification possible due to strong deformation. Moving NW the coal loss line and limestone loss lines were plotted. The 4124′ tag where only thin Herrin remains, is 54′ (18 paces) from the centerline of the intersection (c/c 55).

O. 27′ (9 paces) S. of c/c centerline, Herrin Coal shows knobby limestone in roof at face of stub. Slip on s. flank on thin Energy lens (mapped) drops top of coal 1½′, but this is not primarily a near-channel effect. Although this Energy lens is thin, it has several nasty slip-faults associated with it that caused mining problems. If this is a typical Energy lens at Crown III mining problems assoc. with these lenses may be worse than at Crown II. Just to the N. we saw black tough nodules under the Energy on the Herrin/Energy contact. These have been seen before and were locally a mining problem. Previous analysis indicates these are silicified peat. Segment of black concretion was sampled (-B-9).

2nd N. Panel off E.

We walked S. and E. to check again for any evidence of channel erosion effects in the northern part of this panel.

P. We revisited site A. of my last trip and took a closer look. Fall sequence is:

1/2′+	irregular base of Bankston Fork Ls.
2′-3′	mottled shale, greenish at top
1¼′	Brereton Ls. (top 0.4′ different)
4′	Anna Shale

As mentioned before only a central area has fallen through the Brereton. Roger Nance thought the Bankston Fork examined and sampled (-B-10) was typical of the upper bench; the upper 1/3 of the Brereton appeared lighter, and thus could represent the lower bench. Roger later thought less of this option after seeing site Q. See Discussion.

We walked out of the mine from the 2nd N. panel. On the S. Mains somewhat North of the channel exposures we examined another Fall on the travelway.

Q. Fall showing missing Brereton Ls. on South travelway. Sequence is:

-	Bankston FK. Ls., upper, base only
2½-3′	greenish mottled unit, weak
0.8-1′	tan limestone (lower bench Bk. Fk.)
2½′	dark mottled claystone
5½-6′	Anna Shale and Energy Shale with level contact between them

Discussion

Roger Nance's comments at site P. raised the question of whether or not the lower bench of Bankston is ever seen immediately on the Brereton, i.e. with no intervening shale. Certainly there is sheet siltstone above the Brereton at Crown II and a mottled shale above that; the sheet siltstone (Anvil Rock) is missing over most of the Crown III property according to Roger. Roger is not happy with the use of "Lawson" for this interval by some; he thinks its use should be reserved for the sheet facies of the Anvil Rock channel sediments.

p.8 of 8
plus 2 maps

After seeing site P. it seemed more likely that the lower bench of Bankston Fork Ls. simply was poorly- or un-developed at site P. We have little experience with this bench at Crown II because it is rarely seen. Crown III may be the best place to compare and contrast roof conditions with Crown II, and clarify our understanding of the Brereton to Bankston interval.

Samples: Set "B" completed (to -10)

-B-7 (A) Fusain from lens 2.85′ long, 0.12′ max thickness from B bench (chem. & petrog.)

-B-8 (vic. F) Coalified lycopod tree segment (cast for petrography)

-B-9 (O) Concretion on Herrin/Energy contact, black

-B-10 (P) Bankston Fork Ls., tan, massive argillaceous (C-isotope)

PJD:MN30

Crown III

U. ILLINOIS TAPS FREEMAN-UNITED; ONE YEAR PACT FOR 120,000 TONS OF STOKER

p.3

Coal Week 4/13/92

The University of Illinois' board of directors was prepared last week to act on a recommendation awarding a one-year, 120,000-ton stoker coal supply contract to Freeman-United Coal Co., whose offer, after re-bidding pr, was $26.88/t delivered via truck.

The figure includes ash and gypsum disposal fees, which, at least prior to the rebid, was $1.88/t (3-2-92 *Coal Week*). The coal was solicited on specs of 10,500 Btu/lb., 2.5-3.5 percent sulfur as-fired, 6-12 percent ash as-received, 15 percent moisture under a variety of sizes (2-24-92 CW).

Others who bid on the contract were Energy Resource Development Co. ($28.81/t delivered via truck), Shell Coal's Turris Coal subsidiary ($30/t via truck) and Sahara Coal Co. ($35.26/t via rail). Deliveries under the contract will begin in July. There are no contract extension provisions in the contract, an official said.

I spoke to Dave Webb, General Supt. of the Freeman Crown mines, about this contract. He confirmed that they had won the contract, and that coal would come primarily from Crown II, with a little from Crown III. Freeman United C.M.C. has outbid Turris Coal recently for several incremental contract, including ADM and B.F.Goodrich, but they retained the City of Springfield contract, which will keep the mine alive.

Dave indicated the next bidding contest for a major contract would be this fall for the Commonwealth Edison power plant contract that Peabody No. 10 now holds; the current contract expires at the end of 1992.

pjd 4/22/92

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

FORM 180 W

SAMPLE HISTORY

lant sampled: **Crown III Prep Plant** Date: **Oct. 28 ?, 1992**

ompany: **Freeman United Coal Mining Co.** Sample ID: **CROWN3**
P.O. Box 100 **C32785**
West Frankfort, IL 62896
Jim Yancik (West Frankfort office) - Quality Control, Plant Operations and Maintenance (618) 932-2164.
Neal H. Merrifield, vp, undergnd operations
P.O.Box 100, West Frankfort, IL 62896

ine (source of sample): **Crown III** Collected by: **Company staff**

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

ining period represented (dates): **10/25-26/92??**

anel(s) & location(s) in mine:

Mine locations (descriptive):

¼ or footage section twp rge

ype of Preparation Plant: **Same as for Crown II; built in 1971 rated at 1200 tph of raw coal**

ampling point: # increments:

Belt (describe position in plant) **Loading belt**

Train

Truck

Company's sampling device (yes)
Type:

Other (describe) **Steam coal, 2x0 finished product**

rocedures (describe other aspects):
Sampled by mining company staff from their regular mechanical sampler. Sample said to represent one day of prep plant operation.

Coal Week, 12/21/98 :

A 92-day strike by UMWA against Fr.-Un. ended 12/17/98 with signing of new 4-yr. labor agreement; see under Crown II M. for details.

Note: See Case 6 (G-229) for Results of the roof study map.

Freeman United -

Crown 3

Macoupin Co.

12N 6W

Sec 36

Crown 3 mine

Freeman United Coal Mining Co. - Crown III Mine
Notes by John Nelson April 2, 2003
Mapping roof geology in Main South near 11th and 12th East Panels
with Tom Kell from Freeman

Numbers refer to locations on map.

1.) Intersection on travel entry just east of power borehole. Roof fall in intersection is about four feet high. Section as follows:

TOP - Knobby surface, tan mottled with greenish gray; limestone?

1½ ' Mudstone, highly mottled, upper part light greenish gray, lower part dark gray with intricate greenish-gray mottling. Massive to weakly bedded, crumbly. Sharp contact:

2½ ' Anna Shale, grayish black, upper part mottled and weakly bedded, lower part more competent and fissile.

Top of coal.

Upper mottled shale could be Lawson - if so, the Brereton is missing. Further mapping indicates all the shale is Anna.

2.) Next intersection north - junction with travelway of 12th E. panel. Ragged, roof falls about three feet high, again showing about two feet of Anna Shale overlain by mottled shale. Irregular slips are in the upper shale.

3.) Crosscut 96 on travel entry. Roof fall shows 2½ to 3½ feet of Anna Shale overlain by unbroken limestone. The shale is not fissile, in fact much of it lacks bedding. The black color and streak and light bluish-gray weathering identify it as Anna. Light brown phosphatic lenses and laminae are abundant in the upper portion, which grades to a crumbly, highly mottled "clod" several inches to a foot thick beneath the limestone.

A small kink zone runs through top coal north of the intersection.

4.) Travelway north of crosscut 95. Small roof fall on west side of entry shows knobby base of limestone overlying about one foot of Anna Shale. Phosphatic lenses are abundant, as are small slips. At north edge of fall the edge of a lens of Energy Shale is visible: medium gray, pyritic (weathers yellow), faint fine planar lamination.

5.) Travelway at crosscut 92. Fall shows knobby limestone over 1½ to two feet of shale. The upper part of the shale, averaging about six inches thick, is weak, crumbly, and highly mottled, in light gray and green. Phosphatic lenses are present, indicating "reworked Anna". The remainder of the shale is grayish-black, weakly bedded Anna.

Tom says that where the bottom of the limestone is knobby, the rock usually doesn't hold bolts well.

5.) Travelway to 12th East panel crosses under Main South belt; floor has been taken out for clearance. Coal seam description:

TOP - Anna Shale, black, weakly fissile, weathers white to light bluish gray.

0.9' Coal, bright banded, pyrite laminae near top.

0.05' Mudstone, dark gray, varies in thickness but seems to be persistent in this part of mine.

0.6' Coal, bright banded.

1.1' Coal, bright with numerous dull, shaly, pyritic bands, most persistent thickest shaly bands are at the top and base.

1.2' Coal, bright banded.

0.03' Mudstone, pinches and swells, discontinuous.

0.7' Coal, bright banded.

0.1' Mudstone - Blue band - dark gray to olive-gray.

2.3' Coal, bright banded.

6.95' Total seam thickness.

3' Floor, claystone, olive gray.

6.) Fall in Main South belt entry just south of last. Limestone probably caps the fall; it is unbroken. Larger horizontal, cylindrical features (burrows?) about four inches in diameter are at the base. Below this is three to four feet of shale, highly mottled at the top and black below. I believe it is all Anna, as light brown phosphatic lenses occur at the top.

7.) Belt junction, Main South and 12th Panel East. The panel belt is being taken out. The roof was taken down to the base of the limestone to provide clearance. Exposures are poor, due to rock dust and wire mesh bolted to the ribs. The base of the limestone undulates over shale two to four feet thick; it all appears to be Anna Shale.

8.) Crosscut 90 east of Main South belt entry. Roof cut exposes unbroken limestone overlying less than one foot of Anna Shale. At the southeast corner of the cut, next to the stopping, the edge of a lens of Energy Shale is visible. The Anna thins to about four inches as it rises up over the gray shale lens.

A few general observations:

- Top coal is intact in most of the area.
- Roof shale lack consistent joints.
- I've seen only two or three concretions in the Anna.
- No mappable faults or slips.

9.) Western pair of return-air overcasts at 11th East Panel. Roof rock was taken down to base of limestone, which is knobby and irregular. About two feet of Anna Shale is present, and it is more fissile and competent than at previous stops. The mottled, crumbly "clod" layer is at most a few inches thick, and in places it is absent.

I measured 7.8 feet of coal with 0.1 feet "blue band" 2.7 feet above the base. Other shale partings are thin and lenticular.

10.) Return-air entry of Main South at Crosscut 89. Roof (Anna Shale) fell out to base of limestone, which is very knobby. A limestone "boss" about four feet in diameter is at the center of the intersection; part of another "boss' is visible at the east edge of the fall. Upper half of Anna is mottled and crumbly.

11.) Next intersection south (Crosscut 90). Roof has fallen out along a "slip" or small fault, and Energy Shale is exposed. The fault trends NE-SW, dips southeast at 40-50° and affects only the roof and upper part of the coal. The dark gray pyritic Energy Shale wedges out beneath Anna at the northeast corner of the intersection. This is probably part of the same Energy Shale lens observed at Stop 8.

12.) Roof falls in easternmost entry of Main South between Crosscuts 93 and 95. All expose Anna Shale to base of limestone. The shale varies from a little under one foot to about two feet thick. As usual, the lower half is black and moderately fissile, the upper half weak and mottled. A crumbly "clod" layer several inches thick is just beneath the knobby, bossy lower surface of the limestone.

According to Tom, Freeman's biggest complaint is they can't mine more than 25-35 feet ahead before the roof starts to break, and they have to stop mining and support the roof. It appears that the incompetent nature of upper Anna Shale may be the culprit.

13.) Third entry (from west) in Main South at Crosscut 90. Here is the first clean view (no rock dust) of mottled Anna Shale.

The Anna is about two feet thick, and is overlain by the horizontal, slightly knobby base of the limestone. Light brown phosphatic nodules are abundant in the upper six to eight inches. The lower part of the shale is black, hard, and moderately fissile. The upper part of the Anna, including the phosphatic part, is intensely mottled in greenish gray. A network of green veins extend downward into the lower, black shale. Some of these veins may be animal burrows but I believe most are shrinkage cracks. The green clearly extends downward from above. So I would say the Anna was originally all black, and the upper part became mottled and partially broke apart before the Brereton Limestone formed.

As I recall seeing at the Hillsboro Mine, there are actually two distinct layers of phosphate lenses in the upper Anna here.

Next intersection south also shows the mottled upper Anna. The highly irregular front of mottling in places produces a patchwork or mosaic pattern, isolated areas of black shale entirely surrounded by green.

14.) Second entry from west at Crosscut 91. Roof fall exposes flat-bottomed limestone over two to 2½ feet of Anna Shale. In places the Anna is entirely black to the base of the limestone and the contact is sharp. Elsewhere the green mottling and veins form a network or mosaic pattern in the upper Anna, as before. There are two bands of phosphatic lenses, one at the top and the second six to eight inches below.

April 3, 2003
Continue mapping Main South

15.) First entry (west) at Crosscut 90. Fall exposes limestone over 1½ feet of Anna; little if any mottling. An interesting point here is

the contact between Anna Shale and coal is erosional - bedding truncated with several inches of relief.

Just to north, at Crosscut 89, is the edge of a lens of Energy Shale. The Anna/Energy contact is erosional and trends northeast.

16.) Second entry at Crosscut 83. Anna Shale thickens from two feet on the south to maybe three feet on the north side of a roof fall. The upper part is locally mottled and there are two phosphatic layers, as usual. Anna contact to coal is erosional again. A slip runs northeast but does not cross the entire intersection. It affects only the upper part of the coal, dying out as a "goat beard."

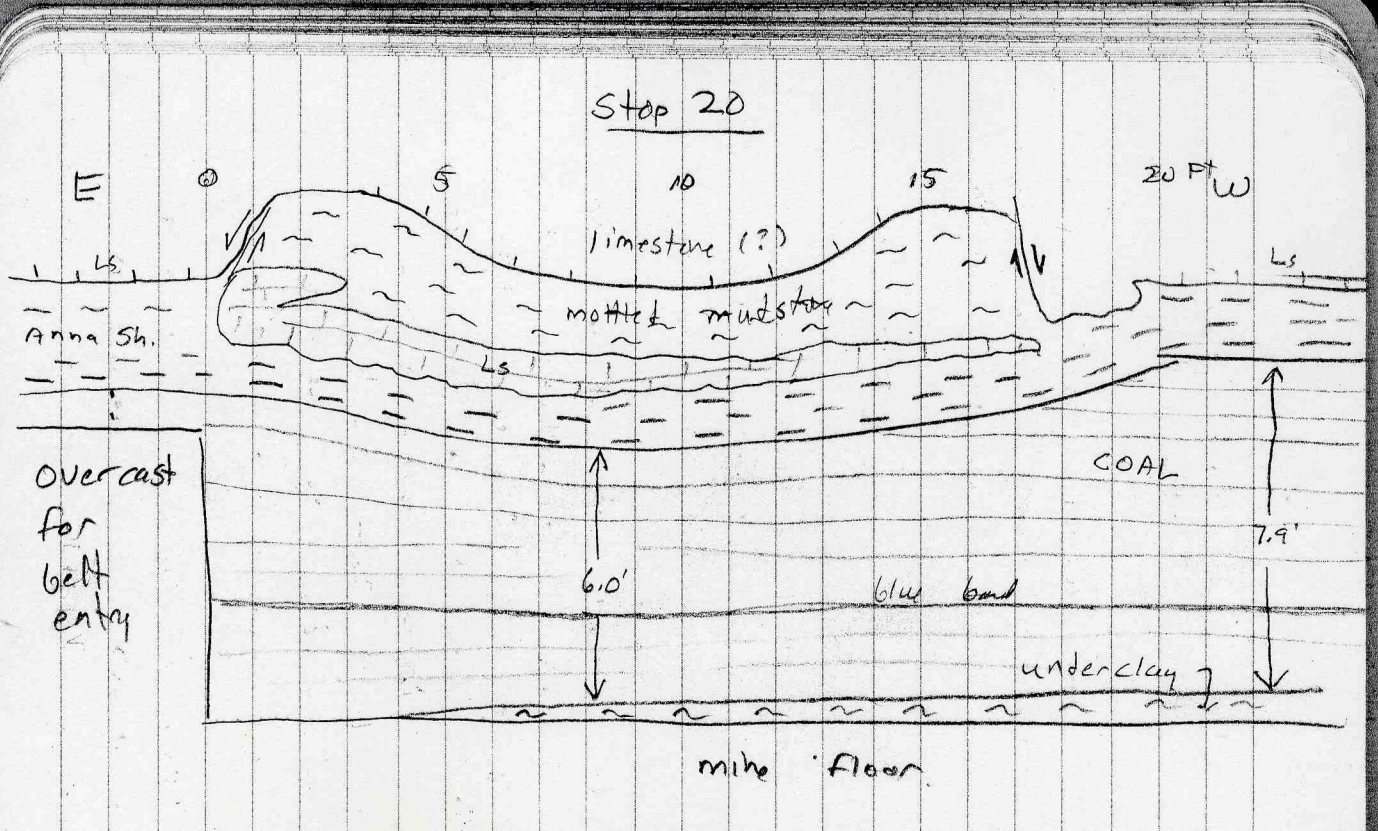
17.) Second entry, Crosscut 84. Anna-Energy contact follows a slip that snakes its way east-west across the intersection. Anna Shale is only about one foot thick. Not a large exposure.

18.) Second entry, north of Crosscut 88. Energy Shale thickens northwestward from a few inches to at least 1½ feet. Overlying Anna Shale less than one foot thick, topped by limestone.

Another roof fall 30 feet south shows Energy Shale again truncated by Anna Shale, the contact running northwest and marked by a slip in places. Lower surface of limestone is rolly and knobby.

19.) Intersection third entry and Crosscut 86. Timber props and cribs have been placed, as the roof looks ominous. A sinuous slip runs north-south along the entry and through the intersection. It follows the contact between Energy Shale on the west, and Anna Shale on the east. The limestone above has cracked and is bowing along the center line of the entry. This is the first place I have seen where the limestone is due to fail.

20.) Between intake-air overcasts to 11th East Panel. Cross-sections of what could be called a limestone "boss" - See sketch.


Stop 20
E
0
5
10
15
20 Pt W
Ls.
Anna Sh.
limestone (?)
mottled mudstone
Ls
Ls
overcast
for
belt
entry
COAL
6.0'
7.9'
blue band
underclay
mine floor

- The coal thins from nearly eight feet to 6.0 feet beneath the feature.
- Top of coal is eroded beneath Anna Shale on west margin.
- Bedding in upper part of coal below the "boss" is slightly depressed but "blue band" and floor are level.
- Both margins of "boss" are faults that affect only the limestone. Eastern fault is reverse.
- Limestone within boss is lenticular.
- Above limestone is weak, massive mudstone, silty, highly mottled yellowish and greenish gray.
- Top of entry probably another limestone.
- Either two benches of Brereton, or thin Brereton, Lawson, and Bankston Fork.

21.) Main South belt just north of 11th East travelway. Fall exposes a smaller version of the structure at Stop 20. The lower bench of limestone, 1½ to 2 feet thick, has dropped down into the Anna Shale along a series of slips, some of which show "reverse" displacement (hanging wall up). The coal is only slightly depressed beneath the "boss" or roll, which is about eight feet wide and seems to run east-west. Above the limestone, as at Stop 20, is weak, finely mottled mudstone.

22.) Belt drive area for 11th East Panel. Roof has been taken down to provide clearance, although study is difficult due to dust and tight quarters.

At the spot marked, the lower bench of limestone has partially fallen away, revealing mottled shale above. East of this point is a small lens of Energy Shale 50 to 60 feet across and two feet thick near the middle. Anna Shale varies from two to three feet thick.

23.) 6th entry (one east of belt) at Crosscut 84. A couple of interesting features visible in a roof fall. A lens of Energy Shale is at the northeast corner. The Anna Shale thins above, and base of limestone remains nearly level. It looks as though the Anna is

truncated beneath the Brereton, but the exposure isn't convincing.

Very convincing erosion of top of coal below Anna is evident here. In one place eight inches of coal is taken out in a lateral distance of four feet, and little flaps of coal extend into the Anna. Bedding of Anna conforms to top of coal.

24.) First crosscut in 11th East Panel. Small-scale intertonguing of Anna and Brereton, apparently caused by soft-sediment deformation. Shale laminae are contorted - see sketch.

25.) Ninth entry, overcast at Crosscut 85. North of outreach, a lens of Energy Shale thickens to a little over two feet. Where Energy is thickest, Anna is only a few inches thick. The base of the limestone rises slightly as the gray shale thickens.

26.) Second entry, Crosscut 99. Roof fall exposes the following:

TOP

1½' Mudstone, highly mottled dark gray, light greenish gray and light brown, massive, intricate network of veins, incompetent. No limestone visible.

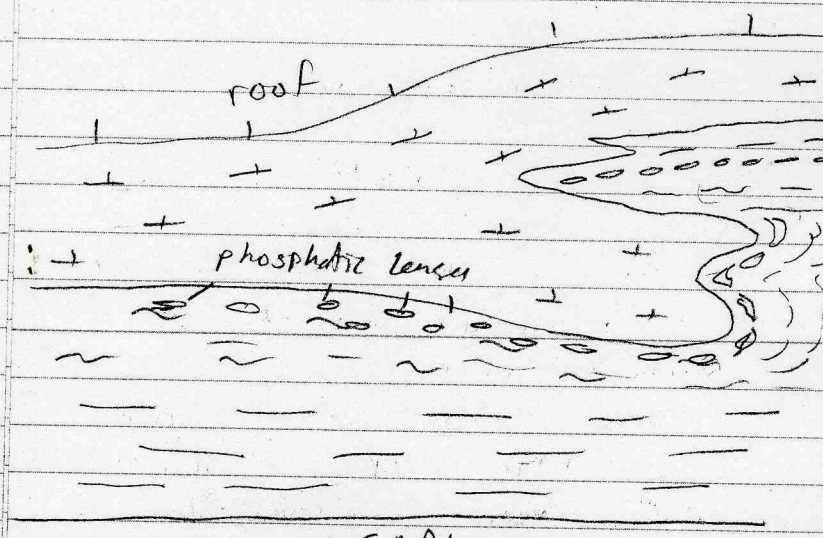
1-2' Mudstone, mostly dark gray, with some lighter veins and mottling, weakly bedded, light brown phosphatic nodules common. Several large septarian concretions, to two feet in diameter and half a foot thick. Contact highly irregular.

½-1½' Shale, grayish black, laminated, competent, contains phosphatic lenses, weathers in places light bluish-gray.

Top of coal.

Lower two roof units are definitely Anna Shale. The upper unit I'm not sure.

STOP 24



25.) North entry, overcast at crosscut 85 North. Of overcast, a lens of Energy shale thickens to a little over 2 feet. where Energy is thickest, Anna is only a few inches thick. The base of the limestone rises slightly as the gray shale thickens.

Other falls in the neighborhood show similar strata. This could be mistaken for Energy (or Lawson) Shale.

27. Third entry just north of Crosscut 100. Here's another exhibition of "mottled Anna Shale" with more details to note:

- Upper highly mottled unit contains fist-sized nodules filled with yellow oxidized pyrite.
- Base of mottled unit is sharp and planar.
- Directly below mottled unit is hard, brownish gray, well laminated silty shale two to three inches thick.
- Remainder of shale dark gray, weakly bedded, with occasional mottles and veinlets.

Friday, April 4, 2003. Mapping 11th East Panel

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28. Southernmost entry (Entry 1). Crosscut 5. Roof is dark gray Energy Shale, which is weakly bedded and slightly silty. Pyrite crystals are common at the base. These are new workings, so there are few roof falls and rock dust is heavy. Top coal is intact in most places.

29. Crosscut 8 between Entries 1 and 2. Small fall exposes two feet of dark gray mudstone - nearly black, massive to weakly fissile, not laminated, no fossils seen. Light green mottles and veinlets appear near top. Is this Anna, Energy, or Lawson?

30. Entry 2, Crosscut 6. Another small fall less than two feet high shows slickensided, mottled green mudstone overlying grayish-black, non-fissile mudstone. Mottling extends to base of shale in places. I am still unsure what unit this is. The shales haven't had a chance to weather as they have in the Main South.

Mapping this area is proving unproductive, so we go back to Main South.

31. Main South travelway, Crosscut 100. Here is one of several falls in area that show thick (2½ feet or more) highly mottled Anna Shale. Only basal few inches lack mottling and the network of fractures. The upper part is highly mottled; limestone isn't visible.

See note 1.

32. Crosscut 102, east of belt. More of the thick, mottled Anna that seems to be prevalent around this part of the mine. Highly mottled green mudstone is at the top of the fall, with laminated, phosphatic black shale directly beneath. Remainder is about two feet of grayish-black mudstone laminated only at the base. Mottling and veins extend within a few inches of base.

33. 7th entry north of Crosscut 103. Seen in roof fall:

TOP - base of limestone. "Boss" in center of entry, bottom cut off by miner.

0.1-0.4' "Clod", olive-gray calcareous shale, incompetent. Contact can be either sharp or gradational.

2.5-2.8' Anna Shale, grayish black, upper part massive, with olive to greenish-gray mottles and veinlets; basal 0.5-1.5' black and moderately fissile. Two phosphatic bands, one at top, another about 0.5' lower.

TOP of coal.

Monday, April 7. With Scott Elrick of ISGS and Eric Buchanan of Freeman.

Face area, Main South.

34.) Intersection Entry 5 and Crosscut 110. Roof has been cut down for overcast to new Submain East. Anna Shale is 1.5 to 2.0 feet thick, with abundant phosphate lenses at the top. Little or no mottling is visible although this is freshly mined. Brereton Limestone is intact above.

35.) Crosscut 110 between 6th and 7th entries. Roof was cut down for overcast, exposing:

TOP - limestone?

4' Mudstone, intricate fine mottling light greenish-gray and dark gray, massive, slickensided. May be thin layer of buff limestone at top.

2.0-2.5' Brereton Limestone, medium gray to buff, nodular bedding, lime mudstone with rare fossil fragments (crinoids), may be algal.

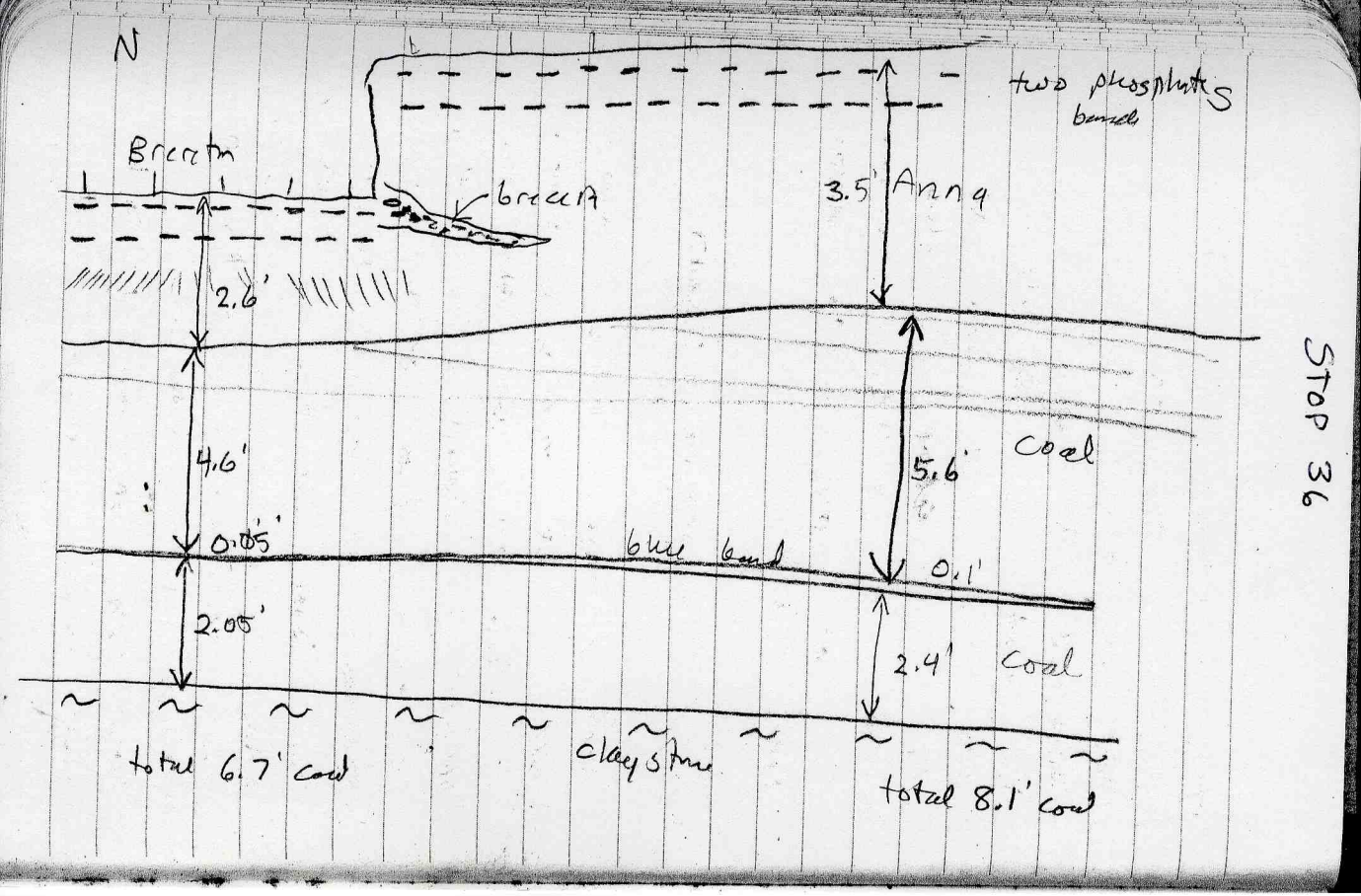
1.2-1.5' Anna Shale, black, moderately fissile, phosphate lenses near top. Thin "clod" layer, olive to greenish gray, at top.

COAL

Exposure above Brereton continues about 100 feet east with only slight changes in strata.

36.) Entry 9, south of Crosscut 110. Large limestone "boss" very similar to that of Stop 20. See sketch. Although limestone is displaced, no fault extends into Anna Shale or coal. There is, however, a small funnel-shaped area of brecciated Anna Shale at lower corner of "boss".

Also note abundant large slips in Anna Shale below the "boss" - it probably was squeezed out to the sides. The coal thins by 1.4 feet below the boss, most of the thinning above the blue band. The floor is horizontal. Top of coal eroded below Anna Shale.


N
two phosphate beds
Breccia
breccia
3.5' Anna
2.6'
4.6'
0.05'
2.05'
5.6' coal
blue band
0.1'
2.4' coal
total 6.7' coal
clay stone
total 8.1' coal

STOP 36

37.) Entry-blocking roof fall in Room 6 on north side of panel. The fall covers most of two intersections, and the intervening room.

At the south end, the following strata are seen:

TOP - flat surface with linear ridges, base of Bankston Fork.

3-4' Lawson Shale, greenish gray, highly mottled mudstone.

2-3' Brereton Limestone, light brown, nodular beds a few inches to a foot thick separated by shaly partings.

2' Anna Shale.

At the north end, the section is quite different.

TOP - Brereton Limestone, nearly flat surface. Lower bench of limestone, a few inches thick and nodular, has fallen.

½ ' Anna Shale? grayish black, greenish mottling; thinly laminated, phosphatic.

4-5' Energy Shale - upper light gray and greenish-gray, mottled with "synaresis" cracks outlining polygons, jagged contact to lower dark gray, silty, weakly bedded shale that contains pyritized shell fragments.

The Brereton can be seen dropping abruptly to the south, where it is broken through.

Tuesday, April 8, 2003. 12th East Panel.

38.) Return air entry at Crosscut 7. Several limestone "bosses" are in this area. The largest, at northwest corner of intersection, pushes about two feet into top of coal. Top conditions are poor in this area - many falls two to three feet high pulling out roof bolts.

These are in Anna Shale that is thoroughly mottled in the upper part.

39.) Roof fall, between Crosscuts 9 and 10. Section as follows is typical for area:

TOP - base of Brereton, knobby.

0.5' "Clod", highly mottled, weak mudstone, greenish gray and dark gray.

0.7' Mudstone, mottled olive to greenish and dark gray, massive, many slickensides; phosphatic lenses at top.

1.0-1.2' Mudstone, dark gray to black with green cracks and mottles, massive, slickensided. Phosphate lenses at top.

0.7-1.0' Shale, black, moderately fissile, weathers white to light blue.

TOP of coal.

Total 2.8 to 3.0 feet of shale.

40.) Outside (north) entry, Crosscut 10. Roof fall in four to 4½ feet of shale, no limestone visible. Lower part is definitely Anna: black and laminated, although in places mottling reaches top of coal. At top of fall is highly mottled greenish mudstone, which could either be Lawson or upper Anna.

41.) Crosscut 18, second entry from north. Fall partly above limestone. There is a "boss" in the middle of the fall, and the limestone breaks out near the northeast intersection corner. Here is seen knobby limestone at the top, overlying two feet of green mottled mudstone, one foot lenticular brown limestone, and finally 3.0 feet of Anna.

42.) Crosscut 19, third entry from north. Unusual disturbance in Anna Shale about two feet above top of coal. A brownish to olive-gray

breccia rock, like a marly limestone, overlies the Anna and is injected into small dikes and sills that penetrate downward. Also large chunks of black Anna Shale, angular to subrounded, occur within the brown rock. It's not a sedimentary conglomerate; it reminds me of "white top". We took samples.

Just east of this point, rock fall shows ordinary looking Brereton overlying 3.0 feet of Anna.

43.) One intersection southwest of previous - another exposure of breccia-filled dikes and sills in upper Anna Shale, below Brereton Limestone. Here the breccia is in thin intrusions rather than the more widespread layer seen at 42. Also, the breccia clasts of Anna Shale are smaller.

44.) South travelway of 12th East, Crosscut 31. Entry blocking roof fall is 12 to 14 feet high and seems to extend above Bankston Fork:

TOP

7' Bankston Fork; inaccessible, looks like two or more ledges of brown limestone separated by dark gray shale or mudstone.

3-4' Lower Shale - mudstone, highly mottled dark green and greenish gray, no bedding.

1-1½ ' Brereton Limestone, light brown, micritic, nodular bedding.

2' Anna Shale

TOP of coal.

45.) Roof fall in belt entry, Crosscut 33. The strata:

TOP - flat surface, base of Brereton.

½ - 1' Anna Shale ? dark gray to black; inaccessible.

5-5½' Energy Shale - upper part is weak, mottled with greenish-gray, and crumbly. Lower three to four feet dark gray, massive to indistinctly bedded, silty, and pyritic, with small pectenoid pelecypods.

TOP of coal.

The Energy Shale comes in abruptly, as there is none on the travelway less than 100 feet southwest of the fall.

46.) Next crosscut east, another large fall. Section as folows:

TOP - flat surface with slight ripply or wavy texture (not true ripple marks)

½ ' Limestone, brown, nodular.

2½ - 3' Mudstone, highly mottled greenish gray, massive.

3' Brereton Limestone, light brown, a series of beds a few inches thick, nodular, separated by dark gray shale.

2-3' Mottled Energy Shale, dark gray and greenish gray, massive, weak. Jagged contact (color changes).

2-3' Energy Shale, dark gray, silty, massive.

47.) Crosscut 39, second entry (intake) from south. An unusual roof fall is sombrero-shaped, the "brim" 10 feet in diameter and the "crown" 5 feet across. Exposed strata:

TOP - Bankston Fork limestone - a "boss" three feet in diameter at top of fall.

2.5' Lawson, highly mottled greenish-gray mudstone.

1.5' Brereton, very shaly, nodular, mottled, marly limestone.

3.0' Anna Shale - typical appearance with two zones of phosphate lenses, one at top, and the second 0.6-0.7' down. Upper part mottled and lower part black and fairly well bedded.

TOP of coal.

April 9, 2003.

48.) 12th East Panel, Returns, Crosscut 22. Entry-blocking roof fall. Not a good view from most angles - on west appears to be Bankston Fork at top, several feet of mottled green Lawson, about two feet of Brereton, and two feet of Anna.

49.) Crosscut 26, between first and second entry from north. Huge, entry-blocking roof fall. At north end, Brereton Limestone is intact overlying about six feet of Energy Shale, of which the upper two to three feet is mottled. The contact between upper and dark gray lower shale is jagged. In next entry south, fall extends well above the Brereton.

Just northeast of the fall, limestone directly overlies one to two feet of Energy Shale - no Anna.

50.) Crosscut 27, between second and third entry. Entry-blocking fall to base of Bankston Fork, a mottled green, slightly rippled surface with narrow elongate downward - facing ridges. Lawson and Brereton broken out but not visible. Energy Shale about seven feet thick, the upper three feet mottled.

51.) Crosscut 28 between 3rd and 4th Entry. Blocking roof fall, viewed from south, shows:

TOP - base of Bankstone Fork, with protruding nodules and linear ridges.

3-4' Lawson Shale; mottled mudstone.

2-3' Brereton Limestone, light brown, micritic, nodular; beds one to eight inches thick separated by shale.

4' Energy Shale, the upper part mottled. Thickens northwest to five feet or more, and pinches out 50 feet southeast of fall.

Monday, April 7, 2003. With Scott Elrick of ISGS and Eric Buhanan of Freeman.

Channel on Main South

1.) North of channel, intake entries: fault is first harbinger of channel. It traces across both intake entries parallel to channel margin, and is a normal fault dipping 30-40° southeast. It penetrates all of the coal we can see, although underclay is not exposed. Throw is one to two feet. Well-developed "reverse drag" in footwall. Anna Shale varies from 1½ to 3 feet thick, overlain by Brereton.

2.) Clastic dikes penetrate coal within 20 feet of north channel margin. Faults along the dikes dip southeast, toward the channel. The filling is siltstone and very fine sandstone, derived from the channel. The channel-fill siltstone here forms immediate roof, although little erosion of coal took place. Rip-up clasts of Anna Shale and limestone occur in places.

Channel margin lies just ahead, as I saw it on March 5. The margin is a ragged edge on the west rib and a fault on the east rib, with the upper half of the seam eroded at this point.

3.) Margin of second, deeper channel. This also trends NE-SW, and its base dips about 30° at roof, flattening downward. The filling is light gray, coarse sandstone to very fine sandstone that has wavy or slightly irregular, thin bedding. The bedding more or less conforms to base of channel. This fill contrasts with that of the first phase, which contains abundant large mats of coal.

4.) Near middle of channel on 2nd entry. Fill is interbedded silty shale, siltstone, and fine sandstone: bedding irregular and wavy. There is plenty of soft-sediment deformation ranging from micro-faults to horsts and grabens having several feet of throw.

5.) Southeast margin of second channel. Bedding dips north, conforming to erosion surface, as at Stop 3. First channel, to south, filled with chaotically slumped and faulted sandstone, siltstone, shale, and large masses of coal.

6.) Southern edge of first (older) channel. Entire coal thickness returns within 10-15 feet, and is cut out at 20° to 40° angle. The cut out is ragged but less ripped-up coal in the channel than at Stop 2.

7.) South margin of channel on easternmost (return-air) entry. Entire thickness of coal is cut out within 20 feet along a fairly straight contact. The channel continues cutting down through three feet of underclay as seen on entry north of crosscut. The filling is medium gray, weakly bedded siltstone to silty mudstone, containing a few discontinuous sandstone laminae, and streaks of dark gray shale.

8.) North margin of channel in easternmost entry. Gray dust coating walls hides the details. There appear to be a first and second, or inner and outer, channels as on the intake entries. The inner channel cuts through the outer at 30-40° angle, whereas the outer channel cuts out the coal gradually over a distance of 60 to 80 feet. The outer channel fill contains abundant coal mats and rip-up clasts.

9.) Here is one of the few places where channel fill can be seen truncating roof strata. The gray, silty shale looks a great deal like Energy Shale and weathers to the same light yellow color. It truncates Anna Shale and Brereton Limestone at a low angle, as seen in small roof fault. This is within 60 feet of the north margin of the channel.

10.) Second entry from east has a better view of north channel margin. The outer channel cuts out the coal in a series of stair-steps, while the inner channel cuts out the outer at a steeper angle.

11.) South side of channel in second (return) entry from east. Here the contact is a fault striking ENE and dipping about 40° NW. The hanging wall is gray, weakly bedded siltstone that contains fossil plants. In the footwall is a full seam of Herrin Coal topped by Anna and Brereton. The upper part of the coal exhibits reverse drag, whereas the lower part shows normal drag.

On the west rib, a chunk of limestone along the fault lines up with the base of the coal, showing a minimum throw of 10 feet.

From this exposure I'd say the channel originates more than 10 feet above the coal and thus, is younger than Bankston Fork.

A revisit to Stop 7 shows that the contact here is a fault also. Probably a big landslide block.

BACK TO 12TH EAST

Freeman United Coal Mining Co. - Crown III Mine
March 5, 2003 with Tom Kell from Freeman
Notes by John Nelson

Underground mine in Herrin Coal, shaft located in **Section 1, T.11N., R.6W.,** Macoupin County (between Girard and Farmersville). I was invited to visit by Tom Kell, to assess the geology as it relates to roof stability.

Channel crossing First South Entries

This is the large channel that crosses the entire mine property and also that of Crown I Mine, cutting out the coal. It runs NE-SW and is several hundred feet to nearly 1,000 feet wide. An excellent set of exposures is along the intake-air entries of the First South.

On the southeast channel margin, the coal is cut out abruptly at about a 30-degree angle. The filing is gray silty shale, siltstone, and fine sandstone. The only warning of the channel is a few small slips in the upper part of the coal: low-angle normal faults that run parallel and dip toward the channel.

Walking north through the channel, we cross a zone more than 100 feet wide where the bedding is highly deformed, steeply dipping or even overturned, and contorted. This represents slumps and ancient landslides and indicates that the channel probably extends deep below the coal. Large, ragged chunks and stringers of coal are common in the channel fill. These are never rounded and lie parallel to bedding of the channel fill - the Herrin Coal was still in the peat stage when the channel cut through.

Continuing northward, into the heart of the channel, the rock is interbedded gray siltstone and light gray sandstone. Bedding is wavy, lenticular, and rather discontinuous. I saw no crossbedding or other current indicators. Small faults and areas of slumped bedding are present, but less severe than to the south.

Where the coal reappears on the north, there are two phases of channeling. The upper is the siltstone/sandstone described above; it cuts

down at a 20- to 30-degree angle. Below this is an older phase of channel fill, containing abundant ragged mats and stringers of coal. The contact onto the coal undulates to a series of steps where great mats of peat were ripped out.

At the north margin are several clastic dikes, where the peat was partly torn apart and siltstone squeezed in from above. They run parallel to the channel and dip toward it. Slips or low-angle normal faults occur farther from the channel edge, and provided the first warning. They affect the upper part of the coal, the Anna Shale, and the Brereton Limestone.

Face of First South - just south of 12th East Panel. Not a great deal to see of the geology. In small roof falls, Anna Shale is one to two feet thick. The lower part is black, the upper part tends to be mottled, weak, and crumbly. A few inches of "clod", greenish in color, are at the top, then the knobby base of the limestone. A little water is dripping in places.

11th East Panel - More of the same. At the place being bolted is the edge of a lens of Energy Shale. This is overlain by Anna Shale with a knife-sharp contact. The roof bolter reports two feet of Anna, 18 inches limestone, and more shale above.

Limestone bosses are common in this mine. Tom tells me the floor usually bulges up beneath them. We see one where the coal below the blue band is 23 inches thick below the limestone boss, 30 inches thick away from the boss.

The 11th East unit has two continuous miners, two roof bolters, and four shuttle cars. The fresh air comes up the middle entry and goes out either side. Face equipment is electric; scoops and mantrips are diesel.

9th East Panel - This panel, 11,000 feet long, is worked out and the miners are recovering the equipment. At about crosscut 158 is a slight dip in the coal where the seam is more than nine feet thick with the top concealed. The blue band is about three feet above the base. This compares to normal seven feet of coal with blue band two to two and a half feet above base.

East of this point the coal rises rapidly, the largest "hill" in this part of the mine. Here the coal appears to be normal thickness.

Near the face is an entry - blocking roof fall:

TOP	Limestone, flat surface
6-8"	Shale, dark gray.
3-4"	Limestone, brown.
3-4"	Claystone, green, mottled.
6'	Shale, dark gray, massive to weakly bedded, probably Energy Shale.

Top of coal.

The roof bolts weren't set to the limestone, so the shale was unsupported.

We visited several more entry-blocking falls in the western part of the panel. All had fallen out to base of limestone six to eight feet above coal. One fall had six feet of Anna Shale, another had six feet of Energy Shale and no Anna, a third had both Anna and Energy. In most cases the roof bolts had not reached the limestone.

General Notes

My visit involved a brief tour of most of the mine's accessible workings. Except in the 9th East panel as noted, the coal thickness appears to be quite constant at about seven feet, and the seam is level to very gently rolling. Except for slump structures associated with the channel and small "slips", I saw no faults and none are reported. The channel is the only significant geologic disturbance.

Crown III Mine Closes amid Illinois Coal Renaissance

Published: Friday, 01 November 2013 12:55

Mining in Illinois continues to enjoy resurgence as the Midwestern state's high-sulfur coal production approaches 50 million tons a year, a level not seen in more than two decades. But not everyone is participating in the good times as Springfield Coal Co.'s venerable Crown III underground mine near Farmersville in Macoupin County is set to close December 20, a victim of an aggressive competitor's lower costs.

Crown III's fate was sealed in late October when Archer Daniels Midland, the Decatur, Illinois-based agribusiness giant, decided not to renew an expiring coal supply contract with Springfield after negotiating for months, stripping the mine of its largest customer. Springfield then notified the Illinois Department of Commerce and Economic Opportunity it planned to shutter Crown III less than a week before Christmas, laying off the mine's nearly 200 employees.

In the end, Springfield lost out to a lower-cost Illinois rival, believed to be Christopher Cline's Foresight Energy Partners, according to Steve Jones, a United Mine Workers of America official in Benton, Illinois.

ADM spokeswoman Jackie Anderson said her company opted to buy coal from another Illinois coal producer, although she would not confirm if it was Foresight. Foresight, easily the fastest growing coal company in the entire Illinois Basin, including Illinois, operates four deep mines in the state, including three longwall operations. Foresight officials could not be reached for comment.

Even though it resulted in a mine closing and major loss of jobs, Anderson defended her company's decision. "We made an economic decision not to renew our contract with Crown III," she said. "Like all businesses, we actively manage our costs. In the process of reviewing our coal supply options, we found other Illinois mines were substantially more competitive than the Crown III."

The good news for Illinois coal, she maintained, was "we are able to continue powering our Illinois operations with coal from here in the state."

For the embattled UMWA, once a powerhouse in Illinois, the news was disappointing. Crown III was the last remaining coal mine in the state affiliated with the more than century-old national industrial union.

Several area elected officials were not giving up on Crown III. They urged Springfield to beat the bushes in search of another steam coal customer who would purchase the mine's recent output of roughly 1 million tons annually. Except for issuing a brief statement announcing the mine's shutdown, Springfield officials did not comment on what, if any, plans they have for Crown III, which was opened in 1978 by the defunct Freeman United Coal Mining Corp.