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ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine

2nd NE

C. G. Treworgy and H.-F. Krausse

August 1, 1975

236

900. Strata seen in roof fall from coal up

.3' Brereton

.9' Jamestown Horizon

.8' Conant Limestone

+3' Lawson Shale, and greenish gray, small brown nodules.

237

901. Strata from coal up in roof.

.2-.3' Brereton Clod

Base of Jamestown Horizon

238

902. Strata seen from coal up in small roof exposure.

.6' Brereton Limestone, medium gray, very irregular and nodular, grunchy in lower layer, some bioturbation?

+1' Jamestown Horizon, 2 coal streaks.

239

903. Clay dikes with faults in antithetic positions, filling intrudes into the Conant Limestone, .9' Jamestown Horizon directly above coal.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

240

904. Strata seen in small exposure from coal up

2.5' Anna, Brereton above.

241

905. Strata seen in small roof fall from top coal upwards

2.3' Anna Shale

.7' Jamestown Horizon - no coal, Conant above

242

906. Strata seen on HW of fault from roof downwards.

2.4' Lawson Shale, greenish, mottled

1.1' Conant Limestone, medium brown, massive.

.7' Jamestown Horizon, lower coal streak present, no upper coal streak, no Brereton

+ .5' Anna Shale

243

907. Small roof fall, strata seen from top coal upward.

.9' Slaty, fissil, Anna Shale

.2' Lower phosphatic layer

.7' Weak, not well bedded

.25' Upper phosphatic layer

.1' Shale, transition to Jamestown

} Anna Shale

.35' Jamestown Horizon, upper and lower coal streaks very thin, Conant Limestone.

244

908. Strata seen in roof fall from top coal upwards.

.1'-.2' Anna

.8' Jamestown Horizon - 2 thin coal bands.

- 1.0' Conant Limestone, lower portion contains numerous coal streaks a few mm thick.
- +5' Lawson Shale, greenish dark gray, no mottling, lower portion, more well bedded, truncated by several steep slickensided slips. Roof fall trends parallel to fault as marked on map.
- 245
909. Strata seen in large roof fall at overcast from top to coal upwards.
- .1' , Shale, greenish, mottled (Anna)
- .8' Jamestown Horizon, coal bands near base and top, irregular limestone lens.
- .15' Shaly limestone with coaly streaks.
- 1.7' Conant Limestone massive, concretions up to .5' near top. Sharp contact.
- 4' Dark gray shale, massive, small concretions up to .25 X .6' in middle, shell fragments throughout. See HHD 3-13 or ~~14-75~~, station #11 for continuation of sequence.
- 246
910. Strata seen in large roof fall near overcast from top down, East side; more than 4.3' greenish Lawson Shale.
- 1.6' Conant Limestone
- .9' Jamestown Horizon
- 4.1' Brereton Limestone, cloddy transition into #6 Coal
- Strata on W. side, from top down Lawson Shale
- 1.7' Conant ~~Shale~~ Ls, but developed as very argillaceous
- .8' Jamestown Horizon
- 6.5' Brereton, becoming very cloddy and argillaceous near base.

X

247

911. Strata from coal upwards seen by underside of overcast.

.1' Anna Shale, *slaty*

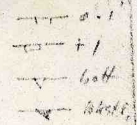
1.7' Jamestown Horizon with "typical" lower coal limestone nodules in center, upper coal band.

1.6'-1.8' Lawson Shale, dark. ~~slaty~~

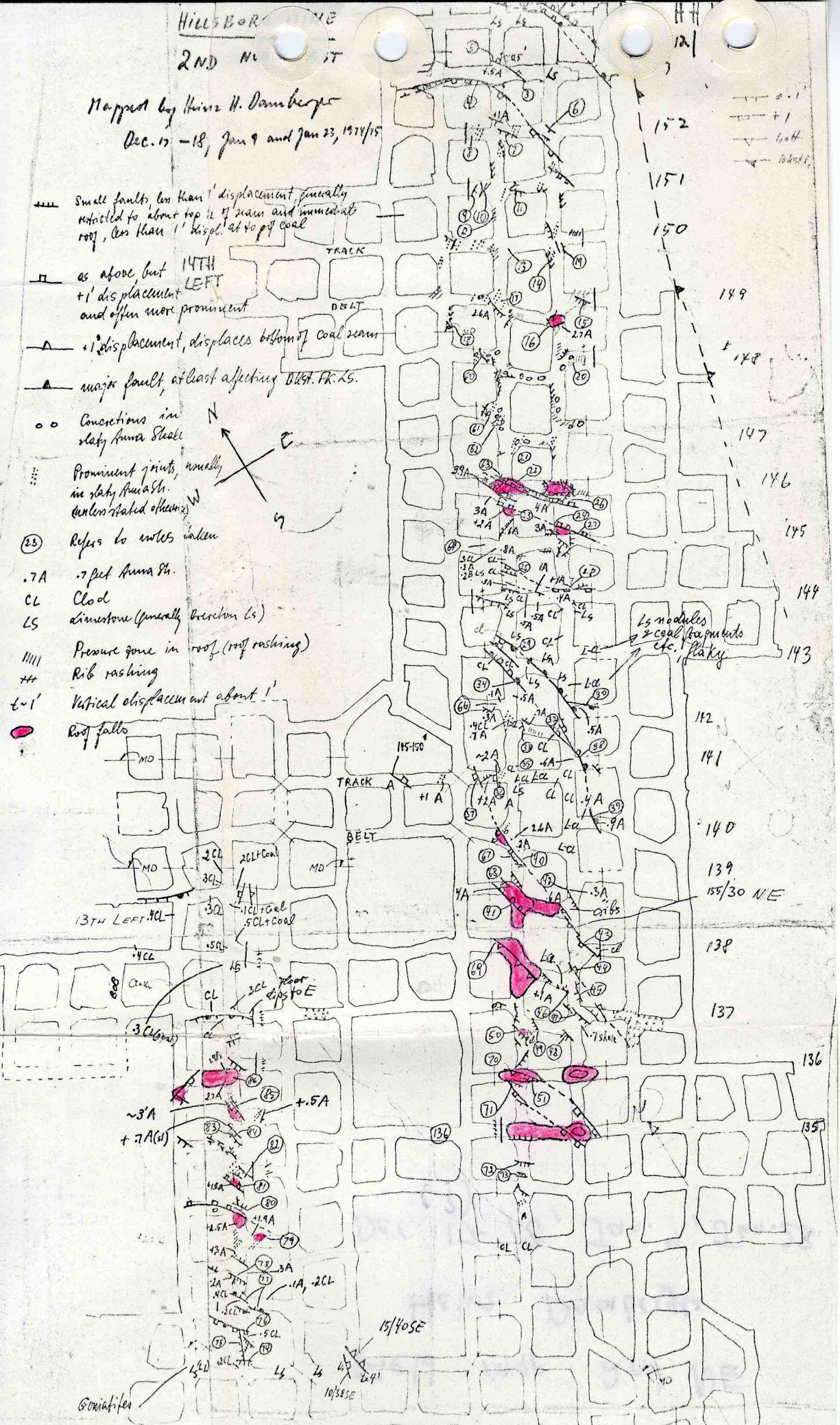
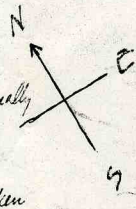
;

X

Mapped by Heinz H. Danberg
Dec. 17-18, Jan 9 and Jan 23, 1914/15



- Small faults, less than 1' displacement, generally restricted to about top 1/2 of seam and immediate roof, less than 1' displacement at top of coal
- as above but 14TH LEFT +1' displacement and often more prominent
- +1' displacement, displaces bottom of coal seam
- major fault, at least affecting DIST. TH. LS.
- Concretions in slaty Anna Shale
- Prominent joints, usually in slaty Anna Sh. (unless stated otherwise)
- Refers to notes taken
- .7A .7 feet Anna Sh.
- CL Clod
- LS Limestone (usually broken LS)
- Pressure zone in roof (roof rashing)
- Rib rashing
- Vertical displacement about 1'
- Roof falls



Goniatites

15/40SE

10/35SE

155/30 NE

LS nodules & coal fragments etc. flaky

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine

12-18-74 H. DAMBERGER

2nd NE entry, starting at stop #154, moving SE in entries 3 and 4 from left.

301

1. Two slips, both with clay dragged down into coal in typical clay dike fashion, rather soft clay filling, widest near top.

At N side it has about 1' displacement at top of coal but "peters" out within about top 1/2 of seam,

42° (in coal).
160°

At S side it has about 1/2 displacement
38° (in coal).

162°

302

2. Two main slips, and minor one in between, with clay filling up to 0.3' wide, typical clay dike.

Northern slip: 1.5' displacement, fairly sharp and straight fault through coal almost to bottom, clay filling restricted to about top 1/2 of seam, then calcite filling up to 1/2" wide in places;

45-50°

128° (in coal), rather like "false drag."

Slip in middle: only 2-3" displacement, dike filling only 1.5" into coal, then "petering" out quickly with some mineralization

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

By _____ Date _____

Quadrangle _____

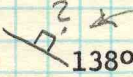
County _____ Sec. _____ T. _____ R. _____

(pyrite) near bottom, no "beard."

Southern slip: 1.5-2.0' displacement, some "false drag" on both sides, up to about 2' away, clay filling (maximum 0.6' wide) reaching ~1/2 way down in seam, "peters out in well defined fault plane with much calcite filling,


42° (in coal).
126°

Roof sequence in this area: 1/2-1" carbonaceous shale with many large plant fragments, then little clod followed by argillaceous limestone (Brereton?).

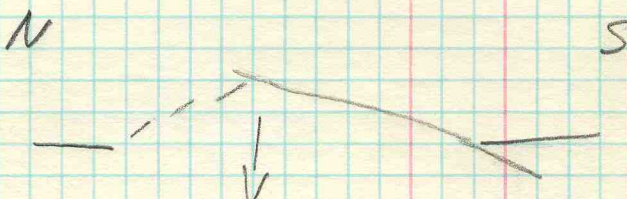
3.  rather shallow dip, ~0.5' displacement at top of seam.
303 138°

4. Major slip, very shallow dip,

304  22° 125° at 4.

In entry 3:  25° 158°.

Changes trend quickly from cross cut into Entry 3, associated with small antithetic slips:



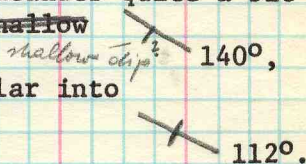
Small falls along trend, usually not more than 1-2' high, all in Anna Shale.

5. Double slip:

305



In at least 0.4' slaty Anna Shale, meander quite a bit along trend, main throw seams to SW. ~~Shallow~~ rather abrupt trend change near NNW pillar into



306

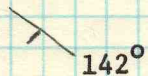
6. Short slip in Anna Shale, difficult to trace in top coal both ways, ~1/2-1' break out,



very irregular surface.

7. small slip in Anna Shale, difficult to

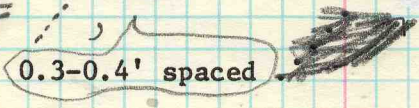
307



trace in top coal. Anna Shale quite slaty, joints: . 62, some slabs break along joints.

308

8. Anna Shale slaty, under pressure, slabs along prominent joints, 0.3' top coal, up to 0.6' slaty Anna Shale, fallen joints: $\swarrow 57-62^\circ E$



309 9. Very irregular slips, probably mostly due to ^{several} some concretions in Anna Shale which ~~is~~ ^{are} ~2' ϕ , difficult to trace to NE due to top coal left.

310 10. Very irregular slips in at least 1' slaty Anna Shale, not possible to determine dip with certainty. 70°

to be the
seems general trend. Some structures look slumped :



Joints somewhat irregularly developed, ^{to have formed} seem later than slips.

$55-60^\circ$ show curving near slips, quite a few large concretions in the whole area.

311 1. Irregular slip pattern, several cracks already up to 2" open, 1/2' up back into roof, no clear trend.

312 2. Many calcite filled irregular cracks in Anna Shale, ~2 feet ~~2~~ inches.

313 3. Much of local pressure and roof rashing seems related to concretions near base of slaty Anna Shale in this area.

314 4. Roof rashing, slaty Anna Shale with good joints, mostly $50-55^\circ$, but as little as 30° trending joints show curbing. Anna Shale breaks in big slabs ~0.5-0.7' spacing.


315 5. Rather irregular shallow slip combined with prominent joints, breaks roof (pressure).

316 6. Roof fall, maximum ~3' high, all in disturbed Anna Shale, two prominent slips.

Come Back Tomorrow

Slips in Anna Shale 45°  70° , curved,

 110° ,
 35°

$25-30^\circ$  30° irregular, curved fall mostly along these slips which don't seem to affect base of Anna Shale much.

X

Hillsboro Mine, 12-19-74 H. DAMBERGER

2nd NE Belt and Track Entries

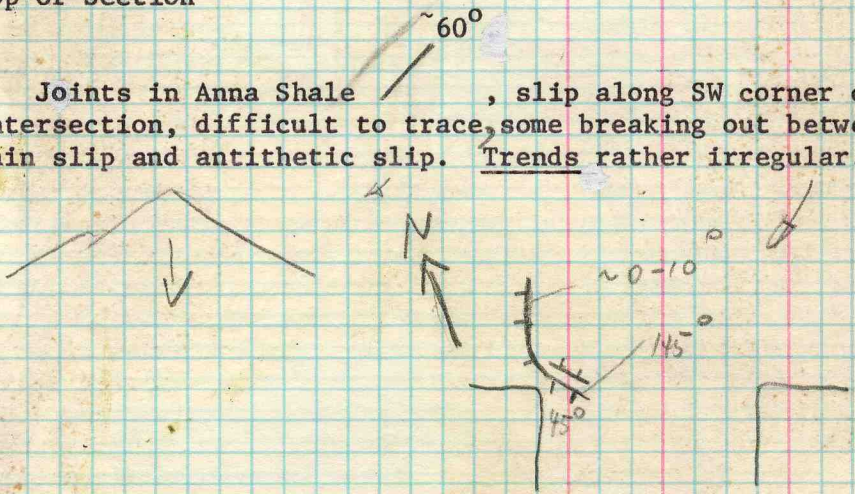
17. Loading point: exposes above coal:

317

- 1.2' Anna Shale, slaty, well jointed.
- 1.4' Anna Shale, rather compact, greenish mottling near top, phosphatic lenses near base.
- 0.2' Clod Limestone, fairly even base. Brereton Limestone. ²⁻² } please check this station!

Top of Section

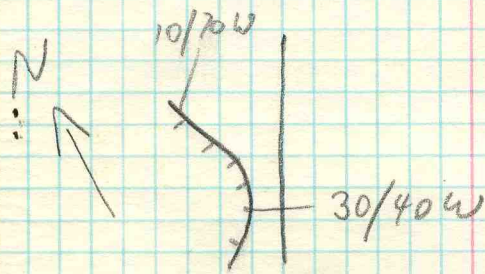
Joints in Anna Shale, slip along SW corner of intersection, difficult to trace, some breaking out between main slip and antithetic slip. Trends rather irregular.



318

18. Pressure along rib causes roof rashing in Anna Shale exposed with good joints: 56-65°; breaks along joints into slabs, spacing 0.4-0.9', averaging ~0.5-0.6'.

One small slip, curved in Anna Shale visible for 3-4'. Probably was displaced in top coal.



probably no displacement in coal

319

19. Small slips in Anna Shale, ~~and~~ discontinuous, rather irregular trend. Some pressure on this intersection, quite a few concretions, with bad slips around them, pushing through roof and causing local roof rashing of top coal, some slaty Anna Shale.

320

20. Pressure on southern rib and adjacent roof, large concretions near base of Anna Shale, aggravate problem, rashing around concretions. Good jointing: ~55-70°, rather irregular up to 80° and down to 30° measured, probably mostly due to concretions.

321

21. Still many rather flat usually elongate concretions as main roof problem; joints often curved around them; average here: 68°

322

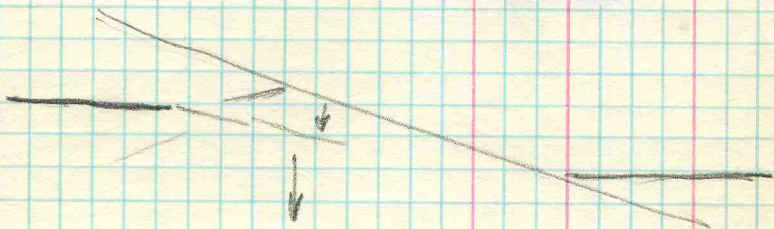
22. 3-4' high fall caused primarily by major slip in map, but lots of others in ~3-4' Anna Shale sequence which is strongly disturbed by great variety of slips, a few of which have been put on map, also irregular jointing contributes.

Come back with better light

Do structural Analysis and Sketch (Photo)

323

23. Fault ~+1' displacement. $25-35^\circ$ $110-130^\circ$, curves in entry as indicated on map, accompanied by at least 3' wide disturbed zone in footwall with many irregular slips:



Normal striation, fall about 1.5' high, all in Anna Shale, cuts at least 3' into coal, steepens, much coal mylonite, seems to have some clay filling, but not much. Difficult to see: rock dust and bad light.

324

24. Fault, ~2' displacement, of clay dike type, with some nice "convergence" structures in rib. Fall adjacent to overcast (for belt?) entry (~4' of Anna Shale up to Limestone removed) along very smooth, slickensided fault plane:



145° , accompanied by swarm of small

slips, both subparallel or at odd directions in footwall which cause roof weakness, main fault

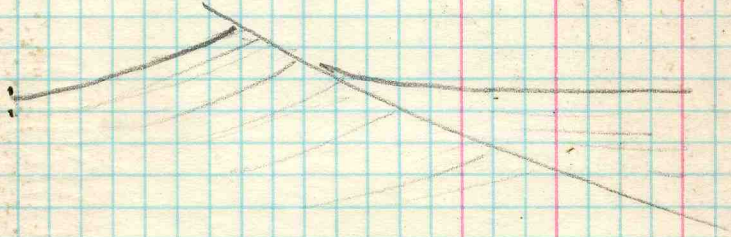
325

5. Fault, ~1.5' displacement, clay dike type.



NNW

SSE



Sharp fault plane within coal down about 2/3 of seam.



Consolidation Coal Co., Hillsboro Mine. Notes by
Heinz Damberger, 12/20/74.

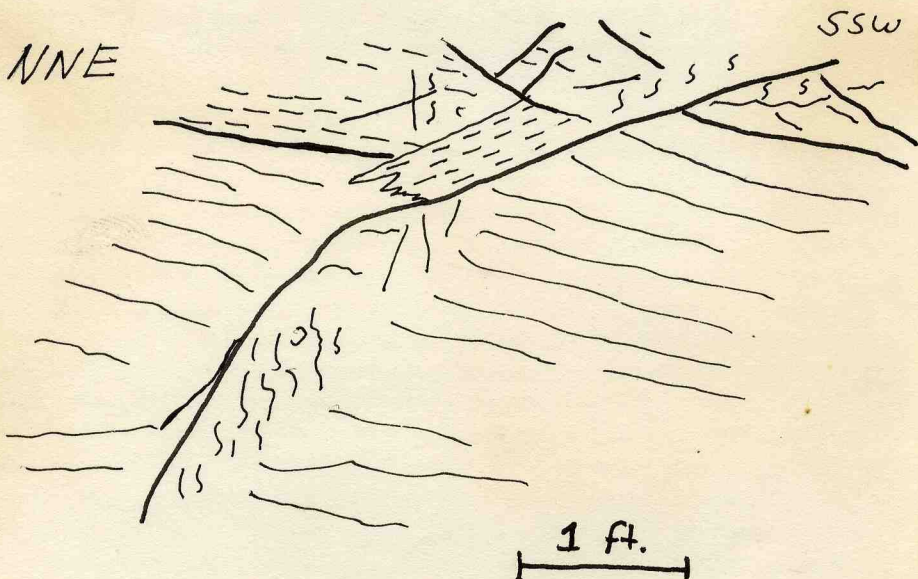
2nd N.E., stopping #146, track entry (#4 from left.)

* * * * *

326

26. Fault, with very little "false" drag, no clay filling in coal, more than 1' displacement at top, steepens within first 1-2' of coal and peters out within 2-3 feet in crushed coal. Hanging wall shows little disturbance, below fault about 0.3-0.5' are crushed so bedding disappears with lots of \pm vertical, sometimes calcite-filled fractures.

\nwarrow 25-35 (near top of coal); good stiation on
140° exposed polished fault planes, only one
set, along dip.



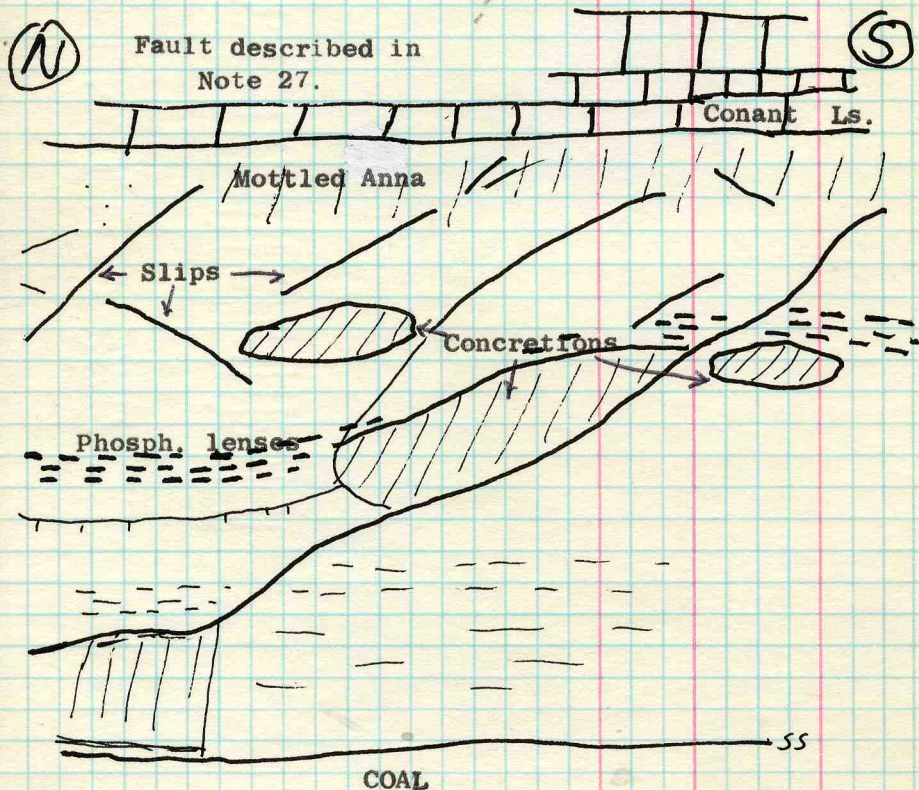
Traceable along roof in cross cut into roof fall in belt entry:

135° fall in belt entry, reaches up to base of Conant Limestone, on which the fault has hardly any effect.

Anna Shale in this area is rather soft, jointing not well developed, lots of slips exposed in fall. Anna Shale ~2.6-3' thick.

Upper, ~1' greenish mottled, generally badly disturbed by slips, most of which are restricted to Anna Shale (see sketch), joints (extending as cleats into top coal), most prominent in a few places:

35°



327

7. This fault affects only rather narrow zone. Accompanied by antithetic ^{and} "odd" slip planes, hardly or not traceable in base of Conant Limestone.

Anna Shale in this cross cut (broken out to Conant Limestone (for belt?) is of rather typical type: fairly slaty, occasional 2-3' concretions near base, 2 phosphatic bands in upper 1/2, thin (~2-4") greenish layer below

Lower bench of Conant Limestone. Bottom coal, section above coal:

Coal

- 1.5' Anna Shale, slaty with concretions near base, joints, few phosphatic nodules and lenses.
- 0.4' Anna Shale, with thin, very elongate phosphatic lenses.
- 0.6' Anna Shale, not well jointed, crumbles near top (slightly mottled).
- 0.2' Anna Shale, many phosphatic lenses, thicker and shorter than in other layer below.
- 0.3' Shale, dark gray, with greenish haze, crumbly, brownish (calcareous?) bands.
- 0.4' Shale, greenish, crumbly, calcareous.

x

0.3' Limestone, brownish, fossiliferous, dark layer near base.

0.1' Shale, greenish, calcareous.

0.2' Shale, dark gray to black, with limestone nodules and lenses and coaly streaks.

0.2-0.3' Limestone, brownish, nodular.

Top Limestone, rather smooth

328

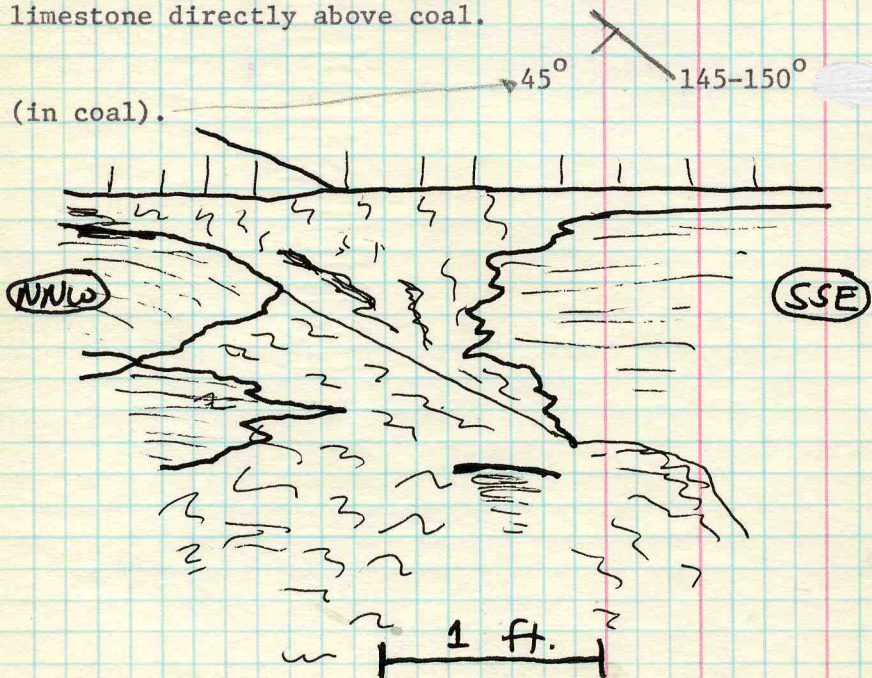
28. Fault zone, ~1' wide, ~1' displacement at top of seam, "drag," "convergence," accompanied by subparallel slips.

Anna Shale seems to thin from cross cut 145 to 144, probably not much in excess of 1' here.

329

29. Clay dike in coal, trace of it can be followed in limestone directly above coal.

(in coal).



Filling near top ~1' wide, "peters" out within top 1/2 of seam, similar in cross cut 143, slight roof slabbing along roof in cross cut 143: clod and possibly like Anna Shale ^{plus} and clay filling. Cuts into limestone, but limestone holds well in cross cut and belt entry.

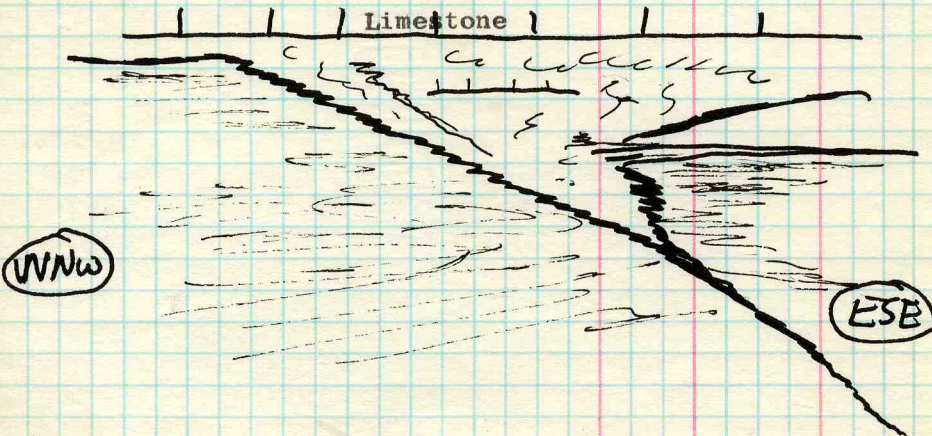
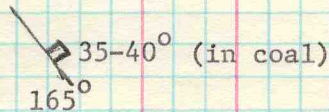
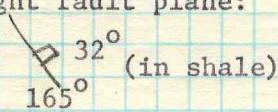
In cross cut 143: up to 0.4' black shale with limestone nodules and coal stringers at base.

330. Apparently an off-shoot of main clay dike, only 1-2" clay filling, maximum, greenish gray in color. Limestone above irregularly fractured, slips at stop trend: (in limestone)

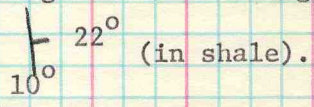


Station #31 does not exist

331. Major fault, about 2' displacement at top of seam, hardly any shale on up-side, up to 2' on down side, direct dike filling, greenish gray, thin (maximum 1/2-1"), filling reaches almost 2/3 down into seam. Very sharp or straight fault plane:



Looking NNW into rib, limestone above, hardly shows any effects of fault at all; second subparallel fault to NNW similar but much less clay filling and not cutting as deep into coal, ~1' displacement:

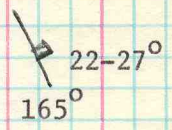


332

33. Slip in shale, others dipping other way.

333

34. Very similar to 32: in coal

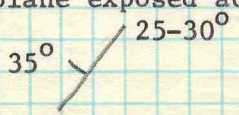


334

35. Coal ball near top of coal.

335

36. Fault, confined mostly to shale, ~1-2' displacement, fault plane exposed across track entry, fairly smooth and even:



+2' Anna Shale on up (E) side, in rather typical facies; joints in down side (W), well developed? .65

336

37. Fault zone, ~2' wide in roof, in coal: only broken irregularly, ~1-2' down, hardly any displacement;

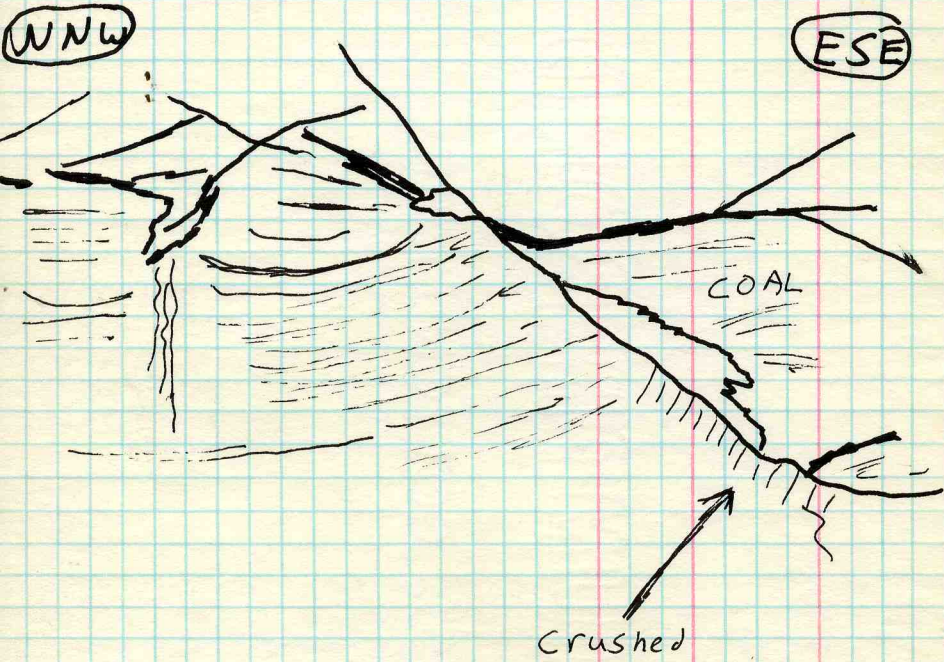
~30-40' in S rib; possibly up to 1' displacement to W, main fault plane starts to open, is rather straight and level.

in roof, as gap

337

38. Fault, +1' displacement in roof, clay filling 2-3' down into coal, typical "false drag," changes trend across cross cut 141, but character remains about the same.

Drawing of fault described in Note 38.

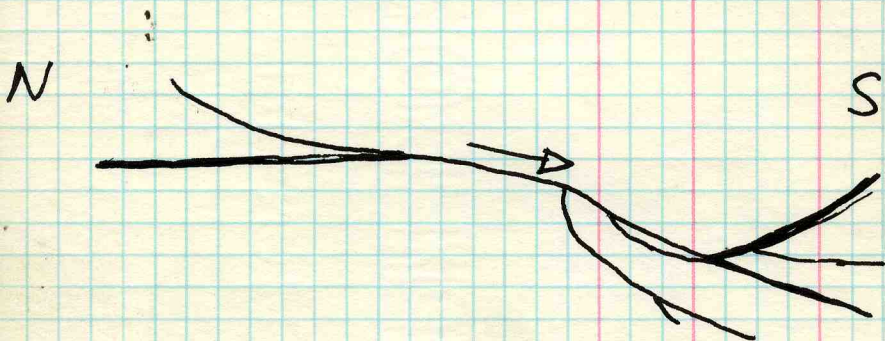


39. Same fault ^{plus} and clay dike as above, 1.3' displacement,

339 | 44° in coal, Anna Shale ~1' thick, rather soft, and
175°

untypical. Almost clod-like.

340 40. Major fault zone, roof cut by a number of slips and faults. Main fault seems very flat near top of coal,



about 2' displacement. Splitting in coal, many fractures in coal.

Exposed Anna Shale fairly typical, well developed joints .60-70°, which are in part used in falls along



fault zone, zone about 10' wide.

341 41. Spectacular fall, sequence all the way to above Bankston Fork Limestone exposed.

Approximate Section from Bankston Fork down:

- ? Shale
- ~6(?) Bankston Fork Limestone, with 1' dark (shaly) parting in upper 1/3.
- ~5' Lawson Shale, mottled in upper part.
- ~1.5' Conant Limestone, with 1-2" dark bed on top.
- ~4' Anna Shale, fairly typical ~~coal~~

COAL

42. Slip, coal fractured, only minor displacement, a little clay found down in coal, about 2-3', trend:

156°.

↖ has no new number !!

342

bedding

43. Major fault zone, main fault plane in part follows ~~sandstone~~, generally very shallow, tends to steepen in coal, and "peters" out with top 1/2.

343

44. Fault plane in roof, lots of "false drag" in coal, and "shots" of clay, mostly thin, several "convergences" ~+1' displacement to NE but some faults in coal and clay filling, dip opposite way,

F ← 48° (in shale).
165°

344

45. Very shallow slip in shale dipping NW, but apparently petering out against other slip which dips opposite.

345

46. Coal overlain by dark gray to black shale with coaly stringers, which is overlain by calcareous shale with irregular argillaceous limestone nodules, with several fine coal stringers near top, followed by limestone, total thickness ~0.7'.

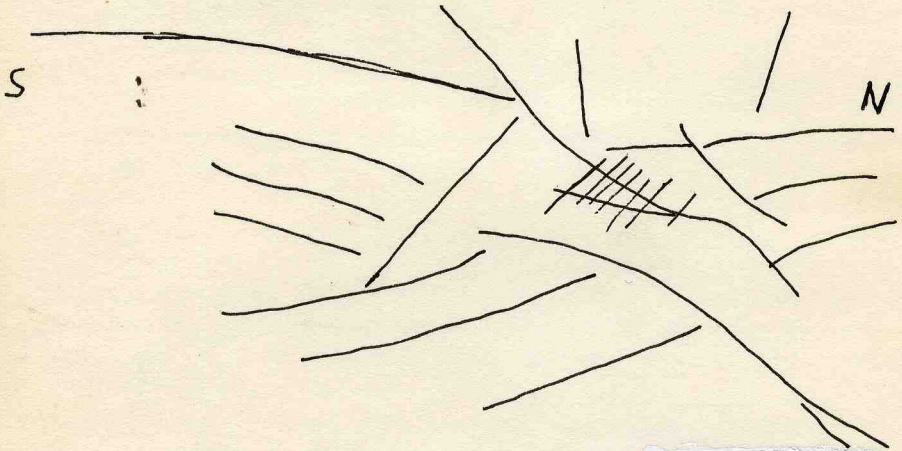
346

47. Slip traceable in roof, shale from S peters out as shown.

X

Another fault, about 1.0-1.5' displacement with fracturing of coal below and thin clay "shots" irregularly through top 1/2-1/3 of seam, comes from N, seems to peter out in track entry, does not cut through limestone, only through 0.6-0.8'.

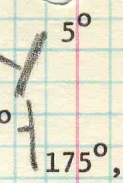
Shale with limestone nodules and coal stringers.



Drawing, looking at west rib.

347

48. Slip in shale exposed for about 10', 30°



348

49. Slips (2) in typical Anna Shale, slaty, 30°, hardly any effect on coal, it seems.

349

50. Thin clay dike type, rather straight fault in coal, with "false drag," "convergences," maximum 1" thick filling. Not traceable in roof.

350

51. Major fault runs through fall:



Flatens within coal, reaches coal base but does not seem to displace coal bottom.

In places at least 3' displacement at top of coal. Typical "drag" close to fault plane.

false

Sequence exposed (from top down).

- ? Bankston Fork Limestone, basal bedding plane (fairly planar).
- 3.5' Lawson Shale, mottled, especially near top.
- 0.8' Conant Limestone, brownish in some parts, seems highly argillaceous.
- 2.6' Anna Shale, rather typical, particularly in lower portion.



Whole exposure is full or irregular slips which accompany maximum fault. Joints are present in lower part of Anna Shale, but play only very minor role in break out (failure). Show normal 55-60° trend.

shales: 4.5° = false drag exist

Hillsboro Mine

January 9, 1975

2nd NE, mapping along west side of belt entry from cross cut 148 southwestward.

Heinz Damberger and Colin Treworgy

Stations # 52-59 do not exist

60. 351 Small slip restricted to Anna Shale, coal seam boundary, .2' displacement to west, fault plane meandering around large concretion in lower Anna Shale, general trend, 174° on north side, turning to 165° and 157° towards south side. dies out within cross cut in bifurcating cracks, calcite filled as indicated on map. Cracks at termination radiate from tip of fault plane (possibly caused by concretions at this locale). Actual strikes and dips, $25^{\circ}/40^{\circ}$ W, $168^{\circ}/30^{\circ}$ E slickensided normal striations $170^{\circ}/34^{\circ}$ W, $165^{\circ}/60^{\circ}$ E, polished, normal striation $125^{\circ}/45^{\circ}$ SW

Many irregular slips associated with fault zone causing bad roof conditions along trend.

Anna Shale-hard, fissil type, many large concretions up to 2.5' in diameter.

Main joints, $55-60^{\circ}$, dipping slightly SE. Another small slip traceable over few feet as indicated in map; $32^{\circ}/50^{\circ}$ SE, no filling except calcite with well developed normal striations.

Within top coal, visible as mineralized zone of fine fissures about 1' down into coal.

No effect (on roof) stability.

61. 352 Several slips exposed that cannot be traced across full cross cut as indicated on map. Pattern is fairly irregular, some measurements are:

76°/38°W, 80°/47°N, 40°/22°W, 155°/30°SW.

Joints in basal Anna Shale well developed, 55-60°, dipping slightly SE.

353 62. At least 2 slips joining together, one from NE with .2' displacement to SE, the other from E with .1' displacement to S as indicated on map, other small irregular disturbed slips associated with them causing minor roof problem.

Strikes: 48°/68° SE, 100°/25°N, 108°/405°

Anna Shale - Same as before.

354 63. Fault zone starting at point indicated. Slip with fault hitting top of coal at shallow angle, but steepening quickly within top 1/3 of coal seam in typical fashion. ("petering," "beard") Actually splits into two fault planes near top of coal, one of which steepens more quickly than other. Anna Shale has been "dragged" into top parting of both fault planes & is found in hanging wall only, interfingers with adjacent coal similar to regular clay dike filling.

General trend 148°/26° NE but variable along trend line. Represented by several slip planes in exposed roof within roof fall zone

Farther south antithetic fault planes are well displaced within roof fall: 135°/54°SW, actually roof failure happened along this fault plane over most of belt entry.

Main fault cuts through roof shale sequence up to limestone base, seems to flatten below limestone base and dissipate in bedding, however, locally limestone shows effects of faulting along same trend but in irregular fashion and with only little displacement. Sequence exposed, top down:

Brown to gray, massive limestone forms top of roof fall, generally fairly smooth basal plane.

Co
J
A

- .1' Shale - medium gray, probably high calcareous
- .2' Limestone - light brownish gray, variable thickness, somewhat nodular.
- .25' Shale - medium brownish gray with few thin limestone lenses and bands.
- .2' Shale - dark gray to black with many phosphatic nodules and lenses.
- .9' Shale - dark gray to black with greenish mottling throughout.
- .4' Shale - dark gray to black with many thin phosphatic lenses, more concentrated near top.
- 1.2' Shale - dark gray to black, well laminated, one carbonate concretion exposed near top, .4' X .4' diameter, few phosphatic lenses throughout joints better developed near base.
- .7' Shale - dark gray to black, hard, fissile with large concretions up to 2' in diameter, phosphatic lenses at base as usual.
- 6.9' Coal

Actual fault plane
 140°/31° NE, 145°/55° NE, 126°/39° SW,
 120°/42° NE, 109°/30° N, 124°/23° NE,
 142°/22° NE.

64. Limestone descending quickly down close onto coal from ESE. Anna Shale at cross cut 145 and entry 3 **355** apparently thins to 1"-2" with some peculiar shale and limestone material (bastard limestone?) underneath about .2' thick. Into cross cut "bastard limestone" becomes quite nodular and seems overlain immediately by limestone.

65. Three clay dikes as indicated on map. **356** Northeastern most dike relatively small with no well defined fault plane within coal, little displacement at top. Clay filling typical, about .6' wide near top, .4'; 1' below top thin offshoots traceable downwards to about 3', almost vertical in dip trend along roof 158°/

Middle fault and clay dike: trend in roof 162°, fault plane within coal fairly well defined in top half, steepening and branching downwards in typical fashion. Fault plane within seam: 156°/48° NE, clay filling reaches 2' down into coal mostly within hanging wall, maximum .2' thick, typical interfingering with adjacent coal, at top of coal about .8' normal displacement, striations normal. Usual false drag adjacent to fault.

SW fault is main fault of system with at least 1' displacement, but probably more. except fault plane in near top of coal: 150°/40° NE, 152°/43° NE, 175°/49° NE, 178°/48° NE, general trend 157°

Main movement seems to be restricted to below limestone, though some displacement of limestone has occurred. (1-1.5') Fault plane not well defined in limestone.

66. Anna Shale starts coming in below clod from NE, already .3' thick along southwest rib in cross cut. Lense of peculiar mineralized coal (carbonate oolites? pyrite) in cross cut about .4' below top of coal, maximum .3' thick, 3' in diameter. Sample taken.

357

Several more irregular lense in this cross cut. Small slip in corner except within top coal, not clear how important - 140°/35° SW.

67. Major fault well exposed along roof by minor falls along trend up to 2' high. General trend 164° variable along strike/32°-22° SW dip also variable, fault plane sharp within coal but not traceable far down into seam, splits into number of cracks that steepen downward in typical fashion with little mineralization associated.

358

Another fault forms kind of graben with major "graben" filled with disturbed Anna Shale 1.5' thick. "Graben" filling cut by numerous slip planes. Associated antithetic fault plane is wavy along trend, antithetic faults petering out along trend with other faults coming in en echelon, striations normal.

X

Measurements of actual planes:

15°/59° E, 6°/35° E, 138°/46° NE, 4°/42° E, 178°/39° E

359

68. Roof fall up to well above Bankston Fork Limestone in center, at least 1 fault visible ⁱⁿ southeast portion ~~west~~ ^{with} 1.5' displacement at top of coal. Fault plane steepens within coal and flattens in Anna Shale, petering out below Conant Limestone, running across intersection as indicated on map. General trend 156°. Original bolts, visible, set in lower Lawson Shale though one bolt (12') made ^{the} Bankston Fork Limestone.

Approximate section examined.

Shale-Siltstone? - greenish gray with plant fragments on bedding planes, at least 1' examined.

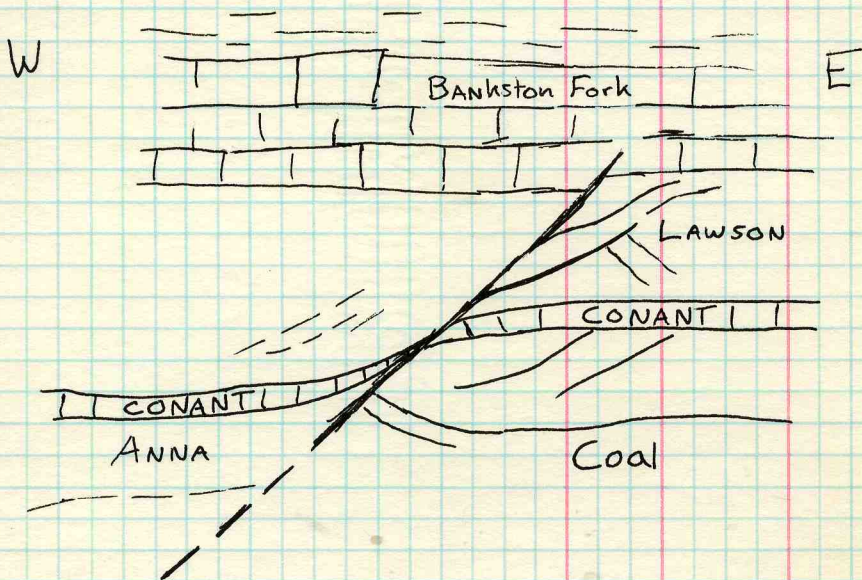
- ≈ 3-4' Limestone, brown to gray, massive with fairly level lower bedding plane.
- ≈ .5' Shale, greenish gray.
- ≈ .6' Limestone, light brownish gray.
- 4' Shale, heavily mottled, especially upper portion along numerous fine cracks, mottling light greenish gray.
- Shale, medium brownish gray, many irregular slip planes in basal 2' of shale.
- .9' Limestone, light brownish gray, fossiliferous uniform thickness throughout exposed area. Sharp contact against next unit.
- .6' Shale, medium brownish gray, irregular limestone lense up to .15' thick and 3' in diameter.
- .65' Shale, dark brownish gray, slightly mottled.
- .15' Shale, dark gray with numerous thin phosphatic lenses.

X

- .85' Shale, dark gray, hard, few phosphatic nodules and lenses.
- .5' Shale, dark gray to black, hard, fissile, well jointed.
- .1' Shale, as above but numerous thin phosphatic laminations.
- A 0-.2' Concretions of siderite right above coal.
- 6' Coal

Lower 1' Anna Shale contains occasional large concretions.

69. Roof fall similar to #68. Section also is similar. 360 Fault shown on map, shows minor effects at base of Bankston Fork (possibly up to .5' displacement). Increasing in throw downwards through section, 1.5' normal displacement at Conant and probably more at top of coal, fault plane tends to flatten within Lawson Shale, also branching up into at least 3 major branches. General trend $158^{\circ}/57^{\circ}$ W, several sub-parallel splits planes except in Anna Shale adjacent to main fault plane.



361

70. Fault has 2.7' displacement, main fault plane accompanied in highwall by several sub parallel faults of smaller displacement. General trend $140^{\circ}/30^{\circ}$ W.

Measurements of actual planes:
 $125^{\circ}/45^{\circ}$ SW, $127^{\circ}/32^{\circ}$ SW, $98^{\circ}/42^{\circ}$ S,
 $154^{\circ}/22^{\circ}$ SW, $159^{\circ}/61^{\circ}$ SW, $100^{\circ}/58^{\circ}$ S

Appreciable amount of false drag, especially in highwall in southeast corner of intersection, much less towards north where number of associated faults seem larger.

Good exposure for Photos and statistical analysis fault can be seen to cut down to underclay and probably into it, seems to steepen as it enters underclay.

Very little fillings associated with faults, dike-like disturbances within Anna Shale with typical false "drag" in Anna Shale worth taking photos and sampling.

362

71. Sharp, well defined fault plane running across entry with about +1' displacement at top, fault plane within coal very sharp with little filling near top, but much mineralized and mylonized coal near termination of fault in lower 1/3 of coal where it steepens and typical "peters". Sample taken strike $148^{\circ}/26^{\circ}$ SW.

363

72. Fault along which roof fell U-shaped maximum of 2' all in Anna Shale. Strike $112^{\circ}/34^{\circ}$ S, displacement at top of coal .5' Main fault plane accompanied by smaller sub parallel slips, mainly in footwall, along which roof broke out

Fault plane hardly traceable in coal seam, but is knife-edge sharp.

X

6

364 73. Small "graben" at top of seam maximum .8' deep all filled Anna Shale, broken up. Coal underneath broken to about 3', seems to die out towards east rib. Trend 102° .

Hillsboro Mine - 1-23-75

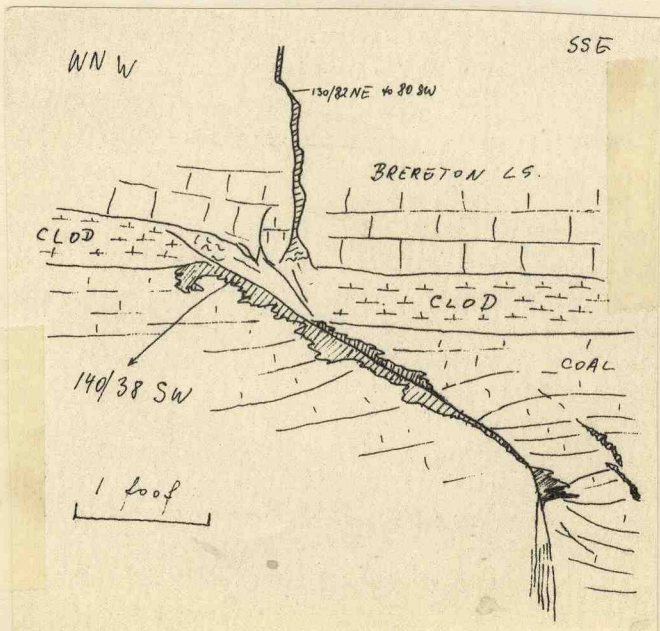
HEINZ DAMBERGER

2nd NE, entry B between 12th and 13th pannels

365

(74) Clay dike +0.6' fault at top of coal, reaches about 2-3' down into coal with nice "beard". Some very good "convergence" structures and irregular "shots" of clay about 1-2' down in coal. Typical interfingering with coal in both hanging and ^{foot}walls, filling generally does not exceed 0.1' much, is distinctly greenish grey and distinctly different from 0.5' med. to dark brownish grey clod directly above coal.

Fault peters out within clod but an irregular crack, almost vertical ~~that~~ meanders both along trend and dip picks up in Brereton Limestone directly above fault at top of coal; crack in limestone is filled with soft dark gray claystone, maximum ~0.1' thick. In places crack is discontinuous but can be traced by brecciated limestone zone.

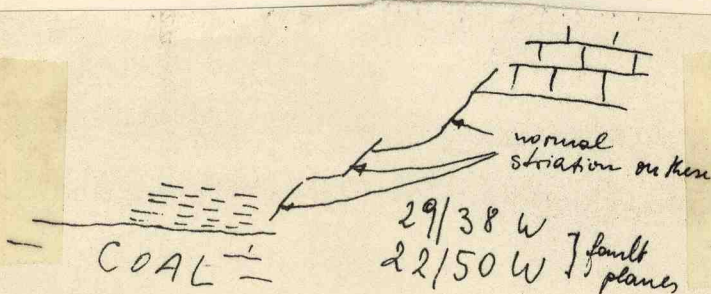


In WSW rib, displacement at top of coal is only 0.1' and most of filling looks like dragged in clod, but some of peculiar green stuff also there.

Filling here up to 0.3'; fault plane much less pronounced, more clay dike with all typical features. "Beard" also seems to be not or not as well developed as on other side.

Limestone in break out above. . . shows signs of brecciation locally and irregular (?) slip planes. About 3-4' limestone exposed.

(366) Breerton? (75) Slip zone that splits at places into several branches traceable between two other faults. Striation is normal. Dip in clod-shale $\sim 45^\circ$ but fault plane has steps,



Has thin greenish clay filling at top of coal where preserved.

(367) (76) Fault, t_r 1' at top of coal greenish filling looks distinctly different from dark brownish gray clod. Filling up to 0.3' thick, spreading near top. Rather shallow dip in coal. Fault traceable at base of Breerton Limestone, but hardly any displacement in limestone, most of movement (slickensided, striated planes) taken up in 0.5' clod. Roof (clod) falls along fault plane between bolts, using slickensided slip planes, up to $\sim 0.5'$ 125/55 S, 90/54 S (same pl.), 112/33 S

- 368
77. Fault zone with much disturbed coal along rib to stopping, apparently splitting much within coal.

Fault plane extends through whole coal but does not do much ^{disturbance} outside coal.

In W rib about 0.2' displacement, only slight effect on limestone above, dies mostly within clod. Not easy to trace along roof where top coal and clod have fallen. 115/33 S (in clod) 115/52 S (in coal)

- 369
78. Irregular small slip, ~0.3' displacement in W rib, very little in E rib, dies out within top 2' of coal, only very thin clay film within coal.

About 45° incl. and shallower, with nice "false drag". Maximum 0.1' x 1' "Bastard Limestone" ^{lens} on SE side of fault about 0.2' Anna Shale ~ 0.4' Clod with irregular small limestone nodules near base.

Slips seem confined to coal, Anna, and Clod but may penetrate Brereton some. Can be traced in top coal, but much less pronounced in E rib. Short slip surface exposed south of this fault (see map).

- 370
79. Roof fall maximum 2' entirely in Anna Shale which picks up in thickness very quickly to the north.

Roof fell probably because they cut into base of it. On east side it fell *about* along well developed joints but some irregular slips also contributed. But slips are apparently confined to shale.

In Anna Shale, the usual two phosphatic layers are present but not too well developed. Upper one is in top of roof fall.

(371)
 (80) Roof fall completely in Anna, close to 3' maximum height. Anna badly disturbed but the two phosphatic layers are now well developed.

Roof fall along smooth fault plane which is accompanied by numerous slips in vicinity along with roof fall in part. But locally joints in Anna were also used.

(372)
 (81) Fault, $\tau \sim 1.2'$, roof fall along fault maximum 1.5' high, all in broken Anna with both slips and joints contributing to weakness. Fault has only little filling. Anna is not too slaty.

(373)
 (82) Zone of slips in roof traceable only for a few feet at a time, much off-setting typical for this zone. Also slips meander quite a bit, possibly due to concretions in Anna.

(374)
 (83) This fault displaces about 0.5' at top of coal. Nice level fault plane exposed in middle and lower part of coal in cross cut. Joints: 65/NW

(375)
 (84) This fault does not show much displacement at top of coal. Also does not seem to penetrate far into coal. But slips cause roof rashing along trend, and especially along west rib.

(376)
 (85) About 3' high fall entirely in Anna Shale, topping at base of limestone. ^{lots} Both of slips in addition to main fault which itself splits into at least 2 slip planes. Displacement at top of coal is small about 0.1-0.3' total. Anna Shale within fall has more "slaty" basal portion, indications of phosphatic lower layer but rather faint, upper phosphatic layer either not visible or not developed at this location.

Fault and slip planes: 174/30 E, 165/20 W, 158/57 W (same plane, closer to coal), 150/44 W, 136/68 NE, 132/42 NE (same plane, higher). Prominant cleats in coal about 146/5 W and less prominant: 60/NW.

(377) 86. Roof fall maximum about 5' high, mostly \pm 4':
sequence from top, on SW side

- 1.3' Dark gray, greenish mottled. Shale, soft, mostly both along irregular fissures and in spots (anchors set a little above). Lawson Sh.
- 1.7' Shale, medium dark gray, very irregular contact to mottled shale above. \otimes Some fissures from above extend down into this, also greenish. Irregular fist-thick concretions at about interface. Contact looks almost brecciated. Lawson Sh. \otimes see sketch on back of Her's page *good photo stop*
- 0.8' Limestone, many shell fragments, brownish-gray with irregular dark gray concretions in about upper half, up to 0.4' thick and $1\frac{1}{2}$ ' in diameter. Show many calcite (?) filled synaeresis cracks. Bottom 0.1' has clod like appearance. Conant ls.
- 0.4' Medium dark gray, probably calcareous shale, with irregularly shaped brownish gray limestone, concretions and coaly streaks in basal portion - Jamestown.
- 0.3' Anna Shale dark gray-black, with numerous fine phosphatic lenses and nodules, more scattered and less concentrated than is typical.
- 1.2' Anna Shale, dark gray-black, rather homogenous.
- 0.15' Shale, as above but with scattered fine phosphatic lenses and laminae. ANNA SH.

0.12, *grate*, *sa* *spole* *pac* *mtpr* *scattered* *fine* *prospertic*

1.5, *unns* *grate*, *qark* *slay-prack*, *icrpei* *homofnoma*.

less concentrated than in *lybica*, *mottled shale*
0.3, *unns* *grate* *qark* *slay-prack*, *mtpr* *unns* *fine*

limestone.
0.4, *medfms* *qark* *slay*, *blorpria* *scattered* *grate*, *mtpr*
concretions *and* *coaly* *strata* *in* *great* *bottom* - *unmottled shale*

bottom 0.1, *pac* *clod* *like* *appearance*. *Common* *is*
0.8, *gron* *many* *strata* (3) *filled* *with* *strata* *strata*.
upper *part*, *as* *to* 0.4, *crack* *and* *is*, *in* *direction*.
mtpr *interstitial* *qark* *slay* *concretions* *in* *spont*
limestone, *many* *spells* *fragments*, *plamitar-slay*
fragments. *See sketch in back of this book*

took *almost* *presented* *on* *braco*, *many* *spells* *also*
inter-crack *concretions* *at* *spont* *interfere*. *Concent*
extending *down* *into* *crack*, *also* *interstitial*. *Interstitial*
mottled *grate* *spole*. *Some* *fragments* *from* *spole*

1.1, *grate*, *medfms* *qark* *slay*, *very* *interstitial* *concent* *to*
(unspore *see* *a* *part* *spole*). *Common* *is*
post *strong* *interstitial* *fragments* *and* *in* *spore*
1.3, *qark* *slay*, *interstitial* *mottled*, *grate*, *soft*, *mottled*

sequence *from* *top*

80, *roof* *with* *maximum* *spont* 2, *mtpr*, *mottled* 4, 1:

spont 100/2 M *and* *less* *blomtuant*: 80/111.
ME (*same* *plane*, *mtpr*). *blomtuant* *strata* *in* *cozy*
(*same* *plane*, *strata* *to* *cozy*), 120/44 M, 130/88 ME, 135/43
plane *and* *with* *planes*: 114/30 E, 102/30 M, 128/21 M (

1.0' Shale, dark gray-black, fairly slaty, occasional indications of concretions are rather small (about fist size). ANNA SHALE

0.1' Shale, as above but with irregular phosphatic bands and lenses, especially on top of coal.

ANNA SHALE

HERRIN COAL

On north side of fall:

Top

0.8' Conant Limestone, with some fine coal stringers near base.

0.18' Jamestown Coal, normally band, with some shaly bands and limestone lenses near base.

0.46' Limestone, quite lenticular, with dark gray shale separating limestone lenses 2-3 limestone lens layers. Lenses are up to 0.35' thick and several feet lateral. Contains very irregular coal stringers mostly in middle.

JAMESTOWN

0.2' Coal with shaly bands.

0.65' Anna Shale, dark gray-black, fairly soft, massive, joints poorly developed. Has some phosphatic lenses near top.

0.1' Anna Shale, as above with phosphatic lenses and nodules.

0.55' Anna Shale, dark gray-black fairly massive, slightly fissile near base.

0.1' Shale, as above but fissile and well jointed, with phosphatic laminae and lenses. Sharp contact to coal below. ANNA SHALE

COAL

Slips did not seem to be main cause of fall though small slips are present as always: Might be good object for Photogrammetry.

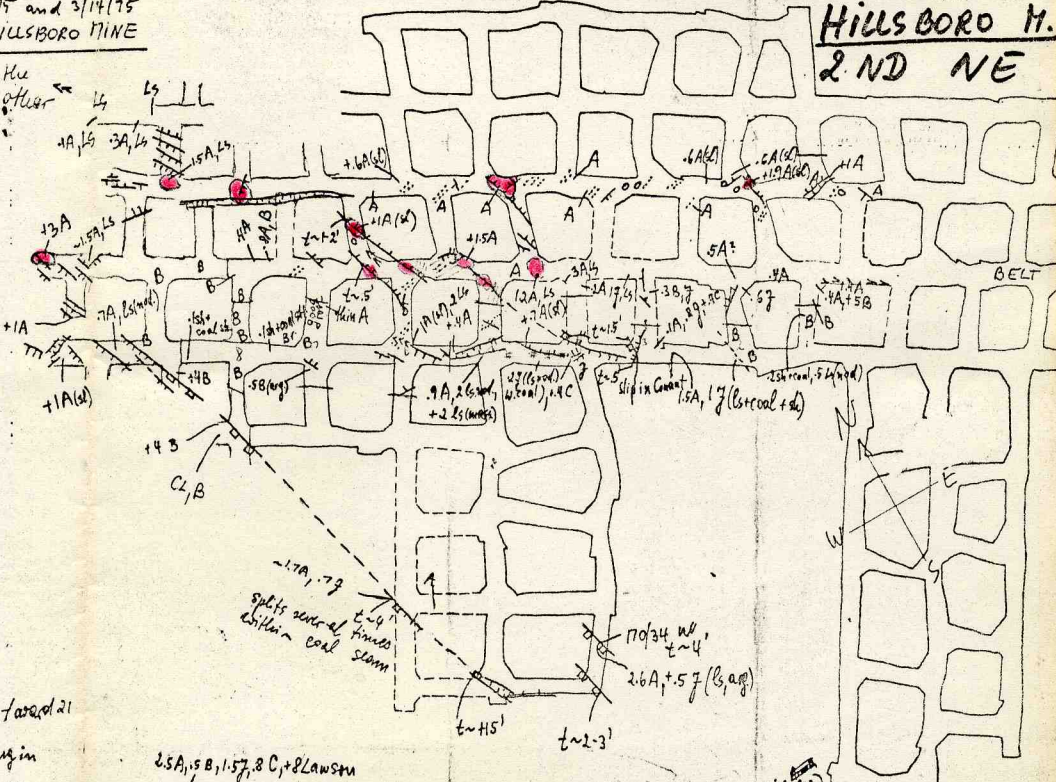
HHD 3/13/75 and 3/14/75
 2ND NE - HILLSBORO MINE

**HILLSBORO M.
 2ND NE**

Symbols are the same as in other maps

14TH LEFT

- + con not further west
- + C&A type
- 26: B
- 15: 7
- 22 B starts toward 21
- 21 B
- 14 Ams coming in
- 13 13A, B



25A, 15B, 157, 8C, & 8Lawstrn

Broken Limestone lens
 Photo taken

13TH LEFT

SA 2' (wall all in ~~one~~
 wall at this loc.)

2' wide

MO

MO

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine - 3/13/75

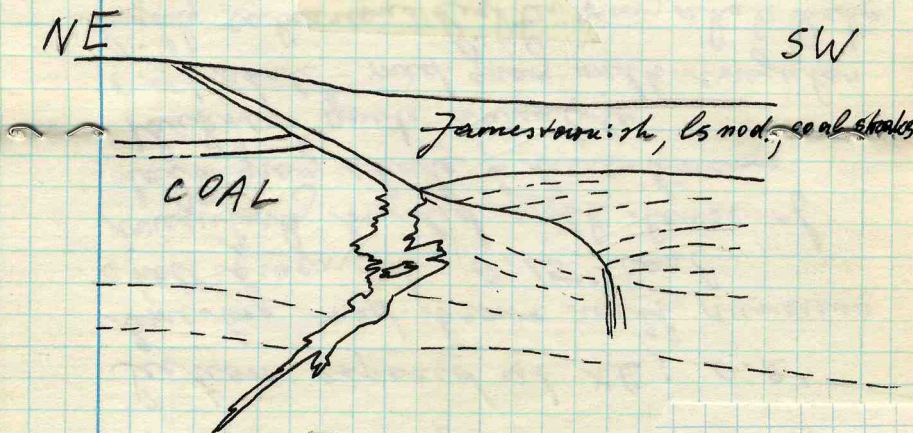
13th Return off 2nd NE

Heinz Damberger

378

1. Fault - About 0.5' displacement in Eastern rib.

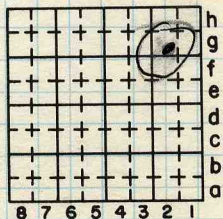
140/26 SW in top portion of coal seam. Associated with clay dike at least half way down into coal. Filling is medium gray, soft claystone brecciated.



By H. Damberger Date 3-13-75
Emil Taisa

Quadrangle _____

County Montgomery Sec. 6 T. 7N R. 2W



Section exposed at crosscut:

- 0.2' limestone, medium brown with numerous shell fragments.
- 0.15' coal, irregularly banded with lenses of dark gray shale and limestone—thickness quite variable.
- 0.5' shale, medium gray with irregular highly calcareous lighter gray shale beds, in particular two bands of 0.1' each.
- 0.1' coal, with dark gray shale very variable and lenticular along trend.
- 0.3' shale, dark gray to black with one thin phosphatic layer near base. Possibly equivalent of Anna Shale.
- 5.6' coal, with fault plane in about middle; 188/42 E.

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- 0.3' shale, dark gray to black with one thin phosphatic layer near base. Possibly equivalent of Anna Shale.
- 0.1' coal, with dark gray shale very variable and lenticular along trend.
- 0.5' shale, medium gray with irregular highly calcareous lighter gray shale beds, in particular two bands of 0.1' each.
- 0.15' coal, irregularly banded with lenses of dark gray shale and limestone—thickness quite variable.
- 0.2' limestone, medium brown with numerous shell fragments.

Section exposed at crosscut:

3/13/75



3/13/75

①

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0.1' coal, with dark gray shale very variable and lenticular along trend.

0.3' shale, dark gray to black with one thin phosphatic layer near base. Possibly equivalent of Anna Shale.

5.6' coal, with fault plane in about middle; 188/42 E.

Main fault from south seems to terminate with turn as indicated on map.

⊗ retype on back of p. 1 above ↑
Section exposed at crossing; 0.2' limestone, medium brown with numerous shell fragments, 0.15' coal irregularly banded with lenses of dark gray shale and limestone—thickness quite variable. 0.5' shale - medium gray with irregular highly calcareous lighter gray shale beds, in particular two bands of 0.1' each. 0.1' coal with dark gray shale very variable & lenticular along trend. 0.3' shale dark gray to black with one thin phosphatic layer near base. Possibly equivalent of Anna Shale. 5.6' coal with fault plane in about middle; 188/42 E.

Fault plane sub parallel to main fault which cuts through rib a few feet further East.

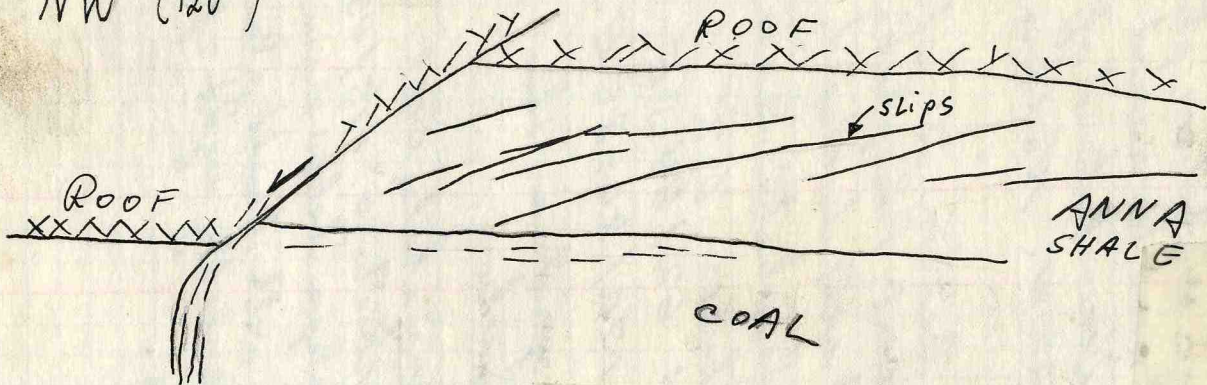
379
2. Two minor slips cutting through about 1.8' Anna shale mostly the slaty lower portion with large concretions—plus 1.5' diameter. Slips meander around concretions as usual. General trend of Southern slip 109/22 N. Northern slip 115/37 S.

Anna shale in this location is not quite as slaty as usual. Phosphatic layers are both not well developed. Only relatively few phosphatic lenses over about 0.4' thickness, 0.3' above base. Joints: 62/84 SE, and less prominent 170/80-85 E. Some slabbing along joints in this area, especially at intersection.

380
3. Fault plane in Anna shale, well exposed with normal striations: 175/45 W. Several subparallel slips below main fault plane together with fault plane caused roof to fall probably right after mining and before bolting.

NW (120°)

SE



- 3 -

Location #3

381

4. In top 1.0' of coal irregular up to 0.15' thick limestone lenses, bastard limestone type, about 2.5' wide, associated with small slips seems to run across cross cut Trend about 105°. Coal here overlain by Jamestown sequence of dark gray shale with highly argillaceous limestone lenses up to 0.1' thick normally two of them. Many coal streaks in top 0.3' overlain by "grunch." Slip in Western rib - two slips subparallel are exposed near bottom of the coal - steepening towards under clay. 0/28 W and 172/27 W, normal striations. Do not seem to penetrate more than about one foot^{up} into coal seam.

near top of coal

Small slip plane in Eastern rib: 165/27 W.

382

5. Complex clay dike cutting through whole coal seam with underclay warping up towards clay dike. Slight displacement at base of coal. About 0.5' displacement to East at top of coal. Clay dike splits into several branches within coal but unites at top of coal. Cuts through Conant limestone.

Rock sequence much broken, up to 0.5' width. Rock sequence exposed from top:

- 0.6' limestone medium gray, fine grained, fossiliferous, with numerous large dark brown concretions about 0.4' thick and up to 2.0' wide, but generally about 1.0' wide only. Numerous septarian cracks filled with calcite? (Barite?)
- 0.35' Limestone, medium gray, well bedded, fossiliferous.
- 0.15' Limestone very lenticular with irregular streaks of coal and dark gray shale.
- 0.2' Shale, dark gray with many coal streaks throughout and a few thin medium gray limestone lenses.
- 0.2' limestone, medium gray, highly argillaceous.
- 0.2' Shale, dark gray calcareous

Conant

↑

Jamestown

- 0.5' limestone as above, very lenticular
- 0.1' Shale, as above.
- 0.1' Coal with numerous shale partings.
- 0.15' Shale - dark gray, slightly mottled near base - few thin phosphatic lenses especially at contact to coal
- Coal

Anna²

Main fault plane:

10/40W

Clay dike:

134/Variable but generally to East - Developing along trend apparently grading into fault with 1.5' displacement and filling up to 1.0' wide. Filling is soft, medium gray claystone, highly brecciated and cut by slips.

6. In roof fall following sequence is exposed:

- 383 5.0' Shale, medium gray, fairly compact with a few lenses of limey? material. No mottling throughout. Fall broke along fault plant - see map.
- 0.8' Conant limestone like ~~No. 5~~ ^{at} or location 5.
- 0.9' Jamestown sequence - very similar to location No. 5.

Lawson

Main fault plane:

158/30 SW, with well developed normal striations. At least 3.0' of displacement at location No. 6. Seems to decrease towards North.

384 7. Sharp fault plane with about 0.6' displacement in Northern rib. Roof fell along fault plane about 3.0' high before bolting was possible. Fault plane continues through whole seam into underclay with about 0.3' displacement in Southern rib. Fault plane is very sharp and well defined throughout seam. Hardly any drag. 165/22 W.

385 8. Small clay dike up to 0.15' thick cutting through most of coal seam. Filling is medium gray, soft, claystone brecciated and cut by numerous slips. No noticeable drag and hardly any associated fine "clayshots":

(Only one ~~seam~~^{seen} at this location)

386
9. Major fault with at least 4.0' displacement causing much roof problems along trend. Also associated with clay dikes both in hanging and foot walls. Numerous irregular slips.

397
10. Major clay dike traceable along roof with V-shaped breakout.

Trend: 46/uncertain

In East rib, major irregularities are associated with this clay dike. Near top more than 1.0' wide filling.

Filling material is mostly medium gray claystone, brecciated but other various materials are also present in irregular lenses--especially near top. Very peculiar lenticular bodies of rock breccia are abundant near top containing greenish, yellowish, dark brown and other materials. (Good for Photo).

Also chunks of coal floating in clay filling. At locations 8 and 9, spherulitic coal ball stuff occurs near top of coal as lenses up to 0.1' thick, but mostly thinner.

388
11. Roof fall above return overcast exposes about 15' of rock from top as follows:

4.0' Shale with irregular limestone lenses and well developed bedding. Shale is medium gray fairly well bedded, lenticular. Limestone is brownish gray, very lenticular fine partings along which material breaks have plant fragments.

0.4' Breccia of apparently limestone dark gray shale, greenish claystone, and shell fragments. Grain size quite variable, but around 0.02' - Maximum around 0.15'

Note: This material looks similar to peculiar clay dike filling at location #10.

Note: Samples taken

variously

8.5' Shale - Greenish gray, rather massive, with irregular ~~mostly steeply~~ inclined slips throughout. One dark gray about 0.1' wide clay dike traceable from top to close to bottom where shale gets very dark. Limestone below, same zone is traceable by narrow shattered or broken irregular zone. Same disturbance seems to continue down through Jamestown horizon, dipping slightly to the South.

Clay filling: also contains broken off pieces of sidewalls. Meandering may be caused by differential compaction, *at least in part.*

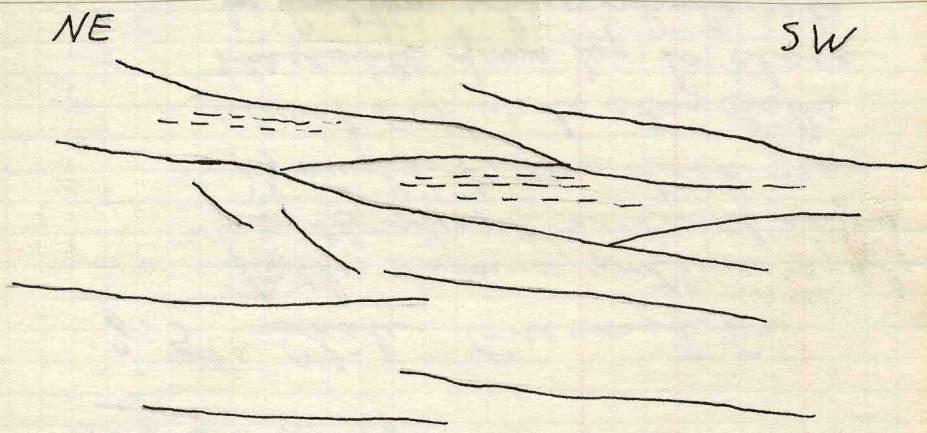
Clay dike has been offset by slip, about 6.0' above base, to the East by about 0.8':

15/35 E

Clay dike trends about

75/Vertical

Additon: There are many slips with rather shallow dip forming wedge-shaped rock bodies; *see sketch*



Slips in Lawson Sh. of E rib over overcast

(over)

old roof bolt

From drill holes, it can be deduced that some of these wedges have moved by as much as 2.0" along shallow slip planes sketched above. (Moved out.)

Description of sequence was not completed but compare and see

Study sites ⁽²⁴⁵⁾ 909 and ⁽²⁴⁶⁾ 910
by H.F.K. and C.G. Trewoagy
dated August 01, 1975

ILLINOIS GEOLOGICAL SURVEY, URBANA
H. H. Damberger & Alfonso Caloleron
Consolidated Coal Company
Hillsboro Mine
July 31, 1975

Study sites see
joint map of HHD and HFK

389 600' above fault plane from top down exposed:

+ .1' Limestone (probably thick)

0.4' Clod (shale, dark, with brownish limestone nodules and)

1.1' Anna dark gray, green shal and brownish mottled shale, crumbles

0.1' Shale dark gray, with thin lenses of phosphatic brown shale

1.1' Shale, dark gray, greenish and brown mottling, crumbles

1.1' Shale, dark gray, "slaty," fissile, well laminated, by thin phosphorous lenses and streaks, especially near base

~ 7.5' Coal

sketch on reverse side

Fault displaces about 6.5' } major fault
Fault plane: 22/25 E

By H. Damberger Date 7-31-75

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

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

390 601 Major roof fall exposes:

+ 5' Lawson Shale, greenish gray, upper part ($\sim\frac{1}{2}$) mottled

1' Conant Limestone, brownish gray, with very dark concretions in upper part

.7' Shale dark gray upper part calcareous, with irregular limestone nodules-Jamestown

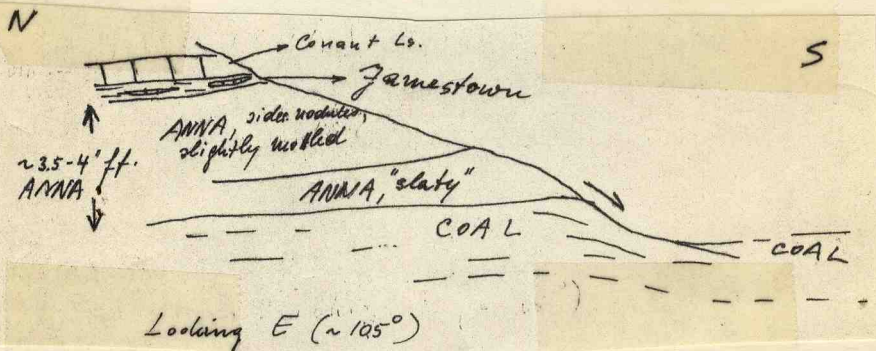
.1' Limestone, gray, fossiliferous, massive, thickening to north. As about +2', thinning to east and southeast

1' Anna Shale, mostly slaty part, thins into fall to west below Brereton Limestone, especially to north where limestone gets thicker
Concretions in lower part

+ 6' Coal

391

602 Very shallow dipping slip, about 15-25° dip to south, undistorting surface, with prominent slickensiding and striations down dip, displacement at top of coal is about 0.5 feet



Above Conant Limestone at least 3-4' Lawson Shale in top of roof fall (still working!)

392 603 Just west of fault, above coal:

Bottom

3.1 Anna Shale sequence with about 1.1-1.4 slaty Anna at base with locally large concretions, above slightly mottled shales with two phosphorous bands as usual

~1 Brereton Limestone, massive, medium gray, seems to thin towards fault in east

~0.7 Shales with irregular limestone lenses —0 Jamestown

~0.2 Conant Limestone, base only

Top

Right at the fault in cross-cut, in hanging wall, the Brereton Limestone is already gone: below Lawson Shale (+2.5'), and Conant Limestone (1')

Yellow 0.35 dark shale, 0.4

(+2.5') and Conant Limestone (~1') follow
0.35' dark shale

0.4' greenish shale

+2' Anna, disturbed

393

604

Sequence from Coal up:

Coal

0.08' bone coal, ^{ter} lateral transition into Anna Shale

0.3' lower coal streak

0.35'-0.2' argillaceous nodules ^{ar} lenses of limestone

0.35' coal streak with argillaceous beds and calcareous beds, thin, lenticular

1.1' Conant Limestone (shell wash);? Lawson Shale well bedded, with fossils in lower part, medium dark; overlain by mottled shale, with sharp boundary

394

605

Important fault, reaches base of coal, but no displacement there, about 1' at top of coal.

No Boerchen ls. in roof fault along fault

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine - 2nd NE Study area

Additional information on roof sequence and faults taken from field maps on 9/16/75.

New station numbers 301 to 394 were assigned to stations set up during field work. This is *added* primarily so that important information on field maps is cross-referenced and can be found more easily using our new station map.

- (395) 3.9' Anna Shale on down-throw side of fault shown, 3' Anna Shale on other side of cross cut at corner to belt entry. This thick Anna Shale extends further to south and southeast.
- (396) Limestone nodules and coal fragments intermixed in thin layer below Brereton Limestone, flaky appearance, "grunch"?
- (397) Same as (396).
- (398) Fault plane 155/30 NE near top of coal, cribs to NE at intersection.
- (399) Marked as .5' clod and coal on map, probably similar to what has been called "grunch" under (396) and by Ledvina and Nelson in their notes.
- (400) As (399), but only 0.1' thick; on other (NE) side of cross cut 2 clod and coal are given on map, but possibly only .2' are present.

(401) As (399), but 0.3' thick

By H. Danberg Date 9/16/75

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

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

- (402) Goniatites found at this location.
- (403) Major fault plane; near top of coal: 10/38SE
- (404) Major fault plane; near top of coal: 15/40SE
- (405) .2' shale with coal, .5' nodular limestone, overlain by Brereton Limestone. "grunch"?
- (406) 1' Jamestown directly on coal, with limestone, coal streaks and shale.
- (407) .1' Anna Shale, .8' Jamestown, +.4' Conant Limestone.
- (408) .3' Brereton Limestone above coal overlain by typical Jamestown.
- (409) .2' Jamestown (nodular limestone with coal streaks) overlain by at least .4' Conant Limestone.
- (410) .9' Anna Shale, overlain by .2' nodular limestone and +.2' massive limestone.
- (411) .1' shale with coal streaks overlain by Brereton Ls., probably what was called "grunch" in other places and especially by Ledvina and Nelson.
- (412) About 1.7' Anna Shale, then .7' Jamestown exposed at fault with about 4' displacement at top of coal. The fault splits several times within coal seam, but fault surfaces are difficult to trace.
- (413) Same fault as under (412), but only about 1.5' displacement at the top of the coal.
- (414) Fault in corner displaces top of coal by about 2-3'.

(415) Fault displaces top of coal by about 4', trend 170/34 near top of coal. On down thrown side 2.6' Anna Shale and at least .5' Jamestown (limestone, argillaceous) are exposed.

(416) In roof fall the following sequence is exposed above the coal:

- Herrin Coal
- 2.5' Anna Shale
 - .5' Brereton Ls.
 - 1.5' Jamestown (typical for this area coal streaks, nodular ls., shale)
 - .8' Conant Ls.
 - +8' Lawson Shale
- up* ↓

(417) Coal overlain by .3' Anna Shale, then Jamestown. A coal ball is exposed in coal at this location.

(418) Above coal: 2.2' Anna Shale, then .5' Jamestown.

(419) Above coal: 1' Anna Shale, then .2' Jamestown (coal and shale).

(420) Fault has about 3.5' displacement at top of coal.

(421) Notes on fallen rock as early as 5/7/75.

Section exposed:

- +4' Lawson Shale (lower part limy?)
 - 1' Conant Ls.
 - .7' Jamestown
 - 3-4' Anna Sh.
- Herrin Coal

(422) Low-angle slip in roof: 95/18S, along limit of roof fall.

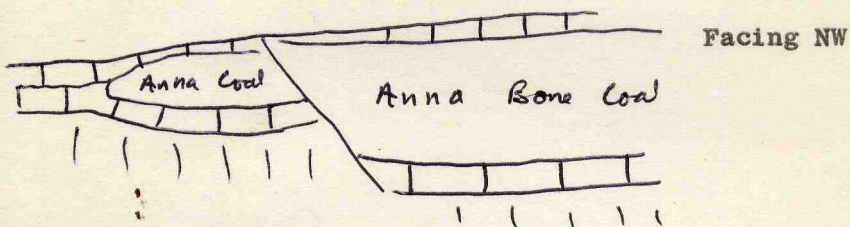
(423) At edge of roof fall following section seen:
.8' Conant Ls.
v.5' Jamestown
v2' Brereton Ls.
1.5' Anna Shale
Herrin Coal

(424) Fault displaces top of coal about 1'.
Section:
?' Brereton Ls.
v.3-.5' Clod
3.2' Anna Sh.
Herrin Coal

H.-F. Krausse - 2nd N.E. - 03-25-75

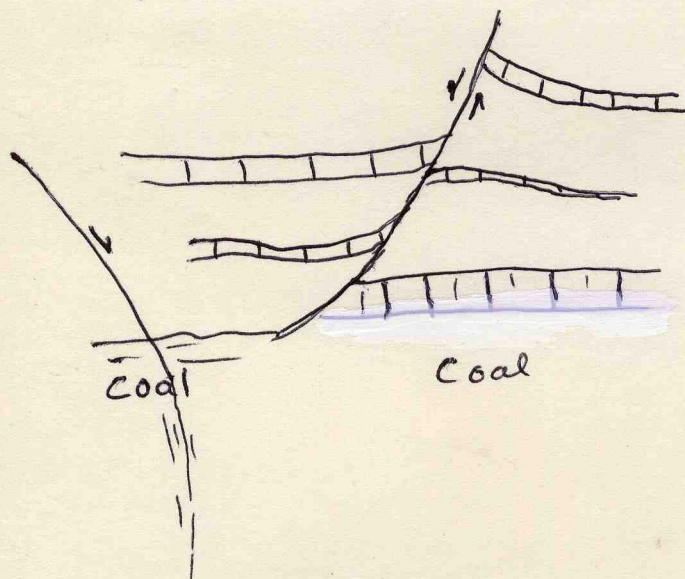
67. Overcast over track entry to 12th Left.

1. Photo taken (?) of Anna Shale in coal (sic)



68.

2. Photo

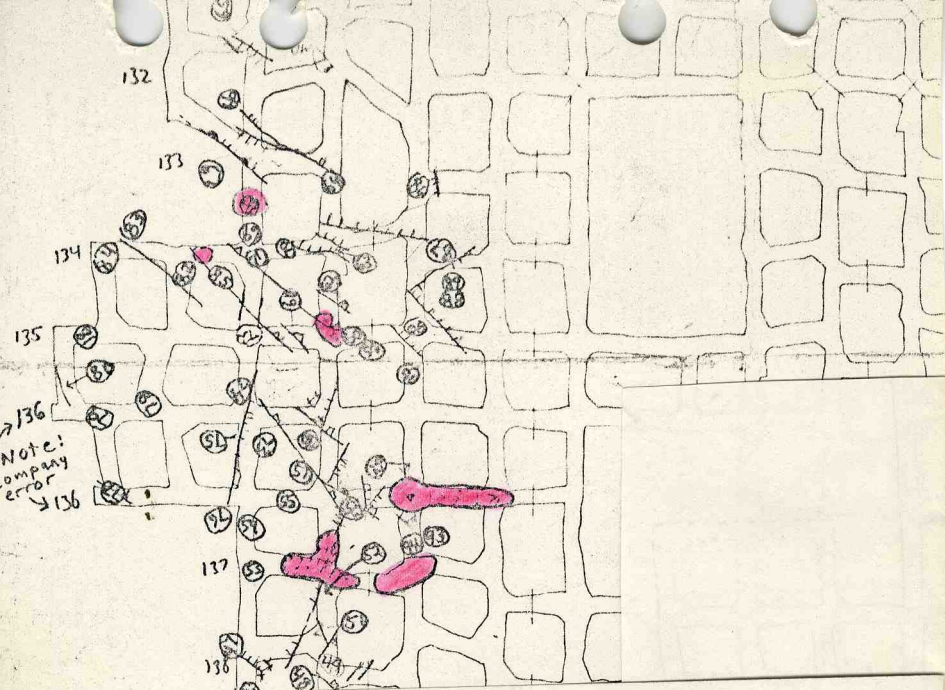


69. Overcast track entry 13th Left- facing N
Photo #3

Lawson to Conant- slip w/ "Lawson Ls."

57d, 71, 145. Photo #4 Clay dike filling brecciated

Entry to 13 left directly north of track entry
at stopping between intake and return in 13th
left.



Field Map 2nd NE
Leduina + Nelson
Dec. 18-20, 1974

CONSOLIDATION COAL CO.

HILLSBORO MINE


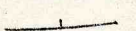
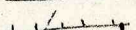
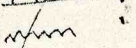
MONTGOMERY CO.

2ND NE, NEAR MAIN FACE

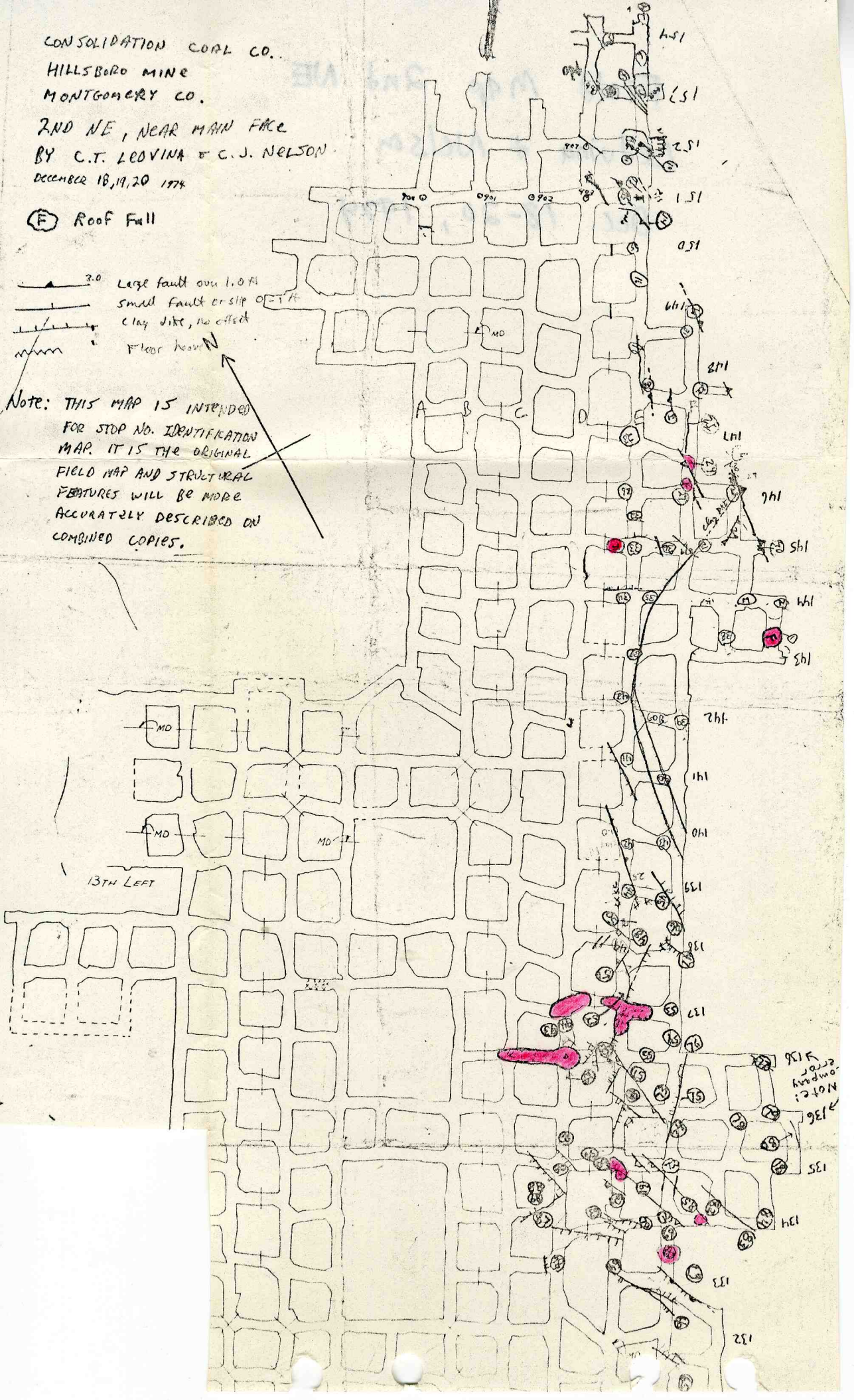
BY C.T. LEOVINA & C.J. NELSON

DECEMBER 18, 19, 20 1974

(F) Roof Fall

-  Large fault over 1.0 ft
-  Small fault or slip 0.1-1 ft
-  Clay dike, no effect
-  Floor heave

Note: THIS MAP IS INTENDED FOR STOP NO. IDENTIFICATION MAP. IT IS THE ORIGINAL FIELD MAP AND STRUCTURAL FEATURES WILL BE MORE ACCURATELY DESCRIBED ON COMBINED COPIES.



ILLINOIS GEOLOGICAL SURVEY, URBANA

C. T. Ledvina and C. J. Nelson - 12/18 /74

Consolidation Coal Co. - Hillsboro

Mapping near face of second NE mains. We are accompanied by Lou Daley from Consolidation Coal Co.

(501) 1 Fall at stub, Lou says one week old, 10/9/74 keep out, sign posted. 5' around ^{top} up to nodular layer in conant.

(502) 2 Mining intersects fault. This is a major fault. ~10' displacement, 175/ 40° East. 4' Lawson shale, mottled with pyritic nodules, .6' Conant? Brereton? .6' Bankston Fork, bumpy bottom.

If they mine south, 60 east, 4' you will go down, 3' and hit the coal. Anna here ~~X~~ 4' thick

(503) 3 Anna shale joints, 065. Small fall nearby (on map) 2' high.

(504) 4 Coal, 7.3' thick, with 0.1' blue band whose top is 1.3' above floor. Numerous wide calcite filled fractures at top of coal.

Roof consists of Brereton Limestone, dark gray, fine grained and fossiliferous, very argillaceous massive. Bottom 0.1' very shaley with thin coal streaks. Fossils replaced by pyrite.

Very stable, solid looking roof, no evidence of trouble. Floor also stable. This area, except for face is ~ 1.5 months old.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

- (505) 5. Skin coal shows numerous trunks. ASSUME Brereton limestone here. Clay dike noted. Goes at least 4.0' into coal. A good sized dike. .8' wide at top.
- (506) 6. Limestone roof. Nothing spectacular to note.
- (507) 7. Clay dike, traces on map. Major one, 1.0' wide at top. Runs parallel to main fault. $175/45^{\circ}$ east, associated with slip. Both dip east. Dike goes to bottom of seam. Roof away from clay dike is same as face roof here.
- (508) 8. Small slip with clay, in fact, several noted in roof all running parallel. 175° . Roof similar to No. 6 stop. No significant roof problems here. Roof looks more argillaceous here.
- (509) 9. Anna shale here, very thin at middle of crosscut, but thicker away from face on other side, up to 1.0' thick on other side. Numerous coal splitting noted in Anna. Some coal pieces and laminae very large. Also large phosphatic and fossiliferous nodules noted in shale up to .3' long and .1' high.
- (510) 10. 155° clay dike, fairly major. Dips east, however, dip is undeterminable clay dike goes 2' into coal. Coal is very badly all around here.
- (511) 11. Small slip. 0.4 displacement. Roof is fossiliferous Anna.
- (512) 12. Very carbonaceous shale roof. Very fragile - full of coal riders.
- (513) 13. Small slip. North-south, dip 40 east.

Immediate roof is black slate with lighter bands and coal stringers. Many pyritized plant fragments noted.

(514)

14. Slip, very difficult to trace. I will just draw in apparent trend on map.

(515)

15. Very slaty Anna shale roof. Prominent joints here, 060°. Numerous large kettle bottoms. Shale seems to top off in flakey black shale, 1.0' above coal.

(516)

16. Very jointed Anna shale. Numerous slabby falls. Zone of weakness on pillar line opposite barrier, as expected. When we reach pillars, zone of weakness ends.

(517)

17. Zone of weakness associated with small slips. Areas here on this entry are timbered as an escape way. Numerous broken headers noted. Zone shown on map.

(518)

18. Looking at rib NW. Gob pile here. Top most exposed layer (roof here) is...

Limestone, medium gray, medium to coarse grained argillaceous, fossiliferous, Jamestown - conant zone.

0.2' coal horizon, interbedded with black shale and limestone as above.

0.4' limestone and shale mixed. Shale is dark gray to black - is calcareous, limestone is medium grayish brown - is very pyritic - fine grained.

0.15' Coal interbedded with black shale.

0.4' Shale, dark gray to black, slightly calcareous, pyritic and coaly (thin coal streaks)

(519)

Sharp contact, No. 6 coal. Numerous coal falls at top

19. Gob pile & major fault;

003° dip 44 east. Very sharply defined fault plane. No drag noted. All we can see here is blackish green Lawson shale. Roof of coal hits foot wall, 2' above blackish-green boundary of Lawson. Only 4" of Anna.

(520)
20. Small roll noted in top coal. 030°/25 NW slip also. No displacement noted on slip.

(521)
21. Slip, west displacement? Can hear skin coal working. Black slate roof with numerous kettle bottoms.

(522)
22. Here we face major fault.

Roof is working so we work fast. Our impression of the sequence will be written before we forget though, from the 'top.

- 2' Greenish mottled shale
- 1-2' Dark gray to black, Lawson shale.
- 1.3' Brownish shaly limestone (Conant)
- 1.3' Limestone zone with coal. Dark shale and limestone nodules.
- 2.0' Limestone, similar to conant.

This is an estimated section due to roof activity.

then we have at least 3' of limestone (Brereton?) below limestone, an undetermined thickness of slate (Anna).

(523)
23. Thick Anna shale with numerous kettle bottoms. Much rib rash here as in other areas around this place. Again, we don't trust the roof in here. It is making noise all the time.

(524)
24. 170 / 20 w Dip.

Fault, 1.0' offset, large slip plane. 3' Anna shale noted with fall along fault line topping out in limestone (Conant?).

(525)
25. Pillar line break. Did not enter to investigate, roof working.

(526)
26. Cracks of random ORIENTATION in floor, do not know if desiccation or true heaving. Some rib rash, but not too serious. Black shale roof.

(527)

27. Looking at fall. Bad top signs hanging everywhere. 10-26-74 is the date here. Can hear the roof working. Main fault seems to split up, trace shown on map.

(528)

28. Fault, drawn on map. We describe a section.

- 3.0' Limestone top, greenish-gray
- 3-4' Shale medium greenish gray, mottled
- 1.3' Limestone Medium brownish gray. Conant. Coarse and argillaceous.
- 1.0' Black-greenish mottled shale interbedded with limestone (Jamestown) varies in thickness.
- 4.0' Limestone, dark gray, fine to medium grained with white fossil fragments, argillaceous, appear to be Brereton.

Here, a small slip noted in Jamestown and Conant. Rib rash working roof everywhere.

(529)

29. Big slips noted but don't trace very far. Hard to note, very discontinuous.

(530)

30. Fault. Lawson Conant well exposed.

(531)

31. Clay dike. Fairly large, 1.0' across at top; goes into coal a few feet. 070° trend. Has graben feature at top

(528)

28. Again. Clay dike, 055/40 SE. Very thin from one seen in 31.

ILLINOIS GEOLOGICAL SURVEY, URBANA

C. J. Nelson and C. T. Ledvina December 19, 1974
 Consolidation Coal Co. - Hillsboro Mine
 Return air entries of 2nd NE working back from
 face.

532 ✓
 32. Small slip ↘ to entry, dip 24° east, trend wiggly, top skin coal and Anna Shale, in good condition.

533 ✓
 33. Approximately 4' roof fall. Top shaly limestone, then about 0.5' Jamestown zone fault dark and (ligh) bands and lenses. Then 0.5' dark grayish-green mottled shale, 0.4' black shale with sideritic bands and spots, then 0.5' mottled dark gray shale, then 2' black slate with sideritic lenses at top.

Large slip about 125° dipping 34° east, with 0.8' offset at top of coal, but disappears into a thin clay dike upon entering coal. Slip extends to top of fall.

Much rock has fallen in the intersection.

Between 33 and 34, minor zones of weakness along both pillar lines.

534 ✓
 34. Large slip in coal, wide clay dike associated, trend 110°, dip 46° NE, no apparent throw.

Anna shale here thin to absent, top is "clod", with many fractures and borrows (?) then dark gray fine grained fossiliferous limestone with irregular bottom, strange irregular nodules, pyritic and or sideritic.

bastard ls? H.F.K.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

(535)

35. Same clay dike continuing, with associated slip, no offset noted. 046° , 25° SE. Could not be traced through next entry, though it was maybe 1' wide while it entered pillar in crosscut. Roof as above (clod, limestone).

(536)

36. Very small parallel opposite dipping slips, as shown. Roof black slaty shale with numerous kettle bottoms.

(537)

2' slip in roof of intersection to east, as shown.

37. Big clay-dike 023° , main slip dipping 60° west, no apparent offset, but dike over 1' and both it and the slip penetrate full seam. Roof clod, limestone as before.

(538)

38. Roof black slaty shale, jointed as usual, very good condition. Mostly skin-coal left.

Two more curving slips, as shown. Floor heaving as shown.

1. Roof fall noted yesterday in C. T. Ledvina notes. 4' fall exposing base of conant, Jamestown horizon, and black shale.

(539)

39. Small erratic slips in roof of clod and limestone as in 34.

General trend north-south. Fairly well defined 060° joints in limestone to west.

(540)

40. First clay-dike 009° , (slip) 36° west, straight track, about 1' wide, full seam affected about 0.8' displacement (normal).

Second clay dike trends 004° . Also dips west, about 0.5' offset, 4' long on north pillar, 1' on south.

Top is limestone as before, lower 0.5' very argillaceous but firmer than usual "clod" forms large treacherous slabs.

(511) 41. Clay dike 170° , dip 66° SW, offset 0.5' at coal top, seam goes about 2' into coal.

(542) Roof rock as above.

42. Large clay dike branches and turns as shown. The eastern branch is larger, appears to offset whole seam. Western branch extends 2-3' into coal. Roof rock as above.

(42a) (542-a) Large fault north-south (000°) dip 28° east, about 1.0' throw to north increasing to 2-3' to south; has consistent clay filling about 0.1' wide to 4' depth (wider at coal top) and the fault cuts the entire seam. Roof as above.

(543) 43. East branch big clay dike 167° , dip about 52° west. Extends 2-3' down, narrows quickly. Roof as above.

ILLINOIS GEOLOGICAL SURVEY, URBANA

C. T. Ledvina and C. J. Nelson, 12/20/74
 Hillsboro
 mapping in second NE

544

44. ✓ Brereton Limestone roof here. Dark gray, flaky in entirety, fossiliferous. Top generally very good.

545

45. ✓ Clay dike type fault. Seems to have 1.0' displacement. Goes into coal 4-5' or in some places to the bottom. Trends 155-170/25 NE dip.

Roof begins to get more argillaceous and firm. Almost a slaty fossiliferous limestone.

546

46. ✓ Flaky clod here. (Base of Brereton). Seems to make better roof.

547

47. ✓ Slip and dike, much more prominent in-by the barrier where it dies. Trends 150/65 south.

Has associated family of calcite coated slips. We have 0.2-0.3' offset on SE rib, 0.1' at barrier. Dike is 6-5" wide in-by, almost nothing at barrier.

548

48. ✓ Large clay dike. See fig. 1.

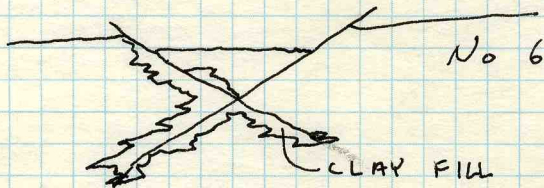


FIG 1

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

Dike is large, up to 1.5' wide at places. It trends 055°/52 west. Dike has east component too, both with slips.

No apparent displacement, but some bending of the coal noted. On roof single dike dips east 50°.

(549) 49. Coal and clod interbedded. ^(ROOF) Slips here don't trace far. Coal here has .2' clay parting in top.

(550) 50. Minor clay dike type fault.

One is suspicious here that the rider coal mentioned in 49 is Jamestown. See Fig. 2.

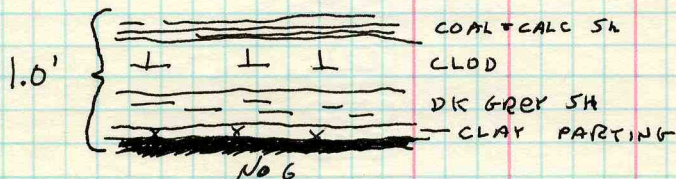


FIG. 2

(551) 51. Meandering slip.

(552) 52. Big clay dike. Big fall too. Don't know if dike is responsible for fall. Fall is all hard firm limestone, cannot see top. Limestone is dark gray, almost black.

(553) 53. High coal, 7' +. Some small untraceable slips in top noted. Very little skin left.

(554) 54. Black slate & small slip. Roof is definitely black slate again here.

(555) 55. Fairly thick Anna with kettle bottoms.

556

56. Big clay dike. Appears very big because we look parallel to entry. 6-10' wide in places. All kinds of mine mold here. ^{GROWING}
^

We see a couple feet of offset on dike at top, but dike fault peter out toward bottom.

Anna shale 5" thick here. Some rib rash here also. Parallel clay dike with a 4" wide fusain band.

557

57. Slip. There are a lot of slips here, but this one stands out. 1.0' offset noted. 160°/35 west.

558

58. Rib rashing here. Also a slip 150°/ 30° SW. 1' offset.

Lots of slips here WITH clay dikes. Thick Anna here.

559

59. Slip of 2' displacement. Slips have caused a lot of roof fall.

560

60. Major fault. 5'-6' displacement. (4-5' out-by) Anna is 2.5' thick here. Fault is 065°/35 west in trend. Both normal-reverse drag noted. 5" limestone medium dark brownish gray, fossiliferous (Brereton). Then lighter cloddy limestone (Jamestown-Conant).

Fault here exposes fire clay.

561

61. These faults are fair sized, 1.5' displacement. Faults are steeper at top. Floor basically unaffected.

562

62. Anna abruptly thinning here. Maybe 2' or thick, then dark gray clod roof.

563

63. Clay dikes and slips. Dikes are gone at start of clod. Can't see them if skin is gone. Clay dike in SE pillar is a network with some arms 4-5" across. Very difficult to trace.

X

(564)
64. .3"-1.0' hard limestone, then clod. Limestone is very dark & fossiliferous. Also clay dike 140°/45 SW dip. Very little offset. Another noted 145.

(565)
65. Clay dike. 165/ dips east. Seems to be several parallel dikes.

Another clay dike noted. Dike is a lighter band in limestone. Other dike to east trends 150/no dip.

(566)
66. Continuation of above dike. Shows cloddy band in coal. Roof here is dark, cloddy limestone.

(567)
67. Clay dike-fault with 1.0' displacement.

(568)
68. Area with numerous small slips.

(569)
69. Black shale coming back. 2" of it here.

(570)
70. Bad top area. Anna has mottled zone present here. Clay dike as shown. Anna 5" thick with coal riders in it. Grades to clod with evidence of dike into clod.

(571)
71. Fault 160°. Anna gets very thick into the fault. 25° west dip. Anna goes from 3" to 3' thick towards NW pillar. Description from top.

Limestone, medium grayish green. Very argillaceous coarse grained-mottled. Becomes more argillaceous toward bottom where it becomes cloddy.

Then 0.4' shale, black, poorly bedded, flakey. Contains numerous small lenses and bands of phosphate.

Then 0.3' shale, black, poorly bedded, nonphosphatic. Contains some tiny coal streaks.

Then 0.3' shale, black, well laminated with long thin streaks and small nodules of sideritic phosphate.

X Then 0.7', shale, as above. However, lacks phosphate. Contains occasional small nodules of pyrite and dolomite.

Then

0.1' shale, black with phosphate bands and nodules.

Then 0.7' shale, black and slatey, mixed with some phosphate material.

Sharp contact with coal.

- (572) 72. We note at this time that the man with the spray paint put two No. 135 stoppings.
- (573) 72. Again. Clay dike and fault. Fault shows under clay
- (574) 73. Fault. 3.5' throw
- (575) 74. Fault again. Very cleverly disguised in roof rock (Anna), but visible in rib. Little faults here look big but aren't.
- (576) 75. Clay dike shown, bifurcates and shows up as a slip. One bifurcates and fades away.
- (577) 76. Clay dike. Seems to be fading here.
- (578) 77. Near face. Slip. 150/25 SW. Floor heaving (1') noticed around rib.
- (579) 78. Parallel jointing and large kettle bottoms. Joints trend 060 as usual. Nice Anna, if you could call it nice.
ANNA AS USUAL MAKES POOR ROOF
- (580) 79. Slip. North-south/35 east dip. Fall, about 3-4' above coal in top of black shale at level of phosphate bands. Slips, not into coal, not continuous and hard to trace.
- (581) 80. Slip, actually two slips with opposite dips.
81. Heave in floor, ~ 2'.

582

82. Anna shale rider into coal.

160/dips east (associated with a slip).

Reverse drag noted as is often the case.

Goes at an angle 2' down into coal.

583

83. Continuation of above, though more slips and less filling.

584

84. Ventilation poor here. Air smells bad. Floor up some here. 2-3'. Rib rash also noted.

585

85. Fall around fault. 150/25 SW and changeable. Goes 5' high to bottom of limestone. Conant-Jamestown zone well exposed. Anna is mottled in places. Has very large concretions. Looks like bad top.

2.5' displacement total. This fault consists of other small faults so this number is the total ^{DISPLACEMENT}. Lower beds of coal broken, uppers are bent. Fault exposes underclay. Limestone is not severely affected in roof.

586

86. Many large clay dikes. Impossible to trace.

587

87. 100° thin clay dike and slip.

588

88. 160/55 SW, slip with clay dike. Dike is 1.0' thick with a little trace in the roof. Goes 3' into seam.

589

89. No trace of this slip in the clod roof here.

590

90. Black shale roof here. Dike, very hard to trace. What I think it is ¹⁵ on the map.

(590)

91. Slip. Affects roof, but not coal. Trends 120/35 east

(591)

92. Two faults. One 160/15 SW. .5' displacement. Note: other small faults occur here. North fault 145, 32 NE. Offset 1 foot. Fall noted too. Goes to bottom of Bankston fork limestone 7' above coal.

(593)

93. 155/23° SW fault, offset, 3'. This is a zone of faults so dip is taken from large fault, but really doesn't mean much. Has 1' of apparent displacement.

(594)

94. Fault 160/35 SW. 4' displacement. See next reference to 94.

(592)

92 (continued) 3' green gray mottled shale (Lawson). 1' brownish argillaceous limestone (conant). 3' black shale with hard concretions.

(594)

94. Fall, has flat, smooth top in greenish rock as usual. Probably Bankston Fork. Description from top:

0.3' dark grayish green mottled shale

0.7' brownish nodular limestone

3.5' mottled medium green and dark gray Lawson.

1.5' Very dark gray shale, some vertical synaeresis cracks. Unit is very irregular in thickness.

0.8' Limestone, medium brown, very argillaceous with numerous round or oval nodules. Unit varies considerably in thickness.

1.0' Jamestown zone. Dark gray shale with nodular limestone as above and much interbedded coal, especially at top and bottom.

2.0' Black shale, Anna, slaty, very much fractured

and broken. No dark concretions noted.

CONSOL. HILLSBORO MINE
2nd NE
13th

Panels Left

BY CT LEVINA & C. NELSON 11/17/75 275 A.D.

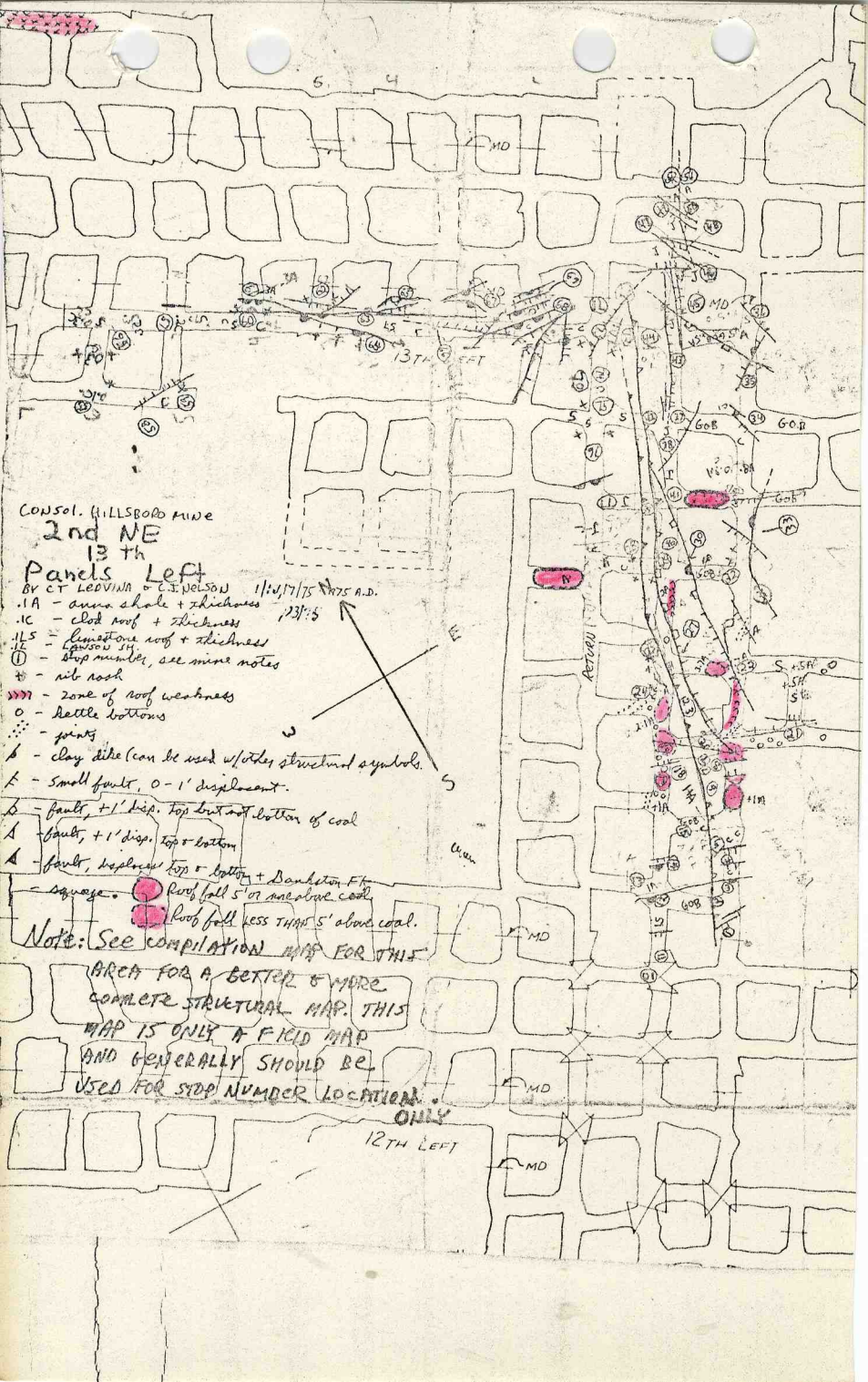
- 1A - mine shaft + thickness
- 1C - clay roof + thickness
- 1LS - limestone roof + thickness
- ① - stop number, see mine notes
- * - nit rock
- ||||| - zone of roof weakness
- - bottle bottoms
- - sink
- h - clay dike (can be used w/ other structural symbols)
- f - small fault, 0-1' displacement
- b - fault, +1' disp. top but not bottom of coal
- A - fault, +1' disp. top & bottom
- A - fault, displaced top & bottom + Banister Fl.

○ - squeeze
● - roof fall 5' or more above coal
● - roof fall less than 5' above coal

Note: See compilation map for this

AREA FOR A BETTER & MORE COMPLETE STRUCTURAL MAP. THIS MAP IS ONLY A FIELD MAP AND GENERALLY SHOULD BE USED FOR STOP NUMBER LOCATION.

ONLY
12TH LEFT



ILLINOIS GEOLOGICAL SURVEY, URBANA

Consolidation Coal Company
 C. T. Ledvina and C. J. Nelson
 Hillsboro Mine

1/16/75

Mapping in 13th panel left in 2ND NE with Emil Teisa from Consolidation Coal Company. See map of this date and name for location of stop Nos.

595

1. Clod roof. Medium gray, very flaky with numerous "trail-like" traces. Slip $085^{\circ}/45^{\circ}N$. Offset 0.2-0.3'. Clod all around slip, 0.3' overlain by limestone (Brereton). Very argillaceous with many pyritized fossil remains. Roof is firm and solid.

596

2. Clod roof and large fault. $015^{\circ}/39^{\circ}E$ dip. Throw about 5', underclay is exposed. Coal 7.0' thick.

597

3. Clay dike about 9" wide. Several slips noted facing IN all different orientations. Dike reaches floor of coal. 1' displacement. Slip runs up into roof and has its own set of clay dikes. Numerous streaks of clay dike MATERIAL run into roof. Seems that Anna comes in here, though at least 1.2' of clod remains.

598

4. $115^{\circ}/45^{\circ}SW$. 1.5' displacement on slip. On up block of fault, Anna is slaty. On downside, roof is generally clod. Though some Anna seen on other side and near slip. Pieces of clod are caught up in the shale as well as pieces of coal. Some type of possible soft sediment washout. Brereton? looks very strange. It is flaky, poorly bedded, medium dark, dull gray with many small

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

bestard ls? HFK
 No! C.J.N. & C.T.L

By _____ Date _____
 County _____ Sec. _____ T _____ R _____

pelcypods.

5. Small slip, definite clod roof. This whole part of entry is a clod—Anna transition zone.

6. Fall. Seemed to be caused by a clay dike. Goes 3-4' above coal and ^{seems to} end in black and green mottled shale which is Anna. Some slips noted in top; doesn't make much sense. A couple of kettle bottoms noted also.

Clay dike is very large near bottom of coal. We are having a hard time finding top. It is better than a foot wide at bottom and can't trace the top.

7. Slip. $125^{\circ}/40^{\circ}$ NE. Offset 0.1'-0.2', but slip face is very large and prominent.

8. $120^{\circ}/35^{\circ}$ NE. Slip. 0.2'-0.5' offset. Anna is 3' thick with kettle bottoms and is overlain by clod.

9. Another slip.

10. Roof taken down for overcast.

1.9' Limestone, dark gray, hard, dense, massive, argillaceous, with many fossil fragments Lingula, pectinoids, productids, etc. Fewer fossils downward. Grades into.

3.0' Limestone, as above, no fossils.

0.2' "Clod," calcareous shale and coal interbedded.

11. Slip with clay dike. $110^{\circ}/35^{\circ}$ S. Dike is .1' wide with .5' offset. Clod-limestone roof.

12. Clod-limestone roof. Clay dikes; 3 of them. One very large (1'), others smaller. Large one has 1' displacement.

092°/Dips N
103°/Dips S

These FORM A GRABEN

- (607)
13. Beginning of Anna Shale (+.1').
- (608)
14. Slip and line of beginning Anna Shale. 115° /S dip. Dip shallows southward. Seems to be contact of Anna and clod.
- (609)
15. $020^{\circ}/60^{\circ}$ E, big fault. 3.5' throw.
- (610) 16
17. Anna Shale, 3.2' typical Anna Shale. Fall here, tops out in base of clod. Mottled Anna in upper portions. Contains numerous kettle bottoms.
- (611)
18. Slip. $115^{\circ}/55^{\circ}$ N. Kettle bottoms large and irregular in shape here.
- (612)
19. Fall up to Conant - Jamestown zone.

Graben fault system noted in fall. Roof is limestone, light to medium gray, fine grained. 0.6' Jamestown, very dark gray and black shale, Carbonaceous, intermixed with limestone (medium grayish brown, and nodular).

- (613)
3.3' Anna, slaty at bottom, phosphatic at top.
- (614)
20. N-S fault. Dips 25° E. 3.5' Anna Shale roof here.
- (615)
21. Slip. Thought at first that it was pillar working, but it turns out to be a true slip feature.
- (616)
22. Skin coal with some slabby falling, but no severe roof problems here.
- (617)
23. 2.7' Anna. Roof is working and looks bad. It is full of zones of weakness, sagging, and kettle bottoms.
- (617)
24. Fault. $170^{\circ}/25^{\circ}$ E, 3' throw.

From top.

- 0.5' Jamestown, zone
2.5' Black shale.

(618)
25. Fall and fault. Stops upward at brown-mottled limestone. 0.5' Jamestown. Then brown mottled shale and limestone (2.5'), then 2.5' Anna Shale, phosphatic at top.

(619) 26
27. Slip. 1' throw.

(620)
28. Fault. 040° /E dip. Fault turns a bit here to other orientations. 2' displacement. 2.5' Anna Shale here.

(621)
29. Fault. 3.5' throw. Anna Shale seems to be thinning.

From top:

2' medium gray-brown, medium grained, argillaceous and massive limestone. Grades to:

0.7' very dark gray, carbonaceous shale with thin coal streaks with lenses of limestone as above. Then 0.1' coal. Then coal and dark gray shale (more Jamestown). Then 0.5' black slaty shale (Anna).

(622)
30. 010° /W dip. Clay dike. Dike is about 8" wide. Throw is about 1.5' with displacement of roof and floor. 1' Anna overlain by Jamestown zone, with no coal, just carbonaceous shale.

(623)
31. Slip. $160^{\circ}/37^{\circ}$ W, not really major. Displacement .1'

(624)
32. Nice crosscut. Good roof.

(625)
33. Clay dike, large.

Top is mottled limestone, medium grayish brown, coarse grained and very fossiliferous and very shaly. Then ~0.5' shale, dark gray with traces of coaly material interbedded with nodules of limestone as above. ~2.0' of shale, black, faintly mottled and poorly bedded at top, hard and slaty at base. This is Anna Shale. Clay dike is 1' wide and is difficult to trace over distance.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Consolidation Coal Company
 Hillsboro Mine
 January 17, 1975

2nd NE entries around 13th panel

John Nelson and Chris Ledvina

(626)
 34. Small clay dike crosses intersection as shown. Large clay dike at NW corner of intersection, at least 1 foot wide and cuts entire coal seam, but no trace across roof - orientation uncertain. Downthrow to SW side, about 0.8 foot displacement.

Roof - 1.3 feet of black slaty shale with occasional kettle bottoms exposed.

(627)
 35. Numerous short discontinuous slips in roof - too small to map. Most common trend about 150° .

Clay dike with irregular trend about 045° , dip uncertain - looks NW.

Large fault about 145° , dip 16° SW, throw about 2.5 feet, small clay filling on fault plane. Roof badly broken, fallen on hanging wall.

Approximately 2.5 feet of Anna Shale exposed.

(628)
 36. Clay dike 170° , dip 40° east, at least 2/3 of seam penetrated.

(629)
 37. Clay dike $\sim 060^{\circ}$, dip $\sim 54^{\circ}$ N, large slip but no offset noted.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

- Top Shale, dark gray to black, very carbonaceous.
0.4' Shale, as above, interbedded with limestone, dark gray to brown, argillaceous, nodular and in lenses.
0.3'+ Shale, as above, interbedded with coal and coal stringers.

(30) This roof is apparently the Jamestown horizon.

38. Clay dike/slip of 37 traced with uncertainty.

Roof section (middle of west pillar).

- Top Limestone, medium gray to brown mottled, medium grained, argillaceous, carbonaceous.
0.5' Shale, very dark gray to black, carbonaceous, interbedded with thin coal stringers and limestone as above.
0.4' Limestone, medium dark gray, argillaceous and shale, dark gray, carbonaceous, interbedded and nodular.
0.3' Shale, black, well bedded, with abundant coal stringers.

This again the Jamestown horizon. Very slabby and weak-sounding. This rock makes bad top due to the coal stringers.

(631) 39. Continuation of thw two large faults noted yesterday.

The easterly one (nearer entry) 009° , 27° W. About 2.1 feet of throw.

- 1.5'+ Limestone, medium gray to green, coarse grained, argillaceous, massive layer (Conant).
0.1' Coal and Limestone, dark gray to black, fine grained, fossiliferous, interbedded.
0.15' Coal, vitrain in top, bottom bony.
0.2' Limestone, dark gray to black, fine grained, very argillaceous, trace coaly streaks.
0.35' Limestone, dark gray, fine grained, argillaceous, fossiliferous and shale, dark gray, fossiliferous.

- 0.05' Limestone, medium brown to gray, argillaceous, very carbonaceous with vitrain streaks.
- 0.15' Shale, dark gray to black, very poorly bedded, slightly calcareous, occasional bands of limestone as above.
- 0.4' Coal, interbedded with shale, black, calcareous, grades into
- 6-7' No. 6 Coal, normal, few coal balls in upper foot.

The top of the coal grades into the mixed coal and black shale that could be lower portion of Jamestown unit, or just shaly No. 6. The interbedded shales and dark limestone are probably also Jamestown but possibly represent Brereton horizon. The coal and black shale above this is almost certainly Jamestown with the limestone above being Conant.

Second fault (nearer the stopping) 029° , 31° E. Throw about 5.3', good exposure of roof again with about 2 feet of the massive Conant Limestone as before.

Floor also exposed but not good enough to measure a section.

Claystone, medium dark gray to green.

Clay dike material found against SW corner by stopping, on the footwall of the second fault.

- (632)
40. South of this point the immediate roof is Anna Shale (black, hard, and slaty) overlain by a Jamestown sequence as at 39. The Anna Shale pinches out rather abruptly.
- (633)
41. Clay dike along the south pillar line of crosscut. Trend 120° , dip about 45° N.

Other slips as shown.

Roof fall in crosscut. Sequences below.

41.

- Top Shale, medium greenish, mottled.
- ~2.0' Shale, medium gray to green, mottled with dark gray, numerous fractures, looks weak and soft. Sharp, very irregular contact.
- ~6.0' Shale, dark gray, poorly bedded, faintly mottled with lighter gray. Occasional slips noted.
- ~1.0' Limestone, medium gray to green, very argillaceous. (Conant as at 39.)
- ~1.0' Shale, dark gray and coal streaks - Jamestown as at 39. Absent in places apparently due to slips and minor faults.

(634)

42. ✓ Two faults as at 39.

The easterly one 175° , 32° E (steeper upward), and above 3.0 feet displacement.

The westward 020° , 30° E measured along the floor - the roof trace is behind the stopping. Displacement about $4\frac{1}{2}$ feet.

Both faults penetrate floor and expose fireclay.

Roof Sequence

- ~1.5'+ Limestone, medium dark gray to brown, medium grained, very argillaceous, fossiliferous (Conant).
- 0.2' Limestone, medium gray, very shaly, flaky, carbonaceous with coal streaks at base (clod).
- 0.3' Coal and limestone as above, interbedded. Layers bent, distorted.
- 0.2' Limestone, medium gray, argillaceous, especially near top, very poorly bedded.
- 0.4' Shale, medium dark gray, calcareous, very poorly bedded, occasional thin coal streaks, near base.
- 0.2' Shale, as above and coal interbedded pyritic zones - grades into
- Top No. 6 Coal, shale streaks at top.

x

635

43. Large gently curving slips about parallel to the entry. Rib-rashing. Smaller slips also present, mostly parallel to those drawn. Large amounts of roof have fallen in both directions.

636

44. Toe of fault seen. No way to determine throw, must look behind stopping.

Roof is about 0.3 foot of "clod" consisting of interbedded dark gray to brown shale, medium gray to brown, coarse, fossiliferous limestone and coal stringers. This overlain by limestone, medium gray to brown, medium coarse grained, fossiliferous, argillaceous, carbonaceous at base - the Conant Limestone.

637

45. Continuation of 030° slips and 150° fault noted. Throw on the latter about 2.0'.

Roof variable.

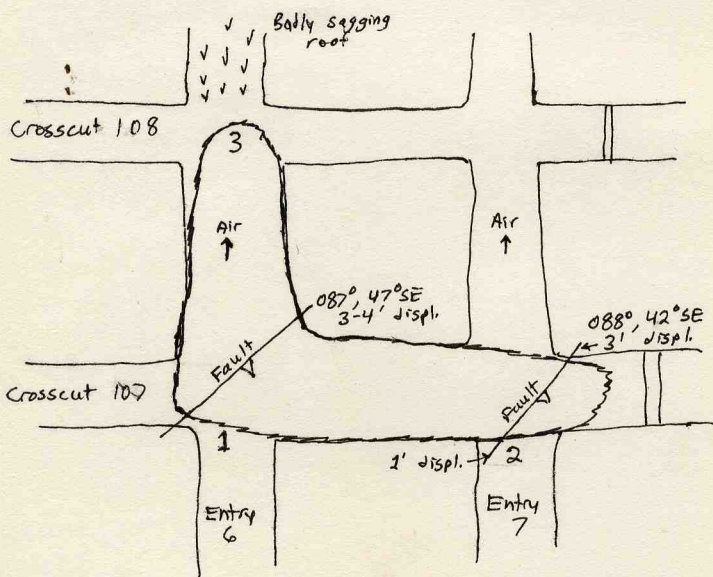
Top	Conant Limestone
0.2'	Black shale and coal.
0.5'	"Jamestown Zone", dark gray, carbonaceous shale, nodular limestone.
1.0'	Dark gray to black, carbonaceous shale and coal interbedded.

Not on map - "Grand Canyon" Roof Fall
Between 9th and 10th left, in 2nd NE Entries.

See map, next page.

Faults affect Bankston Fork, Lawson and lower units.

Sketch map of "Grand Canyon" roof fall.



North



The major part of this fall occurred all at once. Much rock has been loaded out to allow air flow.

Section as measured from 1

Top	About 32.2 feet.	
~4.0'	Shale, green, dark gray patches, slips.	
~1.0'+	Coal, split, irregular with partings.	
~3.0'	Limestone, dark brown.	} Bankston Fork
~1.0'	Limestone, brown, grades	
~1.5'	Limestone, buff, grades	
~0.5'	Shale, dark gray.	
~1.0'	Limestone, brown, massive, grades	
~1.0'	Shale, medium dark gray, laminated, grades	
~4.0'	Limestone, green, hard, massive, grades	
~4.5'	Shale, green, mottled, lighter upward.	
~2.5'	Shale, very dark gray with large irregular brown, calcareous(?) nodules.	
~6.0'	Shale, very dark gray, few brown bands near top.	
~1.5'	Limestone, medium gray to brown.	} Jamestown
0.2'	Black, carbonaceous shale/ coal streaks.	
0.3'	Limestone, brown, argillaceous, medium grained.	
0.2'	Black shale and coal streaks	
	No. 6 Coal	

Section as seen from 2. Irregular coal from section at 1 - No. 7.

- 4.0' Shale, green, brown, hard to see
- 3.0'+ Shale, green.
- 2.0' Buff, massive limestone -
Galum?
- 0.4' Coal, regular, Allenby?
- 2.0' Limestone, buff.
- ~1.5' Shale, dark gray, black band
at top.
- ~3.5' Limestone, buff, massive.
- ~1.5' Dark gray shale(?)
- ~3.5' Shale(?), green and buff
stained. Hard. Limestone(?)
- ~5.0' Shale, dark gray to green
mottled, slips, brown stains.
- ~5.0' Shale, dark gray with brown
streaks at top.
- ~0.5' Shale, dark gray interbedded with
shale, greenish.
- 1.5' Limestone, medium dark gray to
brown, argillaceous with hard
nodules at top (Conant).
- 0.3' Coal and dark gray shale and
limestone lenses.
- 0.4' "Jamestown Zone" of shale and
limestone (pinches out in places).
- 0.2' Coal and dark gray shale
(discontinuous).
- 2.5'+ Limestone, very dark gray, massive,
wavy, argillaceous (Brereton).

} Bankston
Fork

No. 6 Coal

Location 3.

Entry severely sagging to north of the fall. Loose bolts, sagging timbers, falling and slabbing rock.

Measured section of lower part.

- 1.2' Limestone, brown, argillaceous - Conant.
- 0.20' Coal, bony, shale interbedded.
- 0.20' Limestone, brown to gray, argillaceous, lenticular.
- 0.10' Shale, dark gray, carbonaceous.
- 0.10' Limestone, light brown, irregular, lenticular.
- 0.15' Coal and dark gray shale interbedded.
- 0.3' Limestone, argillaceous, gray, "clod".
- 0.8'+ Shale, black, hard, slaty - Anna.
No. 6 Coal

ILLINOIS GEOLOGICAL SURVEY, URBANA

Consolidated Coal Co. - Hillsboro Mine

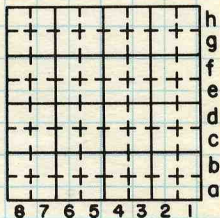
C. T. Ledvina, and C. J. Nelson - January 23, 1975.
 Mapping in the 13th left of the 2nd NE. We pick up
 where we left off last visit starting at stop 45.
 So next number will be 46.

638

46. "Jamestown" horizon roof here. No. 6, then
 various riders of No. 6 or Jamestown. Then .5' of
 very argillaceous uneven (almost nodular) limestone
 then all kinds of interbedded coals and argilla-
 ceous limestone grading into limestone, medium
 brownish gray, unevenly bedded, grainy in appear-
 ance and very fossiliferous.

639

47. Standing on top of overcast. Roof brought
 down to accommodate. Lower unit (dark gray) of
 Lawson exposed. Fault, 150/50SW, 3.3' throw.
 Fault displaces coal and has a slip in the lower
 Lawson, but Lawson moves in to accommodate. See
 figure 1.



By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

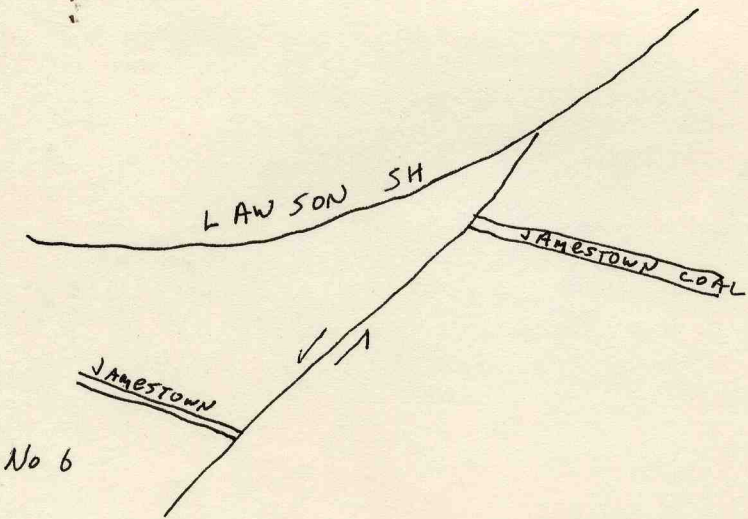


FIGURE 1

x

We also have numerous "parasitic" faults and slips involved here of low displacement. One easily visible is parallel, but of opposite dip and intersects main fault.

We measure a section here.

Flat top is shale, dark greenish gray, poorly bedded, firm with numerous syneresis cracks exposed (vertical). These have a "preferred" orientation (095). 1" to either side is light green alteration material (flakey). Unit has numerous, scattered, smooth-shelled fossil remains, that are seemingly pyritized. Then:

0.9 Shale, dark greenish gray, moderately laminated and firm with syneresis cracks penetrating spottily from above.

0.6 Shale, dark gray, poorly bedded, firm, with numerous hard septarian concretions approximately round up to 0.6' in diameter.

These concretions are slightly calcareous and are filled with calcite veins and centers.

2.8' Shale, dark gray, faintly mottled to a lighter shale, poorly bedded, firm, non-calcareous, with abundant fossils (brachiopods and pelecypods). Distinct contact with,

1.3'± limestone, Conant, dark gray, coarse grained, argillaceous, very fossiliferous including large productids. Contains many large (up to 2-3' wide) horizontal nodules of limestone (dark brownish gray) which are fine grained, dolomitic and smooth. They also have occasional fossils and sparry crack fillings.

0.4' Coal horizon. Contains streaks of vitrain interlaminated with limestone as above. Interlaminations become dark shale in lower part of unit. Jamestown.

X

0.4[±] Lenticular limestone as above, intermixed with shale, dark gray to black, poorly bedded and calcareous with occasional thin coal streaks.

0.4[±] Shale, dark gray to black, poorly bedded, weak and carbonaceous, interbedded with coal stringers. Contacts with top of No. 6 coal irregular with some interfingering. This section taken at NW/c of overcast. At SE/c we have 0.6 typical Anna between No. 6 and Jamestown.

Lawson here has many large, discontinuous slips, 47.

It is surprising that all slips seen in 46 don't trace to here.

646
48. "Parasitic" slip with 1' or so displacement. This is shown as the vertical slip in figure 1. (figure 1 faces 30° east of north).

647
49. Slip; dips 30° to SW, throw is uncertain, but appears to be small. Only affects the top few inches of coal.

Anna - Jamestown contact shown. Slip intersects with the boundary and Anna becomes 9' thick over a few feet. Another slip (120°) also noted.

648
50. We also have a large clay dike. Trends 130°. Has a major slip 26_{01P}° up to shale and parallel to dike.

It penetrates the entire seam. Other small parallel dikes appear that can't be traced due to overcast, but they don't go very far into the coal.

649
51. I go up to top of overcast and John writes. I can climb better than he can. Roof has been taken down 12' above coal.

644
52. Overcast above track. Hole in overcast! Large roof fall, rebolted.

Several slips in Lawson Shale, do not cut below

Conant. Largest 140° , 58° SW, almost 2.0 displacement at contact of dark gray shale and green shale.

Several smaller parallel slips.

Large slip in SW/c 150° , dip 45° west.
CORNER

Another set of nearly vertical slips trending approximately 140° , affecting the green shale (see below) and the top of the dark gray shale.

Top - In green mottled shale.

5.0[±] Shale, green, mottled with dark gray and buff-brown, carbonaceous, poorly bedded, numerous slickensided slips. More mottled downward. Distinct spheroidal mottled zone. Many syn resis cracks in lower part. Contact sharp w/

2.0' Shale, dark gray, somewhat laminated, smooth, firm, many vertical syneresis cracks with borders of green shale as above in upper 1'. Fossiferous especially in lower part. Many small pyritic and calcite-filled nodules, and scattered large (up to 0.7') elongate septarian concretions at base. Bedding bends around the latter.

Section measured at NW/c CORNER

2.5-3' Shale, dark gray, similar to above, but lacks nodules and concretions. Becomes more fossiliferous downward. Many very small, avoid pyrite zones (burrows?). Sharp lower contact, somewhat brecciated in places.

1.0' Limestone (Conant) Medium brownish gray, very fossiliferous w/coarse white shell hash. Large productids noted.

Occasional large hard dark grayish brown, dolomitic nodules up to 2' long. Nodules displace bedding. Unit grades into.

0.3' Coal horizon (Jamestown). Numerous vitrain streaks interlaminae with limestone as above. Flakey. Grades into.

0.3' Shale, dark gray, slightly calcareous, poorly bedded, somewhat flakey, distinct calcareous and pyritic nodular zones in middle of unit. Nodules look like coal falls.

0.1' Coal horizon as above.

0.25' Shale (Anna?). Dark gray to black with bluish cast. Numerous discontinuous phosphatic laminations up to 0.05' thick. ^{then} #6 coal. Top contact sharp.

At the SE/^{corner} there is 0.8' black slaty Anna Shale between #6 coal and Jamestown horizon.

(645) SS and S4
55. Clod roof, then hard limestone, dark gray. Very nice roof all around here. A few non traceable slips noted.

(646)
56. Skin, machine cut, NONE has fallen.

(647)
57. Dark gray limestone above clod. Resembles dark Lawson unit but is limestone. Some calcite nodules hang down from limestone.

(648)
58. Small slip. 090/dips north. Displacements .2', very minor, I wouldn't write home about it.

(649) ?
59. Stub. Rib rash noted. Coal has some nice balls 1' from top. Roof is clod with numerous plant (grunch) remains on contact with coal.

(650)
60. Clay dike, almost parallel to entry. Dike expression is lateral in coal. Very little clay noted

but highly pyritic, almost looks like a big coal ball. There is a slip associated 120/50 north.

Roof is limestone and clod. Dike seems to go 3-5' into coal.

(65) 61. Clay dike and fairly major slips. Roof is limestone and clod. Clod is thicker than normal. 120/50-60 SE w/ parallel .5' displacement. Goes 3.5' into coal. Clod and limestone slabs away around slip. Clod is thicker than normal. Other smaller slips also noted and shown on map. Near stopping there is thin black shale with fairly large phosphatic nodules which undoubtedly is Anna. It is .3' thick and represents a transition area.

(65) 62. Major clay dike and fault. 130/45 S west 2.5' displacements. Both top and bottom is clod, then limestone roof. Lots of rib rash. Barite cleat taken. Cleat is 1/2" thick. Whole rib shot with clay dikes.

(65) 63. Clay dike with changed dip must be 2 coinciding ones producing a graben. Roof is "drummy" sounding. Cloddy limestone, fairly thick.

(65) 64. Roof as above. Small clay dike with .8-1' displacement and slip noted. It zigs-zags. Rib rash all along barrier.

(65) 65. Faults or slips. 1.2' displacement for the large one, .4' for the small one (small 120/40 SW). (30° SW dip for large one). Roof, limestone then calcareous shale, fine grained with many fossils: brachiopods, pelecypods, gastropods, poorly bedded and firm, but slabby (reminiscent of lower Lawson).^{then} Dark gray limestone with fossils, Flakey and more calcareous in bottom. .2'. In fault, stuff seems to get very solid and is dolomite?? Since is so solid, but doesn't fizz^(HCL) much it is with reluctance this we call it limestone (Brereton?).

(65) SLIP

66. 015/45 west. Has some displacement in coal (0.3'). Clay dike with barite, pyrite, and a silver colored SPARKLY metallic mineral of some sort. Goes at least 3-4' into coal. Reverse drag noted.

(65)

67. Clay dike, 3' into coal, up to 1' wide. Roof is hard limestone with grunch between limestone and coal.

(65)

68. Clay dike is shown. ^{ON MAP} Small at first layer later. Roof is .4' good clod then limestone. Another small dike. 110/35° south.

(65)

69. Two parallel slips noted and shown on map.

(66)

70. 40/40° south. Clay dike with displacement to north plus clay, and with no displacement plus clay to south. We see slip in hard limestone. Limestone is medium gray to fossiliferous with round, brown stained nodules that could be fossils. Dike here goes 5' down into coal.

(66)

71. Nodular clod with grunch.

(66)

72. 5' throw on a fault. Horst block. Slip affects limestone and 2' of coal.

(66)

73. .9' clod, medium dark gray, very fossiliferous, then hard rock. Some carbonaceous fragments noted in hard limestone as usual. Clay dike, 075/50° north. Grunch noted in roof also. Dike goes 1' into coal. Roof note made at stopping.

(66)

74. Again. Smaller fault and clay dike. 050/30° west. Slip affects limestone and 2' of coal. It has a possible 1' displacement.

(66)

75. Grunch roof overlain by shale clod. Roof is drummy in places, but generally good.

(66)

76. Generally grunch roof.

* (No Note 77 was ever made though it may appear on map)

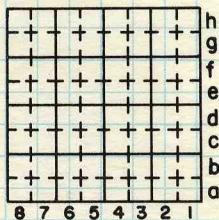
ILLINOIS GEOLOGICAL SURVEY, URBANA

C. J. Nelson and C. T. Ledvina - February 27, 1975

Consolidation Coal Co. - Hillsboro Mine

With Larry Bengal and Emil Teisa.

Photo work in second NE.



By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

Large clay dike on the barrier pillar to north, where shown, in 13th panel left, 2nd NE. ^{NEAR}
MAN DOOR TO RETURNS NEAR TRACK OVERCAST.

The clay dike is very irregular. Clay veins extend from highest part in roof to the floor. Trend 164° , dip 67° NE.

Exposed roof:

- Top - Shale very dark gray, firm, well bedded.
- 1.0 Limestone (Conant) - Medium gray to green, coarse, shaley, fossiliferous, large nodules with septarian cracks noted (see photo). Grades into.
- 0.25 Limestone as above, interbedded with streaks of coal and shale, dark gray.
- 0.3 Shale black, with coal interbedded, few limestone nodules as above noted.
- 0.55 Shale very dark gray, poorly bedded, trace coal and limestone, medium gray fine grained pyritic lenticular, interbedded.
- 0.15 Shale black, calcareous, carbonaceous with traces of coal
- 0.10 Coal with shale as above
- 0.15 Shale, black as above.
- Large fall (see sketch) just east.
- 6.0 Shale very dark gray to black, well bedded, firm, hard, noncalcareous, small and stringers of siderite(?), very large slips. Light synaeresis cracks.

Section below - As at photo location above.

There is a fall here with large slips (not mapped). We need to come back in here and map this area in detail.

SAME OVERCAST AS BEFORE.

2. Second photo. On top of overcast recently built under very large fall. There has recently been more falling in the crosscut to the south.

Max. 3.0 Shale Limestone (?) . Distinct interbeds of very dark gray, carbonaceous shale and brownish limestone (?), very coarse, most bands somewhat lenticular, some bands exposed near the base are distinctly brecciated. Fairly sharp contact.

5.0⁺ Shale, medium greenish gray, very poorly bedded, weak with many slips.

A sinuous dike about 0.1' wide, and extending at least 3' down from top of unit, traceable all across the overcast the dike is dark gray and somewhat brecciated.

Basal contact of shale is gradational in places, elsewhere it is sharp and very irregular.

7.0 ~ Shale very dark gray, firm, fair bedded, many large slips as above. Synaeresis cracks with green borders extend into unit from top. Cracks are nearly vertical.

1.0 ~ Limestone brown, coarse, fossiliferous, shaley. No concretions noted. Mostly hidden by rock dust. This is the Conant Limestone.

1.0 ~ Jamestown sequence, as at Photo 1.

Many broken ends of roof bolts, still interbedded in roof. Some shapped at connections, but most broke under tension. The ends cored out due to stretching. Emil Teisa tells us this indicates over torguing of the bolt. Other bolts had pulled out since they were anchored in soft weak shale.

Photo 2 - Shows numerous slips in the Lawson Shale interval about 12' from the top of the overcast on which we are standing, to the lower most roof bolts on the photo.

Photo 3 - View looking south from overcast, of timber roof fall used as air passage.

Photo 4 - Intersection just north of overcast. Large section of roof breaking away along two intersecting slips, view looking south. Conant Limestone comprises lower foot or so of the block. Note slickensides. Crinoids and roof bolts still bearing the load well.

Location 5 - No photo. Fresh fall. *NEAR FACE*
ON

- 4' - Shale medium gray to green, contact sharp, irregular.
- 2' - Shale very dark gray, poorly bedded, with synaeresis cracks extending down from top.
- 0.8 Limestone (Conant) - Medium gray, flaky with septarian concretion near top. Shaley and lenticular.
- 1.0 Jamestown - Coals visible at top and bottom. The rest black shale with lenticular limestone.
- 0.5 Limestone? very dark gray.
- 2.0 Shale, black, slaty, with few kettlebottoms.

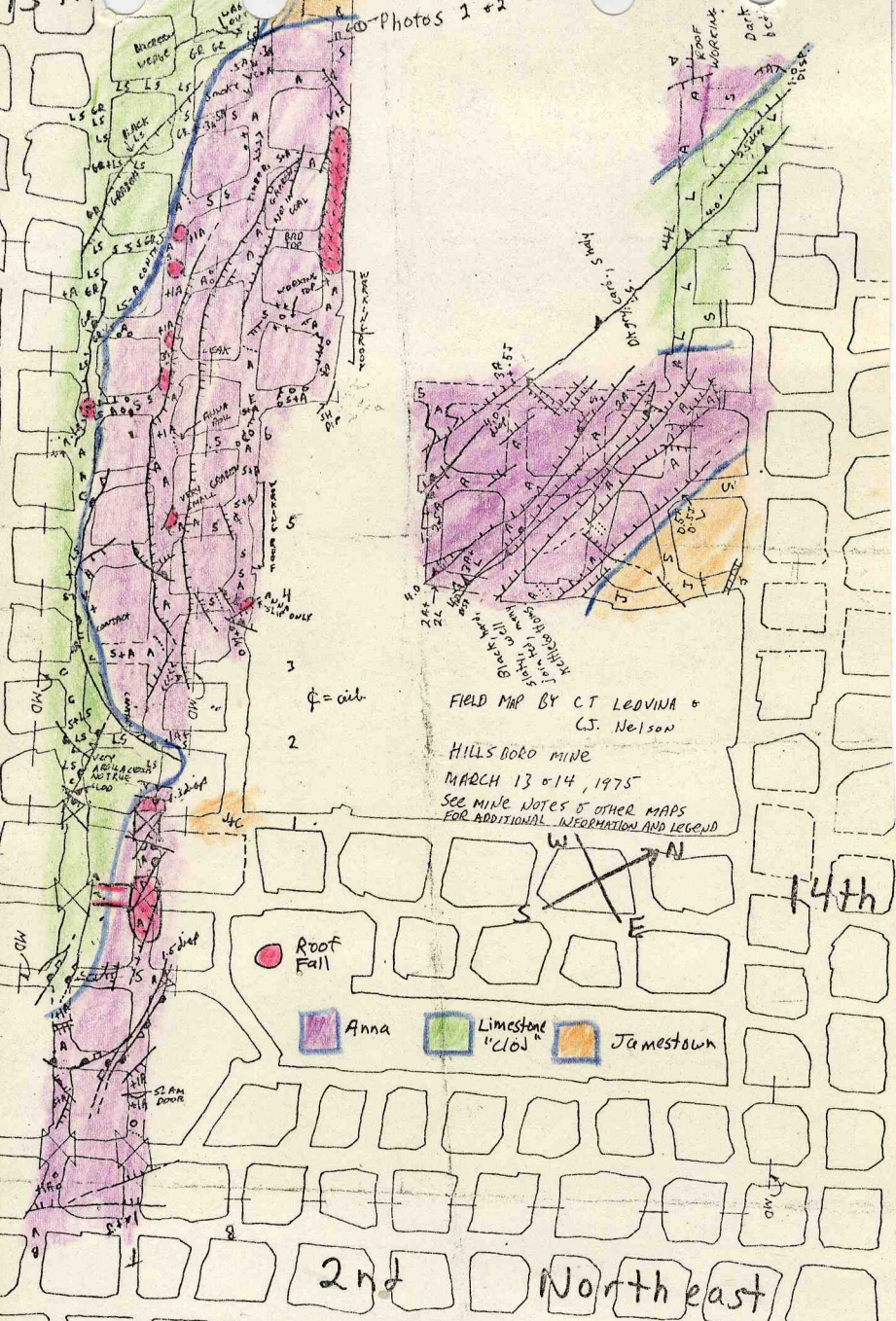
Emil Teisa says this fell last Thursday nite (Feb. 20), a week ago today.

Hearing slight working in crosscut to east. Fall hasn't been cleaned.

13th

Left

Photos 1 + 2



FIELD MAP BY CT LEVINA & G.J. Nelson

HILLSBORO MINE

MARCH 13 & 14, 1975

SEE MINE NOTES & OTHER MAPS FOR ADDITIONAL INFORMATION AND LEGEND

ϕ = cilt

2

3

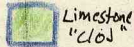
14th



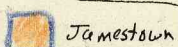
Roof Fall



Anna



Limestone "Clod"



Jamestown

2nd

Northeast

C.T. LEDVINA & C. J. Nelson

March 13, 1975. See map of this date for Additional information. 2nd NE around 13 left.

1. Interesting place here. Bad top. We have a wedge of Brereton Limestone.

Small fall here, top has fallen to reveal a small persistent carbonaceous layer, the sharp contact with limestone with some riders of above material in it. The limestone is a wedge and is medium gray to dark gray limestone with white fossils. It has a "salt & pepper" appearance. Wedge is up to 1.5' thick and thins toward face. Contact with No. 6 coal is "grunchy" with a 2" zone of coal and argillaceous (more so than in wedge) limestone.

This represents Brereton then Jamestown. John reports Jamestown roof a couple crosscuts ahead.

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

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

John Nelson and Chris Ledvina, March 14, 1975.
In 13th and 14th Panels Left, 2nd N.E.

* * * * *

(667)

1. Photo showing a wedge of limestone forming the roof. Limestone overlain by Jamestown interval-dark shale.

(667)

2. Photo; closeup of same wedge. NOTE: Coal stringers near base.

March 25, 1975. - 3 - In the 2nd NE

19. Location as shown, facing northwest. Jamestown Interval with two distinct coal horizons; one at hammer head, other near base. Roof formed by base of Conant limestone. 50 seconds.

20. 50' northeast of last stop (No. 19) Anna shale underlying Jamestown unit. Both cut by clay dike. Scale 1'. Top of ruler on base of Jamestown. 40 seconds.

21. As above, 60 seconds.

22. 2nd northeast track at 13th left turnout. Facing "clod" that loosens bolts and falls dangerously. 90 seconds.

23. Big fall on belt entry between 12th and 13th turnouts. 3 cross-cuts out-by 13th turnout. Bankston Fork with well developed lower nodular bench topped by greenish shale. Roof bolts for scale. 90 seconds.

(New roll of film)

24. As above, 130 seconds.

25. Roof fall in belt entry 2nd northeast, 2 cross-cuts out-by track entry of 13th left looking east. Lawson shale, 2 distinct zones with synaeresis cracks. Bankston Fork above; Conant below- ruler base near base Conant. Ruler 5' long. Contact between dark and light Lawson 1.8' from ruler top. 60 seconds.

26. As above, 90 seconds.

27. 2nd northeast track - between slam doors. Typical clod. 60 seconds.

28. As above, 40 seconds. Taken by man door between 2 sets of slam doors.

Upside Down

29. Grand Canyon - east side, looking southeast.
Brereton- Conant sequence.

Notes on Grand Canyon - Bottom up, from top of Bankston Fork.

0.5 limestone - argillaceous dark gray shale with synaeresis at top.

1.0 limestone/dolomite - buff, top contact sharp, irregular.

0.3 shale parallel laminations, calcareous almost looks varied.

0.2 shale dark gray, carbonaceous near base.

2.5 shale medium-dark gray, poorly bedded, siderite nodules present.

1.0 limestone or dolomite buff, grades to:

4.5 claystone, green, many slips.

6.0 firm at base, weak above. Coal fragments conglomerated at base.

0.2 coal or dark carbonaceous shale. #7. top of fall.

30. Shot on southwest side of Grand Canyon^{Upside Down} Jamestown-Conant forms the immediate roof. Used flash.

Grand Canyon location on map.

31. In cross-cut opposite man door between 2 sets of slam doors, just west of track on 2nd northeast entry. This slab of "clod" or "caprock" would cause serious injury if it fell on someone. We didn't time the exposure because the mantrip is here to take us to the bottom.

7/28/81

Hillsboro - Coffeen Mine - Track mine
Montgomery Co.

Anna Shale Roof - Herrin No. 6 Coal
Column I

- Roof - Anna Shale
0-10" Clarodurain, vitrain bands generally $\leq 1\text{mm}$, calcite on cleat
10-17" Clarain, pyrite lense of variable thickness
17-45.5" Clarain, thicker vitrain & durain bands, up to $\frac{1}{2}$ " thick. At 24.3" to 26.3" durain band. Calcite on cleat
A few thin pyrite lenses $\frac{1}{8}$ - $\frac{1}{4}$ " thick. Most pyrite lenses associated with durain bands. Some thin fusain bands.
45.5-46.5" Pyrite lense
46.5-54.0" Clarain
54.0-56.0" Duroclarain; calcite on cleat
56.0-65.5" Clarain At 57.5-58, durain band; At 59.5-60, dull band w/ pyrite stringers.
65.5-66.4 Dull ~~pyrite~~ band w/ pyrite
66.4-69 Clarain, numerous small cleats w/ calcite
69.71" Blue band
71-81" Clarain, numerous small cleats w/ calcite; at 74.0-75.0 dull band; ~~clarain~~ ^{vitrain} bands generally $\leq 1\text{mm}$.
Underclay.

7/28/81

Hillsboro - Coffeen Mine

Consol

Montgomery Co.

Column site No. 2

Anna Shale Roof.

0. - 6.5" Clarain, one thin (2mm) fusain lense at 4.8",
calcite on cleat
- 6.5 - 6.8" Pyrite lense
- 6.5 - 15.0" Clarain, calcite on cleat, some thin < 1mm pyrite
stringers
- 15.0 - 15.2" Pyrite lense - discontinuous
- 15.2 - 21.3" Clarain, some fusain lenses, < 1mm to 2mm, calcite
on cleat
- 21.3 - 21.4" Discontinuous pyrite lense
- 21.3 - 68.5" Clarain, calcite on cleat, discontinuous lenses of pyrite
up to about 2.5mm, some fusain lenses up to about
0.5" thick, some lenses of dull coal (durain) up to 0.75"
- 68.5 - 69.8" Blue Band, gray, some pyrite stringers in it.
- 69.8 - 83.0" Clarain, several thin ~ 1mm pyrite lenses, some cleat
with calcite, but less than above

Underclay

Note: last ~ 1.5 foot of coal very hard.

Sites are ~ 1 mile apart.

7/29/81

Energy Shale ~~Anna Shale~~ Roof has trackless mine.
Crown III
kettlebottoms

Montgomery
~~Montgomery~~ Co.

Energy shale Roof - contact w/ Anna seen; erosional surface seen; ^{up} Anna erosional unconformity
~~Anna Shale Roof~~
Energy

- 0-16.0" Clarain, w/ thin pyrite stringers (~2mm), Kaolinite + calcite on cleat, pyrite on cleat; vitrain bands <1mm to 3mm,
- 16-16.6" Dirt band w/ pyrite stringers + lenses, variable band thickness.
- 16.6-27.4" Clarain, vitrain bands thicker than above, up to 1cm. Kaolinite on cleat; a few thin <1mm pyrite stringers.
- 27.4-27.8" Pyrite lense, some vitrain bands extend into the pyrite.
- 27.8-42.5" Clarain, several vitrain bands ~5mm thick, thin pyrite stringers, Kaolinite + calcite on cleat
- 42.5-42.8" Pyrite lense, some thin vitrain stringers in the pyrite.
- 42.8-49.5" Clarain, a couple thick vitrain bands (~1/2cm), calcite on cleat
- 49.5-50.2" Pyrite + Dirt band, some dirt + coal in pyrite
- 50.2-57.0" Clarain, - duro clarain, calcite, Kaolinite, pyrite on cleat.
- 57.0-57.6" Fusain band
- 57.6-65.2" Clarain, not as bright as some above, a few thin pyrite stringers; more pyrite on cleat than above, calcite on cleat
- 65.2-65.8 Pyrite lense, thin laterally
- 65.8-73.5 Clarain, vitrain band thicker, some fusain, 1 lense ~1cm thick, vitrain - 2 bands up to 1cm thick each
- 73.5-74.4" Dirt band w/ thin vitrain stringers
- 74.4-79.3 Clarain - duro clarain; Clarain gets higher in vitrain just above the underclay. Some pyrite, calcite on cleat.

Underclay

Crown III

Sample site 2 Channel only
Described by John Nelson

Main Roof } ls, med. dk grey

- 1.5' Shale grayish - black w/ greenish spots + mottles, smooth + poorly bedded, numerous phosphatic lenses + laminae in the top.
- 1.15' Coal NBB, hard about 1/3 vitrain, remainder clardin + durain, no fusain noted, abundant white calcite + a little pyrite on cleat.
- 0.02' Pyrite - fine grained, lt. brassy colored, thinly laminated w/ dark shale, a discontinuous band.
- 1.35' Coal similar to above, a couple v. thin laminae of fusain + pyrite
- 0.06' Shale, dk olive-gray, hard + smooth, contain laminae of pyrite, a discontinuous band.
- 0.62' Coal, similar to above
- 0.02' fusain, soft, not mineralized, lenticular
- 0.35' Coal, similar to above
- 0.08 shale, excluded from channel, brownish-gray, v. hard, w/ abundant disseminated pyrite, lenticular band.
- 0.75' Coal similar to above, less mineralization on cleat
- 0.07' Fusain, tough, not mineralized, lenticular
- 0.11' Coal, similar to above
- 0.06' Fusain, tough, lenticular
- 0.59' Coal, no mineralization on cleat
- 0.01' Fusain, a little pyrite
- 0.63' Coal, trace of calcite
- 0.02' Pyrite w/ irregular streaks of coal, lenticular.

cont.

2.4' Coal, w/ minor amts. of calcite + pyrite

Floor Claystone, med. dk gray, smooth, slickensided, contains particles of coal.

7/30/81

Monteary No. 1

Face very wet, with
lots of mud.

Sample 1

col & channel

Unit 2

5N/4E/MN

Exp 4

55' by crosscut 27

Note: Column numbered
from underlay up.
#1 is the piece next to
floor.

Roof - shale (Anna) blk, hard, smooth, well bedded.
Contains a little pyrite. Joints trend N65°E

2.31 - coal, vbb vitrain most abundant near top, few very thin
lenses of fusain, abundant pyrite in upper .01 ft. prominent
pyrite and calcite in vertical fractures

0.03 - Pyrite inter-laminated w/ dk. shale. A small
lense.

0.60 - Coal vbb, mainly vitrain and clings no fusain.
mod. Calcite on cleat, no pyrite

0.03 Shale - dk. olive gray, smooth, very hard, contains
abundant lenses of pyrite

0.95 Coal, similar to above, a bit more thin, laminated
w/ partings of fusain, and thin lenses of pyrite

0.03 Pyrite - highly lenticular band, varies in thickness

1.19 Coal similar to above, but very little calcite

0.01 Pyrite, fairly continuous band

0.53 Coal, similar to above, but little fusain, Pyrite and
calcite on cleats

0.06 Shale (Blue band) dk. olive gray, smooth, hard
contains abundant lenses of pyrite

1.75 Coal - similar to above

Floor - Claystone - med. greenish-gray, mod. hard
smooth and slickensided.

Total thickness

7.49

Sample 2

Monterey No. 1

7-30-81

Face is generally clean, although some places are covered by nodules of calcite

Roof - is Bergeon LS. above gray, fine grained appears massive basal few inches are shaly, cherty which tend to break away from roof.

2.05 Coal Nbb - vitrain and clavin, fairly evenly banded less than 5% durain, few very thin partings of fusain much parting on cleat near top of seam, a little calcite and pyrite on cleat in rest of unit and a few very thin partings of pyrite on rest of unit

.01 Pyrite - fairly continuous band

.09 Coal - similar to above

.01 Fusain - hard, slightly pyritic, fairly continuous band

.51 Coal similar to above

.08 Shale - dk gray at top w/ numerous streaks and fragments of coal. lower part med. dk. gray w/ less coal. hard and smooth lenticular

.136 Coal - similar to above

.103 Pyrite - irreg. laminated in small nodules varies in thickness

2.50 Coal - more thinly banded than above w/ more partings of fusain. A little calcite and pyrite on cleat. Several discontinuous bands of pyrite in last .5 feet.

.12 Shale - "Blue Band" med. dk. gray hard and smooth contains lenses of pyrite

1.53 Coal - similar to above w/ calcite on cleat

Floor - Claystone - dk. gray, hard and coarsely

7.29 total