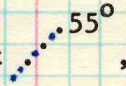


139


201. Fall, maximum 4' high, all in Anna Shale, immediately above major fall, as continuation of down-slope, fall as indicated on map cause after bolting in limestone above Anna Shale; Anna Shale has large concretions in lower 1.5-2'. Many slips with movements indicated by striation are exposed in fall, however, difficult to measure. Photogrammetry?

140

202. Well displayed joints in Anna Shale, about  , spaced about 0.4-0.8' apart.

141

203. Small fall, but pressure on roof at whole intersection. Several slips exposed, main trend is as indicated on map: N 95°E.

Main slip seems:  83°. Roof fall came along


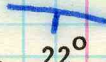
this trend between main slip and antithetic ones.





142

204. Maximum 2' high fall all in Anna Shale, which looks "condensed" in this location, plus also disturbed. But typical features are still recognizable, in particular the two phosphatic layers (only about 0.4' apart), the concretions, and the lower "slaty" portion (only 0.1-0.3' thick).

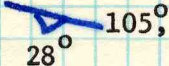
Intense greenish mottling above upper phosphatic layer and below limestone which looks like Brereton Limestone.

Slips:  90°,  105°,  100°

 94° (antithetic to previous one),  90°

 135°,  24°,  39°,  126°

143

205. Fault:  105°
28°

t=8-9' (coal thickness +1-3'), hardly any drag one way or other along very well defined fault plane. Striations are shown dip. Sequence about 6' down below #6 Coal exposed: about 3-4' claystone, about 3' shale. Very good exposures to study character of these faults in detail, would probably need 2-3 shifts to do that. Also good for photos and photogrammetry.

For instance, it can be seen, how Anna Shale is drawn out in fault zone from normal thickness of over 3' to almost 0', or how large pieces of coal get caught in fault zone, and how "pulling apart" is accomplished in general: certain layers seem to flow more easily (plastic flow), e.g. the mottled portion of Anna Shale. Barite(?) sample taken by HFR a little W of 205.

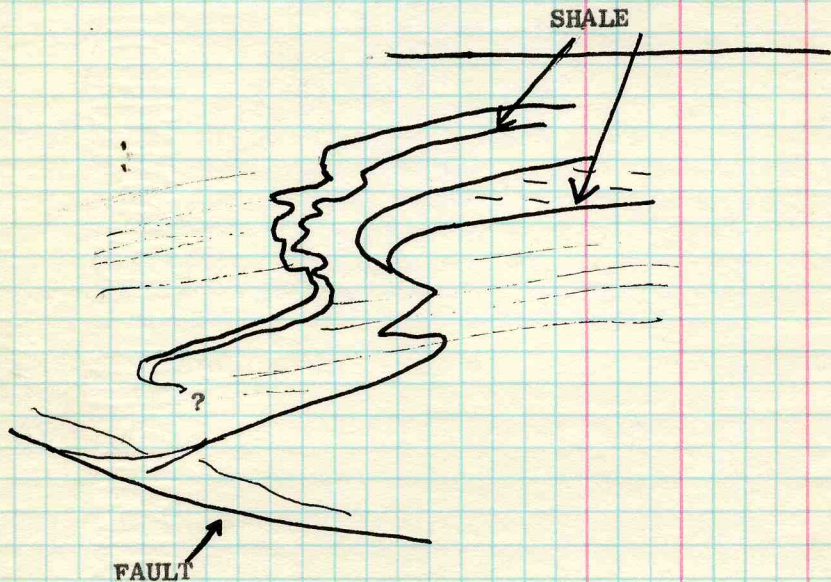
144

206. In hanging wall of fault: nice clay dike on E rib traceable in limestone roof to other side where it is hardly visible anymore due to fault, but definitely is still there. Clay dike in coal continues up from the Anna Shale and into limestone. Slaty Anna Shale is finely brecciated with thin veinlets of much lighter material through it. Zone gets wider. Further up Anna Shale has clay filling, still further up seems to get more limy. In limestone also limy filling (of course).

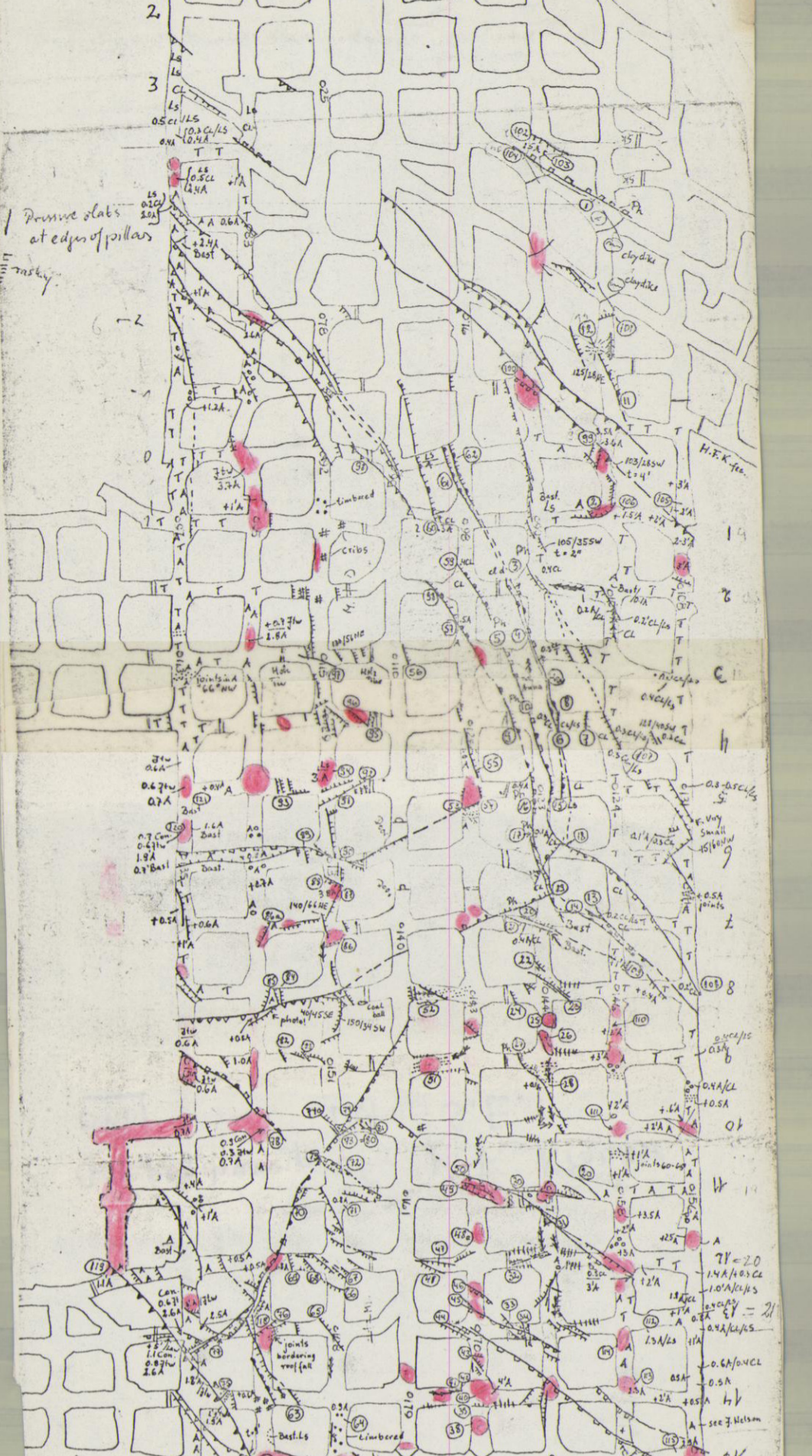
Come Back to Take Photos

Also: in Anna Shale unusual burrow-like balls, 1-2" ϕ , smaller near base, larger near top. Balls contain shell breccia. Occasional thin lenses with shell fragments. This is in lower slaty portion of Anna Shale.

Drawing which goes with Note 206.



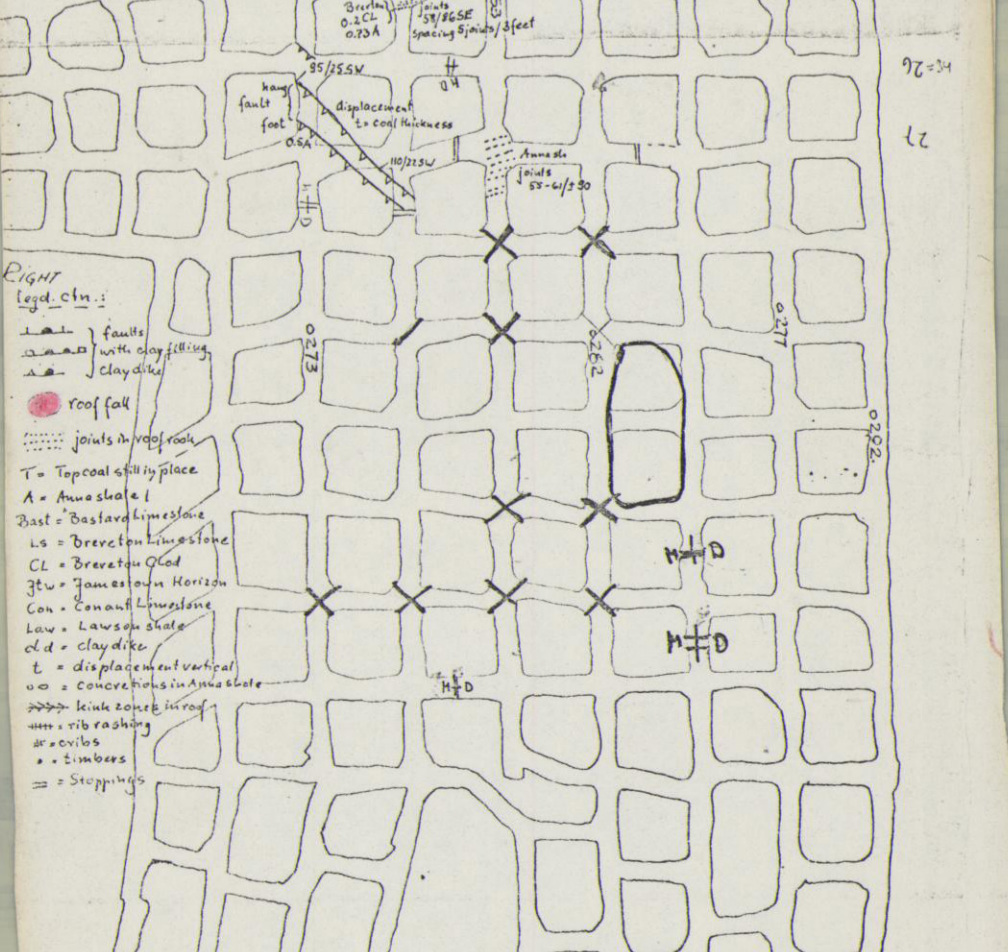
Shale crosses bedding in coal as indicated in sketch; stuff looks like disturbed Anna Shale? Sample taken.



Mapped by:
 Hans-Friedrich KRAUSSE
 December/January 1974/75
 See corresponding
 Mine Notes
 (my Nos 1 - 121) and
 Suppl. Litholog. map
 Comp. also maps
 of H.H. Damberger
 W.J. Nelson and
 C.T. Ledvina

HILLSBORO MINE
 (Coffeen)
 1st SE entries

- Legend:**
- early December:**
- small faults
 - gradually larger faults
 - largest
 - ||||| rib rashing
 - kink zones in roof
 - joints in roof rock
 - stoppings
 - roof falls
- later in December:**
- small faults
 - faults with more than 1' displacement at top of coal seam
 - faults displacing more than 1' and displacing bottom of coal seam
 - faults displacing total seam and reaching up to Bankston Forks affecting Bankston Forks



- RIGHT**
 Legend, etc.:
- faults with clay filling
 - clay dikes
 - roof fall
 - joints in roof rock
 - T = Top coal still in place
 - A = Annu shale
 - Bast = Bastard limestone
 - LS = Brexton Limestone
 - CL = Brexton Clod
 - JTW = Jameson Clod
 - Con = Conant Limestone
 - LAW = Lawson shale
 - CLD = clay dikes
 - t = displacement vertical
 - oo = concretions in Annu shale
 - kink zones in roof
 - ||||| rib rashing
 - cribs
 - timbers
 - stoppings

Photo 20/AP
 taken 1/27
 Clay dike cut by fault

ILLINOIS GEOLOGICAL SURVEY, URBANA

Notes & Map by H. F. Krause. 12/3/74
 Hillsboro Mine (Coffeen), Consolidation Coal Co.
 (Numbers of study sites refer to map of H.-F. K.)
 Location: 1st SE entries, from "parallels" south-
 wards. (in intake air)

former
 (201)

parted

Sect.

mm.

Largest

1. At overcast over ^{house} ~~farm~~ belt-entry in parallels, to be seen cross section of Brereton Limestone 2-3', Clod 1', Anna Shale 1-2', Herrin (No. 6) Coal, upper portion of underclay. Brereton Limestone is pushed into an upper and lower bed by a thin (few inches) of calcareous shale. Anna Shale can be subdivided (although there are transition) into uppermost portion weak mild dark gray shale with horizon of phosphatic nodules; below: dark gray mild shale; below: dark gray mild shale with another horizon of phosphatic nodules; below: very well bedded "slaty" very dark carbonaceous shale with frequent little (less than ~~minimum~~ thickness) coal streaks. Whole sequence is cut and displaced by several smaller slips (= small faults) of "clay dike type" (comp. H. H. Damberger's description of structural features in coal along clay dikes; see also my drawings in these notes). For further details see following sketches. Layers X slip shows 2' displacement.

Comp. also notes of W. J. Nelson of same date

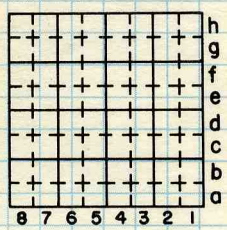
descriptions containing stratigraphic sections are marked Sect. —

By H. F. KRAUSSE Date 12-03-1974

and 12-04-1974

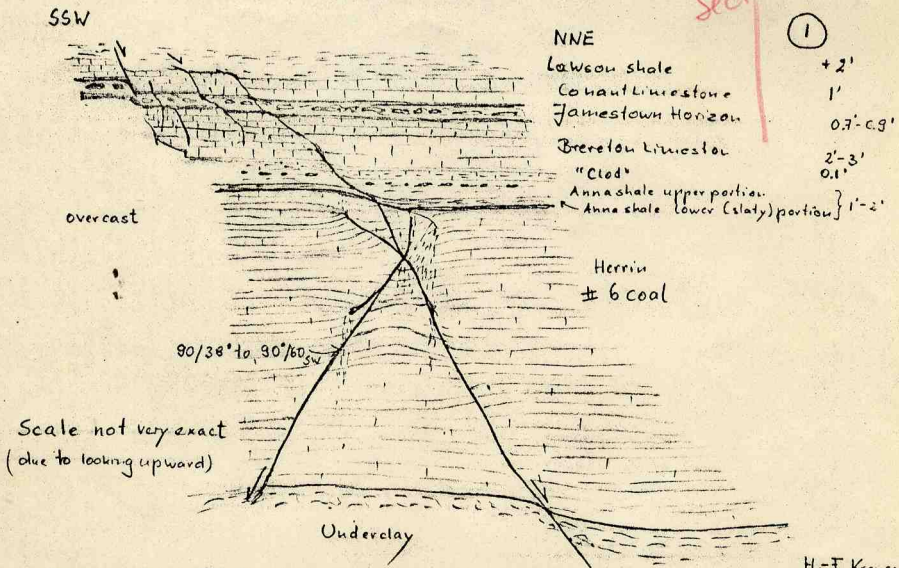
Quadrangle _____

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



Sect

①



- NNE
- LaWoon shale + 2'
- Cowart Limestone 1'
- Jamestown Horizon 0.7'-0.9'
- Breerton Limestone 2'-3'
- "Clod" 0.1'
- Anna shale upper portion } 1'-2'
- Anna shale (lower (slaty) portion) }

Herrin #6 coal

90/38° to 90/60°

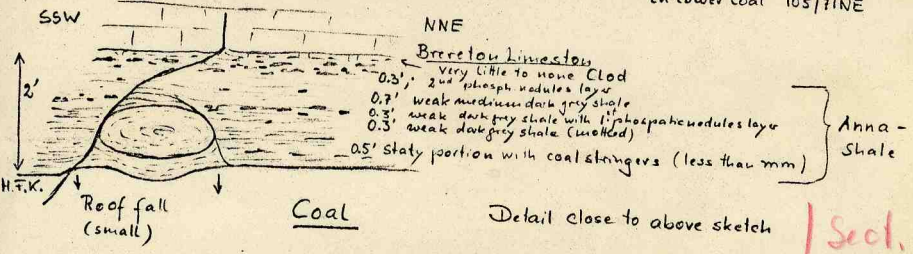
Scale not very exact
(due to looking upward)

Underlay

Hillsboro Mine (Coffeen) Consolidation Coal Comp.
1st SE Entry at overcast belt entry into E-W parallels
study site # ①

H.-F. Kreusse
12-03-1914

main slip
in Anna shale 107/52 NE
in upper Coal 110/65 NE
in lower Coal 105/71 NE



Anna-Shale

Detail close to above sketch

Sect.

①a

Impression: Material of Anna Shale must have been rather plastic during time when slips cut through, because Anna Shale - visible in layer of phosphatic nodules - was distorted \pm continuously*. There are small scale "slumping folds and thrusts at the front, towards the slip and pull apart structures at the backzones. Photos were taken 1-27-75

Photos 1-3 (looking towards eastern rib (North 60° E) shows disturbed (distorted) Anna Shale above coal and below Brereton Limestone. Soft sediment deformational folds well visible in the two phosphatic layers, but weak and medium dark gray Anna Shale between the two phosphatic layers is also "folded", as in photo 1 visible. Most folding is between the small faults, towards faults in foot wall (from left to right) deformation and pull-a-part features on left side and "compressional" features ("flow folds") towards right side. Features are related to the faults.

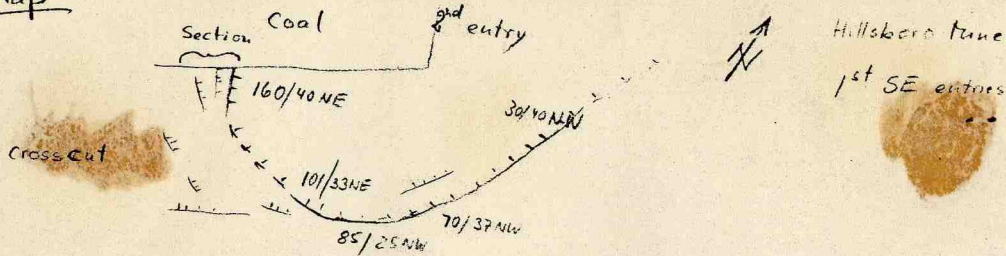
Photo 1: Anna Shale above main fault (not visible, hidden in shadow left side) base and lower portion is very little affected upper portion as coming towards another fault (not visible, out of picture) is very intensively "folded" and distorted. 12

Photo 2: Phosphatic nodules in lower layer of Anna Shale with soft sediment deformational features below small low angular fault; scale: lens container of 1.5 inches length.

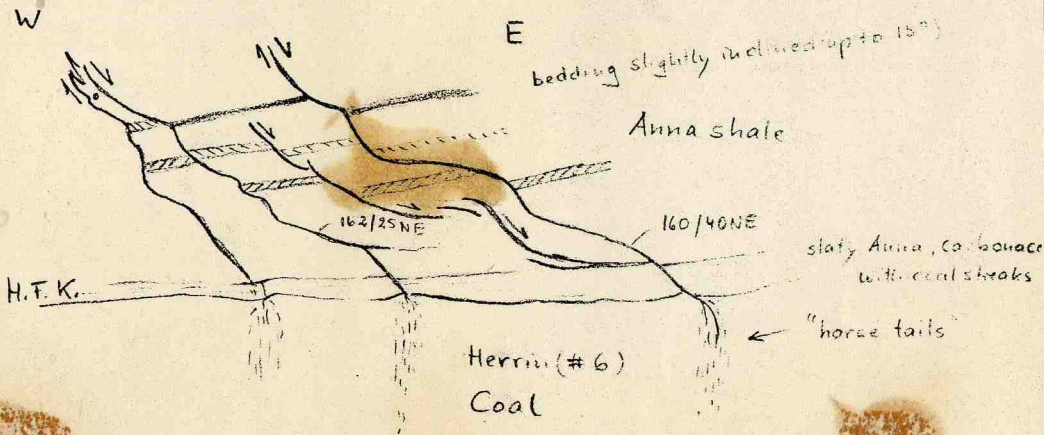
Photo 3: Upper layer of phosphatic nodules in Anna Shale show features of soft sediment deformation below (in foot wall block) the small fault (not visible, out of picture upper right corner) scale: lens container of 1.5 inches length.

* See above: "Continuously" here means without fracturing (contrary would be discontinuously) continuity - discontinuity

Map



Section:



Sketch of small slips in Anna shale displacement few cm
 study site # 2

2. Small roof fall, only slabs and chips of Anna Shale dropped, initiated due to 1 big and several accompanying very small slips in the roof with a considerable change in strike and dip, curved slip surface bearing from 30/40 NW over 85/25 North NW to 160/40 East NE. See following sketch.

202

Measurements of slips in roof:

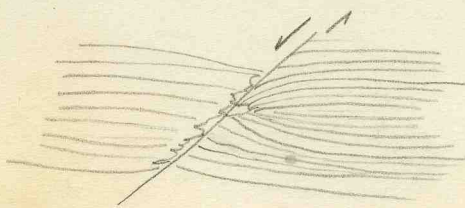
30/40 NW; 40/15 NW; 38/35 NW; 70/37 NW; 85/25 North NW; 101/33 NE; 160/40 NE; 162/25 NE bedding is slightly inclined 15° towards the slips. Coal top is disturbed partly even somewhat displaced (few inches), where slips cut into coal from above in coal; "horse tail" like features of cleats narrowly spaced and frequently filled with pyrite. Slips most commonly peter out ^{or} as dissipate this way towards the lower portion of the coal. striations on the slips are not ^{exactly} directly dipping in the same direction as slips dip (oblique movements!) Plunge of striations southerly, e.g. slip plane 160/40 SE plunge of striation on this same plane 25°-30° SE. Measurements of cleats in coal:

<u>Face Cleats</u>	<u>Large But Cleats</u>	<u>Small Cleats</u>	<u>Small Cleats</u>
150/86 SW	55/85 NW	85/88 NW	5/87 SE
153/88 SW	53/83 NW	83/87 NW	8/85 SE
160/90	61/87 NW	88/90	2/86 SE
158/87 SW	58/88 NW	84/86 NW	6/90
152/86 SW	56/90	89/87 NW	3/88 SE

developed only in few coal-beds of the seam.

203

3. Two clay dikes with slips 125/45 NE, 127/49 NE. Clay dike slip has very sharp and regular contact to footwall of slipplane but quite irregular and "inter-fingering" in hanging wall. Coal shows usual structural deformations as described by H. H. Damberger



204, 204a

4. and 4a. Clay dike with slip. Clay dike up to 10 cm clay filling with brecciated material (coal, Anna Shale? and Limestone fragments near the upper portion). Bearing mainly 120/55 NE and 118-125/43-53 SW.

205

5. Immediate roof is very thin (0.1') of clod and than Brereton Limestone. In coal some irregular lenses of "Bastard" Limestone (see sketch).

Anna - Shale is absent
Clay dike with little fault (displacement > 1') 150°/55 NE
Photos were taken 1-27-75.

less than Sect.

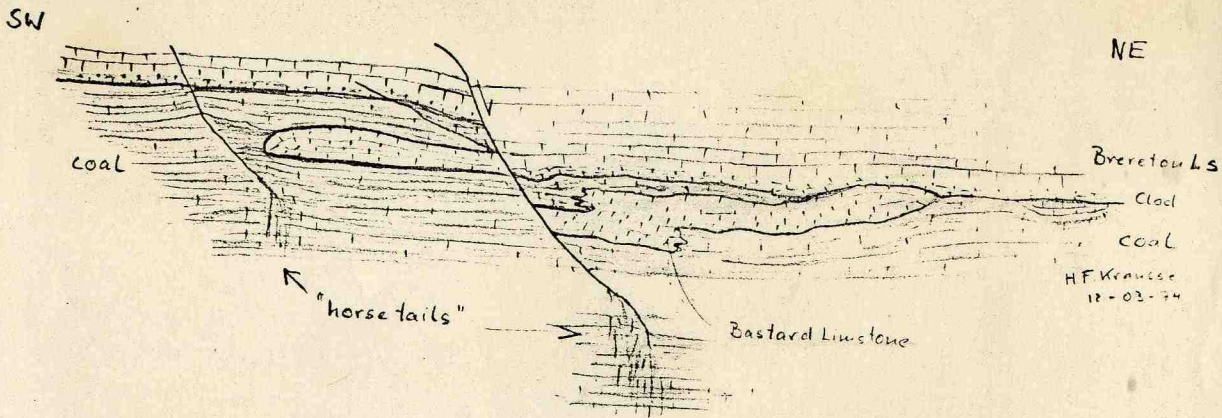
Photos 4-6 looking North 330° East. Clay dike and clay dike-type fault cutting down from roof (Brereton Limestone) and lenses of "Bastard" Limestone between Brereton Clod/Coal streak and Herrin (No. 6) Coal) into coal. Lower portion of coal contains wide irregular ^{by or bordered} ~~carved~~ clay vein. Fault has sheared and displaced through the lense of "Bastard Limestone" and "Smeared" ^{or} as dragged some of its material between fault surfaces. Vicinity of fault and clay dike is fractured by numerous, mostly irregular ^{oriented} spaced and ~~area bed~~ cleats, which mostly are coated ^{by} as or filled with ~~syril and learyte.~~ ^{pyrite and baryte.}

Photo 4: Down-thrown "Bastard Limestone" with "smeared" tail" upwards along low angular fault (left half of picture); note the many unusual, filled, irregular cleats bordering the fault and the limestone lense.

Photo 5: Larger area around ^{sheared} ~~showed~~ Limestone lense and upper portion of clay vein.

Photo 6: ^{still larger} ~~Shale layer~~ area of fault and clay vein, note particularly: the clay-dike-type deformational features in coal surrounding the vein. ^{ju} For center of coal seam prominent fusain layer having been cut by fault and vein.

add to 5



Clay dike - type slip

coal
in coal is "Bastard Limestone"
thin clod
Breton Limestone

slip 150/50-55 NE displacement > 1.0' (~ 1.6')

Hillsboro Limestone (Coffee.)

1st SE Entries (3rd entry, 3rd crosscut)

H.F.K. study site # 5

(206)
6. Same clay dike as at No. 3, 4, 4a 120-125/60 NE
No Anna shale, but 0.1'-0.2' clod and Brereton Limestone
are immediate roof.

(207)
7. Roof is Brereton Limestone
0.5 Hard clod (to shaly limestone)
0.2 Flaky clod

Seal

Flaky clod with very many very tiny coal streaks and
stringers (sometimes impression similar to "Bastard
Limestone") clay dike with small slip 160°/± vertical; only
in top position of coal.

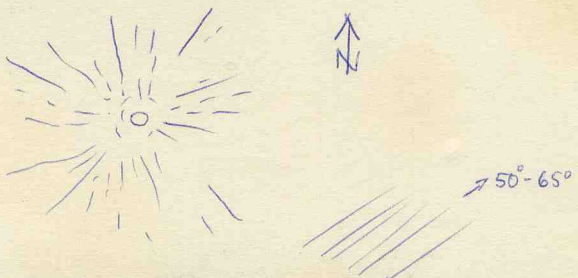
(208)
8. Clay dike with slip 130/50 SW; roof above coal 0.3
clod and then Brereton Ls.

(209)
9. Clay dike with slip 135/60 NE

(210)
10. Clay dike with little fault 135/55 NE (Same as #5)

(211)
11. Clay dike with slip 137/60 NE

(212)
12. Cleats in "radial" orientation around a center,
cleats are calcite coated, visible in skin coal, probably(?)
caused by a concretion within Anna Shale. Photo should
be taken.

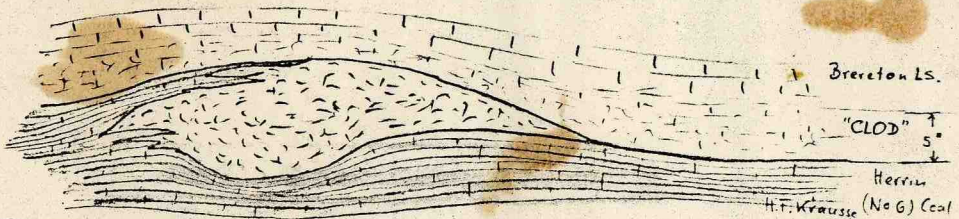


(213)
13. Thin Clod roof and Brereton Limestone above. Thick-
ness more than 2', clay dike with fault cuts up into
Brereton Limestone 110/50 SW. Good for Photo!

214

14. Thin clay dike with small fault/clay filling about two-three inches, fault 100/55 NE - Roof shows coal with "Bastard Limestone" then 5" of clod and then Breerton Limestone, no Anna Shale developed.

Sect.



14 "Bastard Limestone" lenticular in top portion of coal below "Breerton Clod" no Annashale determined

H.F. Krausse (No 6) Coal
12-03-74

218

18. Clay dike with fault 10-15/65 NW. Roof is clod and Brereton Limestone with irregular limestone nodules reaching down on top of coal.

219

Hillsboro 12-04-75

19. "Triple Point" of clay dikes and faults. Roof consists of thin clod and Brereton Limestone. Good place for Photos! Faults: a) 140-150/52 SW; b) 120-130/48 NE; c) 32/42 NW.

220

20. One of the #19 clay dikes 30/40 NW. Roof thin 0.3' Anna Shale below Brereton clod. Photos were taken 1-27-75
Sect

Photos 12 and 13 looking North 330° East. Photos show cross section in very oblique angle to clay dike within coal. To be seen:

- a) Very detailed and *delicate* tiny interfingering of clay filling with coal.
- b) Narrow spacing of cleats, filled with pyrite and barite around clay vein.
- c) Photo 13 "goat beard" dissipating of clay dike and fault.

221

21. In this crosscut (#7 my system; #15 Mine Numbers) off entry 3 shows 3" Anna Shale below 5-6" of Brereton clod this below Brereton Limestone. Two \pm parallel clay dikes with faults 85/70 SE.

Sect

222

22. Small faults (no clay visible 100-105/45-53 NE), Roof is Anna Shale.

223

23. Roof in Anna Shale with clay dike-type faults, small, not clay filled, stronger with some inches displacement in immediate roof rock, but "goat beard" (= horse tail) splitting and dissipating downwards into #6 Coal. Faults 80-90/40-60N. Cleats in Coal:

a) face cleats 142/87 SW, 138/86 SW, 140/88 SW, 144/90, 136/86 SW, 141/88 NE, 138/90, 142/86 SW

b) butt cleats 50/84 NW, 53/87 NW, 49/88 NW, 56/86 NW, 53/90, 51/89 SE

c) Secondary butt cleats (smaller and not passing through as far as others) 176/87 NE, 0/90, 3/87 SE, 5/88 SE, 1/90, 177/90, 179/88 NE, 176/90.

224

24. Very tiny clay dike type fault 125/65 NE, Roof in Anna Shale, "goat beard" in coal.

225

25. Roof fall 4' to 4.5' high, about 2' thick Anna Shale, no Brereton, 0.9' Jamestown Horizon, Conant Limestone very lenticular (maximum 0.7') partly missing, Lawson Shale very thin, bottom of Bankston Fork Limestone about 4.5'.

Sect.

Concerning 25 + 26: This is not quite clear, may be mixed up "mottled Annash." and lenticular Brereton.

226

26. Small long stretched roof fall similar conditions as in 25; thickening Anna Shale (more than 2') in upper portion partly strong mottled and weak and "flaky" in roof some Anna - Non-mapable slips.

with Conant and Lawson

227

27. Clay dike-type fault very small but across total crosscut 130/68 NE; Roof is Anna Shale, Photo of "goat beard" taken 1-27-75.

Sect.

In Quarry = 1 (one)

228

28. Little clay dike type fault, very probably same as 27, 105/55 NE joints in roof in Anna Shale causing slabing and kinks, joints: 50/86 SE, 61/87 SE, 57/90, 55/88 SE, 56/86 SE, 59/90 these are the important ones (set); less frequent are two other sets: 20/90, 18/79 NW, 23/86 NW, 22/87 NW, 24/90 and 105/90; 107/88 NE; 104/87 NE, 106/90.

229

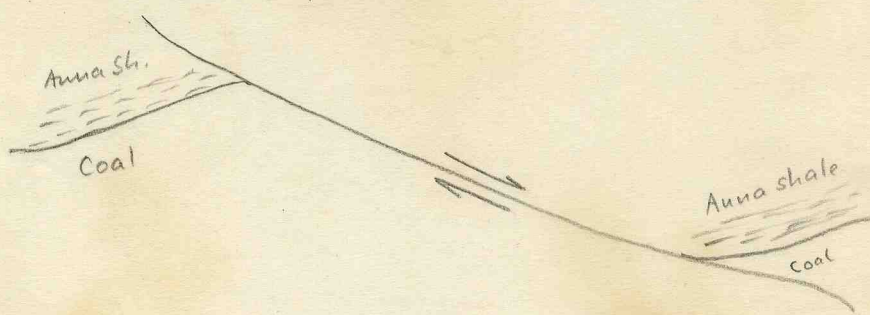
29. Small clay dike-type fault in roof 95/60-70 NE, roof in Anna Shale; main cleats 143/88 SW.

230

30. Clay dike fault in roof, partly clay filled, increasing ^{thickness of} filling towards stopping. Appears more similar to V-Day Mine type clay dikes, Roof fall in 3rd entry and crosscut ^{eleven} parallel ^{small} is usually caused by clay dike fault and slips irregular along concretions in Anna Shale, clay dike 90/50-65 North; roof is more than 1' Anna Shale.

231

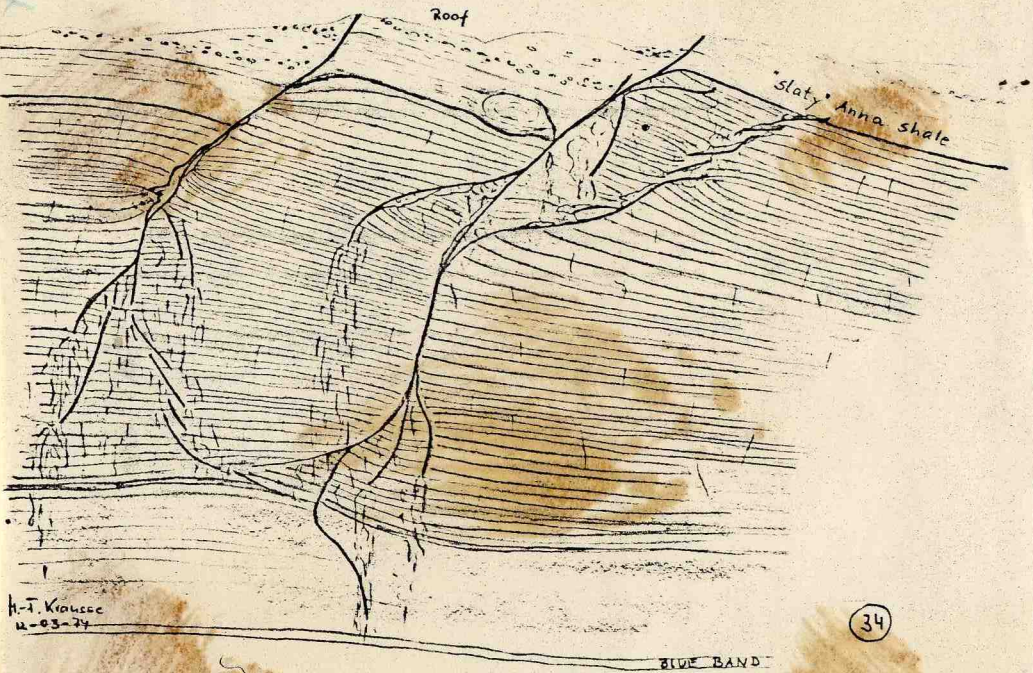
31. Very low-angular normal clay dike-type fault, displacement ^{le} and is almost equal to coal thickness (^{etc} ~5'-6'). Roof is Anna Shale, Breton Limestone exists only in few very small lenses.



(232) Clay dike faults with filling, "en echelon" position 50/56 NW, 53/51 NW, in crosscut coal faces are rashing high and intensively; roof is Anna Shale.

(233) Long clay dike-type fault 85-90/50-60 South, roof Anna Shale.

(234) Roof Anna Shale, several clay dikes, filling small, but faults complex 145/40-45 SW



H-T. Krausec
11-03-74

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine (Coffeen) Consolidation Coal Co.
 12-~~X~~₀₆74 - Notes and map by H. F. Krausse
 (Numbers of study sites refer to map of H. F. K.)

Location 1st SE entries, (from parallels Southwards) in 16th crosscut (= 24 of mine) in belt entry west side (compare east side mapped H. H. Damberger).

235

35. Roof consists of good coal skin (top coal) or Anna Shale; small clay dike type fault 20/55 SE (further west in crosscut 16 very small fault not far traceable, at corner to track-entry small roof fall.

236

36. Clay dike type fault 115/43 NE at intersection between # 35 and 36 small roof fall that increases towards east this roof fall is additionally supported by small slip (fault) about 150° slaty and westwards dipping and other "slips" in roof rock.

237

37. Clay dike-type fault 0/28 West, displacement about 1' roof rock consists of Brereton Limestone above 0.6 Brereton Clod above 0.7 mottled Anna Shale above 0.8' slaty Anna Shale some feet further towards NW several very tiny faults interconnected with main fault, supporting roof slabbing, further towards overcast good roof and skin coal.

238

38. Small roof fall about 2.5' high in Anna Shale up into 0.4' Brereton clod; roof fall ends below Brereton Limestone; roof fall is

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

By H. F. KRAUSSE Date 12-⁰⁶~~04~~-1974

Quadrangle _____

County Montgomery Sec. 14 T TN R 3W

supported by some very small low angular clay dike type faults 70/55 SE and 120/35-40 SW as well as by very irregular slips along concretions in Anna Shale.

(239) 39. Clay dike type fault 41/38 NW; roof rock = 2.5' Anna Shale.

(240) 40. At intersection of belt entry with crosscut #14 my county^{ing} (#22 mine) prominent roof fall goes up through 4.2' of Anna Shale into see H.H. Daubeger, same date!

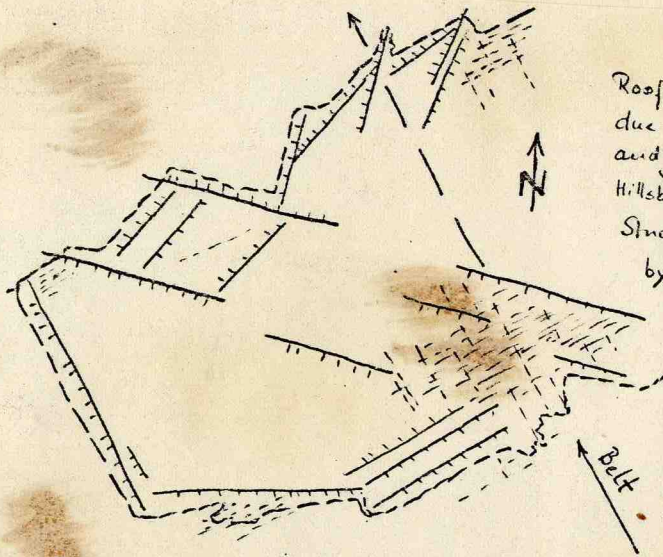
Anna Shale consists of sequence: Weak medium dark gray shale 2nd horizon of phosphatic nodules weak medium dark gray shale not well bedding 1st horizon of phosphatic nodules crumbly to flaky shale slaty well bedded Anna Shale.

Anna Shale is intensively jointed, joints support roof rock falling (fall is however, caused by clay dike-type faults) Two sets of joints. a) prominent direction: 60/86 SE; 80/83 SE, 77/85 SE, 73/87 SE, 69/88 SE, 66/90, 74/87 SE, 55/83 SE. b) Smaller and scarce: 145/86 SW; 148/88 SW, 151/90, 143/89 SW, 146/87 SW, 148/90, 153/89 NE. Main cause for roof fall is intersection of clay dike type faults intersecting : a) 100/42 NE; b) 3/40 West c) 65/63 SE 88/45 SW 10/36 SE 68/38 NW



All intersecting several times with several surfaces almost like ~~the~~ sets; additionally faults 75/47 SE, 10/30 NW, 135/36 SW, clay dike with few inches filling 115/33 NE.

see sketch next page



Roof fall in belt entry
due to various faults
and joints

Hillsboro Mine 1st SE

Study site (40)

by H.-F. Krause

12-05-74

See also: Following sketch of faults and joints bordering
the roof fall.

241

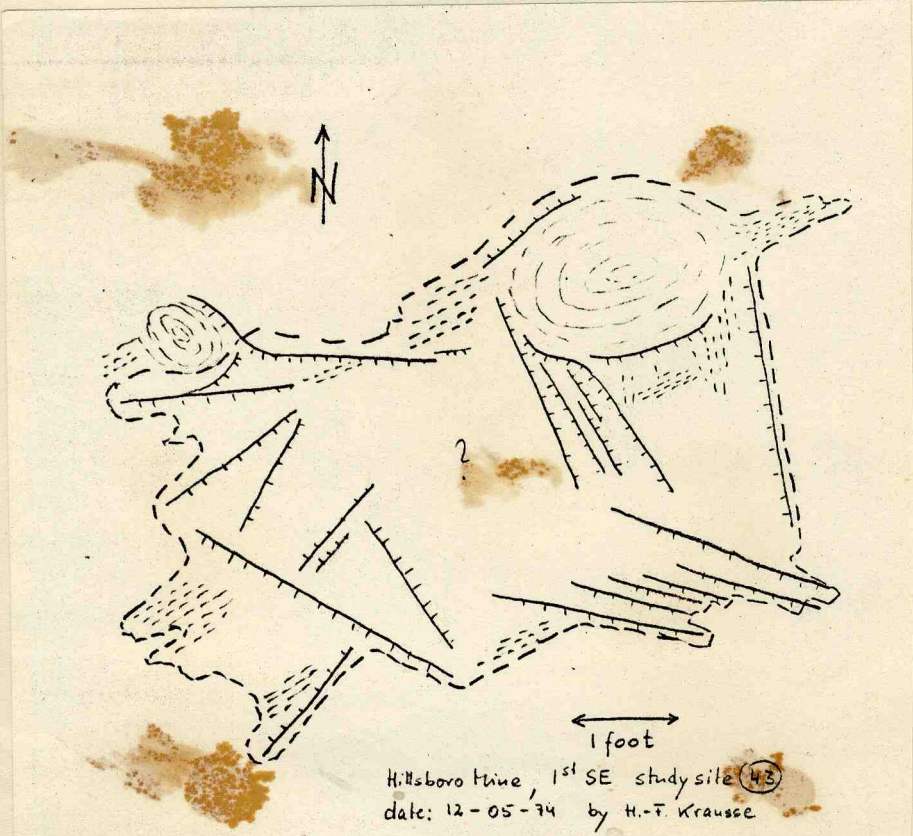
41. Roof consists of Anna Shale, along northern rib in 14th crosscut "kink" zone of slabbing in roof, "kink"-zone "jumps" ^{on} echelon. Joints in Anna Shale vary here from other areas. Joints: 146/80 SW

242

42. Roof: Anna Shale, joints in roof different again main direction: 20/76 NW

243

43. Roof: Anna Shale; smaller roof fall along numerous smaller and medium size faults in roof rock and small joints. Faults 35/58 SE; 40/60 NW; 55/53 SE; 88/45 SE, 100/47 SW; 110/50 SW; 120/34 SW; 145/zone 145/39 SW; 148/133 SW; 170/46 SW. Joints: 57-68/85 SE-87 NW



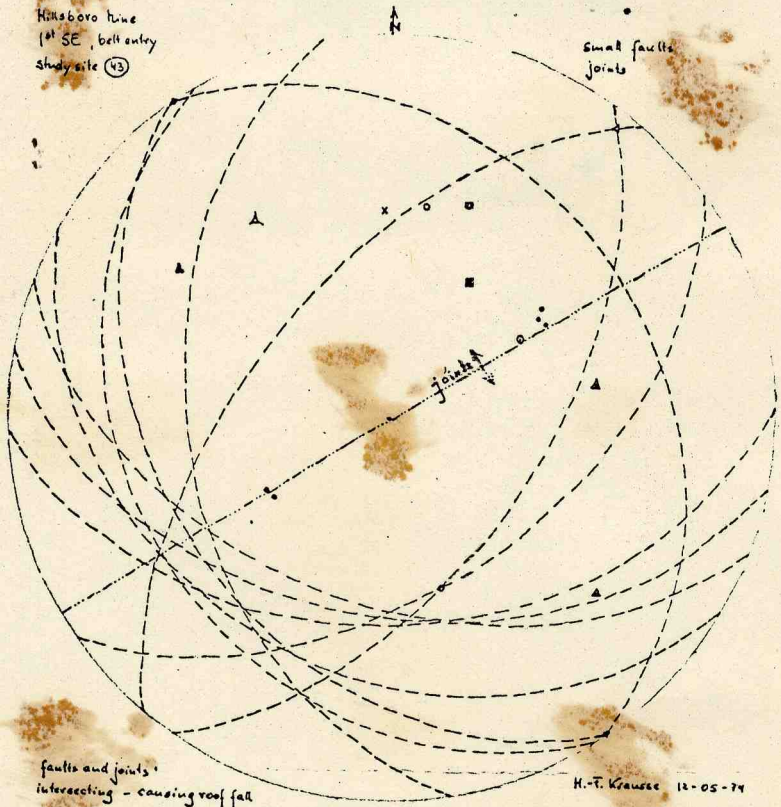
Hillsboro mine, 1st SE study site 43
date: 12-05-74 by H.-T. Krausse

X Roof fall in belt entry, due to various small faults and joints

Roof fall in belt entry, due to various small faults and joints

Hillsboro line
1st SE, belt entry
study site (43)

Small faults
joints



faults and joints
intersecting - causing roof fall

H.-T. Krause 12-05-74

(244)

44. Clay dike type fault 90/53, South accompanied by various smaller ones which cannot be traced on this side of belt, no serious slabbing on this side of belt, but on the other side, comp. notes H. H. Damberger from same day

(245)

45. Roof fall area. One large scale clay dike-type fault 95-100/50-60 SW. Accompanied by set of 6 smaller scale faults with same strike, but dip varies SW and NE. Very prominent joints in Anna Shale were 110/78-87 SW, these are rather locally developed, but are supporting roof fall. Spacing of joints 6 joints/foot - Face cleats in coal are also 90-115/ \pm 90, but cleats have 160-170/ \pm 90 (preferred west).

Roof fall reaches limestone (very probability Brereton Limestone) about 3-3.5' above coal.

(246) or Conant?

46. Roof fall at this study site caused by clay dike type faults and joints. Main fault 96/47 SW displacement 2' passes through coal totaly and up into? Brereton? *Conant* Limestone above. Immediate roof 3.2' Anna Shale.. Main fault is accompanied by 2 bigger ones.

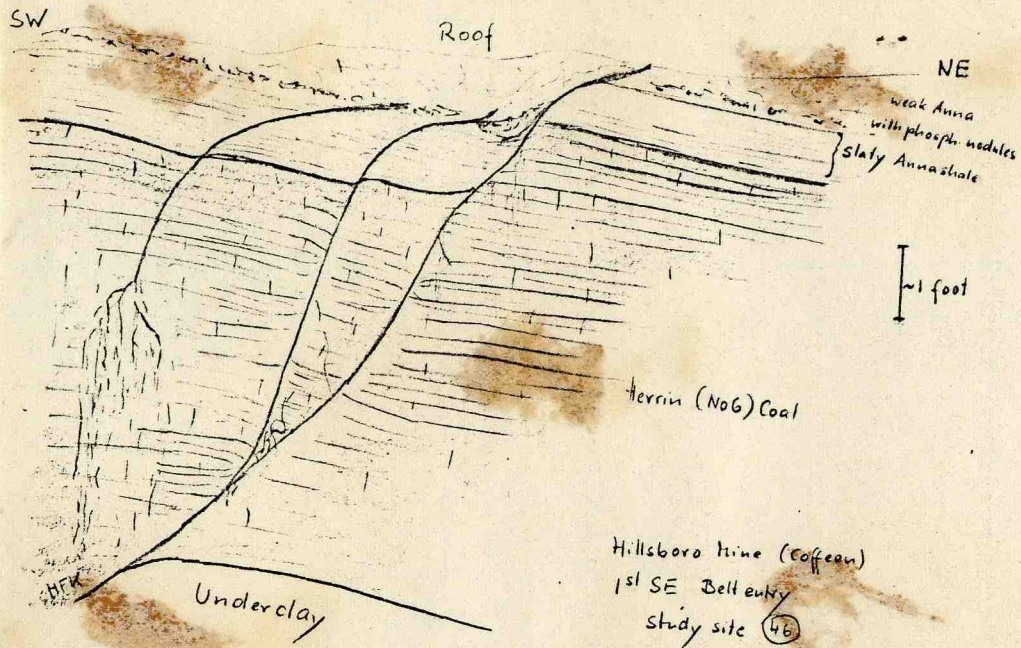
(a) 80/50 SE, curved, displacement 6" inches

(b) 90/53 South, curved, displacement 2" inches

and many very small ones parallel to main fault; all of them are very low angular in Anna Shale. Bedding position and structural feature is inclined and same as (very frequent) in vicinity of clay dikes. Inclination of bedding towards the fault (bedding trends to be \pm normal to the faults. Face cleats 160-170/ \pm 90 (dip trend SW). Butt cleats 75-90/ \pm 90 (trend NW).

dip

See sketch next page



Hillsboro lime (Coffeen)
 1st SE Belt entry
 study site (46)
 by H.F. Krausse 12-05-75

(46)

7

(247)
47. Small clay dike type fault 60/55 SE appears only in roof (Anna Shale).

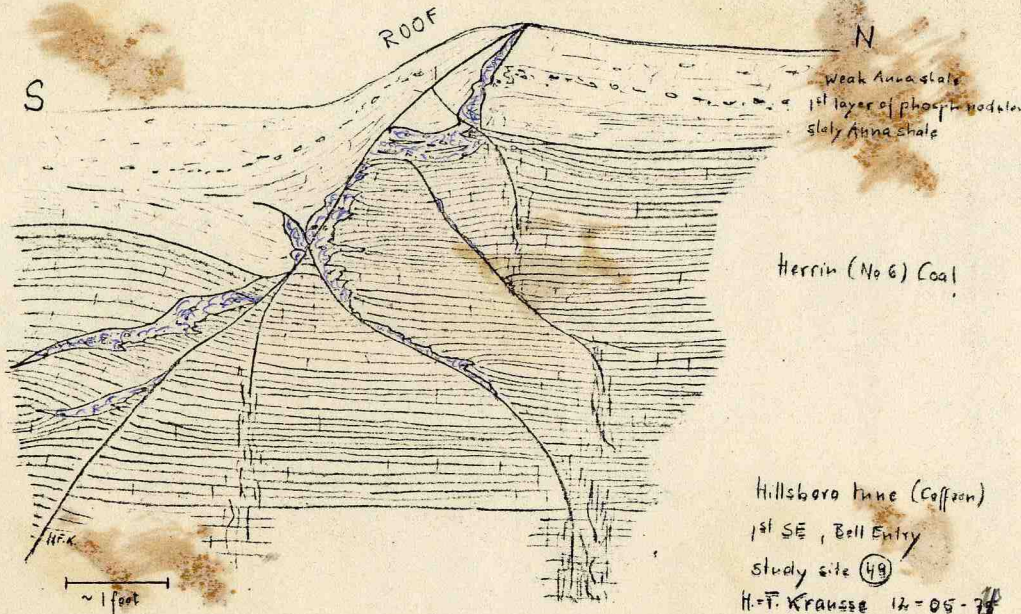
(248)
48. Small clay dike type fault may be same as one of the ones from study site 46. line bearing: 90/50 South - Roof Anna Shale. *here*

(248a)
48a. Roof fall, small, seems to be induced by many small faults and joints, line "normal" again 45°-60°/±90 (dip trend towards SE). *here*

(249)
49. Clay dike with several small faults. 92/32 South; 90/45 South/ 95/25 NE; 95/63 NE; 70/50 SE; 85/40 SE; 85/27 NW; 56/50 NW. This is almost first time, one of the few times, where clay dike filling can be observed in and within Anna Shale.

see sketch next page.

49



Herrin (No 6) Coal

Hillsboro mine (Coffeen)

1st SE, Bell Entry

Study site 49

H. T. Krausse 12-05-78

5

250

Larger

50. Layer clay dike type fault 100-105/46 SW displacement about 4.5'.

251

51. Roof fall in relation to (a) some clay dike-type faults 50/50 NW; 53/43 NW; 48/54 NW and main fault 83/40-50 SW - this main fault (b) is accompanied by \pm parallel minor faults 80-115/40 - 58 SW. (c) Additionally these are small faults 155/32 NE, 160/20 SW, both are intersecting each other, and (d) some slips along large concretions of the Anna Shale. (e) quite a number of main joints in the Anna Shale 45-63/85 NE - 90 support the fall of roof rock. Spacing ~~after~~^{of the} joints is 3 joints/2'. Roof consists of Anna Shale more than 3 feet thick. Anna Shale thickness increases westwards, at least the lower position, the slaty Anna Shale thickness from 0.4' in the East to 1.5' towards the West within a distance of 6-7'.

252

portion

52. Prominent joints in Anna Shale roof. Main joints: 55/87 SE with spacing: 5 joints/2' and secondary joints: 143/83 SW with spacing 3 joints/2' (smaller and less continuous). - Smaller clay dike-type faults in roof rock 115/42 NE and 146/50 SW, roof rock is distorted where small faults pass through. Faults end into coal in "goat beard" features.

253

53. Same clay dike-type fault as in 54, but additionally smaller fault 135/53 NE. Roof consists of jointed Anna Shale. Main joints 58-64/82-89 NE spacing 7 joints/3', secondary joints 120-130/78-85 SW. There is another "strange" set of joints very narrowly spaced (8 joints/1') 160/35 SW. These are far too long angular, but they are sharp cuts joints, which do not bear any striations, no slips.

254

54. Roof fall, roof is Anna Shale main clay dike type fault: 40/50 SE, smaller faults in roof fall about 160° - 170° striking.

255

55. Clay dike type fault in roof 140/53 NE, further north joints 55°-68° strike.

- (256)
56. Clay dike type fault 140/60 NE, in coal, upper position intersecting coal ball.
- (257)
57. Clay dike with small fault 115/40 NE clay filling minor. Roof rock: thin Anna Shale (0.4'-0.7' Anna Shale) above that is clod and Brereton Limestone. Antithetic fault to clay dike: 105/40 SW. Good for Photo.
- (258)
58. Same clay dike as 57; 115/60 NE, roof Anna Shale, good for photo.
- (299)
59. Clay dike 125/40 NE, roof clod and Brereton Limestone.
- (260)
60. Clay dike with faults (several faults) accompanying 130-140/45-52 NE probably the same? fault as in 59. Roof consists of few inches Anna Shale, some inches of Brereton clod and then Brereton Limestone above.
- (261)
61. Two clay dikes \pm parallel 120-132/48 NE. Roof: thin Anna Shale and then Limestone above. Clay filling thin.
- (262)
62. Thicker clay dike with fault 120-130/53 NE. Roof: thin Anna Shale below some inches of Brereton Clod and Brereton Limestone.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine (Coffeen)
 Consolidation Coal Company
 12/11/74

Notes and Map by H.-F. Krausse
 (Numbers of study sites refer to map of H. F. K.)

Location: 1st SE "air return entries" (cross cut numbers my system 26 (= 34 of mine) (without study site numbers in the beginning): entering through a main door from the back entry into air return entries, one finds an area of very low angular faults. Main faults 95/25 SW to 110/22 SW with a displacement of about coal thickness. The roof consists of thin 0.4' to 0.8' Anna Shale with 0.2' Brereton Clod above and higher up Brereton Limestone. Anna Shale in unfaulted areas is well jointed, joints 55-61/86-90 SE. Anna Shale seems to become thinner towards the NW (5 inches between cross cuts 23/24) still with Brereton Limestone above; some roof falls could be observed; as going towards the NW we found various NW-SE striking clay dike-type faults. Started mapping at cross cut 17 (my system (= 25 mine) with large fault 115/43 SW with displacement of 3'-4', but displacement increasing towards NW. Close to fault in 7th and 8th entry (1st entry in E (intake air); 8th entry in W (return air)) lots of cribbing, in 6th entry between 14 and 15 cross cut timbering. The roof falls (15 and 16 cross cut) visible that Brereton Limestone is missing; Jamestown Horizon is directly above Anna Shale. Occasionally "Bastard" Limestone below Anna Shale (comp. study site. 117.) Numbers of study sites are on the field map of H.-F. K. and are in continuation of the ones from the "intake air" entries.

main track

By H.-F. KRAUSSE Date 12-11-74

Quadrangle _____

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

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

(263)

63. Roof immediately above coal consists of a dark gray flaky clod, very probably an equivalent to the Bastard Limestone, since Anna Shale is above.

Small clay dike-type fault 125/50 NE—towards west several cribs in entry.

(264)

64. Roof: from top to bottom:

- a) clody material with medium to dark gray argillaceous bands and medium to light gray, very irregular lenticular bodies of argillaceous limestone (part of Jamestown Horizon)
- b) 0.1' coal stringer of Jamestown Coal
- c) 0.9' dark to very dark Anna Shale with very many thin coal streaks (mm thick)

In this entry between 14th and 15th cross cut numerous timbers since roof trends to be "slaby on western rib small fault in roof, and along the rib in roof "kink-zone."

(265)

65. Small clay dike-type fault 118/48 NE; roof: Anna Shale.

(266)

66. Small clay dike-type fault 95/50 SW

(267)

67. Bundle of ^{or} set of discontinuous small clay dike-type faults in coal hardly to be seen, just due to some "goat beards" but traceable in roof 90/110/39-50 SW.

(268)

68. Small clay dike-type fault 95/25 SW, roof: 1.1' Anna dark gray Shale, thickness towards the west.

(269)

69. Clay dike-type fault close to roof fall 130/45 NE, roof: 1.8' Anna Shale.

(270)

70. Big clay filled dike with fault 170/25-35 NE, clay dike itself steep to E, photo should be taken (interval structures). lar

270
71. Section from top to bottom:

- a) clody gray, argillaceous material
- b) 4" limestone lenses, medium gray, clody, mottled
- c) 1.5" Jamestown Coal
- d) 10" very carbonaceous, weak, medium dark gray shale, probably upper portion of Anna Shale (slaty lower portion absent)
- e) Herrin (No. 6) Coal

271
72. Clay dike with fault 75/45 SE.

272
73. Clay dike and faults 40/55 SE (comp. also No. 80).

273
74. Big clay dike 20/73 NW and 20/65 SE—this big clay dike is + vertical and changes in dip from one side to the other. Often are y-faults going along (comp. also Nos: 70, 118).

274
74 a. Clay dike-type fault 105/40 NE.

H.-F. Krausse

Hillsboro 12/12/7

(275)

75. Roof: Anna Shale frequently jointed.

Joints 30-45/65-85 NW, spacing 7 joints/foot.

Some of the joints bear secondary striations of slip in direction of dip. Small clay dike-type fault 25/38 NW.

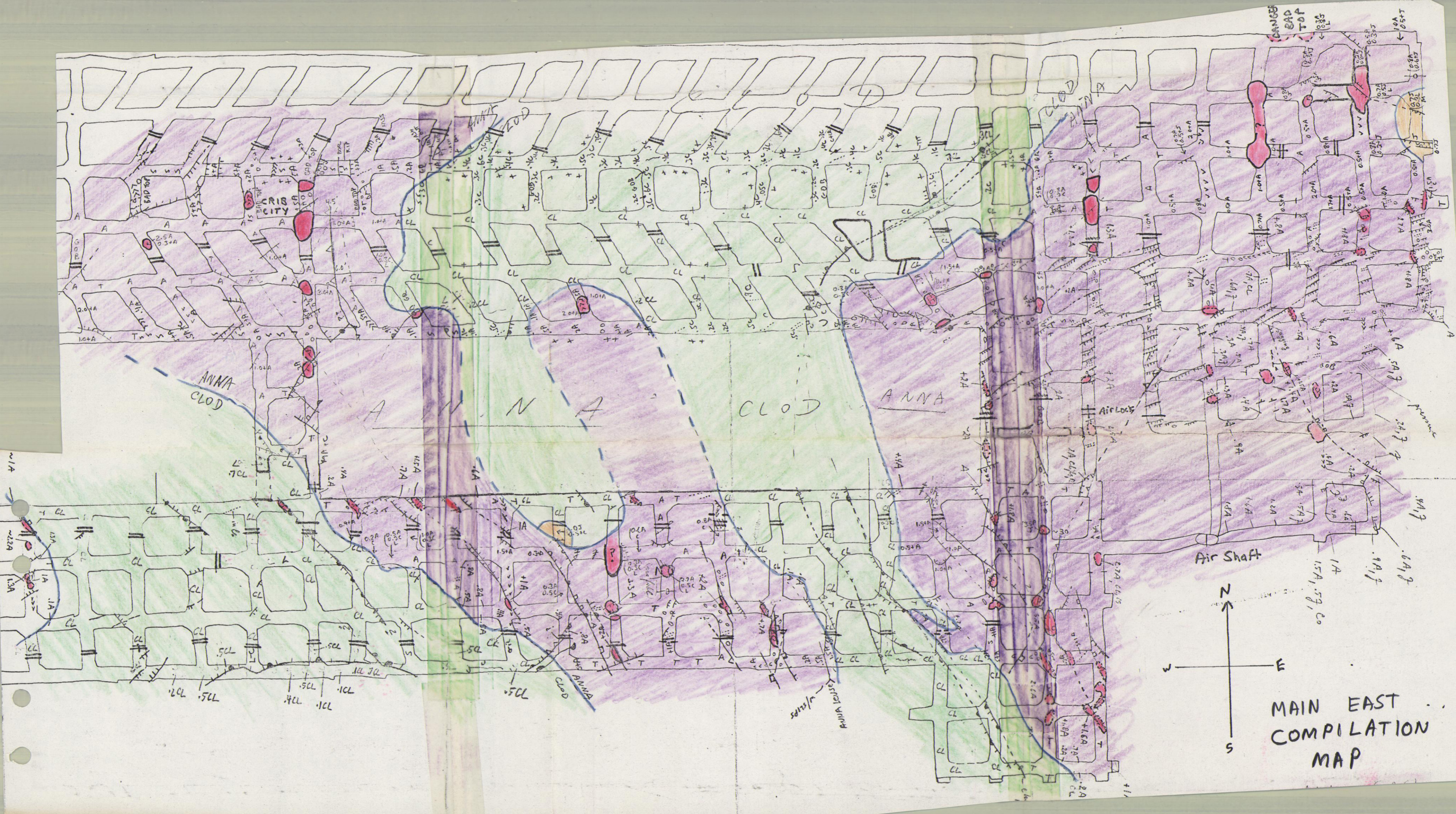
(276)

76. Near roof fall several small clay dike-type faults appear only in roof rock (Anna Shale) and just only flexur top layer of coal a bit. Small faults 10-17/30-40 SE (slaty Anna portion is absent).

(277)

77. Clay dikes with faults 15/45 SE and 10-15/30-45 NW, both with clay filling.

Minor clay dike-type fault (only with ~1" filling) appears to be staggered by former ones (?young?—probably



CRIB CITY

ANNA CLOD

ANNA CLOD

ANNA

Air Shaft

Airlock

MAIN EAST
COMPILATION
MAP

N
S
E
W

ILLINOIS GEOLOGICAL SURVEY, URBANA

East End of Main East
 C. T. Ledvina (only)
 January 29, 1975

Far Left Entry

1. General note. Floor heave and rib rash everywhere all around here. Bad area. Sometimes I have to walk stooped. Many large cribs everywhere.
2. Fault . 3' displacement. ~~many~~ many little parasitic slips noted.
3. Anna with kettle bottoms. Slaty at bottom, gets mottled at top.
4. Fault 7' displacement. Heinz's territory. Bankston Fork and Lawson exposed.
5. Small fault. 1' displacement. Reverse drag. Fades into coal after 4.0'. Noticeable cleats, little clay filling.
6. Fault ~2' displacement. No clay filling, but big cleats (Barite filled).
7. Near clod—Anna contact. Grunch found in junction of entry to crosscut. Anna is yellow stained, but slaty.
8. Clay dike. Fades into clod after .4'. Dike is .9' wide and goes to bottom of seam. Less than 1' coal displacement. Near stopping, we have .7' Anna then clod (gradational contact). Dividing line may be at clay dike (Between ANNA & CLOD)

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

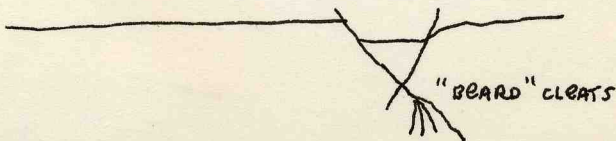
9. Clod. Has more argillaceous (dark gray) zone 1" thick above coal. Also has up to .4" in diameter nodules of harder limestone that are iron stained.

10. Clod generally, then hard limestone as usual but with Anna Shale coming in zones that look like lenses basically. Grunch becomes well developed over lenses. At stopping Anna is .5' thick but fades out toward barrier within a foot or so. Grunch zone looks like a coal rider in cross section.

11. Anna lense with slip (very low angle). Coal is very disturbed 5' from top. Slips seen of low displacement. Lense is 1.5' thick of a normal Anna sequence. (Photo; come back here) Slips seem to have been caused by this. This is a clod-Anna transition zone.

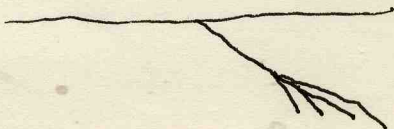
12. Complicated area. Fault increases ^{IN size} as shown. 3.5' ^{ANNA} A, then Jamestown zone, then buff Conant. Fault goes from a trace to 2' displacement. Broken feature noted here. Fall is 4' high, up to Conant. Lunch here.

13. Graben. Cleat taken here. 2' displacement on main line. Fades out 3' feet into coal with a beard.



14. Noticeable squeeze. Skin coal on either side of a fault.

15. Slip parallel to entry. Very minor. Goes 2' into coal to ends in a beard.



Another one is more important, goes 5' into coal before it fades and has a graben feature with it. ~1' displacement.

- 16) Fault. May go to bottom of coal. But at least 4' displacement.
- 17) Fall noted into coal. Anna Shale. Cleats radiate from it. Could be just a kettle bottom.
- 18) Clay dike network. Wide, but undivided areas are very narrow, no greater than .2'. Has slip with 2' displacement. (AREAS BETWEEN DIKES)
- 19) Nice plant impression in roof here. Anna getting flaky where exposed. Lense of Anna - like material noted at corner of NE pillar.
- 20) As is the case down this entry, ever since we started to encounter clod roof, there is a 1" grunch zone then .5' clod which has flaked off except around header blocks, then hard medium gray limestone. Floor is up all along here, but not drastically so.
- 21) Clay dike almost parallel to entry. Dips 45° or so. It is 5" wide here and traces a few inches into clod. Very little throw; 1.0' or less. Ventilation strong here.
- 22) Clod here, but possible Anna is coming back because base of clod looks different, a little darker with a thin grunch layer.

For the first time nodules in limestone (Fe stained areas) look like something other than a shapeless form. They resemble a vaguely sutured cephalopod.

- 23) Clay dike running parallel to pillar has caused the whole side of pillar to look like it is ready to come

crashing down. .9' displacement here, but no well defined slip. Displacement may just be the downdrop caused by rashing of ribs.

24. Normal clod much darker here. Resembles Brereton Limestone. Contains many fossiliferous fragments.

25. Dike turns here, as usual it is accompanied by a few slips of little displacement in clod or limestone.

26. General note here. It is obvious that this whole area has undergone squeezing, from here back East to the shaft. It is interesting to note that the Marietta boring machine with its arched rib produced little rashing. The ripper machine produces the straight sided wall that makes for all kinds of rashing. Estimated end of boring going west shown on map.

27. Small slip. $\approx 1'$ displacement, slip still visible, but displacement fades to nothing at barrier.

28. "Baby" slip to west of one described in 27. Slip cannot be traced more than a foot or so into entry.

End of today's maps at reflector and man door. .5' normal clod, then limestone. Limestone not quite as firm as usual and has a faint buff cast.

29. Grunch noted here between coal and clod.
(Revisited)

23. Clod goes from .6 to 1.2' into clay dike. Dike generally has $\approx 1.0'$ displacement. Clod becomes hard into dike. Very little displacement in limestone. Dike causes no problem in roof.

ILLINOIS GEOLOGICAL SURVEY, URBANA

C. T. Ledvina - January 30, 1975

Hillsboro and Jan. 31, 1975

Main east near 2nd shaft. See map for Jan. 29

30. 1. Slip. 1' displacement at top of coal, fades 3' into coal. Heavily cleated.
31. 2. 2' roll down into coal with associated slip.
32. 3. Anna gets ~~FLAKEY~~ near stopping here. Maybe clod is starting.
33. 4. Strange slip. Anna 2.5' to east of it. 2' to west. Roof fallen up to clod here. This slip has .7' displacement and could parallel entry. Anna visibly thinning to west. Roof falls up to clod here, slip parallel to one shown occurs here, Generally visible in clod only.
34. 5. Big clay dike. Upper wide part dips south, narrow lower part dips north. Very complicated. Goes to bottom of seam.
35. 6. Big cleat taken from east wall. ^(1/4") No apparent reason for it. Jointed clod here. Joints are spread regularly here. *Outby* in entry, very long regular ones were noted that are worth seeing later.
36. 7. Little and big joints. Very nice productids here.
37. 8. Rib noise here. Don't know why. Lesser joint set shown parallel to cross-cut.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

- 3
9. Small phosphate nodule taken from upper 1" of coal.
- 39
10. 1' Anna shale wedge. Very unevenly bedded black carbonaceous shale full of irregular phosphatic nodules that are elongate with bedding. Slip over it, very small and parallel to cross-cut.
- Coal rides into, under and over it, but clod surface remains even. Lense is 1' thick in center into coal.
- 40
12. Grunch. Anna coming in, but fallen up to clod, then roof gets bad.
- 41
13. Slabby falls and bad working top. Point of interest: Where Anna is less than .4' or so, it falls up to clod.
- 42
14. Anna begins to thin. Fallen up to clod at this line. Bad top, here is working.
- 43
15. Some very thin, messed up black shale visible above coal.
- 44
16. 1' displacement, dark clay dike and slip. Goes 3' into coal.
- 45
Limestone nodules dip ^{3"} into coal here
17. ~~Some heaving~~ Some heaving but low roof because of machine.
- 46
18. Area grading into black shale.
- 47
19. Many slips with thin clay dike. Full height of seam ^{Affected} but fades downward. Graben, 2' displacement.
- 48
20. Whole area is bad top, but possible this line (on map) looks like a wash-out, but may be a fault. It is.
- 49
22. Grunch noted, but Anna is here.

- (50) Top markedly improves, probably clod ^Above COAL.
- (51) Big wash out with slip. Wash out is 2.5' into coal, disappears to south. Whole area is bad top. Wash out also has thin clay dike on south rib. Slip has 1' or so ^{DISPLACE} in south. Wash out ends along slip and has 2.5' displacement. It could be a fault.
- (52) Fall up to Conant, 6' high. Very bad top. Very complicated. Headers broken all over.
- (53) Clod roof. .9' Anna fallen.
- (54) Clay dike, coal dips into it, but no displacement.
- (55) Clod very blocky here. Falls in blocks, not flakes as is usually the case.
- (56) Lower .1' of clod very shaley here with phosphatic nodules. Anna?
- (57) Anna washout on NW/c ^{OF} pillar. Grunch roof, 1' clod above Anna. Anna thin here, .2'.
- (58) Kettle bottom nest. Some 8' wide. Bad top.
- (59) Fall 2' high along zone of weakness. Roof looks very bad. Sagging roof and broken headers.
- (60) Coal beds dip down in a concave wave here. Not of any real significance, *however*.
- (61) Slight working sound in roof.

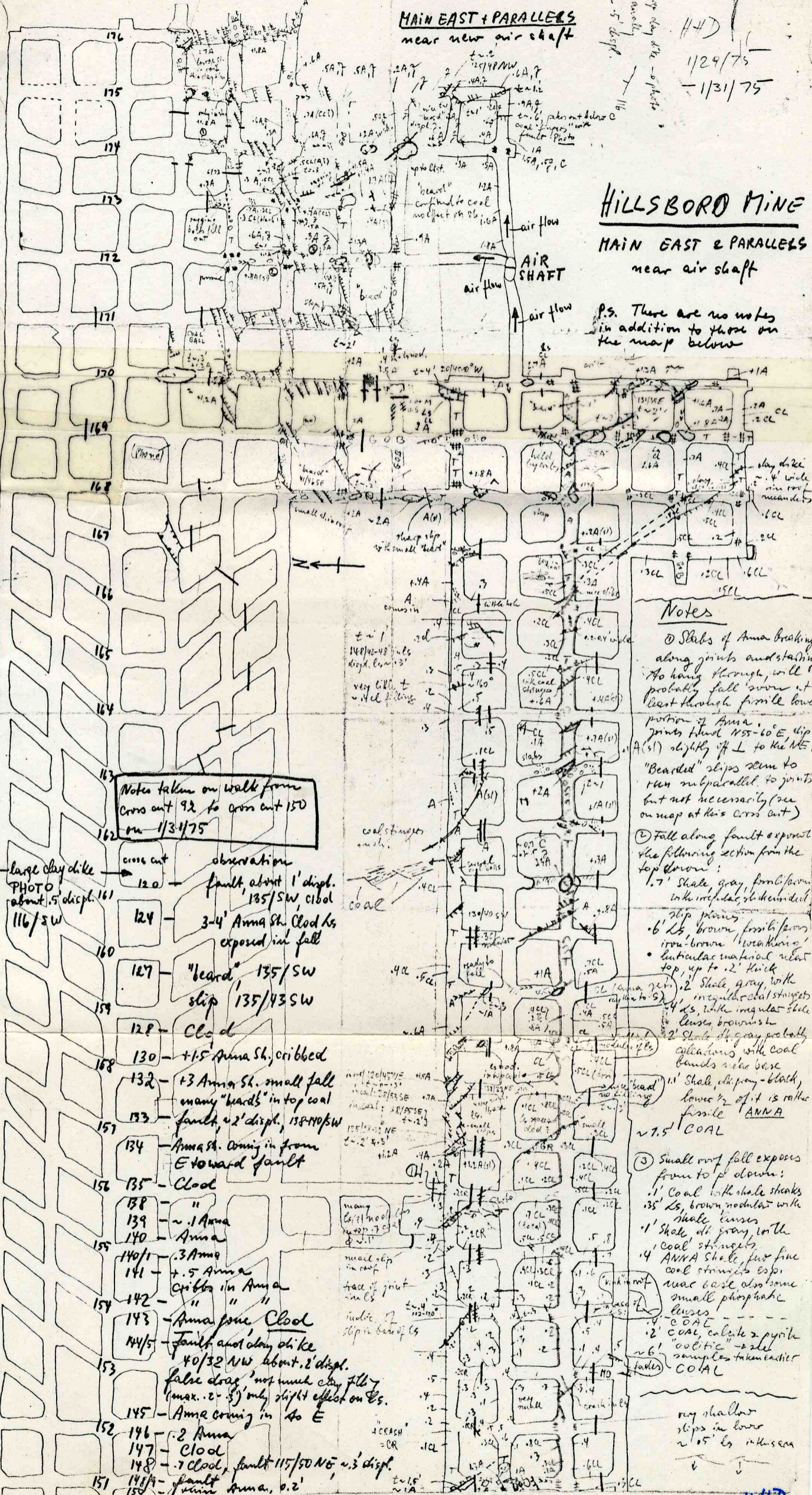
Mapped by Heinz H. Dambach
Jan. 29 - 31, 1975

MAIN EAST & PARALLELS
near new air shaft

HILLSBORO MINE

MAIN EAST & PARALLELS
near air shaft

P.S. There are no notes
in addition to those on
the map below



Notes taken on walk from
Cross cut 92 to cross cut 150
on 1/31/75

- 6 - large clay dike PHOTO about .5' displ. 116/SW
- 120 - cross cut observation fault, about 1' displ. 135/SW, cibal
- 124 - 3-4' Anna Sh. Clod ks exposed in fall
- 127 - "beard" 135/SW slip 135/43SW
- 128 - Clod
- 130 - +1.5 Anna Sh, cribbed
- 132 - +3 Anna Sh. small fall many "beards" in top coal
- 133 - fault, 2' displ. 138/40/SW
- 134 - Anna Sh. coming in from E toward fault
- 135 - Clod
- 138 - "
- 139 - ~.1 Anna
- 140 - Anna
- 140/1 - .3 Anna
- 141 - +.5 Anna
- 142 - " " "
- 143 - Anna joint Clod
- 144/5 - Fault and clay dike 40/32 NW about .2' displ. false drag, not much clay filling (max. .2-.3) only slight effect on ls.
- 145 - Anna coming in to E
- 146 - .2 Anna
- 147 - Clod
- 148 - .7 Clod, fault 115/50 NW, .3' displ.
- 149 - fault Anna, 0.2'
- 150 - "

- Notes
- ① Slabs of Anna breaking along joints and stalling. No hang through, will probably fall soon at least through friable lower portion of Anna. Joints trend 135-60° E dip (sl) slightly off L to the NE. "Bearded" slips seem to run subparallel to joints but not necessarily (see on map at this cross cut)
 - ② Fall along fault exposed the following section from the top down:
 - 1.7' Shale, gray, fossiliferous in the middle, shaly bedded slip planes
 - 2.6' ls, brown, fossiliferous, lenticular material near top, up to .2' thick
 - 3.2' Shale, gray with irregular coal streaks
 - 4.4' ls, with irregular shale lenses, brownish
 - 5.2' Slabs of gray, probably calcareous with coal bands in the base
 - 6.11' Shale, shaly, black, lower 2' of it is rather friable ANNA
 - 7.7.5' COAL
 - ③ Small roof fall exposed from top of down:
 - 1. Coal with shale streaks
 - 2. 35' ls, brown, nodular with shale lenses
 - 3. 1' Shale, shaly, with coal streaks
 - 4. ANNA Shale, fine fine coal stringers esp. near base also some small phosphatic lenses
 - 5. COAL
 - 6. 2' COAL, calcareous pyrite
 - 7. "oolitic" - 2' shaly samples taken earlier
 - 8. COAL

HILLSBORO MINE
MAIN EAST & PARALLELS near air shaft

HHD
1/75

Heinz Damberger- Jan. 29-31, 1975- Main East

These notes are taken from the field map. No book notes were made.

101
1. Slabs of Anna Shale breaking along joints and starting to hang through, will probably fall soon at least through fissile lower portion of Anna.

Joints trend N55-60 E, dip slightly off perpendicular to the NE.

"Bearded" slips seem to run subparallel to joints but not necessarily (see on map at this cross cut.)

102
2. Fall along fault exposing the following section from the top down:

Strip log also on file.

- 0.7' Shale, gray, fossiliferous, with irregular, slickensided slip planes.
- 0.6' Limestone, brown, fossiliferous, iron-brown "weathering" lenticular material near top, up to 0.2' thick.
- 0.2' Shale, gray, with irregular coal stringers.
- 0.4' Limestone, with irregular shale lenses, brownish.
- 0.2' Shale, dark gray, probably calcareous, with coal bands near base.
- 1.1' Shale, dark gray to black, lower 1/2 of it is rather fissile. ANNA
- 7.5' COAL

103
3. Small roof fall exposes from top down:

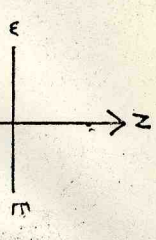
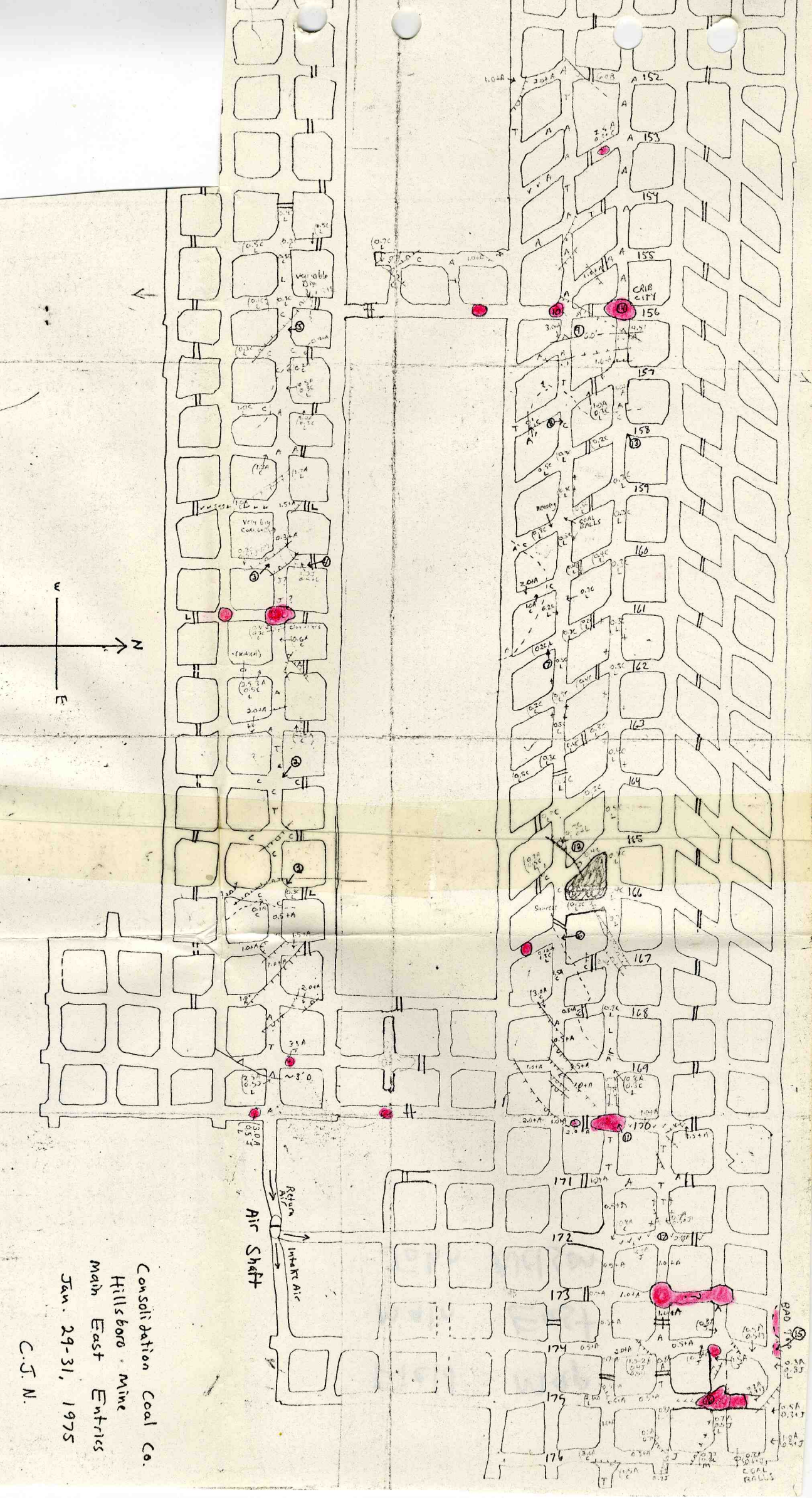
Strip log also on file.

- 0.1' Coal, with shale streaks.
 - 0.35' Limestone, brown, nodular with shale lenses.
 - 0.1' Shale, dark gray with coal stringers.
 - 0.4' ANNA Shale, few fine coal stringers esp. near base, also some small phosphatic lenses.
- - - - -

0.4' COAL

0.2' Coal, calcite and pyrite "oolitic", see
samples taken earlier.

6' (approx.) Coal.



Consolidation Coal Co.
 Hillsboro Mine
 Main East Entries
 Jan. 29-31, 1975
 C. J. N.

Air Shaft

Rising Air

Intake Air

CRIB CITY

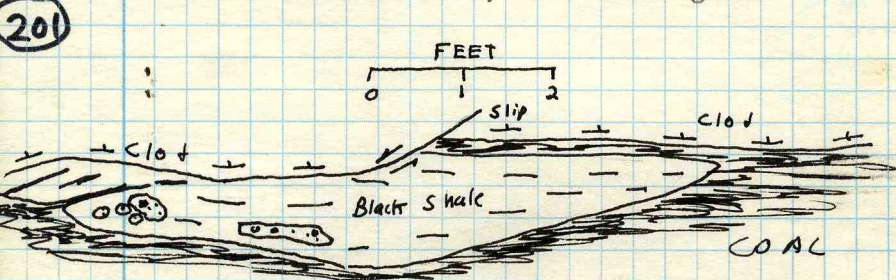
BAD TOP OF T
 15A
 0.34
 10A
 0.34
 10A
 0.34
 COAL
 BALLS

ILLINOIS GEOLOGICAL SURVEY, URBANA

Consolidation Coal Company
 Hillsboro Mine
 January 29, 1975
 Main East, near new air shaft

Notes by John Nelson

1. NW corner of intersection, view looking NW.



Pod of impure, black slaty shale with abundant phosphatic lenses and coaly stringers, also contains irregular pockets of brecciated brown limestone in brown shaly matrix - as shown.

This apparently is a pod of Anna Shale, here overlain by "clod" and massive limestone.

2. Feature similar to 1, but only about 3 feet wide.

(202)

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

3. Jamestown ? roof.
- (203) 0.2' Black shale and coal interbedded.
0.5' Shale; dark gray, carbonaceous, interbedded with limestone; brown, fine grained, argillaceous, lenticular.
0.2' Shale, black as above.
0-0.3' Shale, black, slaty (Anna).

Coal

(204) Toward the stopping a wedge of Brereton(?) Limestone appears below the Jamestown sequence.

- (205) 5. Feature as at 1, about 6 to 7 feet wide, very prominent splitting of coal at top.

In all of this limestone roof area the top of the coal is irregular with minor splitting, and the "clod" layer is variable in thickness and character.

January 30. Entries E and F.

- (206) 6. Along north pillar for about 20' a nearly continuous split from the top of the coal riding up to 0.5' above top of main seam. Above the split is normal clod overlain by limestone. Below split is impure black very coaly shale, with abundant fragments and chunks of brown pyritic limestone, as at 1.

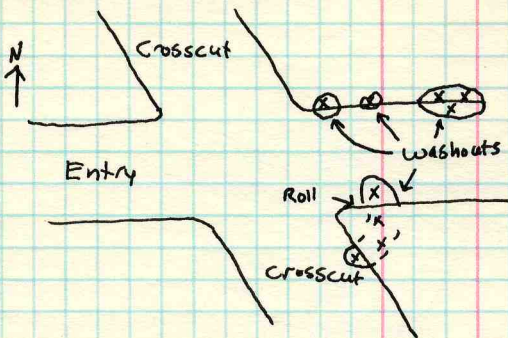
If ends of split were not visible it might be taken for Jamestown Horizon.

- (207) 7. As above, 10 feet wide, maximum 0.8 feet deep, coal split less continuous, only visible on rib at arrow point - no third dimension visible.

Features such as the above seem to occur only near the edge of Anna Shale wedges below the "clod."

- (208) 8. Washout with splits as at 1, about 4 feet wide, 1 foot deep at center, limestone roll over the top, extending about 4' out from rib. Coal below washout fractured, disturbed, mineralized.

Same (?) washout also noted around corner. No limestone roll.



The lower layer of clod in this area becomes very soft, flaky, with abundant plant debris, fossilized tree branches and thin coal streaks. (Grunch.)

9. **209** Big fault, about 6 foot throw (displaces Blue Band on footwall opposite coal top on hanging wall), drag normal on hanging wall, normal on footwall, many smaller faults in the immediate zone of the big one.

Some 3 feet of badly shattered Anna Shale exposed on highwall.

10. **210** Bad top, floor heaving, large new fall, some 4-foot slip-fractured Anna Shale appears to grade into brown, argillaceous, nodular, carbonaceous limestone at top.

11. **211** High fall (on track entry) cleared through the entry out still full of rock in crosscuts to both sides.
*Strip log also on file.

One slip noted, throw about 1.5 foot. Displaces Conant but not Bankston Fork. Fall crests out on flat top.

Some old bolts still hanging.

Flat top - Limestone(?), medium brown, smooth.

0.3' Shale, greenish

0.8'+ Limestone, light gray to green, weathers brown, fine grained, small greenish clay pockets (Lower bench Bankston Fork)

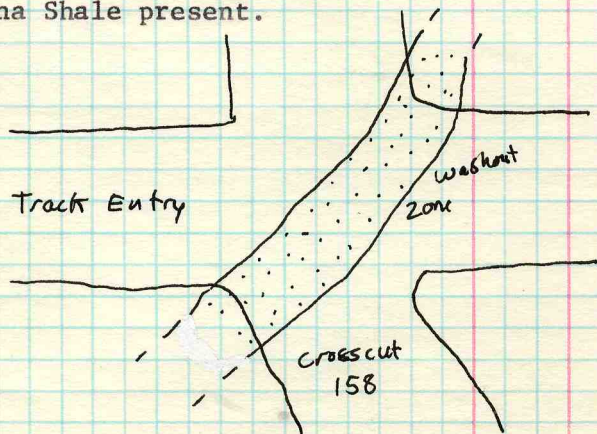
- 2.5' Shale, medium dark gray to green, mottled, weak, poorly bedded.
- 1.5' Shale, medium gray to green, minor dark mottling.
- 0.8' Limestone (Conant), medium gray (weathers brown), coarse, fossiliferous, massive, occasional oval dark brown, hard nodules.
- 0.7' Jamestown Horizon, Shale, dark gray to black, carbonaceous, coal streaks especially at top and bottom; nodules and lenses of limestone as above.
- 0-0.4' Limestone, discontinuous, similar to Conant, has oval dark gray nodules.
- 0.5' Shale, dark gray to black, mottled, weak.
- 1.5' Shale, black, hard, slaty, carbonaceous, occasional kettle bottoms.

Coal #6

Total fall ~8.6 - 9.0 feet.

12. Largest clay dike in area, more than 1.0 foot wide near top, reaches floor, displaces coal top about 1.0 foot.

13. Minor washout with coal splits. Less than 0.5 feet high but 10 + feet wide. Small amount of black Anna Shale present.



Trace of washout across entry marked by thick slabby clod.

14. "Crib City"-entire intersection of track entry and crosscut 156 has fallen, been cleaned, rebolted and cribbed clear to the top - at least 20 feet.

(214)

* Strip log also on file.

No major slips can be traced in the fall, though some too small to map are present. Line of weakness extends north to more falls, and also south.

- +4' Shale or claystone, medium dark gray, no lamination visible, fractured.
 - +0.3' Shale, greenish, weak.
 - 1-2' Limestone (Bankston Fork), weathers medium brown, variable thickness, lenticular.
 - 3.0' Shale, medium dark gray to green, mottled, poorly bedded, weak, many slips, has irregular poorly defined brownish nodules near top.
 - 0.8'+ Limestone (Conant), medium gray, weathers brownish, as at location 11.
 - 0.4'+ Limestone as above, with conspicuous partings of very dark gray to black carbonaceous shale.
 - 0.6' Shale, very dark gray, mottled, poorly bedded, weak.
 - 1.7' Shale, black, poor to fair bedding, phosphatic zone at top.
 - 2.5' Shale, black, hard, slaty, kettle bottoms near base.
- Coal

January 31, 1975

Near working face of Main East

15. Very dangerous top, partly fallen. We did not try to go past it.

(215)

* Strip log also on file.

- 1.0'+ Grayish shale.
- 1.0'+ Limestone (Conant), medium brown, coarse, fossiliferous, argillaceous with large dark brown oval nodules near top.
- 0.8' Jamestown Horizon - Coal streaks, black shale, nodules limestone as above.
- 0.2' Shale, black, very carbonaceous (Anna).

16. Very large fall at intersection, partly cleaned.
Not bolted. Still working slightly!

(216)

* Strip log on file.

Flat top - Limestone, brown.

- 1.5' Shale, greenish
- 3.0' Limestone, brownish, irregular, some green shale.
- 0.5' Shale, green and black, wavy.
- 1.0' Limestone, brown.
- 4.0' Shale, dark gray to green mottled, irregular nodules of brown.
- 4.0' Shale, very dark gray, faintly mottled, faintly streaked, rare small limestone nodules.
- 0.8'+ Limestone, Conant, as at 15, lenticular.
- 0.6' Jamestown Horizon as at 15.
- 1.5' Shale, black, slaty at base, rare kettle bottoms.

17. Immediate roof around intersection is about 1.5 feet of dark gray, fair to poorly bedded, rather weak, carbonaceous shale - not typical Anna - may be weathered Anna.

(217)

Bad zone of weakness extending down crosscut both ways from intersection.

In crosscut north the shale is better bedded and looks more like typical Anna.

No traceable slips in area.

General Notes

- A) Slips, clay veins, and clay dikes seldom occur where the immediate roof is clod or limestone.
- B) Washouts and coal splitting and appearance of coaly debris in lower layer of clod, occur near the edge of Anna Shale wedges.
- C) Wedges of Anna Shale thicken abruptly in this region and roof falls are common in thick Anna Shale.
- D) No falls observed where limestone forms immediate roof.
- E) Minor floor squeezing is common, as shown by rashing and upward displacement of ribs. This especially well shown along the track entry.

ILLINOIS GEOLOGICAL SURVEY, URBANA

C. T. Ledvina & C. J. Nelson - February 28, 1975
Hillsboro.

Rapid express mapping of major contacts and dikes with Heinz Damberger. *SEE MAP OF THIS DATE*

Fall in main east. crosscut 78 and entry E. Not cleaned.

Flat top - Greenish shale (?) with brown alligator hide pattern.

- 4'± Shale, greenish brown mottled, poorly bedded, weak.
- 1' Limestone, brown coarse, impure
- 0.7'± Shale, dark gray, nodules brown limestone
- 0.8'± Limestone brown, coarse, impure, dark gray with nodules and lenses in middle.
- 0.5-1' Shale black, well bedded (Anna).
- 1.5 Limestone very dark gray, fine grained, with abundant brown fossiliferous fragments, cloddy at base. Probably "Bastard Limestone" then contact with coal. Fall at intersection Entry E and crosscut 83 small, flat-topped.

F

Flat top - Shale dark gray, carbonaceous, coaly

- 0.5 Shale as above, with nodules of brown limestone.
- 0.1 Coal and shale (Jamestown)
- 1.0-1.5 Limestone very dark gray, coarse. Wedge of black shale visible below at far corner.

This not cleaned or bolted and not easily accessible.

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

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T _____ R _____

ILLINOIS GEOLOGICAL SURVEY, URBANA

H.-F. Krausse
 Consolidation Coal Company
 Hillsboro Mine- 2nd NE entries

December 17, 1974 1974/75

Location: 2nd Northeast entries (starting almost at face/crosscut 154/155 mapping southwards)
 Numbers of study sites refer to map of H.-F.K.

①. Roof consists of very thin (2-3") Anna Shale, with Brereton Limestone of at least 2' thickness above.

Clay dike-type fault (clay filling) 92/58 N with more than 1.2' displacement, due to ^{lead} ^{expansive} ^{bad} total displacement not measureable.

②. Larger clay dike-type fault 102/48 NE with 2" of clay filling. Displacement at coal roof 1.9' at Blue Band 1.7' goes into floor with smaller displacement. Roof is more or less Brereton Limestone, very "spotty" thin Anna Shale of 1-2" thick and interfingering of 0.3" coal stringers.

③. Some large clay dike-type fault as at ② 98/41 NE to 108/46 NE: direct measurements; average: 100/46 NE. Displacement 1.7' (displacement on surface of fault 3.1') displacement increasing towards the east. Clay filling along fault. Fault passes into floor. (compare mine notes John Nelson #19). Roof consist of thin Brereton clod at bottom and greenish-gray massive and hard Brereton Limestone above (full of Goniatite fragments).

④. 3a. Small clay dike-type fault as in ① 106/48 NE with clay filling, clay dike ends downwards 3.2' above floor of coal seam. Roof: thin clod and Brereton Limestone (compare mine notes John Nelson #14).

⑤. 3b. Several smaller clay dike-type faults with clay filling, average: 135/45-50 NE to 140/50 NE not passing into floor thickness of clay

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

By H.-F. KRAUSSE Date 12-17-74

Quadrangle _____

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

dike 0.4¹-0.6' at top, peters out downwards, in upper ^{part} ~~part~~ containing fragments of Brereton Limestone. Roof consists of Brereton Limestone (compare mine notes J. Nelson #18).

6. 3c. Same clay dike with fault as in 1 and 3a 108/47 NE, not cutting into floor. Roof: Brereton Limestone.

7. 4. Roof consists of 3'-4' Anna Shale with plant debris and ^{Sigillaria} ~~syhearia~~ at bottom bedding plane. Contains hardheads (Anna concretions). Anna Shale well jointed: 58/86 SE spacing: 7 joints/2' subordinate joints in Anna 148/88 SW, 154/87 SW few and not continuous. Small clay dike-type fault 163/35 SW.

8. 5. Clay dike-type faults in roof rock 131/36 SW and 133/41 NE in coal appearing as "goat beards".

9. 6. Small clay dike-type faults in roof 100/37 SW. Roof consists of Anna Shale with prominent joints 60/87 SE. Spacing 3 joints/1 foot.

10. 7. Two small slips 92/29 NE and 100/45 SW offset and weakening the roof jointly together with the well developed joint system of 53-61°/84-88 SE. Roof: Anna Shale.

11. 8. Clay dike-type fault 93/38 SW. Roof rock ^{is} ~~is~~ strongly weakened and broken; in vicinity joints open up and kicking pressure zone appears in roof. Joints in Anna Shale: 58/88 SE spacing 5 joints/1 foot, subordinate joints in Anna: 152/86 SW, spacing 2 joints/1 foot discontinuous.

12. 9. Small clay dike-type fault 18/58 NW extends into somewhat larger fault at 11.

13. 10. Clay dike-type fault in roof 105/30-40 SW in coal, petering out in "goat beard".

"goat beards" are : extension (dilatational) fractures in an echelon position at the downwards steepening ending of clay dike-type faults

+

(14) 11. Clay dike-type fault in roof 108/32 NE, both (10) and (11) ^{run} near about parallel to each other and often even intersect each other SW↘NE. Roof is Anna Shale of more than 0.5' thickness.

(15) 12. Small clay dike-type fault 15/58 SE in relation to a zone of very narrowly spaced joints, which contain abundant pyrite, also calcite.

(16) 13. Found mudcracks in Anna Shale do not pass through bedding; disiccation cracks rather than synaeresis cracks (better be checked, took sample).
according to A. While they are Synaeresis cracks too!

(17) 14. Roof rock was cut for overcast, this initiated further fall of material (cleaned out).

Section: Top: brownish gray Conant Limestone
5" (about 1' thick); 5" coal and very carbonaceous shale of Jamestown Horizon;
0.75' 0.75' calcareous, rather "dirty" shale with elongate lenses or thin continuous but lenticular benches of fresh water limestone of the Jamestown Interval.

1"-2" 1-2" of "dirty" shaly coal (Jamestown Horizon).

2'-2.7' 2-2.7' of Anna Shale

weak mottled dark gray e
phosphate lenses; weak d
weak very dark gray phos c
phosphatic lenses; slaty b
slaty and carbonaceous. a

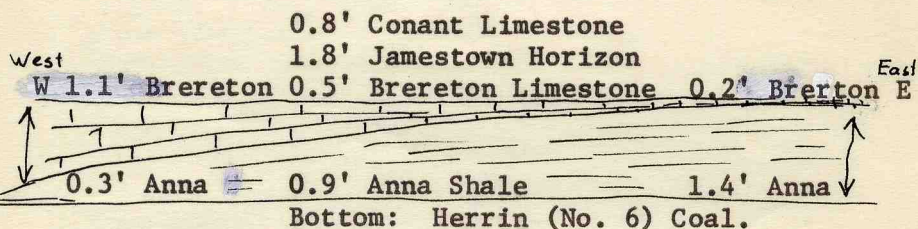
Bottom: Herrin (No. 6) Coal. Coal

(18) 15. Overcast situation similar to (14) (compare mine notes C. G. Treworgy & H. F. Krausse 03-13-75).

Section: Top: more than 1.3' greenish mottled Lawson Shale, somewhat calcareous with b^g cracks of siderite^c mineralization.

2.6' medium dark to dark gray Lawson Shale, poorly bedded.

x



Anna Shale thins out ^{to} downwards the ^{west} east, thickness decreases from 1.4' to 0.3' within the width of entry at the same area the Brereton Limestone above Anna Shale increases from 0.2' in the ^{east} west to 1.1' in the ^{west} east. The Jamestown Horizon does not show a coal stringer in this place.

19

16. More than 1 foot floor heaving, direction of cracks in the floor 140°-145° and 90°-95°.



20

16a. Roof Anna Shale increasing in thickness towards NE; well jointed 60-70/88 SE. Small clay dike-type fault 177/37 NE.

21

16b. Roof consists of very dark to black slaty Anna Shale with large, partly pyritic "Anna Concretion" (hardheads), increasing in abundance towards NW. Anna Shale well jointed with joints 57/85 SE to 67/90. Thickness of Anna Shale more than 1.7'.

22

17. Zone of same clay dike-type faults 50/35 NW and 43-50/25-35 SE. Roof consists of 2" clod and Brereton Limestone.

23

18. Clay dike-type faults 15/35 NW and 15/35 SE intersecting, but do not strike very far into the entry. Hillsboro 12-18-74.

Hillsboro Mine December 18, 1974

24

19. Joints in Anna Shale 66/87 NW.

- (25) (20) Some small slips without clay filling ^{strike} N-S ~~shrinking~~ with dip of 30/60 W contain ~~Besyte~~ ^{baryte} baryte and calcite filling 3 to 5 mm thick.
(baryte also in cleats of coal)
- (26) (21). Small clay dike-type fault in Anna Shale, does not enter top coal; 42/25-36 SE.
- (27) (22). Small clay dike-type fault in Anna Shale about parallel to the one of (21), cuts into top coal and dissipates into "goat beard". Cleats in coal are intensively calcite and pyrite coated. Fault: 41/34 SE.
- (28) (23). ^{Baryte} ~~Besyte~~ and calcite coated to filled large cleat 75/90 and tiny slip 50/65 SE. *Clod/Anna Limit*
- (29) (24). Very prominent cleats in coal, especially in top coal. 60-70-80/90
Strike dip = vertical ±
- (30) (25). 50-70-79/90. Cleats are calcite and ^{Baryte} ~~Besyte~~ filled ~~as~~ coated.
- (31) (26). Clay dike-type faults only in roof and top coal 65-70/35-60 SE.
- (32) (26a). Clay dike-type fault 55/25 NW in Brereton Limestone and coal.
- (33) (27). Same as (26) in roof, fault ^{here} (58-63/25-40 SE).
- (34) (28). Two very small clay dike-type faults in roof 11/42 NW. Joints in Anna Shale 64-67/86-88 SE.
- (35) (29). Very small clay dike-type fault in roof 09/33 NW.
- (36) (30). Larger st ~~st~~ of 3 little, almost parallel clay dike-type faults; direct measurement 35/25 NW; shows displacement of 0.8' to 1'; total fault zone 50-55/preferred NW dip.
- (37) (31). Clay dike-type fault 46/43 NW (steepens upwards) displacement of roof 0.6'.

- 38 32. 3 to 4 small clay dike-type faults ⁽ⁱⁿ⁾ "enéchelon" position at ^{arts} ~~posts~~ 60-65/low angle dip in both ^{strike} directions.
- 39 33. Clay dike-type fault cuts into coal 47/36 SE, displacement 0.8-1'.
- 40 33a. Roof is Anna Shale 0.2' thick, grading into mixture of Anna Shale with "boulders" (burrow fillings) of Brereton Limestone gradually upward transition into Brereton Clod.
- 41 33b. Roof is Anna Shale, black and slaty, 0.35-0.4' thick. This is overlain by 0.2' calcareous black shale with bioturbation (burrows?) filled with Brereton Limestone, many elongate cigar-shaped Brereton Limestone nodules; grading upwards into carbonaceous clod and higher up Brereton Limestone.
- 42 33c. Roof Anna Shale, more than 1.3' thick, many hardheads (Anna concretions).
- 43 33d. Immediate roof consists of abundant "boulders" (burrows?) ^{or} ~~as~~ nodules of Brereton Limestone that even "stick" into top layers of coal, some look like intrusions into coal 1' deep. This limestone is dark with frequent fragments of fossils. (Similar as by J. Nelson #5 from January 1975).
- 44 34. Clay dike with fault 40/34 NW, displacement 1.8', clay filling is about 2-4" thick fault goes into floor and causes a ^{buckling} ~~bricklay~~ of the floor upwards. Roof is Brereton Limestone.
- 45 34a. Roof is hard Brereton Limestone with few tiny coal streaks in lowermost limestone layers. Hardly any Brereton Clod, less than 1".
- 46 34b. Larger clay dike-type fault 17/29-40 SE with 1.2' displacement. Roof: Brereton Limestone solid.
- 47 34c. Roof consists of Brereton Limestone. Transition between coal and Brereton Limestone as in 33d.
- 48 34d. Small clay dikes with faults 27/55 NW and 32/40 NW. Roof is Brereton Limestone.
- 49 35. Clay dike with fault 38/25 NW.

- 50 36. Roof: carbonaceous limestone 2" (very shaly material with coal streaks that "finger" into Brereton Limestone above. ^{inter}
- 57 37. Small clay dike-type fault 58/39 SE. Important study site for soft sediment deformational features in thin Anna Shale (6") Anna Shale and Limestone nodules or "boulders" mixed, bioturbation older. Local unconformities and "cross bedding" in Anna Shale. Coal stringers in Anna Shale. Above Anna Shale is cloddy Brereton Limestone. Take sample - good for photo!!
- 52 38. Small clay dike-type faults 144/40 NE and 142/30-40 SW. Top coal displaced about 0.6'.
- 53 39. Roof consists of Brereton Limestone of which lowermost ^{portion} position (transition downwards, towards coal) shows bioturbation, burrow fillings, nodules of limestone reaching into top coal, even frequently interlayered with top coal. All Brereton Limestone nodules? or Bastard Limestone? Important study site for Photo! Sample ought to be taken.
- 54 40. Very low angular clay dike-type fault 170/20-30 NE; displacement 1.6'. Roof Anna Shale.
- 55 41. Clay dike-type fault, 165/27 NE, displacement 0.6-0.8'. Roof: Anna Shale.
- 56 42. Roof: Anna Shale more than 1' thick, well jointed 63/87 SE spacing 3-4 joints/foot.

HILLSBORO - DECEMBER 19, 1974

- 57 43. Clay dike-type fault, general trend 150/30 NE measurement in coal 151/43 NE, displacement at top of coal 2.3' at ^{top} floor of coal 0.3'. At top of coal next to fault interfingering of Anna Shale and coal. Good for photo!!

possibly of so that transition of Anna Sh. etc

S ph

ph S

ph

x

- (58) (44.) Clay dike-type fault 155/24 NE, seems as if Anna Shale was filled into dike, downwards at fault interfingering with coal, further downwards mylonite of coal and Anna Shale filled in dike along fault surface (looks different from normal clay dikes). Fault plane in center is younger (*later*) coated and partially filled with baryte and calcite (2-4 mm thick).
- (59) (45.) Clay dike with fault, filling mylonitic, shear surface coating ^{is} older pyrite with striations. Younger baryte and calcite no striations. Fault: 156/29 NE displacement at pillar more than 1.2' and cutting slightly into floor.
- (60) (46.) Roof consists of more than 2.5' Anna Shale, contains many hardheads (Anna concretions); which are surrounded by ^{big} slips, little fault ~~is~~ ^{is} "railed" (tracked) by these slips. Anna Shale is well jointed 58/86 NW. Roof appears rather weak. Within upper portion of coal about 3" below roof appears a layer, 2-3" thick, of ^{spherulitic} ~~sphaleritic~~ material that consists of little pyrite and calcite sponlites ^{spherulites} (genesis due to bacteria ? or relation to ^{fastening} forming of coal balls?) Sample was taken and polished. Compare (53) and (59).
- (61) (47.) Clay dike with fault 165/36 SW, clay filling as usual; thickness of clay filling 0.5-0.9'. No Anna Shale in roof, but Brereton Limestone. Further SW a number of ± parallel clay dikes and faults as marked on map.
- (62) (48.) Immediate roof consists of 3" weak, not slaty Anna Shale (upper portion of Anna sequence?). Above this ^{is} cloddy Brereton Limestone in transition numerous nodules and small lenses of Brereton Limestone ^{er-} mixed with Anna Shale and sometimes top coal. Bioturbation (burrows filled with Brereton Limestone). Within the Anna portion also tiny streaks of coal. Photo should be taken.

- (63) (49). Clay dike with fault 149/36 SW same as (47), seems to change in strike, displacement more than 2' passes upwards deep into Brereton Limeston.
- (64) (50). Clay dike-type fault 149/37 NE, displacement 1.3-2.0' increasing towards SE. Roof: Brereton Limestone.
- (65) (51). ^{Staggering} Slagging in "en echelon" position of several smaller clay dike type faults only in roof and top coal: 138/33 NE. Roof rock: very cloddy and strongly argillaceous Brereton Limeston.
- (66) (52). Two smaller clay dike-type faults 100/49 NE; Roof Brereton Limestone.
- (67) (53). Limit between Anna Shale and Brereton Limestone being the immediate roof of the coal. Little clay dike-type faults and many fractures in the roof and many narrowly spaced cleats in the coal indicate this. In top layers of the coal about 3-6" below roof there is again layer ~~sphaleritic~~ material as described in (46) ^{same} appears in (59). ^{spherulitic}
- (68) (54). Clay dike-type fault (small) 170/30-35 NE and 168/30-40 SW contains clay filling (thin) and—important— a coarse clastic (fragmented?) filling in the center of the fault-opening. ^(current) This coarse clastic filling shows sedimentary flow structures, which indicate that opening of the fault (pull-apart) is of the time when sediment was still very soft (maybe late symsedimentary to early diagenetic).
- (69) (55). Clay dike-type fault 160-165/34-38 SW partly filled with clay material, but over a large range in strike filled with a very dark to medium dark gray, medium grained fossiliferous, very argillaceous limestone. Filling shows sedimentary ~~or~~ ^{basalts?} resedimentary structure similar to cross bedding. (NOTE: sedimentary features in filling between fault planes.)

X

S Took sample and ^{marked} washed slickensided planes; top = 130/28 SW and bottom = 125/34 SW.

ph Took photo- (Compare also mine notes and sketch of J. Nelson and H.-F. Krausse, January 9, 1975 ^{shaly study} site #1 in 13th left.)

70 56. Clay dike filling as in (55), but also containing coarse breccia of broken Anna Concretion (fine grained limestone with calcite-filled cracks) and fragments of coal and Anna Shale (appears similar to a very liney ~~elust~~ ^{chert} breccia).

71 57. Same clay dike-type fault as (55), two ^{larger} ~~layer~~ and several accompanying smaller clay dikes and faults; cause bad roof.

Section: { Top- very dark gray to black limestone mixed with coal stringers or ^{coal} streaks.
Jamestown Horizon { 0.2'-0.4' dark gray shale with nodules or lenses of limestone, some carbonaceous or coaly streaks.
0.2' coal and shale, dark to very dark gray.
0.4'-0.5' very dark gray to black shale with phosphatic nodules near the bottom. Lowermost layers well bedded, upper portion weaker, less bedded containing coal streaks (unusual that Anna Shale, which I assure this is, contains coal streaks)
Bottom- is Herrin No. 6) Coal.

See also notes J. Nelson Jan. 9, 75 #57

72 57a. Total area between (51) and (57b) and further towards the NW is cribbed and ^{timbered} ~~timbered~~. Roof is very much broken along main ribs and ~~no~~ sagging. Roof consists of about 1' Anna Shale and above that Jamestown Interval (Brereton Limestone is missing).

57a-57c Comp J.N. notes Jan. 9, 75

73 57b. Several larger and smaller clay dikes and clay dike-type faults 83/36 SE, 86/38 NW, 89/35 NW displacement 0.7', 0.5', 0.6', interacting fault ^{Section} with clay filling large and important: 146/30-51 NE

(Seems as if this fault is slightly younger than the other ones).

74 (57c). Numerous intersecting clay dikes with fault varying in strike and dip. This area should be studied more thoroughly.

75 (58). Clay dike-type fault 110-120/25-35 SW beginning of formation of "white top" in surrounding of Anna Shale.

76 (59). Similar to (46) and (53) ^{spherulitic} spherulitic layer in top of coal. Differential compaction features, due to different material.

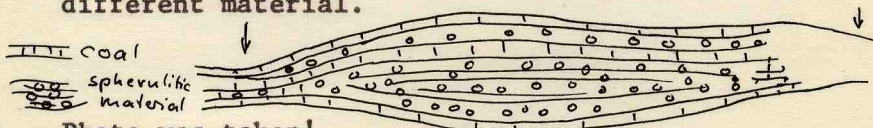


Photo was taken!

77 (60). Cross section at overcast: Total thickness 3'.
Top: Jamestown horizon with calcareous dark gray shale and lenticular, irregular thin Limestone (fresh water Limestone?). Very tiny streaks of coal (^{few} fine mm).

11" Anna Shale, very weak and very slightly mottled, not "slaty", uppermost portion contains layer of brownish nodules of phosphatic material, (yet layer is not very significant developed).

9" Anna Shale well bedded yet weak dark to very dark gray with (lower) horizon of brownish, phosphatic nodules downwards beginning of slatyness.

16" Slaty very "typical" fissile and well bedded Anna Shale with frequent fossil remnants.

Bottom: Herrin (No. 6) Coal.

78 (61). Anna Shale well jointed joints 55-65/87 NW, spacing 3-4 joints/2', in roof little clay dike-type fault 40/39 NW.

79 (62). Large clay dike-type fault in upper roof 70-105/40-50 ^E SW (SW).

- (80) (63.) Clay dike with fault 144/54 NE.
- (81) (64.) Clay dike 70/+90 with small fault 71/46 NW.
- (82) (65.) Large fault with "3 steps" partly clay filled. 165/18 SW.
- (83) (84) (66-66a.) Large clay dike about 1-2 ^{meters} ~~inches~~ (4-6 feet thick) between to major clay dike type faults 158/19 SW. Photo should be taken.
- (85) (66b.) Samples of Baryte and calcite ~~was~~ ^{were} taken:
- a. from roof rock off concretion in Anna Shale.
 - b. from clay dike-type fault off shear plane, which was coated with about 2-3 mm of crystalline Baryite.
- (86) (67.) Clay dikes and faults, dikes dissect from Herrin (No. 6) Coal upwards into mottled Lawson Shale.

HILLSBORO JANUARY 16, 1975

- (87) (68.) Immediate roof 3" Clod and 5' Brereton Limestone. Little clay dike-type fault 64/50 SE does not affect coal, but stays in roof rock. Joints 60/88-90 NW, spacing 10 joints/3' narrow, 2 joints/7 feet in Brereton higher up.
- (88) (69.) Small clay dike-type fault 106-110/36 NE, other one 107/40 SW.
- (89) (70.) Clay dike with 0.4' filling: 160-170/62 NE accompanying faults only in Clod roof 170/60 SW and 45/54 NW. Clay filling in Brereton Limestone!
- (90) (71.) Clay dike 2-4" thick with fault 116/44 NE. ^{Roof Brereton Limestone}
- (92) Roof is Clod and Brereton Limestone. The clay dike with fault only in top coal, accompanied by very many irregular dikes, but subparallel to ~~weak~~ ^{main} clay
- (91)

dike small about 2-3 mm clay filling in roof of clod and Limestone. Faults: 107/46 SW, other one 106/40 NE NE SW. About 3' further NE there is about 2-3" of Anna Shale above No. 6 Coal and below Clod.

See sketch
extra page

92

73. Clay dike with fault: 117/34 SW

Top: Brereton Limestone

2-3" Clod

1' Anna Shale, very carbonaceous "bastard Anna"

Bottom: Coal (Herrin No. 6)

bedding 82/16 NE

This is a rather large clay dike with many parallel y features and clay filling in coal and roof even up into Brereton Limestone. Faults mostly dipping towards SW (is main downthrow direction) but some dipping NE. Displacement at major fault 3.6 feet.

93

74. Clay dike with fault.

measurements: 116/28 SW top

128/39 SW

126/49 SW

132/56 SW

117/66 SW

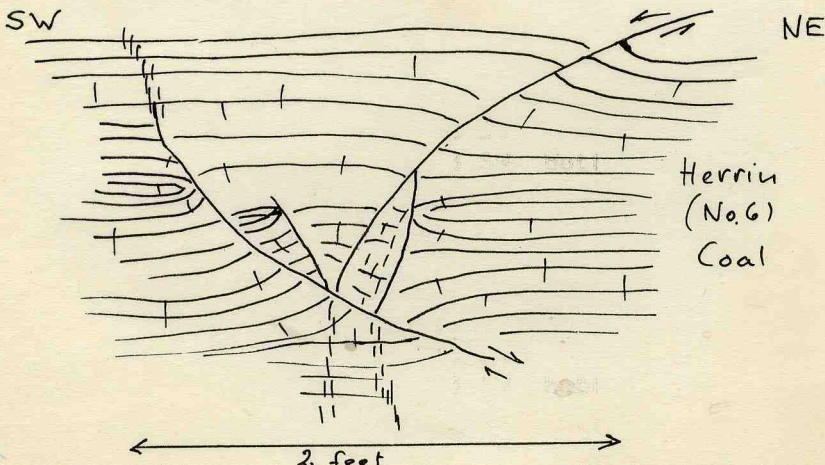
116/83 SW

} general of y fault

~~124/None~~

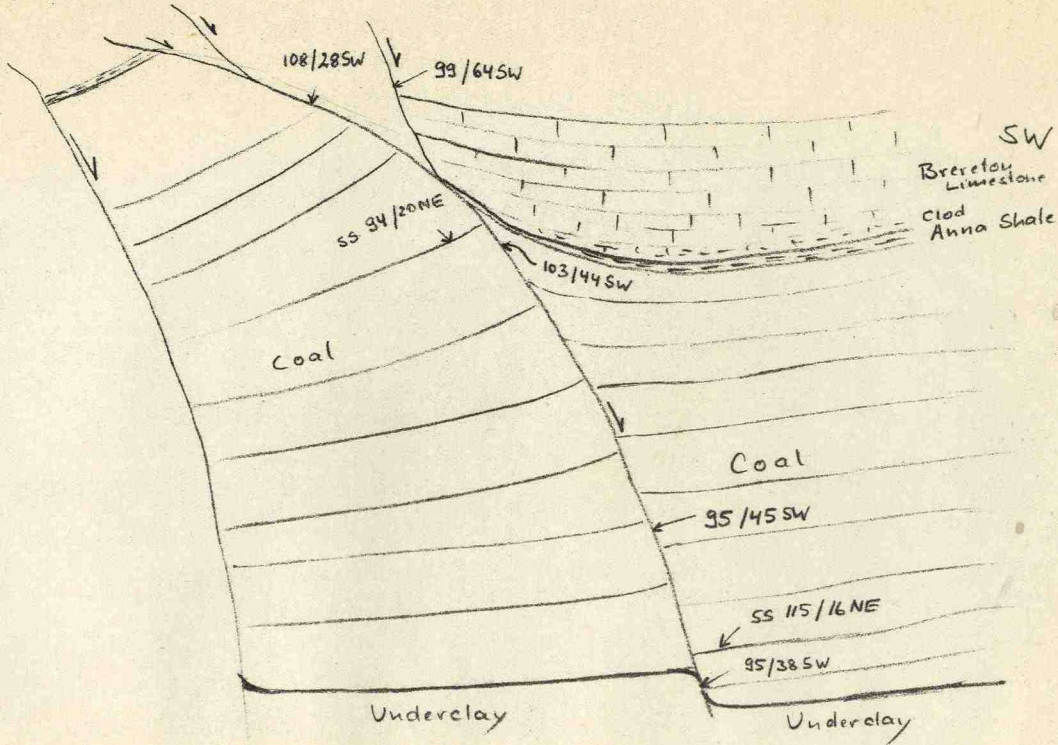
124/40 NE

} bottom



- 13a -

NE



Hillsboro 2nd NE (12-13 left)

Study site No. 73

H.-T. Krausse, 01-16-73

73

94

75. Roof consists of Anna Shale. Many small clay dike-type faults, here (exceptional) mostly in lower portion of the coal, they do not go into roof rock.

Faults:	16/32 NW	53/68 NW	} very many tiny, little irregular clay dikes in coal
	39/54 SE	38/39 NW	
	41/48 SE	45/30 NW	
	40/43 NW	53/35 NW	

95

76. Clay dike-type fault 108/^{40NE}~~None~~. Roof: Anna Shale, more than 0.5' with well developed joints 60°-70°, vertical.

96

77. Clay dike-type fault, small 103/48 NE.

97

78. Clay dike-type fault, small 96/42 NE. Displacement at SE face: $t = 0.8'$ goes through coal however, at NW face fault cuts only 2" into top coal. $t =$ means vertically measured downthrow



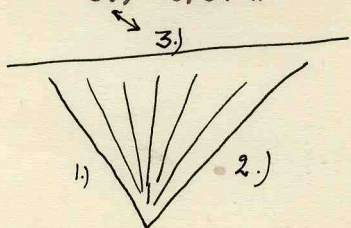
98

79. Clay dike with SW - y - NE faults. Faults 163/56-65 SW, displacement: $t = 0.3'$ 167/48 NE (minor)

on bedding planes striations perpendicular to clay dike. Roof consists of more than 1.2' Anna Shale.

99

80. Small clay dike with fault 88/62 NW smaller fault planes (shear planes) connected to the fault: 1.) 77/45 NW } form a shear pair
2.) 82/54 SE }
3.) 0/64 W

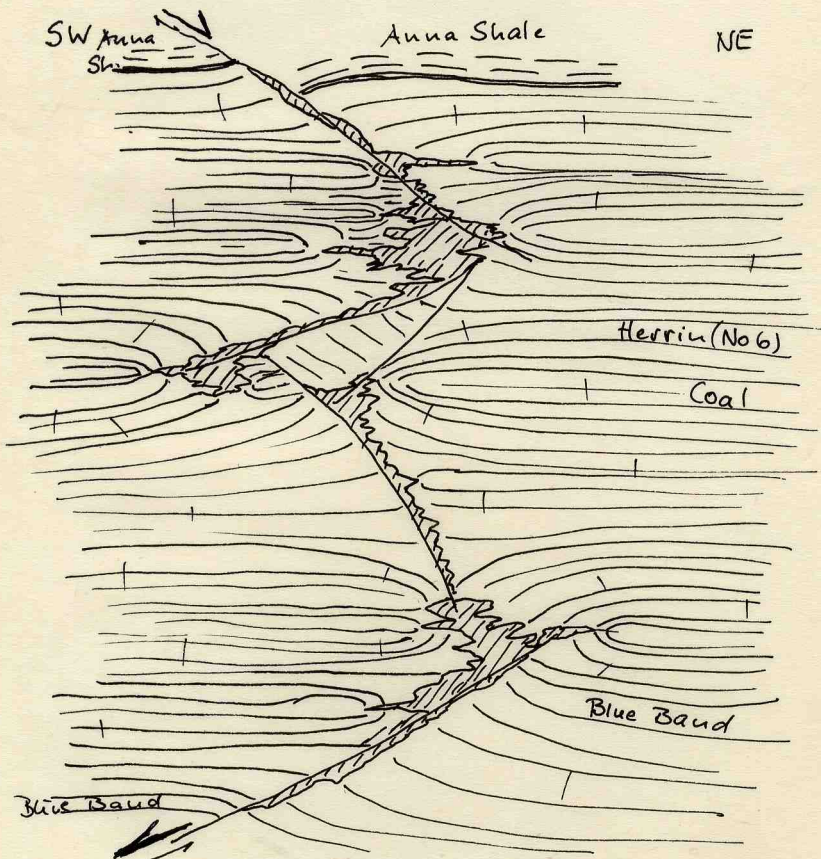


(100) (81) Clay dike-type fault 3/47 W.

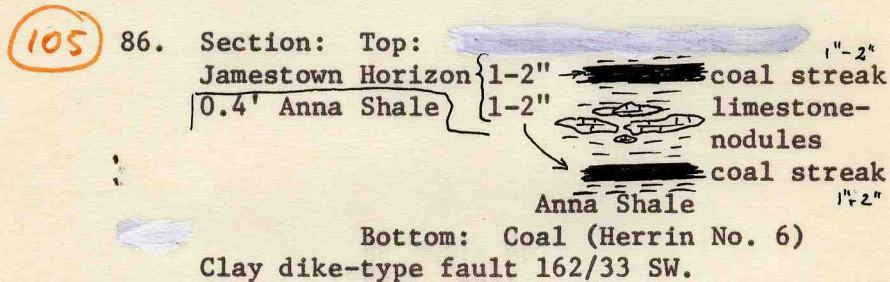
HILLSBORO - JANUARY 17, 1975

(101) (82) Small clay dike-type fault 96/44 NE.

(102) (83) Clay dike with fault 145/37 NE, compare (80) contains five little faults near floor and higher up in coal.



- 103 84. Clay dike, small, with fault 157/59 SW, Anna Shale roof.
- 104 85. and clay dike-type fault 85/33 SE, Anna Shale roof.



- 106 87. Clay dike-type fault 146/52 NE.

HILLSBORO - JANUARY 23, 1975

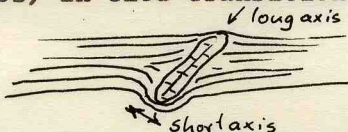
- 107 88. At man door roof is very argillaceous, medium dark gray Brereton Limestone with 1-2" Clod (and coal with Clod included) underneath. Roof fall slabing directly around ~~main~~ man door.
- 108 89. Clay dike with fault 151/49 SW.
- 109 89a. Clay dike with fault 156/57 SW (same as 89).
- 110 90. Clay dike with fault 154/48-39 SW, roof 2" Clod and then Brereton Limestone.
- 111 91. Same clay dike as 90 with fault 155/55 SW, displacement in roof (vertical throw, t = 2'). In cleats Baryt filling cleats 85/88 SE and 74/87 SE. Baryte filling up to 3mm thick, cleats and cleat filling end upwards at top of coal, downwards, they do not pass through clay dike. Cleat filling of other directions is calcite and some kaolinite. Photo should be taken.

ph

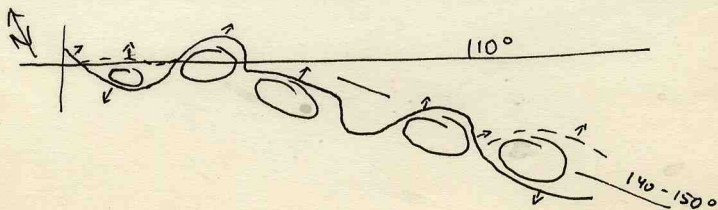
cleat

- 112 92. Clay dike with fault 162/52 SW, immediately above coal are some Bastard Limestone lenses.
- 113 93. Clay dike in roof with fault 147/48-55 SW. Roof consists of Clod and Brereton Limestone.
- 114 94. Slip in roof 118/27 SW, (not clear ~~of~~ ^{whether} clay dike-type). Roof consists of Bastard Limestone with many coal stringers, frequently decrease of calcareousness trend towards Anna Shale lithology. Above Bastard Limestone is 2-3" Clod and above that Brereton Limestone.
- 115 95. Similar to 94 with 0.9' and more of Bastard Limestone grading laterally into Bone Coal. Clay dike-type fault in roof rock 142/33 SW, slip of 94 continues towards E 154/36 SW. Frequently other little + parallel faults staggered and in "en echelon" position.

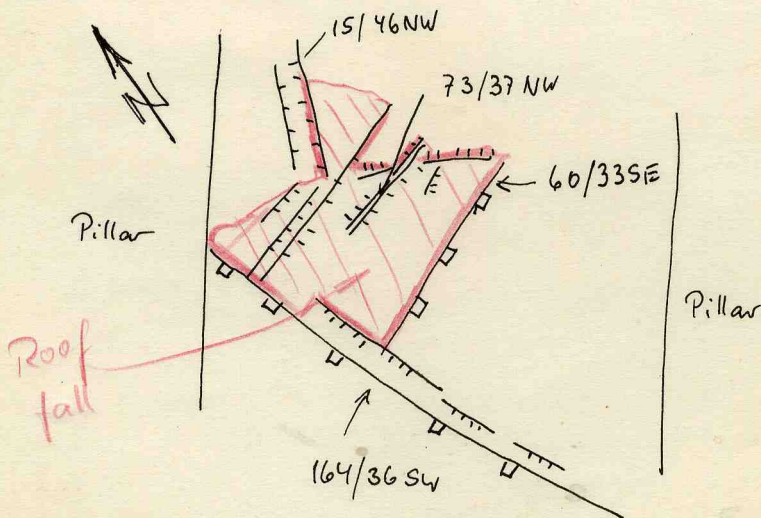
- 116 96. Sample taken of Limestone "boulder" of Brereton Limestone, which here is heavily bioturbated (burros) in clod-transition.



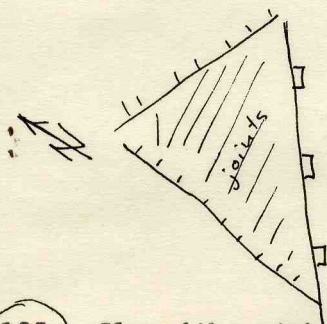
- 117 97. Roof rock is 3.5' or more Anna Shale above Herrin (No. 6) Coal. Larger clay dike-type fault 110/37 NE which peters out with a "goat beard" into top portion of coal. Roof fall is supported by slips and clay dike-type fault of various sizes, which show a very irregular pattern due to frequent Anna concretions.



- (118) 98. Clay dike-type faults 127/26 NE and 137/28 SW in coal and roof rock. Roof \div Anna Shale.
- (119) 99. Roof consists of Anna Shale with frequent Anna concretions; well jointed 65/88 SE and clay dike-type faults.
- (120) 100. Clay dike-type fault in roof rock 68/40 SE and 125/~~None~~ 40 NE.
- (121) 101. Roof is Anna Shale with a clay dike-type fault 142/43 SW.
- (122) 102. Several + parallel small clay dike-type faults in Anna Shale and top coal: 148/41 NE; 159/29 NE. (164/42 NE)
- (123) 103. Larger fault 166/32 SW and very small fault 153/46 SW supported roof fall at (103a).
- (124) 103a. Roof fall caused by various intersecting clay dike-type faults. 15/46 NW; 73/37 NW; 60/33 SE; 164/36 SW; 162/40 SW; 81/42 SE.



- (125) (104.) Various clay dike-type faults causing small roof fall 48-56/35 SE largest
103/37 NE medium
18/56 SE Smallest
joints in Anna Shale roof contribute to roof fall:
64/87 NW.



- (126) (105.) Clay dike with fault 143/27-36 NE. Roof above coal consists of thin "Bastard Anna Shale" then "Bastard Limestone" then Brereton Clod.
- (127) (106.) Roof rock is Bastard Limestone with Bone Coal mixed, above that Clod and Brereton Limestone.
- (128) (107.) Roof rock appears to be stable again ^{with} in the Bastard Limestone and coal mixed, then Brereton Clod and coal mixed, then Brereton Limestone (compare (105)).
- (129) (108.) Little clay dike-type fault in Brereton Limestone 64/40 NW.

ILLINOIS GEOLOGICAL SURVEY, URBANA

H.-F. Krausse

Consolidation Coal Company

Hillsboro Mine, 2nd NE Entries

16 ~~February~~ ^{January} 1975 (Compare also mine notes and stations of J. C. Nelson and H.-F. Krausse of ~~February~~ ^{January} 9, 1975).

109

130

Transition zone of Anna Shale - no Anna Shale.

Roof is mainly Brereton "clod" and Brereton Limestone. Here small pod of 0.1' Anna Shale surrounded by "clod". In cross cut directly east of this point is large fault of about 6'-8' displacement. Clay dike type fault 15/39 SE

Sec: +0.2' Jamestown Horizon
4.5' Brereton Limestone
0.3' Anna Shale

110

131

Anna Shale comes in, thickens rapidly up to 2.5' at the face and is overlain by 0.2' of clod and thick Brereton Limestone Anna Shale as it thickens as in far this area typical facies: lower portion slaty, upper portion less well bedded, weak, slightly mottled with layers of phosphatic nodules

111

132

Two almost parallel clay dike-type faults 47/43 NW and 43/49 SE forming small graben at top of coal. Both contain clay filling and pass through border Anna Shale - No Anna Shale. This is probably an indication that Anna Shale border alone is not a sufficient factor to be mapped. Important is, what is above, there seems to be Brereton Limestone (above Anna Shale) continuing towards the NE.

112

133

Clay dike with fault reaching into floor 40/43 NW, accompanied by a small, parallel SE dipping fault,

By H.-F. Krausse Date 01-16-1975

Quadrangle _____

County _____ Sec. _____ T _____ R _____

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

peters out into coal. Roof is Brereton Limestone (same fault as at (111)).

113 Roof all the way from 112 - 113 Brereton Limestone.

(134) The same fault as at 112 with clay filling: 38/46 NW. Seems to end towards the SW.

(135) 114 Close to Anna Shale - No Anna Shale border. Roof is clod and Brereton Limestone occasionally with ^{up} 8mm of Anna Shale. At northern face is a lense of the Bastard Limestone. Small clay dike type fault 42/59 NW (Anna Shale is dilated due to soft sediment deformation thickness is about 0.6' on down thrown block and 0.2-0.1' on up-block).

(136) 115 Close to boundry Anna Shale - No Anna Shale. Anna Shale thickens towards the north from 0.1' to at least 1.0' at the clay dike type fault (105/51 NE). Roof consists of mainly slaty Anna Shale with large Anna-concretions at face. Joints in Anna Shale 63-69/90 and 139-146/90, spacing: 7 joints per foot.

(137) 116 Anna shale roof, well jointed with Anna concretions, joints 64-70°

(138) 117 Roof ^{sists} ~~connects~~ of intensely jointed Anna Shale more than 1.0' thick with Anna concretions. Clay dike type fault 98-102/48 NE.

(139) 118 Well jointed Anna Shale roof (joints 62-68/90). Clay dike type fault 78/49 NW (same as in 117 and 115).

(140) 119 Roof consists of Brereton Limestone with 0.2' of clod underneath. Clay dike type fault 84/43 SE

(141) 120 Larger clay dike with fault 100-110/43-50 NE goes almost down to the floor. Roof is Brereton Limestone.

(142) 121. Roof in Brereton Limestone with clod underneath; same clay dike as in 120 with fault 124-130/40-50 NE

- 122 Clay dikes with faults, three as shown on map. Very probably same as in # 3b, 3c, 121 and 123 (turning around in strike) Here main fault 142/54 NE others 160-165/35-40 NE. Roof is Brereton clod.
- 123 Roof is Brereton Limestone cut by clay dike with fault 138-132/40-48 NE. About half a foot of clay vein; filling contains limestone fragments.
- 124 Clay dike with fault 92/36 SW in Brereton Limestone roof and coal.
- 125 Roof is Brereton Limestone and clod. Clay dike with fault, main fault 157/48 NE (accompanied by antithetic fault 159/46 SW, not on map). Second clay dike with fault 168/40-45 NE.
- 126 Clay dike with faults (\pm parallel to each other) 160-168/47-55 NE; roof is Brereton Limestone.
- 127-144 See mine notes by C. G. Treworgy and H.-F. Krausse of March 13 and 14, 1975.

148 - 164

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine, T4-7N-3W, Montgomery County.
2nd NE, 14th left. Track entry and two entries
to the NE.

C. G. Treworgy & H. F. Krausse - 3/14/75

148

(127)
15. Roof falls in this area are caused by joints
and slips in Anna Shale. Roof falls are not high, just
slabbing.

149

(128)
16. .5' Anna Shale, ~~up~~ Bioturbation and limestone
nodules in upper part, transition into Brereton
Limestone contains "Brereton Limestone Dikes" in
Anna Shale. Strike 107°/dip SW. Sample taken.

150

(128)
17. .4' Anna Shale. Cloddy Brereton above.
kink zones along rib, may indicate thin Brereton

~~18.~~ 130 does not exist!

18

(15)
18. Roof fall ~~see~~ see H.-F. Krausse # (15)
Sequence above coal as follows: from bottom to top:

- .9' Anna Shale
- .5' Brereton Limestone
- 1.0' Jamestown Horizon
- .8' Conant limestone
- 2.6' Medium dark gray Lawson Shale
- +1.3' Greenish mottled Lawson Shale.

Lawson contains big cracks with sideritic mineral-
ization.

Thickness of Brereton decreases rapidly
eastward; .2' at east edge of fall 1.1' at west
edge.

Anna Shale increases in thickness to East;
1.4' at east edge of fall, .3'
at west edge.

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

By CG. Treworgy
H.-F. Krausse Date March 14, 1975

Quadrangle _____

County _____ Sec. _____ T _____ R _____

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine, Consolidation Coal Co.

C. G. Treworgy and H. F. Krausse - 3/13/75

14-7N-3W, Montgomery County, 2nd NE, parallel sub-mains between 13th & 14th left.

(130) does not exist!

(151) (131) Fault, about .8' displacement. Extends from roof into floor with clay filling.

(152) (132) Cleats with Barite filling.

(153) (133) Fault, claydike, many antithetic slips, Barite filled cleats, bioturbated clod.

(154) (134) Clay filling more than 1' thick in places.

(155) (135) Clay dike and fault, turns around in roof; bioturbation in limestone.

(156) (136) Very thick clay dike (more than 1').

(157) (137) Very thick clay dike, contains xenoliths of coal and black shale. Good place for sample.

(158) (138) .7' Anna Shale. Jamestown horizon directly above Anna Shale.

(159) (139) .7' Anna Shale. 1.2' Jamestown horizon with 2 coal stringers.

(160) (140) Clay filling in coal passes thru Anna Shale into Jamestown Horizon, possibly higher.

(161) (141) Anna Shale with Jamestown Horizon directly above it.

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

By C.G. Treworgy
H.F. Krausse

Date 03-13-75

Quadrangle _____

County _____

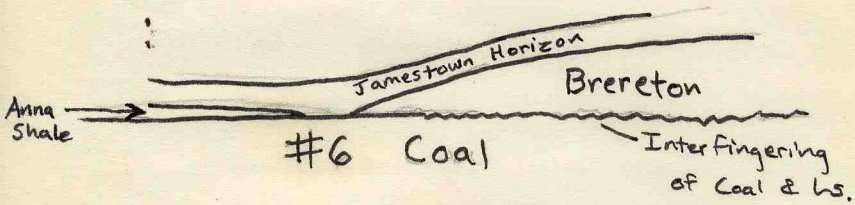
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162

42. Brereton Limestone wedges out against Jamestown Horizon, Anna Shale very thin. See diagram below.



163

43.¹⁴³ Coal interfingering with Bastard Limestone.

44.¹⁴⁴ Brecciated limestone, contains coal fragments
Bastard Limestone, above is Anna Shale

164

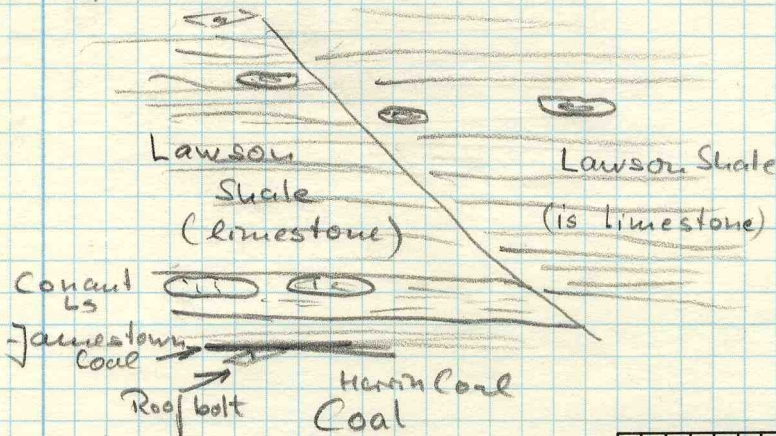
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ILLINOIS GEOLOGICAL SURVEY, URBANA
 H.-F. Krausse and G. J. Allgaier
 Consolidation Coal Company
 Hillsboro Mine, 2nd NE Entries
 March 25, 1975

(165) 145 Photo (facing north) taken of large clay dike; filling with breccia containing fragments of coal and shale (Anna Shale?) altered in various stages. This clay dike is one of very few others in other "important" places, where there is no Brereton Limestone in the roof rocks.

(166) 146 Photos (facing north)
 Section of: Lawson Shale
 Lawson Shale "limestone"
 Conant Limestone with nodular concretions
 all truncated by clay dike type fault

Pho. # 24



By H.F. Krausse Date 03-25-1975

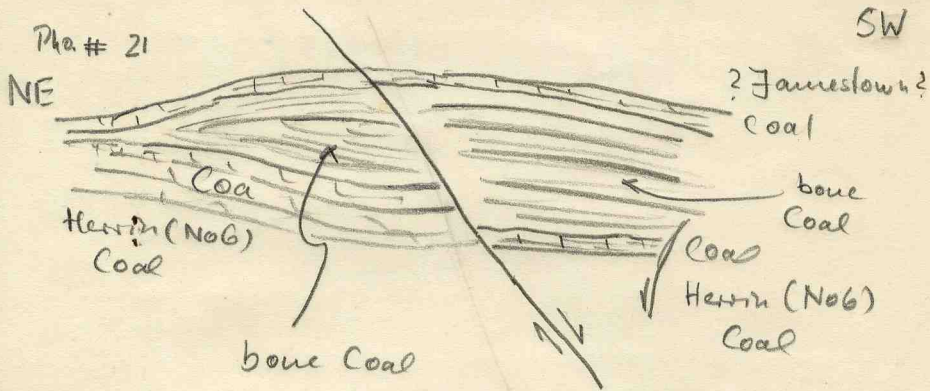
Quadrangle _____

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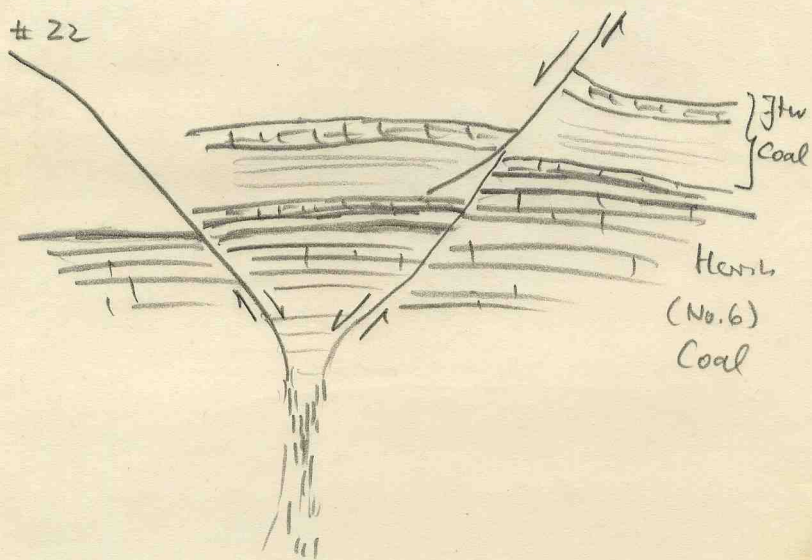
+	+	+	+	+	+	+	h
+	+	+	+	+	+	+	g
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+	+	+	+	+	+	+	d
+	+	+	+	+	+	+	c
+	+	+	+	+	+	+	b
+	+	+	+	+	+	+	a
8	7	6	5	4	3	2	1

147 Two photos (facing northwest) of Anna Shale/bone-coal in uppermost portion of coal seam (or? Jamestown Horizon?)

167



Pho # 22

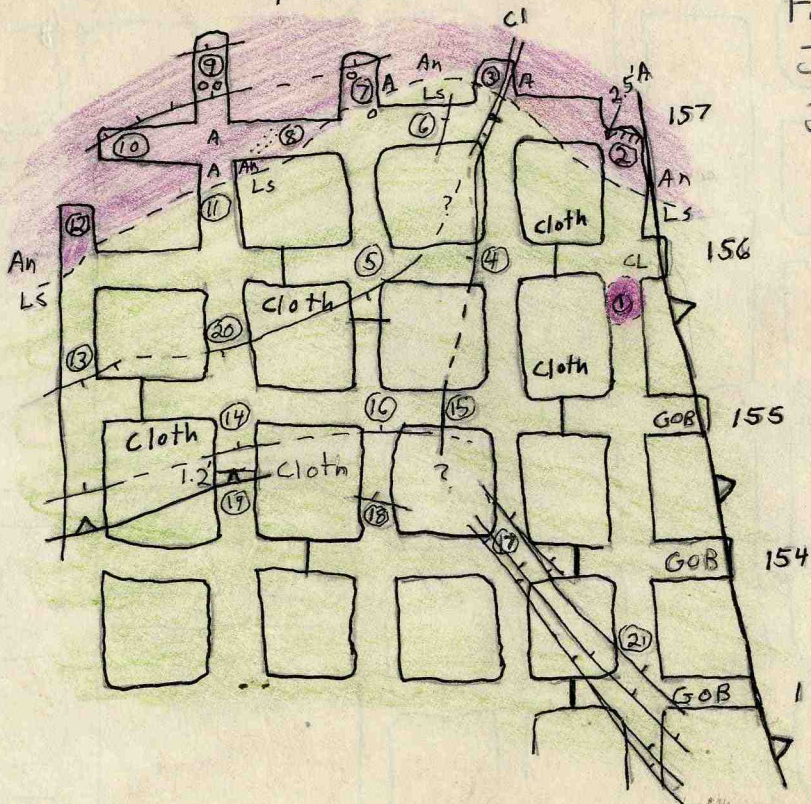


FACE

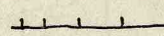
H.F.
Fred Krausse +
John Nelson
Jan. 9, 1975

Hand-drawn map of
face of 2nd N.E.

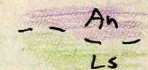
North
↑



Major fault



Minor fault
or slip
Joint pattern



Anna Shale/Limestone
contact.



"kettle bottoms"

Stop number -
see book notes.

ILLINOIS GEOLOGICAL SURVEY, URBANA

Consolidation Coal Co. - Hillsboro Mine
 2nd NE near working face, not on company map
 See hand drawn map. *John Nelson & Fred Krausse*
January Jan 9, 1975

168

1. Roof consisting of dark gray limestone with "clod" shaly base, a pod of Anna shale right at the number.

Major fault in the crosscut bringing limestone against coal. 010° , 55° east.

169

2. Lens of Anna shale thickening to about 2.5 at the face. Overlaminae by clod and then dark gray limestone. Lower part of Anna is slaty, with rare concretions. Upper part not as well bedded, has the phosphatic zone at top. Slip noted at face.

170

3. Clay dike at face. Two associated slips in graben pattern. Slips trace staggered trend across roots about 045° , 52° SE for the main slip.

171

4. Large clay-dike filled with dark grayish-green claystone, appears to reach floor. Probably same as at 3, 040° , 45° NW also a SE-dipping slip.

172

5. Continuation of large clay-dike of 3 and 4; extends to floor.

173

6. Roof dark gray, fine grained limestone with very thin "clod" and in places, slate below. On north wall, nodule of "bastard limestone" with coal stringers noted.

Small slip with clay dike
 040° , 60° NW dip. Slate about 0.1'

By _____ Date _____

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

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+	+	+	+	+	+	d	
+	+	+	+	+	+	c	
+	+	+	+	+	+	b	
+	+	+	+	+	+	a	
8	7	6	5	4	3	2	1

on up side and 0.6' on down thrown side.

Several small discontinuous slips noted elsewhere in the area.

174
7. Black shale roof with numerous large pyritic kettle bottoms. Jointing in shale trends about 065° , with lesser set 143° . Shale at face must be at least 1.0' thick, but thins to zero at intersection with cross cut.

175
8. Black shale roof, closely spaced joints about 061° , about 7 parallel joints per foot.

176
9. Small slips trending 100° as shown. Roof of well jointed black shale, at least 1.0', with scattered kettle bottoms.

177
10. Continuation of slip heading about 075° . Roof as at 9.

178
11. Pinch out of Anna shale as shown by dashed line.

179
12. Pinch out of Anna shale on dashed line. At least 1.5' of it at face.

180
13. Small slip with clay dike as shown. Limestone roof, thin dark grayish-green "clod" layer.

181
14. Slip with large clay-dike 110° , 50° NE dip. Roof at massive limestone. Dike peters out about 3' above floor.

182
15. Limestone roof, slabby clod at base, small clay dike-slip dipping SE as drawn-dies out across inter-section.

183
16. Clay dike as of 14 heads 130° , dip 50° NE. Clod, limestone roof.

184
17. Large clay-dike 142° , 56° NE, splitting as shown; the western branch is the main one.

X

Two parallel clay dikes 165° , 38° NE running diagonally thru intersection.

Roof very thin clod, and limestone.

(185) 18. Large slip with clay-dike trending 135° , dip 48° NE. Slip extends to within 1' of floor but clay dike dies out sooner. Clay dike about 0.5' wide at top, has limestone fragments. Roof is massive limestone, thin clod in places.

(186) 19. Fault 110° , 45° NE, throw about 1.7'. Some clay along fault plane. Fault definitely reaches floor. Roof dark grayish-green, fine-grained massive limestone, argillaceous at base, very hard above.

(187) 20. Small clay dike and slip 090° , dip 35° south.

(188) 21. Slips with clay dikes, as drawn— 157° , 50° SW and 50° NE and 170° , 43° NE and a pair 165° , $50-55^{\circ}$ NE

Roof limestone, thin clod as before. 14th left panels - new area drawn on map. John Nelson.

(189) 1. Black slaty shale roof, well jointed, increasing in thickness toward face. Several small irregular slips as shown.

(190) 2. Shale black, slaty, well jointed (about 060°) with many large pyritic kettle bottoms increasing in abundance toward face. Slabbing common especially around kettle bottoms, though this area was only opened a few days ago. Part not yet bolted. At least 1.7' black shale. Much water seeping from roof.

(191) 3. Roof as at 2. At least 1.3' shale. Appears unstable. Many concretions grown together.

192
4. Anna shale here about 0.2' thick, topped by limy burrowed black shale grading into clod.

See also small slip drawn on map.

193
5. About 0.35' black slaty shale, about 0.2' burrowed limy black shale with limestone nodules grading to 0.1 carbonaceous clod and argillaceous limestone.

Anna pinches out to south and toward face, but thickens to about 1.0' to north rib. No kettle bottoms but many small limestone or pyritic nodules. Base of limestone usually nodular.

Small slips present, one shown on map. Much slabbing of roof.

At face near NW/c, irregular intrusion of limestone into coal top, extending about 1' into coal. Black medium grained fossiliferous limestone with numerous round or oval nodules of pyrite to 0.3' across. Slip nearby.

bastard ls? HFK

Several pyritized traces of tree trunks. Also one coal bounded nodule in roof, probably a tree trunk replaced by limestone.

194
6. No shale. Limestone roof. Transitional boundary of abundant flattened limestone nodules in top of coal. Much carbonaceous or pyritic plant debris. May be fossilized wood.

195
7. Solid limestone roof - little or no clod, transitional zone very thin, few coal stringers in base of limestone.

196
8. Large slip about 017° , 40° SE dip, throw about 1.2'. Roof as at 7.

197
9. Limestone roof, about 0.2' mixed coal and limestone transitional zone, very carbonaceous, as at 7.

At north end of this crosscut Anna shale reappears.

198

10. Small slips as drawn, with minor clay dikes, 027° , 55° NW and 032° , 40° NW. Roof limestone as above.

In 13th left

John Nelson

199

1. Coffin-cover roof fall exposing unusual roof sequence.

Sketch in handwritten notes!

sketch

X

Top of coal irregular, large splits or riders of coal caught in the roof, consisting of very dark gray medium grained fossiliferous argillaceous limestone. Several round or irregular nodules of dark gray fine grained limestone with calcite-filled cracks. 0.1' band of interlayered coal and shale (Jamestown?). Then above streaked dark gray shaly limestone. Hazardous area, cribbed heavily.

(Fred may have already described this)

71
57. (Fred's system). Slip 160° , 38° SW. Roof sequence (working up) - 0.45 dark-very dark gray shale, phosphate lenses at base, well bedded, firm, upper part weaker, with thin coal streaks. 0.15 coal interbedded with shale like that below. (Jamestown Zone) 0.3 dark gray shale with irregular brownish limestone lenses and nodules, trace of coal (tops out in black shaly limestone mixed with thin coal streaks).

Also a clay dike - as drawn on map - reaches base of coal.

200
Much sagging of roof - very bad area.

2. Roof breaking along both ribs several discontinuous slips and clay dikes (not drawn) bad sagging of roof. Black shale top, at least 1.0'. Rib rashing under way.

201
3. Three parallel clay dikes 085° two dip NW, the SE about 35° , with 0.7', 0.5 and 0.6' of throw.

An intersecting clay-dike trending about 146° , dip NE at various angles. (Base map is not accurate in this area).

Judging by offset at the intersection the three parallel faults occurred after the intersecting one.

Roof here black slate, several large kettle bottoms, Jamestown coal horizon about 1' up.

202
4. Many large intersecting clay dikes. Most penetrate entire seam often one has intruded another. "Too numerous to measure."

ILLINOIS GEOLOGICAL SURVEY, URBANA
H.-F. Krausse
Consolidation Coal Co.
Hillsboro Mine, 2nd NE entries
Stations as on new station map as of Sept., 1975

203. clay dike type fault, 115/25 SW; roof Anna Shale.
204. clay dike type fault, 105/45 SW, displacement more than 1'; roof Anna Shale.
205. clay dike type fault, 90/45 S; south cross cut well jointed Anna Shale.
206. clay dike with fault, 115/32 SW; roof Brereton Ls., with thin clod.
207. clay dike with small fault, 140/53 NE; roof Brereton Ls.
208. clay dike with fault, 170/30 SW, roof Brereton Ls.
209. clay dike type fault, 175/30 SW, roof Brereton Ls.
210. clay dike with fault, 48/43 NW, roof Brereton Ls.
211. clay dike type fault, 43/39 NW, roof Brereton Ls. in this cross cut along south rib is kink zone well developed.

By H.F.K. Date _____

Quadrangle Montgomery

County _____ Sec. _____ T. _____ R. _____

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

212. clay dike type fault, 165/47 SW, roof is very thin Anna Shale (about 0.7-0.9') and Jamestown Coal unit above (No Brereton Ls.)
213. clay dike at the limit of Anna Shale to Jamestown Coal unit (No Brereton Ls. Fault, 75/40 SE)
214. clay dike type fault, 165/38 SW; roof Jamestown Coal unit, occasionally very thin 0.1-0.2' Anna Shale underneath.
215. Fault zone forming very narrow graben structure, is directly related and a little east of the limit Anna Shale - No Anna Shale. Along fault zone, which runs parallel to the entry, along rib, roof is heavily weakened and working, mostly timbered or cribbed.
216. Roof: well jointed Anna Shale with concretion joints, 65/86 SE.
217. Anna Shale in roof well jointed, 64/86 SE, some slabbing.
218. Anna Shale in roof well jointed, two sets, 64-68/85-90 SE and 175/88 NE.
219. Roof fall 3.6' Anna Shale measured with Conant Ls. above (probably Jamestown unit was included in Anna Sh. measurement).
220. Section of roof sequence on hanging wall of the fault.
+3' Lawson Shale
1.3-1.5' Conant Ls.
0.6-0.9' Jamestown Coal unit
+4.1' Brereton Ls. (bottom not exposed)
221. Interfingering of Herrin (No. 6) Coal with Anna Shale, but possibly and probably also

transition into Jamestown unit. There is no Brereton Ls. or equivalent. Jamestown Coal streaks are immediately on top of thin Anna Shale.

222. Roof fall through thick (about 3.8' Anna Shale and Jamestown unit up to base of Conant Ls. (No Brereton Ls.)

+

ILLINOIS GEOLOGICAL SURVEY, URBANA

Hillsboro Mine

2nd NE, 14th Right

Mapping Track Entry and Returns

July 31, 1975

Study sites see
joint map of
HHD and HFK

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

223

199. Track Entry

Strata seen on downthrown side of large fault from top of coal upwards:

0.3' Anna Shale, soft, black, with typical phosphatic nodules.

(for the Hillsboro mine)

+4.3' Brereton Limestone

Jamestown Horizon visible above. Fault measured on HW of coal-strike N 17° E, dip 38° SE, up to 0.1' of gouge on fault contact, also pockets of white mineral (calcite?, barite?). Coal displaced ≈ 7'.

224

200. N side of entry

Small clay dike type fault accompanying larger fault, slip originates in underclay and steepens upward petering out in a "goat beard" about in the middle of the coal seam. Strike N 18° E, dip 64° middle of coal; 39° in lower 1/4 of coal; 27° where slip enters clay. Vertical displacement near the underclay, 0.4'; 1.9' movement along dip, coal bedding trends normal to slip surface, some drag. Southward this slip trends toward main fault. Some water seeping down along main fault.

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

By CG Treworgy
HFK Krausse

Date July 31 1975

Quadrangle _____

County _____ Sec. _____ T. _____ R. _____

225

201. Main fault, strata from roof down.

- 1.8+ Feet of light greenish-gray limestone, brachiopod fossil noted, very hard.
- .6' Jamestown Horizon, dark brown shale, some limestone nodules, green material along base.
- 6' Brereton Limestone - medium gray, calcite layer along fault 0.1'.
- .2' Clod
- .1-.4' Anna Shale, black, phosphatic lenses, some slightly disturbed zones, possibly bioturbated. Coal bed on downthrown side dips toward fault, this inclination extends up to 1 crosscut back from fault.

226

202. Small roof fall, strata from coal up

- .8' Slaty Anna, black
 - .6' Dark gray, weak, but bedded
 - .2' Phosphatic layer
 - .6'+ Weak, mottled shale
- } Anna Shale

This area of the entry is crossed by numerous small slips which do not seem to displace the top coal.

227

203. Small roof fall exposing Anna Shale, subdivided from coal up as follows:

- .8' Slaty
- .6' Weak, bedded
- .2' Phosphatic nodular layer
- .3' Crumbly, mottled zone

Several clay dike type faults running through coal. Most run from Anna Shale downwards and end in the coal. One was noted which ran upward from the underclay and petered out in the coal. This slip displaced the coal at least 1'. Strike N 45° E, dip 26° SE. Water is dripping from the roof nearby. A large puddle covers most of the entry.

228

204. Large roof fall, strata from coal up.

3.6' Anna Shale, black, subdivided as follows:

1.1' Slaty, some large concretions

.8' Well bedded, but not fissil

.3' Layer of phosphatic nodules.

1.1' Weak, partially mottled

.2-.3' Layer of phosphatic nodules.

.2-.3' Shale

.5-.7' Brereton Limestone, light, medium gray

.6-.7' Jamestown Horizon, dark brown

1.1' Conant Limestone, light brown

3'-4' ^{SHALE} Lawson, greenish, mottled.

Fall domes out in Bankston Fork, slips pass through and effect Bankston Fork Limestone.

229

205. Strata seen in large roof fall from coal up.

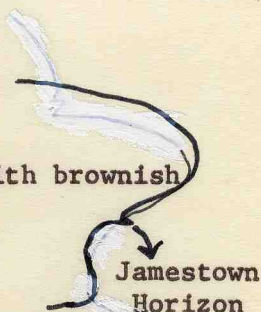
3.5' Anna Shale

.5' Dark brownish limestone (Conant?)

- 3'-3.5' Light greenish gray limestone, "Lawson Limestone" (calcareous shale?)
- 3' Lawson Shale, mottled greenish fall probably tops out in Bankston Fork. Jamestown not recognizable. Brereton not recognizable.
- (230) 206. Large roof fall. Strata from coal up
- 2.8' Anna Shale
- .6-.8' ; Jamestown Horizon
- 1.1' Conant Limestone, brown, large limestone nodules or lenses in upper portion.
- 1.5' "Lawson Limestone," greenish gray (calcareous shale), very soft, crumbly.
- +3' Greenish mottled Lawson Shale.

Roof bolt shells have been torn out of holes. Bolts were anchored in mottled Lawson Shale. Only two small slips visible in fall.

- (231) 207. Strata from coal up; N side of entry.
- .15' Anna Shale, *slaty*
- .12' Coal (Jamestown)
- .38' Dark gray calcareous shale with brownish irregular limy shale.
- .14-.16' Coal (Jamestown)
- +8' Conant Limestone, medium gray, hard, coal streaks in lower portion, numerous fossiliferous fragments.



No (232) !

South side of entry

- .2' Anna Shale
 - 1' Jamestown Horizon, 2 layers of coal
 - + .5' Conant Limestone
- 233
208. Large roof fall strata seen from coal upwards.

- 1.8' Anna Shale, some concretions, *lower portion slaty*
- 1.0' Jamestown Horizon
- 1.5' Conant Limestone
- 2' Dark, bedded Lawson Shale
- +3' Mottled, greenish Lawson Shale
- +2' More Lawson towards center of fall
Fall domes out at Bankston Fork

- 234
209. Strata seen in HW of large fault from top coal up

- .7' Slaty Shale, large concretions
 - 1.0' Well bedded, not so slaty shale
 - .2' Lower phosphatic layer
 - .6' Weakly mottled, crumbly shale
 - .2' Upper phosphatic layer
 - .25' Mottled green and black, upper portion grading into Jamestown.
 - .5' ^{Horizon} Jamestown, no coal, medium gray with brownish tint, base of Conant visible.
- } Anna Shale

235

210. Strata in HW of fault from coal upwards

2.9' Anna Shale. Grades into:

1.8' Greenish calcareous shale, becoming greenish, gray, argillaceous limestone (Brereton) upward.

.5' Jamestown Horizon, no coal streaks.

X