

South
Knight Hawk Coal - Prairie Eagle Mine - Perry County

Notes by John Nelson on visit with Scott Elrick of ISGS, Howard Falcon-Lang of Royal Holloway University in London, England; and Chris Fielding from the University of Nebraska.

Purpose of visit was only to have another look at the box cut at the mine portal. We did not go underground.

Portal location (belt entry) 250 ft from SL, 600 ft from EL, Sec. 31, T5S, R4W, Perry County. Section from Bankston Fork upward described along inclined road into pit; section below Bankston Fork at east end of south-facing highwall, east of mine portals.

TOP

10-15' Surficial materials, not examined

5'± Piasa Limestone, mottled brownish gray, very finely crystalline (recrystallized micrite?) argillaceous; contains brachiopods but they are poorly preserved. Occurs as a series of partly overlapping, lens-shaped bodies, total thickness estimated 3 to 8 feet. Lower contact sharp and undulating. Description based on fallen blocks.

2' Shale, mottled olive-gray and dark gray, weakly fissile clay-shale, deeply weathered. Spheroidal siderite nodules less than 0.1 ft across are common. Lower contact rapidly gradational.

0.4' Carbonaceous shale (Danville Coal horizon), grayish black, incompetent, weakly fissile, silt-free, contains streaks of fusain and plant fossils; Howard identified *Cordaites* and *Macroneuropteris*. Lower contact rapidly gradational.

4 ½' Claystone, upper part medium-dark gray, lower part olive-gray, weathers yellowish brown. Soft, massive to weakly blocky, rootlets near top. Lower contact sharp.

½' Carbonaceous claystone (Baker Coal horizon), grayish black, soft, non-fissile but contains stringers of dull coal. Lower contact gradational.

4 ½' Claystone, olive-black to dark olive gray, mottled, slightly silty, upper part profusely slickensided, lower part massive to weakly blocky. Lower contact rapidly gradational.

0.3' Limestone (top Bankston Fork), medium gray, very argillaceous, nodular, upper part has nodules in claystone matrix, nodules intergrown in lower part; lower contact rapidly gradational.

0.6' Shale, olive gray, silty, very calcareous, weakly fissile, lower contact rapidly gradational.

2.3' Limestone, medium gray, weathers yellowish brown, microgranular, dolomitic, no fossils found. Lower part is very silty, approaching siltstone, and shows thin, slightly wavy lamination. Lower contact sharp.

4 ½' Shale, medium gray, upper part olive gray, silty, calcareous, weakly fissile. Upper 1 to 1 ½ feet contains abundant large (several inches across) irregularly shaped limestone nodules that are partly intergrown. Lower contact sharp.

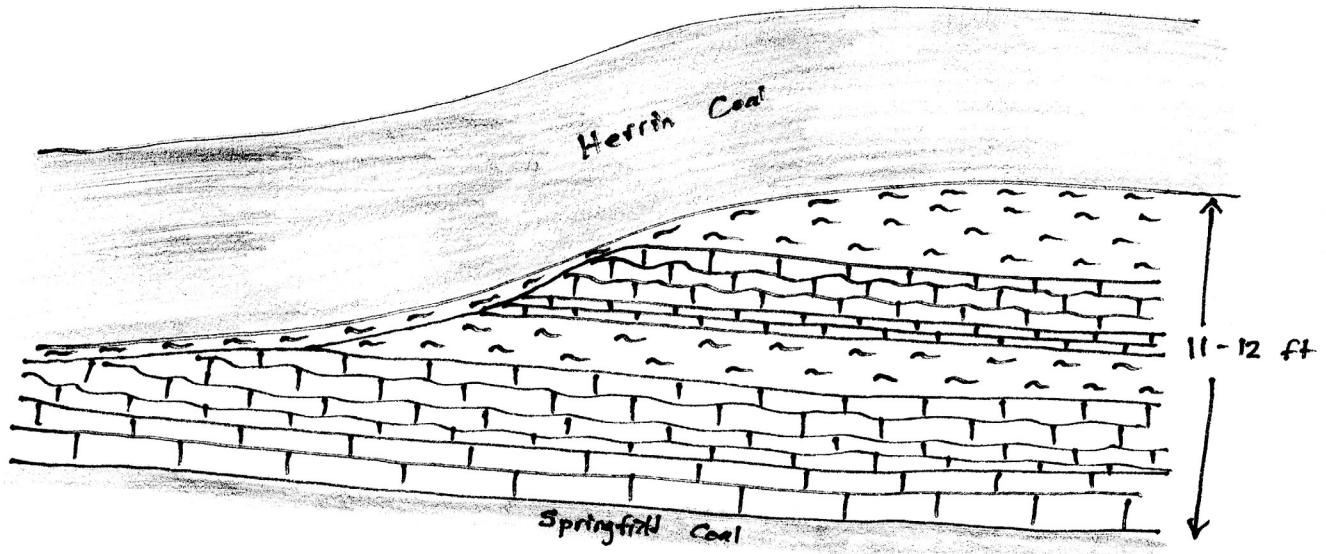
- 4 ½' Limestone (base of Bankston Fork), medium gray to olive-gray, weathers yellowish gray to orange, dolomitic lime mudstone, partly sublithographic; contains brachiopods and echinoderm fragments, massive to thick-bedded with hairline clay partings. Unit is tabular, lower contact sharp.
- 7 ½' Shale, dark gray to black, mostly inaccessible and mud-draped, upper part soft and mottled, lower part hard, calcareous, almost limestone. Lower contact sharp.
- 0.3' Coal (Jamestown), bright banded, contacts sharp.
- 1' Shale, black, hard, very calcareous, almost limestone.
- 6 ½' Limestone (Brereton), dark gray, microgranular, scattered small fossil fragments (unidentified), upper part massive or nearly so and lower part has wavy beds a few inches to about 1 foot thick. Portions have nodular bedding. Contact sharp, but nodules or lenses of limestone occur near top of shale below.
- 3 ½' Shale (Anna), black, hard, fissile, contacts sharp.
- Herrin Coal - not measured. Section continues in sump west of mine portals. This was a cursory description.
- 3' max. Claystone, olive-gray, blocky, incompetent.
- 2' Limestone, gray, nodular with claystone matrix, limestone in very thin tabular beds at base of unit, grading into top of next unit.
- 2' Claystone, like next-to-last.
- 3' Limestone, gray, nodular
- 1 ½'-2' Limestone, gray, massive.
- 1'+ Coal (Springfield) bright banded, base under water.

Remarkable here is angular discordance between Herrin Coal and floor strata - as shown in sketch. The base of the coal truncates as much as 10 feet of strata within a lateral distance of 50 feet, and as much as 10° angularity. There is a claystone layer a few inches thick between the truncated beds and base of coal. This is difficult to explain except as result of tectonism during deposition.

Highwall mining - Knight Hawk has installed a highwall mining machine in a box cut east of the underground portal, and this is extracting coal between old strip mine and the underground workings. The working head (not visible) is said to resemble a continuous miner. Behind this are a series of massive steel frames that contain augers used to carry the coal back from the cutting head to the outside, where a conveyor belt dumps coal into a pile to be loaded onto trucks. The resulting tunnels in the coal are about 12 feet wide and 8 feet apart. They run parallel into the face a distance of 840 feet.

This operation is an improvement on the old-style auger mining in which augers bored a series of circular tunnels into the coal. The system that keeps the cutting head within the coal seam is quite complicated and I did not fully understand its operation as explained to me. Basically, an increase of amperage required to turn the cutting head signifies that the machine is deviating into the floor or roof, and appropriate corrections can be made remotely.

Prairie Eagle Mine - Sump at portal
Sept. 14, 2009



View 50-60 ft wide, vertical exag. 2 to 3x

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Sec 31

This is a brand-new underground mine, a twin to Prairie Eagle and like the latter, accesses the Herrin Coal via a box cut. Belt entry portal is located 200 ft from NL, 2400 ft from WL, Sec. 30, T5S, R4W, Perry County (about two miles south of Prairie Eagle).

Only a small area has been mined underground. We did not go inside, but examined rocks in the box cut. The section is as follows:

TOP - surficial materials not examined.

0-5' Sandstone, light gray, very fine-grained, micaceous, argillaceous, laminated to thin bedded. Not accessible, described from pieces in spoils. Appears to have erosional lower contact.

15-20' Shale, dark gray, not accessible.

½ - 1 ½' Coal (DeGraff or Rock Branch?), shaly, not accessible

1-3' Claystone, incompetent

3-8' Limestone (Piasa), medium gray, weathers grayish orange, very finely granular, argillaceous to silty, non-fossiliferous, bedding lenticular to coarsely nodular. Lower contact sharp and highly uneven, rolling. I suspect this contact reflects loading onto incompetent claystone below, rather than erosion.

5-12' Claystone, gray to olive-gray, blocky, contains lenses and nodules of limestone resembling Piasa. No coal horizons evident. Lower contact irregular.

2.0' Limestone (upper Bankston Fork), medium gray, weathers orange, sublithographic, single bed. Upper part bleached, vuggy, and brecciated. Lower contact sharp and planar.

5.5' Shale, gray, calcareous, weakly fissile, masses of intergrown limestone nodules are common near the top. Lower contact sharp and planar.

4.4' Limestone (lower Bankston Fork), medium-light gray with a greenish cast, weathering orange, dolomitic lime mudstone containing brachiopods and crinoids, single bed, lower contact sharp and planar.

4.0' Shale, dark gray, silty, moderately fissile, not calcareous, lower contact rapidly gradational.

2.2' Limestone (Conant), dark gray, lime mudstone to wackestone, upper 0.7-0.8' very shaly, thin-bedded with calcareous shale layers; large brachiopods common. Lower 1.4-1.5' a single bed of hard, micritic limestone. Lower contact sharp.

4.3' Shale, dark gray, finely silty, calcareous, moderately fissile; thin layers (less than 0.1 ft) of limestone near the top and occasional rounded limestone concretions as large as ½ foot across occur in the middle part of the unit. Lower contact sharp.

0.2-0.3' Coal (Jamestown), bright-banded with laminae of black shale; contact sharp.

0.8' Limestone, grayish black, microgranular, laminated, contains *Stigmara* and *Lingula*. Lower contact sharp.

- 4' Limestone (Brereton), dark gray, hummocky bedding; behind wire mesh at mine portal, couldn't examine closely.
- 2' Shale (Anna), black, behind wire mesh
- 5-6' Herrin Coal, not examined closely.

Prairie Eagle South - Box cut at portal - Sept. 14, 2009

