

American Coal Company
Millenium Portal Mine
Saline County

American - Millenium
Portal

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Notes by John Nelson on visit with Tom Moore and Russ Jacobson, accompanied by Greg Smith from the company, February 19, 2004

We made more or less the same tour I made with Greg Smith a month ago, walking from the shaft bottom along the Main West to the 4th North Headgate.

Large rolls are found not far from the shaft bottom. They are lenses of siltstone, nearly identical to that of the roof, within the upper part of the coal. The coal splits along the margins, with "riders" taking off into the roof. The siltstone filling the rolls has largely horizontal or gently undulating lamination, except at the lateral edges where the lamination is locally contorted, suggesting that the soft sediment was squeezed laterally between layers of peat.

The roof is medium gray silty shale to siltstone containing a few thin, planar laminae of light gray sandstone along with scattered plant fragments.

Turning into the Main West, we cross a sharp "hill" in the coal where laminated sandstone makes the immediate roof. Bedding planes are coated with carbonaceous debris. Greg mapped a series of rolls in this area, but rock dust hides most of the detail.

Joints are uncommon until we reach the turnout to the 3rd North headgate, where NE-trending vertical joints become apparent. Greg notes that NE-trending joints occur in the Millennium Mine but not in the Galatia North and East Mines, where the joints run nearly east-west. This confirms my idea that the intense NE-trending jointing at Millennium is a local tectonic feature.

Water flow in most areas of the 4th North Headgate has diminished greatly, and the sea of mud encountered a month ago has largely dried out. One area that is still very wet and muddy is along the left-hand (northwestern) of the three parallel headings. An enormous roof fall has taken place, extending through three intersections in a

line running northeast. American had to mine a fourth entry to maintain ventilation around the fall after attempts to stabilize the area failed. Intense vertical fracturing parallel to the entry is the cause of the fall. These extend to the top of the fall, at least 50 feet above the coal; and water is raining out of them. As we can see in the coal and immediate roof at the edges of the fall, many of the fractures are open or filled with a mixture of mud and angular rock fragments. The fractures step off to the left when followed along strike.

This structure is bordering on a pull-apart graben. The nearest analog I have seen is along the strike-slip fault in the Crown II Mine in Macoupin County. Stabilizing the roof or shutting off the water flow would be a hopeless task. It was American Coal's special misfortune to run their longwall headgate exactly parallel to the fracture zone.

We went briefly to the 5th North Headgate, where they are mining into, or through the fracture zone encountered on the 4th North. Many fractures are producing water, but not much detail can be seen because of the fresh condition of coal and roof together with deep water and mud and movement of face equipment. Everyone is hoping they will soon get through this fracture zone.

**American Coal Company - Galatia Mine - Millenium Portal
Saline County, Illinois**

Notes by John Nelson on visit with Greg Smith of American Coal,
January 9, 2004.

A troublesome fracture zone has been encountered in the 2nd through 4th North longwall panels. Walking north into the 4th North headgate, we see the roof is well-laminated gray silty shale containing abundant well-preserved fossil plants, mainly *Neuropteris* fronds and *Cordaites*. Long, vertical, planar joints strike N 60° E, parallel to the entry.

Three de-watering wells were drilled in advance of mining near crosscut 11. Nevertheless, water is dripping from the roof in several places nearby. We are approaching an area of sandstone roof. In crosscut 13 left, water is coming from a fracture that runs N 60° E.

Greg mapped an area of sandstone roof from crosscut 13 to 15. Here the coal dips sharply downward, and the roof contains many slips and has fallen in many places. Little water is dripping now, but past accumulation made the underclay a soupy mess.

On belt entry between crosscuts 16 and 17, a water-bearing fracture zone strikes N 60° E. This is a bundle or swarm of parallel joints that step off to the left, in *en echelon* fashion, as you walk along them. Crushed shale and mud fills the wider fractures, and water is pouring out in many places. Continuing northeast, the intense fracture zone dies out into ordinary joints.

On the travelway (middle entry) between crosscuts 19 and 20, a fracture zone strikes N 25° E and dips vertically or nearly so. The shale is crushed, and the N 25° E fracture is flanked on both sides by closely-spaced N 60° E fractures that extend only a few feet away. This feature is presently dry. See sketch.

Another zone of intense fractures, striking N 60° E, is on the northwest rib of the travelway at crosscut 19. Mud and crushed shale have fallen out, leaving open crevices several inches wide and extending many feet upward into the roof. The southwest end of the zone dies out within the width of the entry, the northeast end continues into the pillar. Only a little water is dripping, but the floor is a quagmire. The miners resorted to angled truss bolts for roof support.

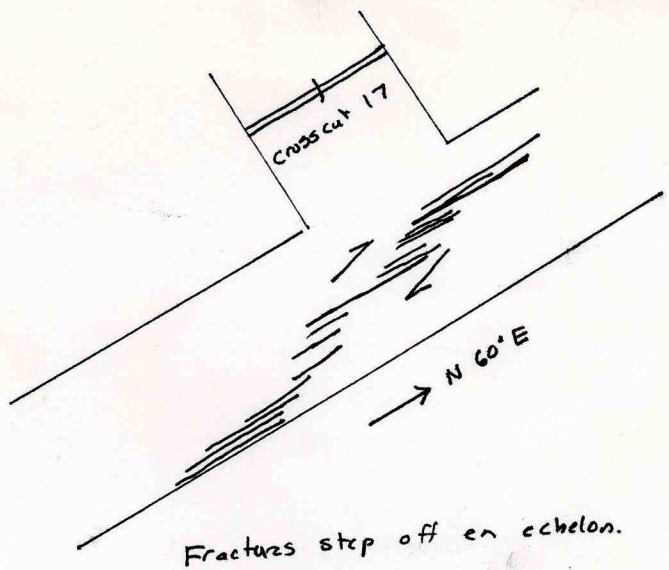
Greg confirms that these fractures were present before mining, they are not induced by mining.

North of crosscut 20, a fracture zone strikes N 60° W, nearly perpendicular to the usual trend. The zone is 6 inches wide and crushed shale fell out three feet above the coal. The zone ends abruptly at one end, the other end runs into the pillar.

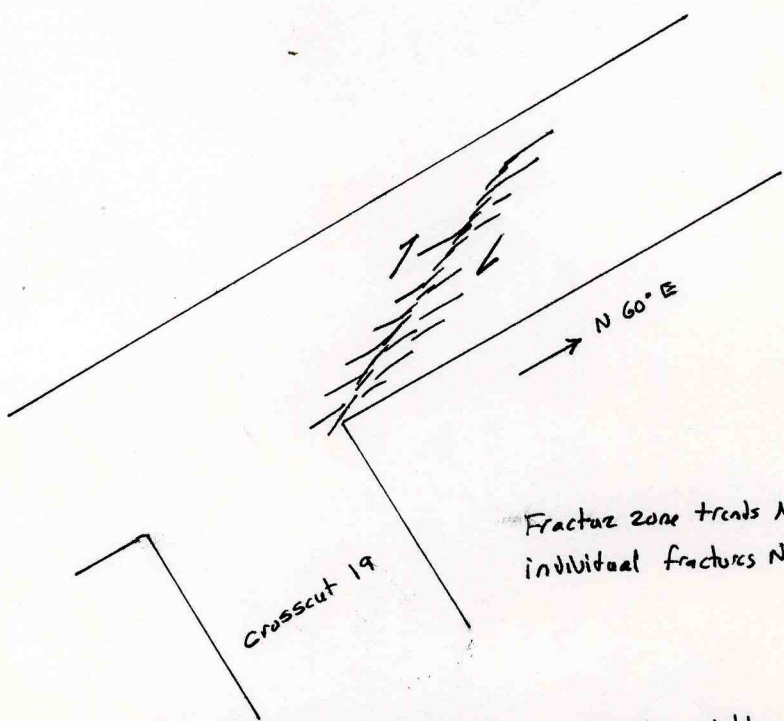
A wide fracture zone [trend not recorded] is at crosscut 24 on the northwest entry; the zone crosses the intersection obliquely. There is a large roof fall, cribs have been set, and water is ~~drilling~~* Here, as elsewhere, the fractures scarcely affect the coal. The few that enter the coal extend no more than a foot below the top of the seam. In the same area, however, a N 60° E fracture penetrates roof, entire coal seam, and floor, and water is pouring out. This is a single fracture, not a zone.

An enormous roof fall is on northwest entry at about crosscut 20. Fracture zones run parallel to entry and extend to the top- of the fall, at least 20 feet above the coal. On the northeast the roof is still in place, anchored by angled trusses and a double row of cribs. These fractures run parallel and not *en echelon*.

* dripping.



Fractures step off en echelon.



Fracture zone trends N 25° E, individual fractures N 60° E.

The fracture pattern in both cases suggests right-lateral strike slip.