Nubay Mining, LLC
Liberty Mine
Saline County, IL

Nubay – Liberty Mine

Nubay Mining, LLC - Liberty Mine - Saline County, Illinois
Notes by John Nelson on visit with Tom Moore, Russ Jacobson, Scott Elrick, and Andrew Louchios, February 5, 2004.

This is a slope mine in the Springfield Coal. Nubay deepened the slope of the Brushy Creek Mine, which worked the Herrin Coal, and is using the surface works of Brushy Creek. The slope location is **1120' NL, 200' WL, Sec. 32, T8S, R5E** on the Harco 7.5' quadrangle. Nubay traces its lineage from Buddy Morris through Western Fuels (Brushy Creek Mine), combined with Nubay Mining, which has operated in western Kentucky for about 20 years. It is interesting that Buddy Morris deepened the slope of the old Parton No. 2 Mine near Crab Orchard from the Herrin to the Springfield Coal back in the late 1970s.

From the slope bottom, Main North entries of the Liberty Mine extend N 13 W. Two sets of panels have been developed west off the Main North at right angles to the latter. The 1st West Panels have already been completed and sealed. The 2nd West Panels are now proceeding, with current mining taking place at the face of the submains. Liberty's workings adjoin Peabody No. 40 on the west and Peabody No. 47 (both long abandoned) on the east. As Liberty proceeds northward, it will leave these old mines behind. It will also be mining away from the Cottage Grove Fault System.

This was Andrew's first time underground.

From the slope bottom, we rode to the face of the 2nd Submain West for a quick tour of the working face, then we stopped to look at a few roof falls on the return trip. Low seam height (4 to 4 ½ feet) discourages long walking tours.

Coal thickness appears uniform throughout the mine. The seam undulates gently. No faults have been encountered. The roof is thick Dykersburg Shale. Immediate roof is generally dark gray, well laminated, and competent shale containing scattered plant fossils, including coalified bark and stems. Roof conditions are generally

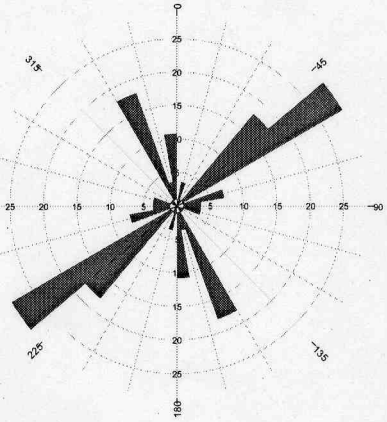
excellent, although in the Main North, the lower one foot or so of the shale has commonly spalled away, suggesting moderate sensitivity to moisture. Joints are widely and unevenly spaced. Throughout the mine, they strike east-west. There is little, if any water seepage.

The only series of large roof falls is in the 2nd Submain just inby the Main North. Approximately 15 intersections in a straight line running N 13 W have fallen. We crawled into several of these and could see nothing due to broken rock blocking the view. On the adjacent, parallel entry, severe "cutters" were developing along the west rib and the floor was heaving. Above the conveyor belt in the Submain, a large fall in line with the group of 15 has been cleaned but not re-bolted. I saw no "kink zone" or geologic feature that might account for roof failure. South of this fall, along the haul road, cribs are taking weight, but no kink zone or geologic weakness is evident.

The cause of the aligned roof falls is unknown. I suspect *in situ* compressive stress, given presence of known stress failure in the nearby Galatia Mine, where the stress axis is ENE.

Cleat measurements by David Morse 8/30/05
Liberty Mine, Saline County, IL

Direction	Dip Angle	Dip direction	kind of cleat
285	80	S	b
55	90		f
50	85	S	f
355	90		b
55	88	N	f
350	90		b
340	88	E	b
50	90		f
275	90		b
85	90		f
350	90		b
70	90		f
330	90		b
40	90		f
50	90		f
335	90		b
15	90		
70	90		f
45	90		f
45	90		f
40	90		f
335	90		b
55	90		f
50	90		f
40	90		f
335	84	W	b
55	90		f
330	90		b



Liberty Mine Coal Cleat Orientations

Calculation Method	Frequency
Class Interval	10 Degrees
Min.Length Filtering ..	Deactivated
Max.Length Filtering ..	Deactivated
Azimuth Filtering	Deactivated
Data Type	Bidirectional
Population	28
Maximum Percentage	28.6 Percent
Mean Percentage	10.0 Percent
Standard Deviation	8.48 Percent
Vector Mean	84.83 Degrees
Confidence Interval ...	26.83 Degrees
R-mag	0.64

DGMorse
8/31/05 visit
Springfield Coal.

Nubay Mining, LLC, Liberty Mine - Saline County, Illinois. Notes by John Nelson on visit with Scott Elrick and David Moore; Bob Clarida and Steve Reynolds from Nubay. August 31, 2005.

Main North entries run NNW from slope. First two panels west off Main North have been sealed.

Roof falls are highly preferential in NNW headings. In 3rd panel west, some rooms were abandoned because of bad roof and water seepage from floor. Another area that had poor roof and water from bottoms was along mains at junction with 2nd panel west. They use fully grouted tension roof bolts on mains, plain resin bolts in rooms.

No faults have been encountered to date.

Currently two working units, a super section (two continuous miners) at face of Main North, and a single-miner unit on new Submain East.

At slope bottom, joints in roof shale run N80°E, spaced several per foot.

We go to Main North junction to 2nd west panel (sealed); where roof falls have occurred. In entry west of travelway, we see a roof fall (uncleared) at least 10 feet high. A kink zone runs south from the fall along west rib and across next intersection south. Roof shale is crushed (light gray) and layers slightly buckled downward where slabs fell out along the kink.

On the No. 8 entry, a line of big falls extends north for 8 or 9 crosscuts. A kink zone runs along the west rib south of the southern end of the roof falls. At this intersection the kink looks like a west-dipping thrust fault. Cribbing at the intersection prevented the fall from continuing south. The kink continues southward into the next intersection, hugging the west rib. It dies out in the next intersection, curving to SW and showing evidence of slippage along bedding planes (white shale powder, striations). Roof is gray silty shale with siderite nodules; bedding weakly developed.

We went briefly into the Submain East Entries, which have been driven about 1,000 feet east of Main North. Immediate roof contains scattered plant fossils - lycopod leaves, bits of fern foliage, one calamite, and other stems. Just off junction to Main North, joints are prominent and run approximately east-west.

At the face of the Main North, the other active section, we see kink zones beginning to form. One follows the east rib and bedding planes are coated with shale powder. Farther north in the same entry, there are kinks along both ribs.

Fossil plants seem to be concentrated just above the coal, but scattered fragments occur two to three feet above the top of coal. Here are a couple of partial *Neuropteris* fronds. Moisture weakens the roof in this mine; basal one to two feet of shale fall away in older workings.

Next we go to 3rd panel west. Kink zone at north edge of large fall is at east rib line. Broken shale pieces are rotated, indicating roof is being driven horizontally against east rib. This kink does not extend across the intersection, but some bedding planes there are coated with shale powder.

CONCLUSION: In situ horizontal stress is the cause of roof failures in NNW-trending headings. The stress orientation appears the same as in the adjacent Inland No. 2 and Galatia Mines, and also in the Brushy Creek Mine, which extracted Herrin Coal above the present Liberty Mine. One difference seen here is that kink zones tend to follow ribs instead of running down the centers of entries. However, the evidence for horizontal E-W or ENE-WSW compression is clear. Turning mine entries at 45° to principal stress axis probably would be beneficial.

Nubay Coal Company - Liberty Mine
Saline County, Illinois

Notes by John Nelson on visit with Scott Elrick of the ISGS and Bill DiMichele of the Smithsonian Institution, June 30, 2006.

This mine reportedly is experiencing financial troubles and another company is looking to buy it. Nubay also is said to be having difficulty hiring and retaining miners. Opened as a non-union mine, Liberty is now a UMWA operation - the first new union coal mine in Illinois for 25 years.

Purpose of our visit was to collect and catalog fossil plants in the roof shale, as part of a basin-wide study undertaken by Bill DiMichele. On previous visits to this mine we saw few fossils, but were not searching for them.

Our visit was confined to walking out a small area around the slope bottom, where the roof shale has been taken out or fallen to a height of 2 to 3 feet above the coal. The shale is medium-dark gray, finely silty, and has faint, locally rhythmic (tidal) lamination. Small siderite nodules, about 1 to 2 centimeters across, are common; and Scott observes that many of them fill or replace burrows. The contact of shale to coal is sharp in some places and elsewhere gradational through a few inches of interlaminated coal and shale. Shallow rolls, less than one foot deep, with splayed coal "riders" occur in places.

Plant fossils are common and most are well preserved, albeit not spectacular. The following is a partial list of fossils named by Bill:

Neuropteris
Pecopteris
Sigillaria
Lepidodendron
Lepidophlois
Diaphodendron
Lycopod leaves and cones
Stigmarian root

The first two named plants occur as foliage, and the next four as partial stems or logs. We believe that all the plant remains were transported from their sites of growth. The stems and logs all are flat-lying, we saw no stumps, and the Stigmarian root was not in growth position. Most fossils were observed in shale 2 to 3 feet above the top of the coal, because the immediate roof has fallen away. However, fossils do not appear to be more numerous in the basal layers of the shale, as determined by picking at the basal shale along the ribs. This contrasts with several other mines we have visited, where plants are abundant in the basal layers and rapidly diminish upward into the roof.

The only invertebrate fossils we saw were a few specimens of *Lingula*.

Joints are prevalent throughout the area we walked, generally several per foot, and they trend N 85° E. We saw no kink zones or large roof falls.