Operator: United Fuel Gas Co.
Farm: The National Shawmut Bank
Well No. 5810
Location: Buchanan County
15,000' N. of 37°20'
9,850' W. of 81°55'
Elevation: 1263.12' Ground
Total Depth: 5302'
Drilling Commenced: February 2, 1949
Well Completed: October 28, 1949
Result: Dry hole, P & A

Geologic sample log prepared by A. W. Williamson (0' - 1032') and E. Jacobsen (1032' - 5305') U. S. Geological Survey, Lexington, Kentucky 1949 - 1950

Correlations and geological summary by Marshall S. Miller.

Pennsylvanian System		thickness
top	surface	
bottom	1438	1438'

Mississippian System		
top	1438	
bottom		

Bluestone Formation		thickness
top	1438	
bottom		

Gray Member (Upper)		thickness
top	1438	18'
bottom	1456	

1300 – 1438 -- Sandstone chiefly light gray, mostly fine grained, subangular to subrounded, a few occasional coarse grains and milky white quartz pebble fragments, slightly calcareous, calcite cement, few accessory minerals, some mica.

1438 – 1456 Brownish gray to gray shale, micaceous and silty. Although this interval is mostly gray, light gray, white, brownish gray and pale green siltstone and shale, specks of red shale is intermixed within the gray siltstone, and although this interval might be named the gray shale unit, as designated, it may possibly be linked to the red member below. The red member was probably deposited as red sediment. If accumulation was slow, much of the red color would be lost, and the iron that was iron hydrate when red would be converted into chlorite like clay material. If deposition was relatively rapid,

none of the sediment had a chance to become reduced to a green or gray color. The accumulation was probably slow during the last part of Mississippian time as a state of equilibrium was probably being achieved during the transition from a marine to a nonmarine environment. Thus, with the specks of red sediment present in the "Gray Member", the so-called "Gray Member" may be finally eliminated and grouped as the upper part of the upper Red Member, the final phase of the Mississippian System.

Red Member		thickness
top	1456	131'
bottom	1587	

1456 – 1587 Interval recognized and boundaries decided by presence of red color. Is chiefly maroon to brick red shale and siltstone. Varies in color to light gray to pale green to dark gray to grayish green; usually calcareous, ostracods are recognizable, contain some sandstone in lower part.

Glady Fork Sandstone Member		thickness
top	1587	78'
bottom	1665	

1587 – 1665 Light gray, very fine grained silty sandstone. Varies in amounts of siltstone and shale, but remains essentially a sandy interval. Contains biotite and mica locally and is locally calcareous.

Gray Member		thickness
top	1665	127'
bottom	1792	

1665 – 1792 Chiefly gray shale and light gray siltstone, traces of red shale and fine grained white sandstone; shale is also usually micaceous and slightly calcareous. Interval becomes more siliceous near Princeton contact. Sandstone in lower interval more fine grained and siltier than the Princeton sandstone below.

Princeton Formation		thickness
top	1792	
bottom	1900	108'

1792 – 1900 Chiefly white to light gray, fine grained sandstone, which progressively becomes more coarse grained and conglomeratic downward. Varying amounts of shale. Sandstone is angular to subangular at bottom and poorly sorted to subrounded and moderately well sorted at top.

Hinton Formation		thickness
top	1900	374'
bottom	2274	

Little Stone Gap Member		thickness
top	1900	48'
bottom	1948	

1900 – 1972 Calcareous sequence; calcareous gray shale and gray limestone, fossiliferous, crinoids can be recognized (1905 – 1913) (1937 – 1948).

Middle Red Member		thickness
top	1948	191'
bottom	2139	

1948 – 2139 Chiefly grayish red, micaceous shale and siltstone. Grades to a slightly silty sandstone, similar to Stony Gap sandstone from (2015 to 2056). Would make the interval an upper Maxon sandstone. The sandstone is light gray to white, fine grained, subangular to subrounded, moderately sorted and often with calcareous cement. The interval below the sandstone returns to the grayish red shale and siltstone similar to the lithology in the upper interval.

Stony Gap Sandstone		thickness
top	2139	225'
bottom	2274	

2139 – 2274 Sandstone, white to light gray, very fine grained, calcareous cement, subrounded, moderately well sorted, varied amounts of shale, siltstone.

Bluefield Formation		thickness
top	2274	619'
bottom	2893	

2274 – 2893 Chiefly calcareous, gray, shale, poor to fair fissility, micaceous and locally carbonaceous. Various local amounts of limestone and sandstone. Limestone with crinoids and fossil fragments, light gray, white, brown and black. A sandstone interval Lower Maxon (2496 – 2540) is recognized. The sandstone light gray, fine grained, intersilty, silty, subrounded, well sorted and slightly calcareous. Contain pyrite, biotite, and carbonaceous materials. Also traces of chert.

Greenbrier Formation		thickness
top	2893	353'
bottom	3246	

2893 – 3246 Limestone; light gray to dark gray, fossiliferous, microcrystalline to cryptocrystalline, crinoidal, oolitic. Also brown and white and cherty. Dolomitic near bottom.

Maccrady Formation		thickness
top	3246	184'
bottom	3430	

3246 – 3430 Red siltstone chiefly, moderately hard, no bedding, locally shaly, finely micaceous

Price Formation		thickness
top	3430	630'
bottom	4060?	

3430 – 4060 A conglomeratic sandstone? in top interval directly under Maccrady chiefly light gray siltstone, and medium gray shale, slightly calcareous, slightly micaceous. Becomes more shalier progressively downward. Probably lower 100' is the Big Stone Gap shale, where a dark gray fissile shale is present.

VDMR Well No.: W-102

Operator: United Fuel Gas Company
Farm: National Shawmut Bank of Boston
Well No.: 5810

NE Patterson QUAD

Samples for this well were examined by Mr. David Bowen in preparing a Master's thesis entitled "Subsurface Study of the Lee Formation in Buchanan County, Virginia," for the Virginia Polytechnic Institute. A microfilm copy of the thesis, containing a detailed description of the Post-Princeton strata in this well, is available for reference in the Library of the Virginia Division of Mineral Resources.

Formation boundaries stated in this thesis are as follows:

System / Formation		
Pennsylvanian		
Post-Lee Strata, Undivided	in	0'
	bottom	228'
Lee Formation	top	228'
	bottom	1438'
Mississippian		
Bluestone Formation	top	1438'
	bottom	1760'
Princeton Sandstone	top	1760'
	bottom	--