

Dickenson County  
 Clinchfield Coal Co.  
 Big Sandy Fuel Corp. #209  
 Index #5

Location: 2900' S of 37°15'  
 4150' W of 82°15'

Elevation: 1473'

Remarks: Elevation and location of well indicate well spudded below Gladeville sand, Norton coal and above the Hagy coal. Referred to geology along Barts Lick Basin. No measured sections are close enough to refer to. Correlations by Marshall Miller, 1970-74, VDMR.

<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>
Pennsylvanian System			
Post Lee Formation	0	583	583'
		Hagy coal 30-32'	
		Splash Dam coal 160-161'	
		Kennedy coal 447-451'	
		Raven coal 548-569'	
Lee Formation	583	1737	1154'
		War Creek coal 1368-1370	
Upper Member			
583-626 (43')			
		quartzose sand 583-626	43'
Middle Member			
1012-1325 (313')			
		quartzose sand 1012-1134	122'
		quartzose sand 1275-1325	50'
Lower Member			
1582-1737 (155')			
		quartzose sand 1582-1592	10'
		quartzose sand 1641-1737	96'
		conglomerate 583- 626	43'
		conglomerate 1046-1056	10'
		conglomerate 1641-1737	96'
		total quartzose sand	321'
		total conglomerate	149'

No Pocahontas Present

Mississippian System

Bluestone Formation	1737	2291	554'
Pride Shale	2088	2291	203'
Princeton Sand	2291	2342	51'
Little Stone Gap Member	2342	2378	36'
Stony Gap Sand	2770	2805	35'
Bluefield Formation	2805	3036	231'
Greenbrier Formation	3036	3610	574'
McCrary	3610		

VDMR Well No. 282

Operator: Clinchfield Coal Company  
Farm: Big Sandy Fuel Corporation  
Well No.: 209  
Location: Dickenson County  
2900' S. of 37° 15'  
5250' W. of 82° 15'  
Elevation: 1473.0' Ground  
Total Depth: 5554'  
Drilling Commenced: 3/26/58  
Well Completed: 9/26/58  
Result: Gas well

Geologic Log  
Samples studied and  
described by:  
John M. Wilson  
Virginia Division of  
Mineral Resources  
January, 1963

### GEOLOGIC LOG

<u>Depth</u>	<u>Interval</u>	<u>Description</u>
<u>Pennsylvanian System (0-1734)</u>		
<u>Pottsville Group (0-1734)</u>		
<u>Norton formation (0-760)</u>		
0 - 50	50	No sample
50 - 84	34	Sandstone, clear to white and light gray, moderately cemented, fine- to medium-grained, well sorted, sub-angular to subrounded, interstitially silty, siliceous, with: abundant mica (biotite and muscovite), common silty-micaceous partings, and common iron oxide staining. Nonporous.
84 - 100	16	Siltstone, light to dark gray, moderately hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, with: common mica, and rare pyrite.
100 - 138	38	Siltstone, very calcareous, light to medium gray, light brown, moderately hard, brittle, locally poorly fissile, siliceous and argillaceous, with: abundant mica, and common carbonaceous streaks.

138 - 148	10		Siltstone, light to dark gray, light brown, with rare red, hard, tough, locally poorly fissile, argillaceous, with: abundant mica.
148 - 160	12		Interbedded; Siltstone, as in 138 to 148, with; Sandstone, white to light gray, poorly cemented, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: rare pyrite, abundant mica (biotite and muscovite), rare chlorite, and common iron oxide staining. Nonporous.
160 - 161	1	sd	Coal, in part silty and impure, blocky fracture, low luster. (Interpreted depth and thickness.)
161 - 189	28		Interbedded Siltstone and Sandstone, as in 148 to 160.
189 - 190	1		No samples
190 - 216	26		Siltstone, light to dark gray, moderately hard, brittle, locally poorly fissile, argillaceous, with: abundant mica (biotite and muscovite), common iron oxide staining, and minor stringers of Sandstone, white to light gray, moderately cemented, very fine-to medium-grained, medium sorted, subangular to subrounded, siliceous, with: common mica. Nonporous.
216 - 226	10		Sandstone, clear to white, fine-to medium-grained, well sorted, subangular to rounded, interstitially silty, siliceous, with: abundant mica (biotite and muscovite), rare pyrite, rare chlorite, and abundant silty-micaceous partings. Nonporous.

226 - 239	13	Siltstone, light to medium gray, light brown, hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, with: abundant mica, and common coal laminae and partings.
239 - 250	11	Sandstone, clear to white and light gray, poorly to moderately cemented, very fine-to medium-grained, medium sorted, angular to subrounded, siliceous, very slightly calcareous, with: abundant mica (muscovite and biotite), rare chlorite, rare iron oxide staining, and common micaceous-carbonaceous partings. Nonporous to slightly porous.
250 - 264	14	No samples
264 - 275	11	Sandstone, as in 239 to 250, slightly calcareous.
275 - 295	20	Sandstone, as in 264 - 275, with abundant carbonaceous streaks.
295 - 307	12	Sandstone, white to light gray, poorly cemented, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty and siliceous, calcareous, with: abundant mica (biotite and muscovite), rare chlorite, rare iron oxide staining, and minor stringers of Siltstone, light to medium gray, light to medium brown, moderately soft, flaky, locally poorly fissile, locally finely-sandy and siliceous, argillaceous, with: common mica. Nonporous.
307 - 320	13	Interbedded; Sandstone and Siltstone, as in 295 to 307.
320 - 331	11	Siltstone, medium to dark gray, with light brown, moderately hard, brittle, locally poorly fissile, argillaceous, slightly calcareous, with: common mica.

331 - 339	8	No samples
339 - 386	47	Siltstone, as in 320 to 331.
386 - 404	18	Sandstone, clear to light gray and light brown, moderately to well cemented, very fine-to fine-grained, well sorted, subangular to subrounded, siliceous, with: abundant mica (biotite and muscovite), common carbonaceous streaks, and stringers of Siltstone, as in 320 to 331. Slightly porous to porous.
✓ 409 - 409	5	Interbedded; Sandstone and Siltstone, as in 386 to 404.
409 - 441	32	Siltstone, light to dark gray, reddish-brown, hard, tough, locally finely sandy and siliceous, argillaceous, with: abundant mica, and common carbonaceous laminae and partings.
441 - 447	6	Interbedded; Siltstone, as in 409 to 441, with; Sandstone, as in 386 to 404.
447 - 451	4	Coal, in part silty and impure, blocky fracture, semi-glossy (Interpreted depth and thickness).
st 451 - 456	5	Interbedded Siltstone and Sandstone, as in 441 to 447.
456 - 464	8	Sandstone, clear to white and light gray, friable, very fine-to medium-grained, medium sorted, subangular to subrounded, siliceous, with: abundant mica (biotite and muscovite), common iron oxide staining, and common silty-micaceous partings.
464 - 493	29	Sandstone, as in 456 to 464, with stringers of Shale, silty, medium gray, with brown, moderately hard, tough, fair fissility, argillaceous.

493 - 522	29	<i>- possible -</i>	Sandstone, clear to white and milky white, poorly to moderately cemented, fine-to very coarse-grained, poorly sorted, subangular to rounded, siliceous, with: common mica (biotite and muscovite), common chlorite, common iron oxide staining, and common silty-micaceous partings. Slightly porous to porous.
522 - 554	32	<i>- possible -</i>	Sandstone, as in 493 to 522, with rare granules.
554 - 568	14	<i>- possible -</i>	Sandstone, conglomeratic, white to milky white, very fine-to very coarse-grained, with common granules, poorly sorted, subangular to subrounded, siliceous, with: abundant mica (biotite and muscovite), rare chlorite, rare iron oxide staining, and rare silty-carbonaceous partings. Slightly porous to porous.
568 - 569	1		Coal, silty and impure, blocky fracture, dull luster, contains rare plant fossils.
569 - 583	14	<i>- possible -</i>	Sandstone, as in 554 to 568, non-conglomeratic.
583 - 615	32	<i>- possible -</i>	Sandstone, conglomeratic, clear to white, milky white, light gray, moderately to well cemented, fine- to very coarse-grained, with common granules, and rare pebbles, poorly sorted; angular to subrounded, siliceous, with: common mica (biotite and muscovite), common chlorite, rare pyrite, and common silty-micaceous-carbonaceous partings. Slightly porous.
615 - 626	11		No samples
626 - 658	32		Siltstone, light to dark gray, with rare red and tan, moderately hard, tough, locally finely sandy and siliceous, argillaceous, with: abundant mica, common carbonaceous streaks, rare pyrite, rare coal partings and laminae.

658 - 687	29	Shale, medium to dark gray, hard, tough, fair to good fissility, locally silty and siliceous, argillaceous, with: rare mica, rare pyrite, common carbonaceous streaks and laminae, and minor stringers of Sandstone, white to milky white, moderately cemented, very fine to medium-grained, medium sorted, subangular to rounded, siliceous, with: common mica (muscovite and biotite). Porous.
687 - 689	2	No samples
689 - 707	18	Shale with Sandstone stringers, as in 658 to 687.
707 - 730	23	Interbedded; Siltstone, light to dark gray; hard, tough, locally finely sandy and siliceous, argillaceous, with: abundant mica (muscovite and biotite), and rare carbonaceous streaks, with; Sandstone, white to light gray, moderately cemented, very fine- to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: abundant mica (biotite and muscovite). Nonporous to slightly porous.
730 - 740	10	No samples
740 - 765	25	Interbedded; Siltstone, light to dark brownish-gray, medium gray, moderately hard, brittle, locally finely sandy and siliceous, argillaceous and ferruginous (?), with: abundant pyrite, common mica, with; Sandstone, white to milky white, light gray, light brownish-gray, moderately cemented, very fine-to medium-grained, medium sorted, subangular to rounded, siliceous, with: abundant mica, and rare pyrite. Slightly porous.



Lee formation (765-1737)

765 - 795 30

*Possible*

Sandstone, white to milky white, moderately cemented, fine-to medium-grained, with rare coarse-grained, well sorted, angular to subangular, siliceous, with: abundant mica, common chlorite, and common silty-micaceous partings. Nonporous to slightly porous.

795 - 859 64

Interbedded Siltstone and Sandstone, as in 740 to 765, slightly calcareous.

859 - 885 26

Siltstone, light to dark gray, with rare reddish-brown, hard, brittle, locally poorly fissile, argillaceous, slightly calcareous, with: rare mica.

885 - 950 65

Interbedded; Siltstone, as in 859 to 885, with; Sandstone, white to light gray, moderately to well cemented, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: common mica, and common carbonaceous streaks. Nonporous.

950 - 960 10

Siltstone, as in 859 to 885, with minor stringers of Sandstone, as in 885 to 950.

960 - 1012 52

Shale, dark gray to black, with common red-brown, moderately hard, flaky, poor to excellent fissility, locally silty and slightly siliceous, argillaceous, with: rare pyrite, common mica, and common carbonaceous streaks.

1012 - 1041 29

*Possible*

Sandstone, clear to white, moderately cemented, fine-to coarse-grained, medium sorted, angular to subangular, siliceous, with: rare mica, and common silty-micaceous partings. Slightly porous.


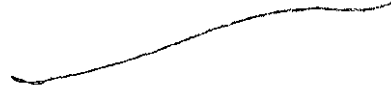
1041 - 1046 5

*Possible*

Sandstone, conglomeratic, clear to white and milky white, moderately to well cemented, fine- to very coarse-grained, with common granules, poorly sorted, siliceous, with: common muscovite. Slightly porous to porous.

1046 - 1067	21	<i>possible</i>	Sandstone, as in 1041 to 1046, non-conglomeratic.
1067 - 1075	8	/	Sandstone, as in 1046 to 1067, with abundant iron oxide staining (probably bit particles).
1075 - 1104	29		Interbedded; Sandstone, as in 1046 to 1067, with; Siltstone, light to dark gray, brownish-gray, hard, flaky, locally finely sandy and siliceous, argillaceous, with: rare mica.
1104 - 1132	28	<i>possible</i>	Sandstone, clear to white and milky white, moderately cemented, medium-to coarse-grained, well sorted, subangular to subrounded, siliceous, with: rare mica. Slightly porous to porous.
<u>1132 - 1201</u>	69	<i>Chow</i>	Interbedded; Sandstone, clear to white and light gray, well cemented, fine-to very coarse-grained, poorly sorted, angular to subangular, interstitially silty, siliceous, slightly calcareous, with: <u>rare mica</u> , with; Siltstone, light to medium gray, light brownish-gray, moderately hard, locally finely sandy and siliceous, argillaceous, with: common mica, and common carbonaceous streaks.
1201 - 1275	74	<i>1046-1067</i>	Sandstone, white, milky white, brown, green, moderately to well cemented, medium- to coarse-grained, with rare very coarse-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: abundant mica, rare pyrite, and <del>abundant mica</del> , rare <del>pyrite</del> , and abundant silty-micaceous partings. Slightly porous.
1275 - 1320	45	<i>1046-1067</i>	Sandstone, clear to white, moderately cemented, very fine-to medium-grained, medium sorted, angular to subangular, siliceous, with: <u>rare mica</u> , and <u>rare</u> silty-micaceous partings. Slightly porous.

1320 - 1334	14		Interbedded; Sandstone, as in 1275 to 1320, with; Siltstone, medium to dark gray, brownish-gray, hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, with: common mica.
1334 - 1350	16		Sandstone, as in 1275 to 1320, with minor stringers of Siltstone, as in 1320 to 1334.
1350 - 1368	18		Sandstone with Siltstone stringers, as in 1334 to 1350, with common very coarse-grained quartz.
1368 - 1370	2	W.C.	Coal, silty, blocky fracture, semi-glossy (Interpreted depth and thickness).
1370 - 1373	3		Sandstone with Siltstone stringers, as in 1350 to 1368.
1373 - 1435	62		Sandstone, white to milky white, light brownish-gray, well cemented, fine- to coarse-grained, medium sorted, angular to subrounded, interstitially silty and siliceous, slightly calcareous, with: common chlorite, common mica, and common silty-micaceous partings. Slightly porous.
1435 - 1486	51		Siltstone, light to dark gray, with rare reddish-brown, moderately hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, with: common mica, and minor stringers of Sandstone, as in 1373 to 1435.
1486 - 1497	11		Sandstone, white to light gray, hard, very fine- to medium-grained, <del>medium-grained</del> , medium sorted, subangular to subrounded, interstitially silty, siliceous, with: common mica, and stringers of Shale, medium gray, moderately hard, fair fissility, argillaceous, with: abundant coal laminae and partings. Nonporous to slightly porous. (Possible 1 to 2 foot coal bed in this interval).

1497 - 1517	20	Sandstone, with Shale stringers, as in 1486 to 1497, with: rare pyrite.
1517 - 1565	48	Siltstone, light to dark gray with rare brownish-gray, hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, with: rare mica.
1565 - 1582	17	Interbedded; Siltstone, as in 1517 to 1565, with; Sandstone, white to light gray and brownish-gray, moderately cemented, very fine-to fine-grained, well sorted, subangular to subrounded, siliceous, with: rare mica, and rare carbonaceous streaks. Nonporous to slightly porous.
 1582 - 1589	7	Sandstone, clear to white, poorly cemented to friable, fine-to coarse-grained, medium sorted, angular to subrounded, siliceous, with: rare chlorite, rare mica, and common silty-micaceous partings. Slightly porous.
1589 - 1608	19	Sandstone, as in 1582 to 1589, with rare very coarse-grained.
1608 - 1629	21	Sandstone, as in 1589 to 1608, with abundant iron-oxide staining (bit particles?)
1629 - 1641	12	Sandstone, conglomeratic, clear to white and light brown, poorly cemented to friable, fine- to very coarse-grained, with common granules, poorly sorted, angular to subrounded, siliceous, with: common mica (biotite and muscovite), and rare silty-micaceous partings. Slightly porous.
1641 - 1737	96	 Sandstone, conglomeratic, as in 1629, to 1641, with abundant granules, and abundant iron oxide stained (probably bit particles).

1737 - 1754	17	Siltstone, light green, hard, brittle, locally fissile, argillaceous, with: abundant round, brown, chert nodules, and common mica (predominately muscovite).
1754 - 1782	28	Siltstone, as in 1734 to 1754, with minor stringers of Conglomeratic Sandstone, as in 1641 to 1737.
1782 - 1871	89	Siltstone, light to dark gray, hard, tough, locally poorly fissile, locally finely sandy and siliceous, argillaceous, slightly calcareous, with: rare mica.
1871 - 1891	20	Siltstone, variegated, red, marron-drab, purple, light green, light gray, light brown, cream, black, moderately hard, flaky, locally very finely sandy and siliceous, argillaceous, ferruginous, with: rare mica.
1891 - 1920	29	Siltstone, red, with light green, moderately hard, tough, locally poorly fissile, argillaceous, ferruginous, slightly calcareous with: rare mica, and common carbonaceous streaks.
1920 - 1955	35	Siltstone, light green, white, light to medium gray, moderately soft, flaky, locally finely sandy and siliceous, argillaceous, calcareous, with: common mica (predominately biotite).
1955 - 1980	25	Siltstone, variegated, red, maroon drab, green, black, light gray, moderately soft, flaky, locally finely sandy and siliceous, argillaceous, calcareous, with: rare mica.
1980 - 1993	13	Interbedded; Siltstone, as in 1955 to 1980, with; Sandstone, clear to white, moderately hard, very fine- to medium-grained, medium sorted, subangular to subrounded, calcareous, with: rare mica. Nonporous.

1993 - 2040	47	Siltstone, variegated, as in 1955 to 1980.
2040 - 2088	48	Interbedded; Siltstone, as in 1955 to 1980, with; Sandstone, white to light green, moderately hard, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty and siliceous, grades locally to a siltstone, slightly calcareous. Nonporous.
2088 - 2146	58	Shale, silty, light to dark gray with rare reddish-brown, moderately soft, flaky, fair fissility, argillaceous, locally siliceous, with: rare mica.
2146 - 2175	29	Shale, variegated, medium to dark gray, light reddish-brown, green, cream, soft, flaky, poor to fair fissility, argillaceous, slightly calcareous, with: rare mica.
2175 - 2291	116	Shale, medium to dark gray, with rare red and green, moderately soft, flaky, fair to good fissility, argillaceous, with: rare mica, and rare pyrite.
<u>Princeton sandstone (2291-2460)</u>		
2291 - 2342	51	Interbedded; Shale, as in 2175 to 2291, with; Sandstone, white to light gray, moderately cemented, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: rare mica. Nonporous.
2342 - 2378	36	Interbedded; Shale, light to medium gray, soft, flaky, fair to good fissility, locally silty and siliceous, argillaceous, with: rare mica, and rare carbonaceous streaks, with; Limestone, dolomitic, shaly, light to medium gray, moderately soft and flaky, rare fossil fragments, platy, cryptocrystalline, with: common calcite, and rare pyrite.
2378 - 2395	17	Siltstone, variegated, pale green, maroon, cream, light gray, tan, moderately hard, tough, no apparent bedding, argillaceous, and ferruginous, slightly calcareous, with: rare mica, and stringers of Shale, light gray, hard, tough, poor to fair fissility, argillaceous, with: rare carbonaceous streaks, and rare mica.

2395 - 2460	65	Siltstone, pale green, white, light gray, with reddish-brown, moderately soft, flaky, locally finely sandy and siliceous, argillaceous, slightly calcareous, with: rare mica, stringers of Shale, as in 2378 to 2395, and rare calcite.
<u>Hinton formation (2460-2892)</u>		
<u>2460 - 2475</u>	15	Interbedded; Siltstone, light to medium gray, light green, moderately hard, brittle, locally very finely sandy and siliceous, argillaceous, slightly calcareous, with: rare mica, with; Shale light to medium gray, moderately soft, flaky, fair fissility, argillaceous, with: rare mica, and rare carbonaceous streaks.
2475 - 2521	46	Interbedded; Sandstone, white to light gray, moderately cemented, very fine- to fine-grained, well sorted, subrounded to subangular, interstitially silty, siliceous, with: abundant mica (biotite and muscovite), with; Siltstone, variegated, maroon-drab, light-green, light to dark gray, moderately soft, flaky, locally poorly fissile, argillaceous and ferruginous, with: rare mica.
2521 - 2550	29	Siltstone, as in 2475 to 2521.
2550 - 2570	20	Interbedded; Dolomite, silty, light green, light gray, moderately soft, micro-crystalline, with: rare calcite, rare pyrite, with; Siltstone, medium to dark gray, moderately soft, flaky, no apparent bedding to poorly fissile, argillaceous, with: rare pyrite.
2570 - 2578	8	Siltstone, variegated, reddish-brown, light green, light to medium gray, cream, moderately hard, brittle, locally finely sandy and siliceous, argillaceous, with: common mica.

2578 - 2584	6	Dolomite, silty, light greenish-gray, moderately hard and brittle, micro-crystalline, with: rare mica, common carbonaceous streaks, rare pyrite.
2584 - 2590	6	Interbedded; Siltstone, dolomitic, light to medium gray, hard, brittle, no apparent bedding to poorly fissile, argillaceous, with: rare pyrite, rare mica, and rare carbonaceous streaks, with; Sandstone, white to light gray, well cemented, very fine-to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, with: common mica (biotite and muscovite). Slightly porous.
2590 - 2611	21	Interbedded Siltstone and Sandstone as in 2584 to 2590, with abundant <u>iron oxide</u> staining.
2611 - 2616	5	Sandstone, white to light gray, moderately cemented, very fine- to fine-grained, well sorted, subangular to subrounded, interstitially silty, calcareous, with: abundant carbonaceous streaks, common mica, common iron oxide staining (probably bit particles), and stringers of Siltstone, as in 2584 to 2590.
2616 - 2670	54	Siltstone, light to dark gray and black, moderately soft, flaky, locally poorly fissile, argillaceous, locally slightly dolomitic, with: common mica, common carbonaceous streaks, and minor stringers of Sandstone, as in 2611 to 2616.
2670 - 2677	7	Siltstone, light to dark gray and black, moderately soft, flaky, locally finely sandy and siliceous, argillaceous, with abundant mica, and abundant pyrite.



2677 - 2697	20	Siltstone, dolomitic, calcareous, light to dark gray, moderately hard, brittle, no apparent bedding to poorly fissile, locally finely sandy and siliceous, argillaceous, with: rare mica, and rare pyrite.
2697 - 2735	38	Siltstone, variegated, light to medium red, light green, light to medium gray, moderately hard, tough, locally finely sandy, argillaceous, dolomitic, with: rare mica.
2735 - 2770	35	Interbedded; Siltstone, as in 2697 to 2735, with; Shale, light gray, moderately soft, flaky, fair fissility, argillaceous, with: abundant carbonaceous streaks.
<u>Stony Gap sandstone member (2770-2892)</u>		
2770 - 2805	35	Sandstone, white to light gray, well cemented, very fine-to fine-grained, with rare medium-grained, well sorted, subangular to subrounded, calcareous, with: rare mica, and common silty-micaceous partings. Slightly porous.
2805 - 2892	87	Siltstone, clayey, light to dark gray, moderately hard, brittle, no apparent bedding to poor fissility, argillaceous, with: common mica, and minor stringers of Sandstone, as in 2770 to 2805.
<u>Bluefield formation (2892-3036)</u>		
2892 - 2923	31	Limestone, silty, argillaceous, light to medium gray, moderately hard, rare fossil fragments, microcrystalline, with: rare calcite, and rare carbonaceous streaks.
2923 - 2940	17	Interbedded; Limestone, as in 2892 to 2923, with; Siltstone, light to medium gray with rare red, moderately hard, brittle, locally finely sandy, argillaceous and calcareous with: rare mica.

2940 - 2969	29	Siltstone, light to dark gray, hard, tough, no apparent bedding to fair fissility, grades locally to shale, argillaceous, with: common mica, common carbonaceous streaks, and rare sand seams.
2969 - 3006	37	Interbedded; Siltstone, as in 2940 to 2969, with; Sandstone, white to light gray, moderately to well cemented, very fine- to fine-grained, well sorted, subangular to subrounded, interstitially silty, siliceous, slightly calcareous, with: rare mica, and rare pyrite. Nonporous to slightly porous.
3006 - 3036	30	Interbedded; Siltstone, as in 2940 to 2969, with; Shale, light to medium gray, moderately hard, brittle, fair fissility, argillaceous, with: rare mica, rare pyrite, and rare carbonaceous streaks.
<u>Greenbriar limestone (3036 - 3610)</u>		
<u>3036 - 3071</u>	35	Limestone, silty, dolomitic, medium to dark gray, moderately soft, flaky, locally oolitic, abundant fossils [crinoid stems, coral, cephalopod (?)], platy, microcrystalline, with: common calcite, rare pyrite.
3071 - 3115	43	Limestone, silty, light to medium brown, light to dark gray, moderately soft, rare oolites, common fossil fragments, microcrystalline, with: rare pyrite, and rare calcite.
3115 - 3135	20	Limestone, white, light green, light brownish-gray, soft and crumbly, locally oolitic, unfossiliferous, cryptocrystalline, with: abundant calcite.
3135 - 3187	52	Limestone, light to dark gray, moderately soft and brittle, abundant fossils (crinoid stems) microcrystalline, with: common calcite.
3187 - 3220	33	Limestone, white, light brown, medium gray, moderately hard, common fossils (crinoid stems), microcrystalline, with: rare calcite.
3220 - 3250	30	Limestone, light to medium brown, medium gray, white, black, moderately hard, rare fossil fragments, microcrystalline, with: rare calcite.

3250 - 3260	10	Limestone, light brown, white, black, rare oolites, moderately soft, microcrystalline and cryptocrystalline, with: rare calcite.
3260 - 3280	20	Limestone, light gray, dark gray, light brown, moderately hard, rare oolites, microcrystalline, with: rare calcite.
3280 - 3329	49	Limestone, light brown, white, moderately soft, locally oolitic, microcrystalline.
3329 - 3400	71	Limestone, white, light to medium brown, medium gray, moderately hard, locally oolitic, rare fossil fragments, microcrystalline, with: rare calcite.
3400 - 3557	157	Limestone, white, light brown, moderately hard, common fossil fragments, cryptocrystalline, with: rare calcite.
3557 - 3565	8	Limestone, light to dark brown, white, moderately soft, cryptocrystalline, with: common calcite.
3565 - 3593	28	Limestone, as in 3557 to 3565, with: abundant chert.
3593 - 3610	17	Limestone, light brownish-gray, dark brownish-gray, moderately hard, microcrystalline, with: common chert.
<u>Maccrady formation (3610-3625)</u>		
3610 - 3625	15	Siltstone, red, light green, dark gray, moderately hard, flaky, locally finely sandy, argillaceous and ferruginous, dolomitic, with: rare mica, and common very coarse-grained quartz.
3625 - 3743	118	Siltstone, light green-gray, hard, brittle, locally very finely-sandy and siliceous, argillaceous, with: rare mica, rare carbonaceous streaks, and rare pyrite.

3743 - 3806	63	Interbedded; Siltstone, as in 3625 to 3743, with: Shale light-to medium gray, moderately hard, brittle, fair fissility, argillaceous, with: rare mica.
3806 - 3817	11	Shale, as in 3743 to 3806.
3817 - 3875	58	Interbedded; Siltstone, light to medium gray, moderately hard, brittle, locally finely sandy and siliceous, argillaceous, with: rare mica, and rare carbonaceous streaks, with; Shale, as in 3743, to 3806.
3875 - 3940	65	Shale, slightly silty, light to medium gray, moderately soft, brittle, poor to fair fissility, argillaceous, with: rare mica, and rare pyrite.
3940 - 3975	35	Siltstone, light to medium brown, light gray, moderately hard, tough, no apparent bedding to poorly fissile, argillaceous, with: rare mica, and minor stringers of Shale, as in 3875 to 3940.
3975 - 3982	7	No samples
3982 - 3995	13	Shale, silty, light to dark gray, moderately hard, flaky, poor to fair fissility, argillaceous, with: rare mica, common yellow quartz, and rare pyrite.
3995 - 4175	180	Shale, as in 3982 to 3995, with stringers of Siltstone, light gray, moderately hard, brittle, locally finely sandy and siliceous, argillaceous, with: rare mica.
4175 - 4193	18	Shale, carbonaceous, black, moderately hard, flaky, argillaceous, with: rare mica.
4193 - 4215	22	Siltstone, light to dark gray, moderately hard, brittle, locally finely sandy and siliceous, argillaceous, with: rare mica, common carbonaceous streaks, and minor stringers of Shale, as in 4175 to 4193.

4215 - 4232	17	Siltstone, white, light gray, with medium gray, moderately soft, brittle, finely sandy, siliceous, with: rare biotite.
4232 - 4281	49	Siltstone, as in 4215 to 4232, with common iron staining (bit particles?)
4281 - 4320	39	Interbedded; Siltstone, as in 4215 to 4232, with; Siltstone carbonaceous, black, moderately soft, crumbly, locally finely sandy, argillaceous, with: rare mica.
4320 - 4523	203	Siltstone, light to medium gray, moderately hard, no apparent bedding to poorly fissile, argillaceous, with: rare mica.
4523 - 4858	335	Interbedded; Siltstone, as in 4320 to 4523, with; Shale, silty, light gray, moderately hard, tough, poor fissility, argillaceous, with: common pyrite, and rare mica.
4858 - 4930	72	Shale, locally silty, light to medium gray, hard, tough, fair to excellent fissility, argillaceous, with: rare mica.
4930 - 5198	268	Interbedded; Shale, as in 4858 to 4930, with; Siltstone, black, moderately soft, brittle, carbonaceous locally, argillaceous, with: rare mica, and rare pyrite.
5198 - 5242	44	Shale, silty, light gray, dark gray to black, moderately hard, brittle, apparent bedding to good fissility, argillaceous, possibly carbonaceous, with: rare mica, and common pyrite.
5242 - 5437	195	Interbedded; Shale, as in 5198 to 5242, with; Siltstone, light gray, light brown, moderately hard, tough, no apparent bedding to fair fissility, argillaceous.
5437 - 5456	19	Interbedded Shale and Siltstone, as in 5242 to 5437, with: abundant pyrite.

- |             |    |   |
|-------------|----|---|
| 5456 - 5479 | 23 | Shale, very carbonaceous, black, moderately soft, flaky, fair fissility, carbonaceous with: abundant fibrous calcite, and rare pyrite. (This interval is described in the AAPG Bull., V. 41, no. 11 (November 1957), pp. 2567 - 2573, by D. M. Young. He describes the shale as "dark and bituminous, and coal-like, containing fibrous calcite as veinlets. This shale overlies the "blow-out zone," which is used for gas production. "It seems probably that this gas originated during the time of shearing of the highly bituminous Marcellus shale at the base of the Devonian shale section.") |
| 5479 - 5489 | 10 | Shale, light to dark gray, moderately hard, tough, fair fissility, argillaceous, with: abundant pyrite (including round nodules), common calcite, and possible minor stringers of Limestone, light brown, microcrystalline.   |
| 5489 - 5555 | 66 | Shale, carbonaceous, black, moderately soft, flaky, fair to good fissility, argillaceous, with: common pyrite, and common calcite.  |
| 5555 - 5560 | 5  | Limestone, light brownish-gray, moderately soft, microcrystalline, with: rare pyrite, and common calcite.   |
| T. D. 5560' |    |   |

Operator: Clinchfield Coal Company  
 Farm: Big Sandy Fuel Corporation  
 Well No.: 209

Location: Dickenson County  
 2900' S. of 37°15'  
 5250' W. of 82°15'

Elevation: 1473.0' Ground

Total Depth: 5554'

Drilling Commenced: 3/26/58

Well Completed: 9/26/58

Result: Gas Well

Coal: 30'-32', 765'-767'

Water: 40'

Gas Show: 313'-320', 1713'-1717', 4232'-4251', 5461'

Geologic Log

Samples studied and described  
 by: John M. Wilson  
 Virginia Division of  
 Mineral Resources  
 January, 1963

Pennsylvanian System (0-1734')

    Pottsville Group (0-1734')

        Norton formation (0-760')

        Lee formation (760'-1734')

Mississippian System (1734'- )

    Pennington Group (1734'-2892')

        Bluestone formation (1734'-2291')

        Princeton sandstone (2291'-2460')

        Hinton formation (2460'-2892')

            Stony Gap sandstone member (2770'-2892')

        Bluefield formation (2892'-3030')

        Greenbriar limestone (3030'-3610')

        Maccrady formation (3610'-3628')

        Price formation (3628'- )

Mississippian-Devonian Systems ( )

    Big Stone Gap shale ( )

Devonian System ( )

    Devonian shales and siltstones ( )

## GEOLOGIC SUMMARY

## Pennsylvanian System

Norton Formation	in	50
	bottom	765
Lee Formation	top	765
	bottom	1737

## Mississippian System

Bluestone Formation	top	1737
	bottom	2291
Princeton Sandstone	top	2291
	bottom	2342
Hinton Formation	top	2342
	bottom	2805
Stony Gap Sandstone	top	2584
	bottom	2805
Bluefield Formation	top	2805
	bottom	3036
Greenbrier Limestone	top	3036
	bottom	3610
Maccrady-Price Formations	top	3610
	bottom	3875

## Mississippian-Devonian Systems

Big Stone Gap Shale	top	3875
	bottom	(?)

## Devonian-Pre-Devonian Systems

Devonian-Pre-Devonian undivided	top	(?)
		(sampled depth 5560)

Correlations by: J. M. Wilson and R. C. Milici

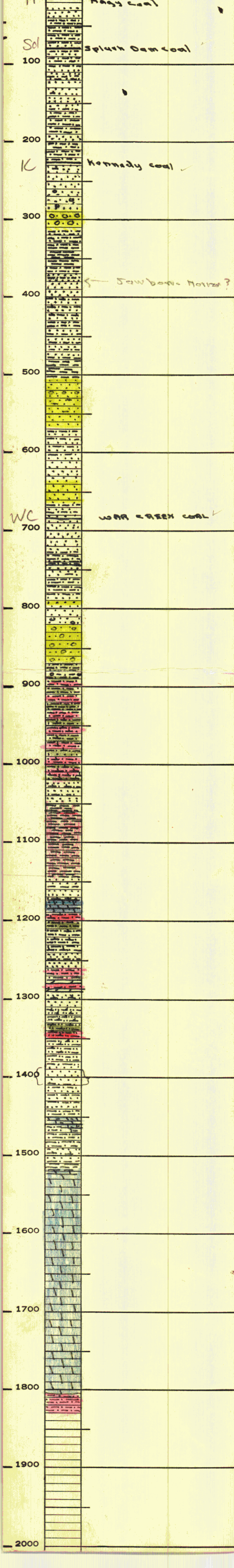
September 1963



113 / Dickinson County  
 Clinchfield coal  
 Bio sandy # 209

T.	R.	Index # 5	COMPANY
		Elev. 1473	NO.
		COMMENCED	
		COMPLETED	
ELEVATION		REMARKS location + elev. of	
PRODUCTION		well indicate well located below Norton coal and above Hazy coal	

FORM 187 - For Sale by Ross-Martin Co., Tulsa





T.	R.	Dickenson Co.
		Clinchfield Coal COMPANY
		Big Sandy Coal Co NO. 209
		COMMENCED
		COMPLETED
ELEVATION		REMARKS <i>Geologic Log</i>
1473.0'		
PRODUCTION		

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