

Dickenson County
 Clinchfield Coal Corp.
 Big Sandy Fuel Corp. Well No. 210
 Index No.: 6
 Location: 1200' S of 37°15'
 1350' W of 82°15'
 Elevation: 1753'

Remarks: Elevation and location of well indicate well spudded in below the Eagle coal and above the Dorchester coal. Referred to coal geology on Barts Lick Basin. 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	825	825'
		Dorchester coal at 27-28 Kennedy coal 764-765	
Lee Formation	825	2009	1184'
		War Creek coal horizon at 1630'	
Upper Member 825-892 (67')		quartzose sand 825-892 _x	67'
Middle Member 1300-1600 (300')		quartzose sand 1300-1334 quartzose sand 1345-1433 quartzose sand 1528-1600	34' 88' 72'
			194'
Lower Member 1890-2009 (119')		quartzose sand 1890-2101 [?] conglomerate 1930-1955 conglomerate 2001-2009	122' 25' 8'
		total quartzose sand conglomerate	380' 33'
Pocahontas Formation	2009	2028	19'
Mississippian System			
Bluestone Formation	2028	2567	539'
Pride Shale	2413	2567	154'
Princeton Sand	2567	2614	47'
Little Stone Gap	2614	2663	49'
Stony Gap	2772	2957	185'
Greenbrier Fm.	3325	3893	568'
MacCrady	3893		

Dickenson County
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Big Sandy Fuel Corp. Well No. 210
Index No. 6
VDMR W-283
Elevation: 1753.0

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Brief geological summary below by Marshall S. Miller, to recognize and identify coal horizons, and quartzose sands of the Pennsylvanian System. All other descriptions of well cuttings are available from K. Robinson's geologic log.

<u>Depth</u>	<u>Thickness</u>	<u>Description</u>
27- 28	1'	Coal, noted on drillers log, but no samples were collected in this interval; The Dorchester coal
149-152	3'	Coal, impure, silty; the Norton coal
764-765	1'	Coal, impure to pure, shaly; the Kennedy coal
825-858	33'	Sandstone, white, quartzose, mostly medium grained, but occasionally coarse and fine grained, subround to subangular, moderately sorted, interstitially silty, only rare and scattered micas and dark rounded rock material, which occasionally appears carbonaceous. X-ray of sample intervals (825-830) and (840-850) indicate pure quartz nature of interval. No feldspar present.
858-892	34'	Sandstone, white, quartzose, medium to coarse grained, subround to subangular, moderately sorted; almost 100% quartz, and no longer silty
1300-1334	34'	Sandstone, white, quartzose, very fine to medium grained, interstitially silty, subround to subangular, moderately sorted, with rare mica and dark carbonaceous material, X-ray diffraction indicated quartzose nature of interval. No feldspar present

- 1345-1387 42' Sandstone, white, tan, to buff, very fine to medium grained and coarse grained, sub-angular, poorly sorted, interstitially silty, with considerable dark carbonaceous material, rare mica, and traces of feldspar. A quartzose sand with interbeds of gray silty shale. X-ray indicated a quartzose sand with only a trace of feldspar and illite clay.
- 1387-1433 46' Sandstone, white to buff, appears quartzose, fine to medium grained, occasionally coarse grained, subrounded, moderately to well sorted, occasionally silty, with rare muscovite, and dark carbonaceous material. X-ray indicated a quartzose sand with some illite clay
- 1528-1600 72' Sandstone, white, quartzose, mostly medium grained, occasionally fine and coarse grained, subround to subangular, moderately sorted, interstitially silty, with rare mica and dark rock material
- 1666-1709 43' Sandstone, light tan, very fine to coarse grained, granular and conglomeratic throughout, sub-angular to subround, poorly sorted with abundant silty, micaceous and carbonaceous material. Large white quartz pebbles up to 7 mm present. An interesting interval, but is not a Lee quartzose sand by any means. This interval may perhaps have been a large stream which was transporting much of the Lee quartz material to the near shore environment to the west.
- 1890-1930 40' Sandstone, white, quartzose, fine to medium grained, well sorted, subangular to subround, slightly silty, but with considerable silt and shale contamination from above. X-ray indicated pure quartz sand.
- 1930-2009 79' Sandstone, white, quartzose, medium to coarse grained, subround to subangular, poorly to moderately sorted, conglomeratic (1930-1955) (2001-2009).

Operator: Clinchfield Coal Company
 Farm: Big Sandy Fuel Corporation
 Well No: 210
 Location: Dickenson County
 1200' S. of 37°15'
 1350' W. of 82°15'
 Elevation: 1753.0'
 Total Depth: 5860 (5866' SLM)
 Drilling Commenced: 4/12/58
 Well Completed: 11/17/58
 Result: Gas Well

Geologic log
 Samples studied and described
 by: K. Robinson
 Virginia Division of
 Mineral Resources
 July, 1962

GEOLOGIC LOG

<u>Depth (feet)</u>	<u>Thickness (feet)</u>	<u>Lithology</u>
<u>Pennsylvanian System (0-2009)</u>		
<u>Pottsville Group (0-2009)</u>		
<u>Norton formation (0-1015)</u>		
0' - 50'	50'	No sample.
50' - 83'	33' Gladysville?	Sandstone, white to light gray, hard, fine to coarse grained, moderate sorting, subround to round, interstitially silty, siliceous with abundant chlorite, mica and carbonaceous material. Poor porosity.
83' - 135'	52'	Shale, light to medium gray, moderately hard, poorly fissile, clayey, locally silty, with variable rare to common coal lamanae and plant impressions.
135' - 149'	14'	Sandstone, white to light gray, hard, very fine to fine, medium and locally coarse grained, graded, moderate to poor sorting, subangular to round, interstitially silty, siliceous, with abundant mica, chlorite, carbonaceous material and highly micaceous lamanae and partings. Poor porosity.
149' - 152'	3'	Coal, commonly argillaceous and impure. (interpreted depth and thickness)

152' - 190'	38'		Sandstone, <u>white</u> , hard, fine-to medium and coarse-grained, moderate to poor sorting, subangular to rounded, silty, siliceous, with <u>abundant</u> mica, chlorite, and coaly carbonaceous material. Common coal fragments and micaceous partings. Poor porosity.
190' - 195'	5'		Sandstone, micaceous and carbonaceous, light to medium gray and brown, hard, very fine to medium grained, poorly sorted, well rounded, very silty, siliceous with abundant micaceous and coaly carbonaceous partings. Poor porosity.
195' - 200'	5'		Siltstone, medium to dark gray, hard, brittle, slightly fissile, siliceous and clayey, with abundant mica and carbonaceous material.
200' - 244'	44'		Shale, silty and clayey, light to medium gray, hard, brittle, poorly fissile, with finely divided mica and carbonaceous material.
244' - 297'	53'		Shale, medium gray, hard, slightly fissile, clayey with abundant finely divided mica and coaly carbonaceous material. Common coal lamanae 275'-285'.
297' - 311'	14'		Siltstone, light to medium gray, hard, siliceous with abundant mica and carbonaceous material.
311' - 350'	39'		Sandstone, silty, white to light gray, hard, silty to very fine, fine, medium and commonly coarse grained, poorly sorted, well rounded, siliceous, with <u>abundant</u> chlorite, mica and carbonaceous material. Abundant silty gray micaceous-coaly carbonaceous partings. Poor to no porosity.
350' - 367'	17'	CA	Sandstone, very fine to fine grained, rarely medium and coarse grained, moderately well sorted, otherwise as above.
367' - 387'	20'		Shale, medium to dark gray, hard, brittle, poorly fissile, clayey, with abundant finely divided coaly carbonaceous material.

387' - 429'	42'		Siltstone, white to light and medium gray, hard, brittle, locally argillaceous and clayey, siliceous and slightly calcareous with abundant finely divided mica, coaly carbonaceous material and common silty gray micaceous-coaly carbonaceous laminae and partings.
429' - 445'	16'	✓	Sandstone, silty, white to light gray, hard, silty to fine, common medium grained, moderately sorted, well rounded, siliceous and locally slightly calcareous with abundant chlorite, mica, common carbonaceous material and silty gray micaceous partings. Poor to no porosity.
445' - 459'	14'	✓	Sandstone, silty, light to medium gray-brown, moderately hard, silty to very fine grained, with sorted and rounded, siliceous with very abundant carbonaceous material and mica. Grades to siltstone in part. Poor to no porosity.
459' - 522'	63'	✓	Sandstone, white to light gray and brown, hard, very fine to medium, commonly coarse grained, poorly sorted, subround to round, silty, siliceous and carbonaceous, with abundant mica, common carbonaceous material, locally common chlorite, and silty micaceous-carbonaceous partings. Poor porosity.
522' - 545'	23'		Siltstone, micaceous, medium to dark gray and brown, hard, brittle, poorly fissile, siliceous, with abundant finely divided mica.
545' - 577'	32'	✓	Sandstone, <u>white</u> , moderately hard, very fine to medium and coarse-grained, poorly sorted, subround to round, very silty, siliceous and slightly calcareous with common carbonaceous material, mica and rare chlorite. Poor porosity.
577' - 602'	25'		Siltstone, light to medium gray and brown, hard, siliceous with abundant finely divided mica and carbonaceous material.
602' - 629'	27'		Siltstone, clayey and argillaceous in part, otherwise as above.
629' - 666'	37'		Siltstone, clayey and argillaceous, otherwise as above.

666' - 702'	36'		Shale, medium to dark gray, hard, brittle, and fissile.
702' - 710'	8'		Sandstone, silty, light gray, hard, very fine to fine and commonly medium grained, moderate sorting, subangular to round, siliceous and calcareous with <u>abundant</u> mica, common chlorite and carbonaceous material. Poor porosity.
710' - 731'	21'		Siltstone, light gray, hard, locally very finely sandy, siliceous and slightly calcareous with abundant mica, carbonaceous material and dark gray micaceous-carbonaceous partings.
731' - 733'	2'		Shale, medium to dark gray, hard, brittle and fissile.
733' - 740'	7'		Sandstone, micaceous, white to light gray, hard, very fine to medium grained, moderately sorted, subangular to round, silty, siliceous, with <u>abundant</u> mica, carbonaceous material, chlorite and common silty gray micaceous-carbonaceous partings. Poor porosity.
740' - 760'	20'	CR	Sandstone, <u>white</u> , hard, very fine to medium and rarely coarse grained, moderate sorting, subangular to round, silty, siliceous, with <u>abundant</u> mica, carbonaceous material and common chlorite. Fair porosity.
760' - 765'	5'		Shale, medium to dark gray, hard, brittle and fissile with an estimated 1' Coal in this interval.
765' - 802'	37'	CR	Sandstone, silty, white to light gray, hard, silty to very fine and fine grained, well sorted and rounded, siliceous, with abundant coaly carbonaceous lamanae and silty gray micaceous-carbonaceous lamanae. Poor porosity.
802' - 858'	56'		Sandstone, <u>white</u> , hard, very fine to generally medium and coarse grained, moderate sorting, subangular to round, interstitially silty, siliceous with <u>common</u> mica, chlorite and carbonaceous material. Poor to no porosity.
858' - 892'	34'	CR	Sandstone, <u>white</u> , fine to coarse grained, moderate sorting, subangular to round, interstitially pure, siliceous.

892' - 947'	55'	OK	Sandstone, silty, light gray, hard, silty to fine, locally medium and coarse grained, poorly sorted, subangular to round, siliceous, with <u>abundant</u> mica, carbonaceous material, and silty coaly carbonaceous lamanae and partings. Poor porosity.
947' - 1015'	68'		Siltstone, generally clayey and argillaceous, medium to dark gray, hard, siliceous, with abundant finely divided mica, carbonaceous material and locally common interbedded coal lamanae., Grades to a silty shale.
<u>Lee formation (1015-2009)</u>			
1015' - 1029'	14'	OK	Sandstone, light gray, moderately hard, fine grained, well sorted, subangular, slightly silty, siliceous with common mica and carbonaceous material. Poor porosity.
1029' - 1056'	27'	OK	Interbedded Sandstone, light gray to brown, hard, very fine to fine grained, moderately sorted, subangular to round, silty, siliceous; and Siltstone, clayey, medium to dark gray, hard, siliceous, with abundant mica, coaly carbonaceous material and locally abundant coal lamanae and partings.
1056' - 1087'	31'	OK	Sandstone, <u>white</u> , hard, very fine to medium, coarse and <u>locally</u> very coarse grained, poorly sorted, subangular to round, silty, siliceous with <u>common</u> to abundant mica, chlorite and carbonaceous material. Possible fair to poor porosity.
1087' - 1103'	16'	OK	Sandstone, white to brown, hard, very fine to coarse, commonly very coarse grained, poorly sorted, well rounded to subround, silty, siliceous with <u>common</u> mica and carbonaceous material. Possible fair to poor porosity.
1103' - 1123'	20'	OK	Sandstone, light gray, very hard, very fine to fine grained, well sorted and rounded, silty, siliceous, with <u>abundant</u> mica, carbonaceous material, chlorite, and silty black to gray micaceous-coaly carbonaceous lamanae and partings. No apparent porosity.
1123' - 1172'	49'		Siltstone, clayey, medium to dark gray, hard, siliceous and slightly calcareous with abundant very finely divided mica.

1172' - 1194'	22'	✓	Sandstone, <u>white</u> , hard, very fine to fine grained, with sorted and rounded, silty, siliceous with <u>common</u> mica, carbonaceous material and silty coaly carbonaceous lamanae. Poor porosity.
1194' - 1226'	30'		Siltstone, white to light and medium gray, hard, locally very finely sandy, siliceous and clayey, with abundant mica and carbonaceous material. Common shale fragments and coal lamanae 1194'-1211'.
1226' - 1273'	46'		Siltstone, clayey, light to medium gray, rarely dark red-brown, hard, siliceous, with mica and coaly carbonaceous material. Interbedded Sandstone, white, hard, silty to very fine grained with common coaly carbonaceous partings in the interval 1240'-1253'.
1273' - 1300'	27'	✓	Sandstone, <u>white</u> , hard, very fine to coarse grained, poorly sorted, subangular to round, silty, siliceous with minor intercalated Siltstone lamanae.
1300' - 1334'	34'	ex	Sandstone, <u>white</u> , hard, very fine to medium grained, moderately sorted, subangular to round, slightly silty, siliceous, with <u>rare</u> mica and carbonaceous material. Poor porosity.
1334' - 1341'	7'		Shale and Siltstone, clayey, light to medium gray, siliceous, with finely divided mica, carbonaceous material and common coal lamanae and partings.
1341' - 1387'	46'	ex	Sandstone, white, hard, very fine to fine, medium, coarse, very coarse and locally granular grained, poorly sorted, well rounded, silty, siliceous, with <u>common</u> chlorite, mica and carbonaceous material. Possibly <u>conglomeratic</u> ? Fair to poor porosity.
1387' - 1433'	46'	ex	Sandstone, white, hard, very fine to medium, rarely coarse and very coarse grained, moderately well sorted, subangular to round, slightly silty, siliceous, with common silty micaceous-coaly carbonaceous lamanae and partings. Poor porosity.

- 1433' - 1486' 53' dk Sandstone, white to light gray, hard, silty to fine grained, well sorted and rounded, siliceous, with abundant silty gray micaceous-coaly carbonaceous partings and siltstone lamanae. Poor porosity.
- 1486' - 1505' 9' ck Sandstone, white, hard, very fine to medium grained, poorly sorted, subround, silty, siliceous, with abundant Siltstone stringers and micaceous-coaly carbonaceous lamanae and partings. Poor porosity.
- 1505' - 1572' 67' ck Sandstone, white, hard, fine to medium and coarse grained, poorly sorted, subangular to round, silty, siliceous with rare mica, chlorite and carbonaceous material. Poor porosity.
- 1572' - 1600' 28' dk Sandstone, white, hard, very fine to medium grained, moderate sorting, angular to round, slightly silty, siliceous with rare carbonaceous material. Fair to poor porosity.
- 1600' - 1633' 33' Siltstone, coaly carbonaceous, light to dark gray, hard, locally very finely sandy, siliceous with impure silty, siliceous, micaceous-coaly carbonaceous lamanae and partings.
- 1633' - 1666' 33' ck Sandstone, white, hard, very fine to very coarse grained, poorly sorted, subround to round, silty, siliceous, with common chlorite, mica, carbonaceous material and silty micaceous-coaly carbonaceous lamanae and partings. Fair to poor porosity.
- 1666' - 1709' 43' Sandstone, conglomeratic, white, hard, very fine to very coarse, granular and pebbly grained, poorly sorted, subangular to round, silty, siliceous with common silty micaceous-coaly carbonaceous lamanae and partings. Fair to poor porosity.
- 1709' - 1724' 15' Siltstone, medium to dark gray, hard, locally finely sandy, siliceous and clayey, with abundant mica and carbonaceous material.
- 1724' - 1735' 11' Shale, clayey, medium gray, hard, brittle, slightly fissile, with abundant coaly carbonaceous material and coal lamanae.

1735' - 1791'	56'		Shale, silty and clayey, medium gray, hard, brittle, poorly fissile with locally common mica and coaly carbonaceous material.
1791' - 1830'	39'	ck	Interbedded Sandstone, white, hard, silty to very fine and fine grained, well sorted and rounded, <u>siliceous</u> : and Siltstone, medium to dark gray, hard, siliceous with abundant mica and coaly carbonaceous material.
1830' - 1870'	40'		Shale, medium gray, hard, brittle, slightly fissile with common coal lamanae
1870' - 1883'	13'	ck	Interbedded Sandstone, <u>white</u> , hard, fine grained, well sorted and rounded, good porosity, and: Siltstone, medium to dark gray, locally finely sandy, siliceous with abundant micaceous-coaly carbonaceous lamanae and partings.
1883' - 1885'	2'		Coal, impure and silty, with abundant associated shale fragments. (interpreted depth and thickness)
1885' - 1890'	5'		Siltstone, medium to dark gray, locally very finely sandy, siliceous with abundant micaceous-coaly carbonaceous lamanae and partings.
1890' - 1930'	40'	ck	<u>Sandstone</u> , <u>white</u> , hard, fine to medium grained, well sorted, subangular to round, slightly silty, <u>siliceous</u> with estimated total of 1' Coal in the interval 1916' - 1930'. Fair to poor porosity.
1930' - 2009'	79'	ck	<u>Sandstone</u> , <u>white</u> , hard, fine to coarse, commonly very coarse and locally granular grained, moderate to poorly sorted, subangular-to round, slightly silty, siliceous with <u>common</u> mica and coaly carbonaceous material. Abundant interbedded siltstone and fine coal lamanae in the interval 1975'-2009'. Fair porosity.
<u>Mississippian System (2009-4216)</u> <u>Pennington Group (2009-3219)</u> <u>Bluestone formation (2009-2567)</u>			
2009' - 2010'	1'		<u>Coal</u> , impure and argillaceous (interpreted depth and thickness)

2010
2009
31

2010' - 2040'	30'	2K	Shale, clayey and locally silty, light to medium gray, hard, brittle, with abundant finely divided mica, coaly carbonaceous material and common coal fragments.
2040' - 2055'	15'		Siltstone, argillaceous and clayey, light gray-green, green and brown, hard, brittle, very slightly calcareous with finely divided mica. Grades to a silty shale.
2055' - 2083'	28'		Siltstone, light gray, light gray-green, green and brown, hard, brittle, locally very finely sandy, siliceous and slightly argillaceous, clayey, with abundant mica, carbonaceous material and micaceous-carbonaceous partings.
2083' - 2152'	69'		Siltstone, light to medium gray, hard, siliceous, locally argillaceous, slightly calcareous with abundant finely divided mica and carbonaceous material.
2152' - 2173'	21'		Interbedded Siltstone and Shale, clayey, light to medium gray, hard, locally very finely sandy, siliceous, very slightly calcareous, with abundant mica, coaly carbonaceous material and rare coal fragments. Common Sandstone stringers in the interval 2161' - 2173'.
2173' - 2184'	11'		Shale, clayey, red-brown, light gray-green and green, moderately hard and brittle, locally silty, siliceous, with abundant finely divided mica.
2184' - 2224'	40'		Shale, clayey, locally silty, red-brown, ferruginous, hard, brittle, with finely divided mica.
2224' - 2272'	46'		Interbedded Shale, clayey, red-brown and gray-green, hard, brittle, slightly fissile, with abundant finely divided mica, and: Siltstone, light to medium gray and gray-green, hard, locally clayey and very finely sandy, siliceous, slightly calcareous, with abundant finely divided mica, chlorite carbonaceous material, and common pyrite. Common very fine grained, calcareous, sandstone lamanae.

2272' - 2354'	82'	Shale, clayey, red-brown and gray-green, mottled, as above with minor interbedded Siltstone, clayey, mottled, calcareous, as above, and Limestone stringers, light gray, hard, argillaceous and silty, siliceous,
2354' - 2392'	38'	Shale, clayey, red-brown and gray-green, mottled, with rare intercalated Siltstone lamanae clayey, light to medium gray and gray-green, mottled, slightly carbonaceous as above.
2392' - 2413'	21'	Sandstone, white to light gray, locally brown, hard, fine to very fine and silty grained, well sorted and rounded, siliceous, with abundant coaly carbonaceous inclusions, lamanae and partings. Poor to no porosity.
2413' - 2450'	37'	Siltstone, clayey, argillaceous, light to medium and dark gray, hard, brittle, rarely very finely sandy, siliceous with abundant finely divided mica and carbonaceous material. Minor interbedded Shale stringers, clayey and silty, mottled, red-brown and gray-green, hard, brittle, with common mica and pyrite.
2450' - 2567'	117'	Shale, clayey and sparsely silty, medium to dark gray, hard, brittle, slightly fissile, with common pyrite, coaly carbonaceous inclusions, lamanae and partings. Fine coal lamanae in the interval 2555'-2567'.
<u>Princeton sandstone (2567-2726)</u> 2567' - 2614'	47'	Interbedded Sandstone, white, hard, fine to very fine and silty grained, well sorted and rounded, siliceous, with rare carbonaceous material. Fair to poor porosity. Siltstone and shale, clayey, red-brown, gray-green and light gray, hard, locally slightly calcareous with abundant finely divided mica and common pyrite. Minor intercalated Limestone beds, cream, moderately hard and brittle.
2614' - 2663'	49'	Interbedded Siltstone, calcareous, clayey, and argillaceous, light to medium gray, hard, with common pyrite, and: Limestone, dolomitic, impure, white to light and medium gray, hard, silty, siliceous, with common pyrite and fossil fragments.

2663' - 2700'	37'	Siltstone, calcareous, slightly dolomitic, clayey and argillaceous, red-brown with minor mottled gray and gray-green, hard with abundant finely divided mica. Grades locally to silty shale.
2700' - 2726'	26'	Interbedded Siltstone, clayey and argillaceous gray-green, hard, slightly calcareous, with abundant finely divided mica, and: Sandstone silty and generally clayey, gray-green, hard fine to very fine and silty grained, poorly sorted, well rounded, siliceous, with abundant mica and chlorite. Poor porosity.
<u>Hinton formation (2726-3219)</u> <u>2726' - 2772'</u>	46'	Shale, calcareous, clayey and silty, light to medium gray, hard, brittle, no fissility. Minor interbedded stringers of Siltstone, clayey, and Limestone, dolomitic impure, with common pyrite, as above.
2772' - 2817'	45'	Interbedded Sandstone, silty and argillaceous white to light gray, hard, very fine to silty grained, well sorted, siliceous and slightly calcareous, with common mica, carbonaceous material and chlorite. Poor porosity; and Shale and Siltstone, red-brown, hard and brittle, clayey.
2817' - 2842'	25'	Sandstone, grading to interbedded Siltstone, white to light gray, rarely brown, very hard, fine to very fine and silty grained, well sorted and rounded, siliceous and slightly calcareous, with abundant finely divided mica, carbonaceous material, common pyrite and abundant silty gray micaceous-carbonaceous partings. Poor porosity.
2842' - 2873'	31'	Siltstone, light to medium gray, very hard, siliceous with very abundant finely divided carbonaceous material, mica and micaceous-carbonaceous partings. Grades to minor interbedded stringers of Sandstone, white, very hard, fine to silty grained, siliceous and calcareous.
2873' - 2919'	46'	Interbedded Siltstone and Sandstone as above.

2919' - 2957'	38'	Sandstone, white to light gray-brown, hard, fine to very fine grained, well sorted, subangular to round, siliceous, slightly calcareous with common mica, silty gray micaceous-carbonaceous partings and siltstone stringers. Poor porosity.
2957' - 2998'	41'	Siltstone, argillaceous-clayey, mottled red-brown, light to medium gray and gray-green, very hard, siliceous and locally very slightly calcareous with finely divided mica and rare carbonaceous material.
2998' - 3002'	4'	Limestone, dolomitic, olive gray, hard, brittle and microcrystalline.
3002' - 3028'	26'	Siltstone as 2957'-2998', grading to Shale of similar composition.
3028' - 3058'	30'	Interbedded Sandstone, silty, white, hard, fine to silty grained, well sorted and rounded, siliceous and slightly calcareous, with abundant mica, carbonaceous material and silty gray micaceous-carbonaceous lamanae. and: Siltstone, light to medium gray, hard, siliceous with very abundant micaceous-carbonaceous partings and pyrite. Poor porosity.
3058' - 3091'	33'	Sandstone, white, hard, fine to very fine grained, moderately well sorted, subangular to round, interstitially slightly silty, siliceous, with common siltstone stringers, mica and rare carbonaceous material. Fair to poor porosity.
3091' - 3119'	28'	Dolomite, silty, siliceous, medium and olive gray to dark gray, hard, brittle, cryptocrystalline, with common pyrite.

Stony Gap sandstone member (3119-3219)

3119' - 3179'	60'	Sandstone, white, hard, fine to rarely medium grained, well sorted, angular to round, siliceous, locally very slightly calcareous. (The samples in this interval contain abundant siltstone and shale fragments that are considered to be contamination)
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3179' - 3194'	15'	Siltstone, clayey and argillaceous, medium to dark gray, hard, brittle, slightly fissile, locally slightly calcareous, with common mica and carbonaceous material. Grades to silty shale.
3194' - 3219'	25'	Shale, locally silty, light to medium gray, rarely red-brown, hard, brittle, slightly fissile, locally calcareous. Common argillaceous siltstone stringers and rare very fine grained, sandy, siliceous, limestone lenses.
<u>Bluefield formation (3219-3325)</u>		
3219' - 3226'	7'	Limestone, impure, light to medium and olive gray, hard, brittle, very finely sandy and silty, siliceous, with common pyrite.
3226' - 3247'	21'	Limestone, impure, white to light, medium and dark gray, very hard, microcrystalline, commonly silty, siliceous, with rare pyrite.
3247' - 3249'	2'	Dolomite, silty, siliceous, medium to dark and olive gray, hard, brittle, cryptocrystalline, with common pyrite.
3249' - 3254'	5'	Shale, medium gray, hard, brittle, fissile
3254' - 3262'	8'	Siltstone, light to medium gray, hard, locally very finely sandy, siliceous and clayey, with common pyrite.
3262' - 3275'	13'	Sandstone, white to light gray, very hard, fine to silty grained, well sorted, subangular to round, siliceous, with common pyrite, abundant siltstone stringers and silty dark gray micaceous-carbonaceous partings. Poor to no apparent porosity.
3275' - 3281'	6'	No samples
3281' - 3325'	44'	Siltstone, generally clayey and argillaceous, light to medium gray, hard, locally very finely sandy, siliceous with common pyrite and micaceous-carbonaceous partings.
<u>Greenbrier limestone (3325-3893)</u>		
3325' - 3338'	13'	Limestone, impure, light to dark and gray-brown, hard, brittle, microcrystalline, commonly silty, siliceous with pyrite.

3338' - 3349'	11'	Siltstone as 3281'-3325'
3349' - 3365'	16'	Limestone, impure, silty, siliceous, white to medium and dark gray, hard, brittle, with common pyrite and fossil fragments, Interbedded stringers of Siltstone, calcareous, medium to dark gray, hard, with pyrite and fossil fragments.
3365' - 3400'	35'	No sample
3400' - 3414'	14'	Limestone, white, light to medium gray, and gray-brown, hard, microcrystalline, commonly silty, siliceous with oolites, fossil fragments and pyrite.
3414' - 3442'	28'	Limestone, oolitic and fossiliferous fragmental, white, tan, light to medium gray and gray-brown, hard, brittle, microcrystalline, rarely silty, siliceous, (samples contaminated with fragments of siltstone)
3442' - 3470'	28	Limestone, impure, silty and very finely sandy, siliceous, light to dark gray and brown, hard, brittle, with common fossil fragments. Abundant chert, milky white and brown.
3470' - 3495'	25'	Limestone, oolitic, white to light gray, hard, microcrystalline, slightly silty, siliceous with common fossil fragments.
3495' - 3529'	34'	Limestone, generally impure, silty, siliceous, white to light and medium gray, hard, brittle, microcrystalline with common fossil fragments and rare chert.
3529' - 3545'	16'	Limestone, oolitic and fossiliferous fragmental, white to light tan-gray, very hard, microcrystalline.
3545' - 3555'	10'	Siltstone, medium gray, hard, slightly argillaceous with pyrite and interbedded sandstone stringers. (This sample is probably either contamination or wrongly numbered)
3555' - 3567'	12'	Limestone, oolitic and fossiliferous fragmental as above.

3567' - 3585'	18'	Limestone, slightly silty, siliceous, white, light to medium gray and gray-brown, hard, brittle, microcrystalline with common calcite and fossil fragments.
3585' - 3597'	12'	Limestone, oolitic and fossiliferous fragmental, white to light tan-gray, hard, brittle, microcrystalline.
3597' - 3623'	26'	Limestone, slightly silty, siliceous, white, light to medium gray and gray-brown, hard, brittle, microcrystalline, rarely oolitic with common calcite and fossil fragments
3623' - 3670'	47'	Limestone, oolitic and fossiliferous fragmental, white to tan and light gray, hard, microcrystalline.
3670' - 3690'	20'	Limestone, white, medium gray, dark gray-brown and brown, very hard, microcrystalline, slightly impure, with common pyrite and rare chert.
3690' - 3789'	99'	Limestone, oolitic and fossiliferous fragmental, white to light gray, hard, brittle, microcrystalline.
3789' - 3798'	9'	Limestone, dolomitic, silty, siliceous, red-brown, very hard, microcrystalline
3798' - 3804'	6'	Limestone, tan to light tan gray, very hard, cryptocrystalline, rarely oolitic and fossiliferous fragmental
3804' - 3842'	38'	Limestone, oolitic and fossiliferous fragmental, white to light tan-gray, hard, microcrystalline.
3842' - 3883'	41'	Limestone, white to light tan-gray and medium gray-brown, hard, brittle, microcrystalline, very slightly silty, siliceous, with common chert, rare oolites and fossil fragments.
3883' - 3893'	10'	Limestone, silty, siliceous, light gray to gray-brown and brown, hard, brittle, microcrystalline, locally very finely sandy with abundant chert and common well rounded quartz grains.

Maccrady formation (3893-3945)
3893' - 3919' 26'

Siltstone, dolomitic, red-brown and brown, ferruginous, hard, brittle, commonly very finely sandy with mica.

3919' - 3931' 12'

Interbedded Sandstone, silty, white, light to medium gray, gray-brown and brown, hard, very fine to silty grained, well sorted and rounded, siliceous and slightly calcareous, and: Siltstone, light to medium gray, hard, commonly very finely sandy, siliceous, with abundant silty micaceous-carbonaceous partings. Fair to poor porosity.

3931' - 3945' 14'

Siltstone, very finely sandy, light to medium gray, gray-brown and brown, hard, siliceous, with abundant micaceous-carbonaceous partings. Minor interbedded sandstone stringers.

Price formation (3945-4216)
3945' - 4045' 100'

Sandstone, silty, grading locally to Siltstone, white to light and medium gray, hard, very fine to silty grained, well sorted and rounded, siliceous with common pyrite and silty micaceous-carbonaceous partings. Poor porosity.

4045' - 4216' 171'

Siltstone, light to medium gray, rarely red-brown, hard, brittle, grades from very finely sandy, siliceous to argillaceous, clayey and slightly fissile, with abundant finely divided mica, carbonaceous material, and common pyrite. Locally common sandstone stringers throughout.

Mississippian-Devonian Systems
(4216-4483)

Big Stone Gap shale (4216-4483)

4216 - 4350 134'

Shale, clayey, generally silty, siliceous, medium gray, hard, brittle, slightly fissile with common pyrite. Minor interbedded stringers of Siltstone, clayey, light to dark gray and brown, hard and brittle, siliceous, with mica, carbonaceous material and pyrite, occur throughout.

4350' - 4410' 60'

Shale, clayey and slightly silty, siliceous, medium gray, moderately hard, brittle and fissile with rare finely divided mica, Grades to minor interbedded Siltstone stringers, clayey, as above.

4410' - 4483'	73'	Shale, carbonaceous, black, moderately hard, and brittle, fair fissility, locally finely silty, siliceous with finely divided mica and pyrite. Contains minor veins of crystalline dolomite in the interval 4470'-4480'.
<u>Devonian System (4483-T. D)</u>		
<u>Devonian shales (4483-T. D)</u>		
4483' - 4562'	79'	Interbedded Shale, medium to dark gray and black, carbonaceous, moderately hard, brittle and fissile, generally slightly silty, and: Siltstone, light gray, very hard, locally very poor fissility and clayey, siliceous and slightly calcareous, with finely divided mica, carbonaceous material and rare pyrite.
4562' - 4638'	76'	Siltstone, carbonaceous, black, moderately hard and brittle, rare slight fissility, clayey, locally calcareous, with common mica and rare pyrite. Minor veins of crystalline dolomite in the interval 4598'-4611'.
4638' - 4822'	184'	Interbedded Siltstone, light gray to rarely gray-brown, hard, brittle, locally finely sandy, siliceous, locally slightly calcareous, with common micaceous-carbonaceous partings and rare pyrite. Shale, generally slightly silty, medium gray to rarely black, hard, brittle and slightly fissile, with common very finely divided mica.
4822' - 4865'	43'	Shale, generally very finely silty, light to medium and rarely dark gray, hard, brittle, slightly fissile with finely divided pyrite and carbonaceous material. Grades to minor interbedded Siltstone, light gray, hard, commonly very finely sandy, siliceous, with abundant carbonaceous inclusions, common pyrite and micaceous-carbonaceous partings.
4865' - 4900'	35'	Siltstone, very slightly argillaceous, light gray, hard, locally very finely sandy, siliceous, with abundant carbonaceous material, common pyrite and micaceous-carbonaceous partings. Grades locally to very minor interbedded Shale stringers as above.

4900' - 4929'	29'	Interbedded Siltstone, very finely sandy, siliceous, white to light and medium gray, very hard, locally slightly argillaceous, with abundant micaceous-carbonaceous partings, and: Shale, silty, medium to dark gray, hard, brittle, poorly fissile, with common pyrite.
4929' - 5018'	89'	Shale, grading to minor interbedded Siltstone, as 4900'-4929', with very fine grained Sandstone stringers.
5018' - 5070'	52'	Interbedded Shale and Siltstone as 4900'-4929'.
5070' - 5095'	25'	Shale, generally slightly silty, light to medium gray, hard, brittle, slightly fissile with abundant finely divided carbonaceous material and common pyrite. Grades to minor interbedded Siltstone, white to light gray, hard, brittle, siliceous, locally slightly clayey, with abundant carbonaceous material and common pyrite.
5095' - 5155'	60'	Shale as above with rare Siltstone stringers.
5155' - 5308'	153'	Shale, light to medium and dark gray, gray-brown and brown, hard, brittle, slightly fissile, commonly silty, siliceous, with pyrite and carbonaceous material. Common intercalated Siltstone stringers as 5070'-5095', throughout the interval.
5308' - 5415'	107'	Siltstone, carbonaceous, black, hard, brittle, slightly argillaceous, siliceous, with abundant finely disseminated pyrite.
5415' - 5425'	10'	Shale, silty, light to medium and dark gray, hard, brittle, poorly fissile with abundant pyrite and carbonaceous material.
5425' - 5834'	409'	Siltstone, medium to dark gray, carbonaceous, hard, brittle, slightly fissile, locally very finely sandy, siliceous, locally argillaceous, with abundant finely divided pyrite and common mica. Contains interbedded stringers of Shale, light gray, hard, brittle, slightly fissile, locally silty, siliceous and slightly calcareous, with common mica and carbonaceous material. Abundant coaly carbonaceous material in the interval 5755'-5798'.

5834' - 5855'	21'	Limestone, dolomitic, silty and argillaceous, dark gray to black, hard, brittle and impure, with common finely divided pyrite and mica.
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5855' - 5866'	11'	No sample
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Total Depth 5866'

Operator: Clinchfield Coal Company
 Farm: Big Sandy Fuel Corporation
 Well No.: 210

Location: Dickenson County
 1200' S. of 37°15'
 1350' W. of 82°15'

Elevation: 1753.0'

Total Depth: 5860' (5866' SLM)

Drilling Commenced: 4/12/58

Well Completed: 11/17/58

Result: Gas Well

Coal: 27'-28', 446'-448', 1010'-1011', 1038'-1040'

Water: 60'

Gas Show: 2919'-2926', 3153'-3156', 3162'-3165', 3165'-3172', 3590',
 4511'-4515', 5560'

Pennsylvanian System (0-2009')

Pottsville Group (0-2009')

Norton formation (0-1015')

Lee formation (1015'-2009')

Mississippian System (2009'-4216')

Pennington Group (2009'-3219')

Bluestone formation (2009'-2567')

Princeton sandstone (2567'-2726')

Hinton formation (2726'-3219')

Stony Gap sandstone member (3119'-3219')

Bluefield formation (3219'-3325')

Greenbriar limestone (3325'-3893')

Maccrady formation (3893'-3945')

Price formation (3945'-4216')

Mississippian-Devonian Systems (4216'-4483')

Big Stone Gap shale (4216'-4483')

Devonian System (4483'-T. D.)

Devonian shales and siltstones (4483'-T. D.)

Geologic Log

Samples studied and described
 by: K. Robinson

Virginia Division of

Mineral Resources

July, 1962

GEOLOGIC SUMMARY

Pennsylvanian System

Gladeville Sandstone	in	50
	bottom	83 (?)
Norton Formation	top	83 (?)
	bottom	1015
Lee Formation	top	1015
	bottom	2040

Mississippian System

Bluestone Formation	top	2040
	bottom	2567
Princeton Sandstone	top	2567
	bottom	2614
Hinton Formation	top	2614
	bottom	2957
Stony Gap Sandstone	top	2772
	bottom	2957
Bluefield Formation	top	2957
	bottom	3219
Greenbrier Limestone	top	3219
	bottom	3893
Maccrady — Price Formations	top	3893
	bottom	4216

Mississippian — Devonian Systems

Big Stone Gap Shale	top	4216
	bottom	4562

Devonian — Pre-Devonian Systems

Devonian — Pre-Devonian undivided	top	4562
	(sampled depth 5855)	

Correlations by: Keith Robinson

September 1963

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Dickenson County
Index No 6

Big Sandy Fuel # 210

T.	R.

Elev. 1753.

COMPANY

NO.

COMMENCED

COMPLETED

ELEVATION

REMARKS location elev. of well indicates well located below Eagle coal + above Dorchester coal

PRODUCTION

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

