Latitude 37 50

Longitude 81 00

4.97 S 4.98-S
2.73 W 2.78-W
7 SC (4-7)

New Location X
Drill Deeper
Abandonment

Examined by Flowers (record on file)

Company Godfrey L. Cabot, Inc.
Address 900 Union Bldg. Charleston, W.Va.
Farm Russell & Doloff, Trustees
Tract _____ Acres 6245 Lease No. 5-42
Well (Farm) No. 1 Serial No. 1236
Elevation (Spirit Level) 1999
Quadrangle Beckley - SE
County Raleigh District Shady Spring
Engineer Logan McDonald
Engineer's Registration No. 610
File No. _____ Drawing No. _____
Date 1-27-47 Scale 1" = 1320'

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION
CHARLESTON

WELL LOCATION MAP

FILE NO. RAL-83

✚ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.

— Denotes one inch spaces on border line of original tracing.

1-0 0

Samples 21-G (50-7169')

Deep Well

H. Ch 82'

ORIX 93 6990
6997

6990
1991
1991

WEST VIRGINIA DEPARTMENT OF MINES
OIL & GAS DIVISION
W E L L R E C O R D

Permit No. Ral 83
Beckley Quad.

Company	Godfrey L. Cabot, Inc.					
Address	Charleston, W.Va.					
Farm	Russell & Doloff	Acres				
Well No.	1 serial 1236	Elev. 1999				
District	Shady Springs	Raleigh County				
Commenced	April 23,1947					
Completed	Feb. 13,1948					
Water	25 H.F.					

Dry Hole
CASING & TUBING

13	299	299
10	1061	1061 Shoe
8	2010	2010 "
7	6923	6923 "

Gravel	0	20
Red Rock	20	35
Lime	35	54
Red Rock	54	58
Slate	58	77
Sand	77	145
Lime	145	224
Red Rock	224	250
Lime	250	435
Red Rock	435	450
Sand	450	455
Red Rock	455	465
Lime	465	475
Red Rock	475	480
Lime	480	485
Slate & Shells	485	596
Lime	596	600
Slate & Shells	600	650
Sand	650	660
Red Rock	660	685
Lime	685	690
Red Rock & Shells	690	775
Lime	775	795
Red Rock	795	818
Lime	818	825
Red Rock	825	838
Slate & Shells	838	875
Lime	875	895
Slate & Shells	895	960
Grey Sand	960	975
Slate	975	990
Grey Lime	990	1020
Slate Shells	1020	1058
Lime	1058	1175
Red Rock	1175	1190
Lime	1190	1275
Sand	1275	1300
Red Rock	1300	1385
Sand	1385	1395
Slate	1395	1435
Slate- Dark	1435	1455
Slate & Shells	1455	1480
Lime	1480	1490
Slate	1490	1500
Sand	1500	1520
Slate	1520	1555
Lime	1555	1582
Slate & Shells	1582	1610
Sand	1610	1630
Slate	1630	1675
Greenbrier Lime	1675	1850
Black Shale	1850	1880
Big Lime	1880	2520
Red Rock	2520	2541
Gritty Lime	2541	2791
Slate	2791	2810
Lime	2810	2820
Slate & Shells	2820	3855
Lime	3855	4400
Slate & Shells	4400	4420
Lime	4420	4550
Slate & Shells	4550	6195
Lime	6195	6220
Slate & Shells	6220	6650
White Slate	6650	6790
Black Slate	6790	6908
Corniferous Lime	6908	7173
Sand Line Measurement	7173	

485

Gas 401 show
Gas pocket at 6819
Gas 6953 show. also show at 7133

APR 26 1949

RUSSELL & DOLOFF NO. 1 — G. L. CABOT, INC. — RAL-83

RUSSELL & DOLOFF NO. 1 (1236) WELL.

83

Shady Springs District, Raleigh County, W. Va.
By Godfrey L. Cabot, Inc., Charleston, W. Va.
Drilled under permit Ral-83; Beckley Quadrangle.
On.....acres.
Elevation, 1999' L.
Drilling commenced April 23, 1947; completed Feb. 13, 1948.
Water, 25', hole full.
13" casing, 299'; 10", 1061' (shoe); 8", 2010' (shoe); 7", 6923' (shoe); all left in.
Gas show, 401'. Gas pocket at 6819'. Gas show, 6953'; also show at 7133'.
Dry hole. Record from Smith April 26, 1949.

	Top.	Bottom.
Gravel	0	20
Red rock	20	35
Lime	35	54
Red rock	54	58
Slate	58	77
Sand	77	145
Lime	145	224
Red rock	224	250
Lime	250	435
Red rock	435	450
Sand	450	455
Red rock	455	465
Lime	465	475
Red rock	475	480
Lime	480	485
Slate and shells	485	596
Lime	596	600
Slate and shells	600	650
Sand	650	660
Red rock	660	685
Lime	685	690
Red rock and shells	690	775
Lime	775	795
Red rock	795	818
Lime	818	825
Red rock	825	838
Slate and shells	838	875
Lime	875	895
Slate and shells	895	960
Gray sand	960	975
Slate	975	990
Gray lime	990	1020
Slate shells	1020	1058
Lime	1058	1175
Red rock	1175	1190
Lime	1190	1275
Sand	1275	1300
Red rock	1300	1385
Sand	1385	1395
Slate	1395	1435
Slate, dark	1435	1455
Slate and shells	1455	1480
Lime	1480	1490
Slate	1490	1500

(OVER)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued).

	Top.	Bottom.
Sand	1500 -	1520
Slate	1520 -	1555
Lime	1555 -	1582
Slate and shells	1582 -	1610
Sand	1610 -	1630
Slate	1630 -	1675
Greenbrier Lime	1675 -	1850
Black shale	1850 -	1880
Big Lime	1880 -	2520
Red rock	2520 -	2541
Gritty lime	2541 -	2791
Slate	2791 -	2810
Lime	2810 -	2820
Slate and shells	2820 -	3855
Lime	3855 -	4400
Slate and shells	4400 -	4420
Lime	4420 -	4550
Slate and shells	4550 -	6195
Lime	6195 -	6220
Slate and shells	6220 -	6650
White slate	6650 -	6790
Black slate	6790 -	6908
Corniferous Lime	6908 -	7173
Total depth (sand-line measurement)		7173

RUSSELL & DOLOFF, TRUSTEES, NO. 1 (1236) WELL

Shady Springs District, Raleigh County, W. Va.
By Godfrey L. Cabot, Inc., 900 Union Bldg., Charleston, W. Va.
Located 5.07 mi. S. of 37° 50' and 2.72 mi. W. of 81° 00' = SE - Beckley Quad.
Elevation, 1999' L.
Permit Ral-83.
Drilling commenced April 23, 1947; completed Feb. 13, 1948.
Gas show 401'. Gas pocket at 6819'. Gas show, 6953'; also show at 7133'.
Dry hole.
Water, 25', hole full.
13" casing 299'; 10", 1061' (shoe); 8", 2010' (shoe); 7", 6923' (shoe); all left in.
Section based on samples 50' to 7173', examined by Russell R. Flowers.
Record to RCT from Flowers, Oct. 11, 1949.

Top.	Bottom	Thickness	MAUCH CHUNK, 2030+ FEET
50	54	4	Siltstone (very sandy, greenish-gray to medium-gray, calcareous, slightly dolomitic; small amount of grayish-green shale
54	58	4	Clay-shale, grayish-brown; some greenish-gray, calcareous, sandy siltstone.
58	61	3	Clay-shale, (grayish-brown), to shale(brownish-gray), silty, a moderate amount of greenish-gray, calcareous siltstone.
61	74	13	Siltstone, greenish-gray, some medium-gray (with highly calcareous, brown streaks); small amount of brownish-gray to grayish-brown, highly calcareous shale; small amount of moderately yellowish brown, highly dolomitic shale
74	77	3	Siltstone to sandstone (very fine), greenish-gray to medium-gray, slightly calcareous, somewhat dolomitic; some grayish-brown clay-shale
77	144	67	Sandstone, very light to light-gray and light greenish-gray, fine-grained, very fine grained in part, some medium grains, fine- to medium-grained at 134 to 144', contains specks of carbonaceous and chloritic material, slightly calcareous, moderately to highly sideritic at the bottom; a moderate amount of medium-gray, shaly siltstone at the top; a moderate amount of grayish-brown and greenish-gray clay-shale at 82-86'; some medium- to dark-gray, silty shale at 82-86'; some medium- to dark-gray, silty shale, 121-130'; a large amount of medium-gray and greenish-gray shale and siltstone, 134-144'.
144	147	3	Shale, medium-gray to greenish-gray, silty
147	150	3	Shale, medium- to dark-gray, some greenish-gray, silty
150	181	31	Shale, medium dark to dark-gray; trace of calcite and trace of pyrite at the bottom.
181	191	10	Shale, medium- to dark-gray, sandy, very highly fossiliferous (light- to medium-gray calcite;) some dark-gray to grayish-black shale.
191	212	21	Shale (very sandy) to sandstone (fine, very shaly), medium dark to dark-gray with light- to medium-gray fossiliferous calcite spots and streaks; a moderate amount of interbedded, dark-gray to grayish-black shale.
212	216	4	Shale, dark-gray to grayish-black, very silty, fossiliferous, calcareous in part.

(OVER)

RUSSELL & DOLOFF, TRUSTEES NO. 1 (1236) WELL (CONTINUED)

Top	Bottom	Thickness	
216	224	8	Shale, light olive gray, to greenish-gray and medium-gray, soft, calcareous in part; some dark-gray to grayish-black shale.
224	244	20	Shale and siltstone, grayish-red to grayish-brown, greenish-gray to medium-gray, some dark-gray to grayish-black and some brownish-gray, calcareous in part
244	253	9	Shale, grayish-red to grayish-brown, some greenish-gray, and brownish-gray, some dark-gray to grayish-black, silty, slightly calcareous.
253	273	20	Sandstone (very fine) to siltstone, light-gray to greenish gray; a very large amount of interbedded grayish-brown to dusky-brown and some grayish-black shale at 265-269'; some shale cavings in the upper part
273	289	16	Siltstone and shale, sandy at the top to sandstone, very fine and silty at the bottom, greenish-gray to medium-gray some grayish-red to grayish-brown, some dark-gray to grayish-black, calcareous at the bottom; some dark yellowish brown, highly sideritic, shale at the bottom
289	296	7	Shale, medium to medium dark gray, some grayish-black, some dark yellowish-brown (sideritic)
296	304	8	Shale, greenish-gray to medium-gray, dark-gray to black (carbonaceous and calcareous)
304	325	21	Siltstone to sandstone (very fine), light- to medium-gray to greenish-gray (with dark-gray to grayish-black, highly micaceous, somewhat carbonaceous, shaly streaks), slightly to moderately calcareous; a large amount of interbedded dark-gray shale at the bottom
325	335	10	Siltstone and shale, medium light to medium dark gray, some brownish-gray to dusky yellowish brown (sideritic) small amount is calcareous and dolomitic
335	376	41	Limestone, brownish-black with some brownish-gray, shaly to a highly calcareous shale (brownish-black to grayish-black), very highly fossiliferous, a few chips are slickensided; some dark-gray shale
376	385	9	Shale, medium light to medium dark gray (with brownish-gray highly fossiliferous, highly calcareous spots), somewhat dolomitic, trace of pyrite
385	392	7	Shale, medium to medium dark gray, some dark-gray at the top; some moderate to dark yellowish brown siderite
392	401	9	Shale, medium- to dark-gray (with brownish-black, highly fossiliferous spots in the upper part); some medium-gray siltstone at the bottom
401	415	14	Siltstone, greenish-gray to medium-gray, somewhat calcareous and dolomitic, micaceous and kaolinitic
415	419	4	Siltstone, greenish-gray to medium-gray with interbedded medium- to dark-gray siltstone (shaly) to shale
419	422	5	Shale, dark-gray to black, carbonaceous, pyritic and fossiliferous in part; some medium-gray shale
422	432	10	Clay-shale, medium to medium dark gray, some dark-gray to black, calcareous and dolomitic in part, somewhat pyritic, lighter in color with a greenish cast in the lower part
432	435	3	Shale, greenish-gray and medium- to dark-gray, silty, a moderate amount of brownish-gray limestone; small amount of pyrite

OVER - Page 3

RUSSELL & DOLOFF, TRUSTEES NO. 1 (1236) WELL (CONTINUED

Top	Bottom	Thickness	
435	445	10	Clay-shale, grayish-red, greenish-gray and medium-gray; some dark-gray, some brownish-gray, somewhat silty and sandy at the bottom, calcareous in part
445	450	5	Shale, grayish-brown to grayish-red, soft; shale (soft) and siltstone (sandy) to sandstone (very fine), greenish-gray to medium gray, some dark-gray to black; some of the shale and siltstone is calcareous
450	455	5	Sandstone, very light gray and light greenish gray, fine-grained, subrounded, slightly calcareous; a large amount of grayish-red and greenish-gray shale and siltstone cavings
455	475	20	Siltstone and shale (silty), greenish-gray to brownish-gray, small amount of grayish-red to blackish-red, somewhat calcareous; some sandstone, very light gray to pinkish-gray and light greenish-gray; at the bottom siltstone to sandstone (very fine)
475	480	5	Shale, grayish-brown to dusky-brown, silty
480	485	5	Shale, grayish-brown to dusky-brown, dark greenish gray to medium-gray
485	500	15	Shale, medium dark gray, some dark greenish gray, some dark-gray to black (carbonaceous), dolomitic, small amounts of grayish-brown and dark-yellowish brown (sideritic)
500	510	10	Shale, grayish-brown to grayish-red, somegrayish-black to black (calcareous); shale and siltstone, dark greenish gray to medium dark gray, calcareous in part
510	520	10	Shale and siltstone, dark greenish gray to medium dark and dark-gray (shaly), contains streaks of greenish and light greenish gray to white, very fine sandstone; some dark-gray to black and brownish-black, shaly limestone; small amount of black, carbonaceous shale
520	535	15	Shale (silty) and some siltstone, medium dark to dark-gray, some grayish-black; some siltstone to sandstone (very fine), light- to medium-gray, calcareous
535	550	15	Shale and siltstone (highly micaceous), grayish-brown to dusky-brown, some grayish-red, some greenish-gray to medium- and dark-gray, calcareous and dolomitic in part
550	560	10	Siltstone and shale, grayish-brown to dusky-brown, dark greenish gray to medium dark gray, some grayish-red and brownish-gray, micaceous
560	580	20	Dolomite (very shaly) to shale (highly dolomitic), olive-black to grayish-black, 40%; siltstone, greenish-gray to medium-gray, dolomitic, 40%; shale, greenish-gray to medium-gray, grayish-brown to grayish-red, 20%
580	605	25	Shale, olive-black, slightly calcareous to highly calcareous, olive-black shale (with brownish-black spots) and streaks, to a brownish-black, shaly limestone, highly fossiliferous, highly dolomitic
605	625	20	Limestone, dark-gray to brownish-black (with medium-gray spots), highly dolomitic; fossiliferous
625	645	20	Clay-shale to shale, grayish-red to grayish-brown, some greenish-gray to medium-gray, some medium dark to dark-gray; a large amount of olive-black to brownish-black shale to shaly limestone, highly dolomitic (cavings)
645	665	20	Siltstone (sandy) to sandstone(very fine), grayish-brown to dusky-brown, calcareous; a large amount of grayish-red in the lower part

(Continued on page 4 - Over)

RUSSELL & DOLOFF, TRUSTEES NO. 1 (1236) WELL (CONTINUED)

Top	Bottom	Thickness	
665	725	60	Shale, grayish-red to very dusky red, some grayish-brown to dusky-brown, soft, calcareous and dolomitic, in part; some grayish-brown to dusky-brown siltstone in the lower part
725	750	25	Clay-shale, brownish-gray to grayish-red; siltstone and shale (silty), grayish-brown to dusky-brown, some brownish gray, somewhat calcareous in the lower part
750	768	18	Clay-shale and shale (silty), grayish-red to grayish-brown, some dusky-brown
768	778	10	Siltstone, grayish-brown to dusky-brown, calcareous in part; shale, grayish-red to grayish-brown, some greenish-gray to brownish-gray.
778	785	7	Shale and some siltstone, grayish-brown to dusky-brown, some grayish-red to very dusky red, greenish-gray to medium-gray, some purplish-gray; some dark-gray, calcareous in part
785	810	25	Clay-shale and shaly (silty), some siltstone (in the upper part), grayish-brown to dusky-brown, some greenish-gray to dark-gray (in the lower part); small amount is calcareous
810	820	10	Shale, grayish-red to very dusky red, greenish-gray to medium and dark-gray, small amount of black, somewhat calcareous
820	830	10	Shale, grayish-red to grayish-brown, some greenish-gray to dark-gray, calcareous
830	837	7	Shale, olive-gray to grayish-brown, soft, calcareous in part
837	885	48	Shale, some clay-shale and some siltstone, grayish-red to grayish-brown, some dusky-brown, calcareous in part; a large amount of grayish-brown to dusky-brown, sandy siltstone at the bottom
885	899	14	Siltstone, grayish-brown to dusky-brown, micaceous, slightly to moderately calcareous; a large amount of grayish-red to grayish-brown and some greenish-gray to medium-gray clay-shale in the lower part
899	911	12	Clay-shale and shale, grayish-red to grayish-brown, some dusky-brown, some greenish-gray to medium-gray; small amount of greenish-gray to brownish-gray limestone at the top
911	937	26	Shale, grayish-brown to grayish-red, some dark greenish-gray to medium dark gray; siltstone, dusky-brown to brownish-gray, calcareous in part
937	944	7	Shale and siltstone, grayish-brown to dusky-brown, some very dusky-red, some medium- to dark-gray; trace of limestone
944	954	10	Shale, grayish-brown, soft; some dusky-brown siltstone; some medium- to dark-gray shale; some olive-gray to brownish-gray dolomite
954	960	6	Siltstone, dusky-brown to brownish-gray, slightly dolomitic; some dusky-brown to grayish-brown shale; a moderate amount of olive-gray to brownish-gray dolomite
960	987	27	Siltstone, dark greenish gray to medium dark gray, slightly dolomitic in part, micaceous
987	997	10	Shale, grayish-brown to dusky-brown, some grayish-red, greenish-gray to medium dark gray, some dark-gray (with black, carbonaceous streaks), Calcareous and dolomitic

(Continued on page 5)

RUSSELL & DOLOFF, TRUSTEES NO. 1 (1236) WELL (CONTINUED)

Top	Bottom	Thickness	
997	1007	10	Siltstone, dusky-brown to very dusky red, some grayish-brown, some brownish-gray, a moderate amount of dark greenish-gray to medium dark gray, micaceous, dolomitic in part
1007	1020	13	Shalo, grayish-red, to grayish-brown, greenish-gray to dark greenish gray, medium dark to dark-gray (dolomitic) soft
1020	1030	10	Limestone to shale (highly calcareous), dark greenish gray; shale, brownish-gray to grayish-red, some reddish-gray
1030	1040	10	Siltstone and shale, dusky-brown, some very dusky red, some grayish-brown, dark greenish-gray to medium dark gray (dolomitic in part), dark-gray to black, some brownish-gray
1040	1051	11	Shale, (soft, silty), and some siltstone, grayish-brown to dusky-brown, some brownish-gray, some dark greenish-gray to dark-gray and black; a moderate amount of olive-gray to brownish-gray dolomite.
1051	1063	4	Dolomite, olive-gray to brownish-gray, shaly, 40%; greenish-gray to dark greenish-gray, dark-gray to black, grayish-brown, and some grayish-red siltstone and shale, 60%
1063	1070	7	Shale, grayish-brown to medium dark gray, some olive-gray to brownish-gray, shaly dolomitic (cavings?)
1070	1085	15	Siltstone and shale, grayish-black (dolomitic in part), mostly siltstone in the lower part
1085	1095	10	Siltstone, dusky-brown to brownish-gray; shale, greenish-gray to medium dark gray (dolomitic), some dark-gray
1095	1115	20	Siltstone to sandstone (very fine), light- to medium-gray (with medium dark gray to grayish-black, shaly, micaceous and somewhat carbonaceous streaks), somewhat calcareous, kaolinitic; considerable medium dark gray to dark-gray; shaly, micaceous siltstone in the lower part; a large amount of medium dark gray to dark greenish gray shale
1115	1122	7	Shale, dark greenish gray to medium dark gray (dolomitic in part), some dark-gray to grayish-black; some medium gray, very fine sandstone
1122	1126	4	Sandstone, light- to medium-gray and greenish-gray, fine to very fine grained, somewhat calcareous, kaolinitic; some medium dark gray siltstone and some shale; dark greenish gray to medium dark gray, soft
1126	1135	9	Sandstone, very light to medium-gray, fine-grained, 30%; shale and siltstone, medium dark gray, some dark greenish gray, 20%; shale (calcareous) to limestone (shaly), dark-gray to greenish-black, 50%
1135	1155	20	Siltstone (sandy in part) and shale, medium dark gray, some dark greenish gray, some dark-gray to black (carbonaceous) in the lower part, somewhat calcareous, moderately dolomitic in the lower part
1155	1162	7	Limestone, brownish-black to black, shaly, 50%; shale, grayish-red to grayish-brown, some brownish-gray, considerable dark greenish gray, to medium dark gray
1162	1185	23	Shale and siltstone, grayish-brown to dusky-brown, a moderate amount of medium dark gray to dark greenish gray, some brownish black to black, shaly limestone at the top
1185	1195	10	Shale, medium dark gray (silty), some dark greenish gray, a moderate amount of grayish-brown, some brownish-gray, trace of black (calcareous cavings?)

(Continued on page 6)

RUSSELL & DOLOFF, TRUSTEES NO. 1 (1236) WELL (CONTINUED)

Top	Bottom	Thickness	
1195	1205	10	Shale, mottled olive-gray and very dusky red, highly dolomitic, calcareous, 60%; shale, brownish-gray, medium dark gray, and dark greenish gray
1205	1215	10	Shale, mottled grayish-red and medium dark gray, some dark greenish gray, moderately dolomitic; considerable interbedded medium dark gray, silty shale, calcareous in part
1215	1230	15	Shale and some siltstone, grayish-brown to dusky-brown, some medium dark gray in the upper part, considerable brownish-gray and medium dark gray to dark greenish gray in the lower part, small amount is calcareous and dolomitic
1230	1260	30	Siltstone, medium dark gray and dark greenish gray to shale, medium dark to dark-gray, kaolinitic, somewhat micaceous, dolomitic in part at the bottom; at the top, mostly siltstone, dark greenish-gray to medium dark gray; mostly shale, medium dark to dark-gray in the middle and lower parts
1260	1285	25	Siltstone and sandstone (very fine, some fine at the bottom), medium-gray to greenish-gray (with medium dark gray to grayish-black, carbonaceous and micaceous, shaly streaks), highly kaolinitic, somewhat calcareous and dolomitic
1285	1300	15	Sandstone (very fine, silty), light brownish gray to grayish-brown; small amount of brownish-gray to grayish-brown; small amount of brownish-gray dolomite
1300	1348	48	Shale, grayish-brown to grayish-red, some very dusky red to dusky-brown; some medium dark gray shale in the middle; at the bottom, a moderate amount of medium dark gray to dark greenish gray and brownish-gray shale; small amount of moderate olive brown dolomite
1348	1360	12	Shale, medium dark gray to dark greenish gray, dark-gray to black, dolomitic, 30%; light olive gray to light brownish gray dolomite, 10%; shale, grayish-brown to very dusky red, 60%
1360	1400	40	Siltstone, dark greenish gray to medium dark gray, some dark-gray, kaolinitic, micaceous, with specks of carbonaceous material; some grayish-brown to dusky-brown, and some dark greenish gray shale (cavings)
1400	1430	30	Shale and some clay-shale, medium dark gray and dark greenish gray; some dark-gray to brownish-black dolomite
1430	1470	40	Shale and siltstone, medium dark-gray to dark greenish gray, some dark-gray to black (large amount, 1440 to 1450'); at the bottom, some sandstone (very fine, silty) medium light gray to greenish-gray, calcareous
1470	1480	10	Shale, medium dark gray to grayish-black, 60%; siltstone (calcareous, dolomitic), to a slight calcareous dolomite, 40%
1480	1495	15	Shale, medium dark gray, highly calcareous to limestone (shaly), brownish-black to black (with medium-gray spots), somewhat dolomitic
1495	1505	10	Shale, grayish-brown to dusky-brown, olive-gray to dark greenish gray; a moderate amount of dark-gray, dolomitic shale
1505	1515	10	Siltstone, dusky-brown, 90%; shale, grayish-brown, olive-gray to dark greenish-gray, dark-gray (dolomitic)10%

(Continued on page 7)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top	Bottom	Thickness	
1515	1520	5	Shale and siltstone, dusky-brown, some brownish-gray, medium dark gray (dolomitic); some dolomite, olive-gray to brownish-gray
1520	1540	20	Shale, medium dark to dark-gray (dolomitic in part), some dark greenish gray and brownish-gray, some grayish-brown (cavings?)
1540	1549	9	Shale, olive-gray to dark greenish-gray, 70%; shale, medium dark to dark-gray, dolomitic, 30%
1549	1565	16	Shale, medium dark gray to grayish-black, calcareous, some olive-gray to dark greenish gray, the upper part contains more dark shale; small amount of olive-gray dolomite
1565	1572	7	Dolomite, brownish-gray to light-gray, greenish-gray to medium dark gray, shaly to dolomitic shale
1572	1577	5	Limestone, grayish-black to black, shaly to a highly calcareous shale, highly dolomitic; some dark greenish gray to medium dark gray shale.
1577	1582	5	Dolomite, brownish-black, highly calcareous; some grayish-black to black, shaly, dolomitic limestone; some shale cavings
1582	1608	26	Shale, medium dark to dark-gray, some grayish-black to black (highly carbonaceous), moderately calcareous at the top, silty and lighter in color at the bottom
1608	1624	16	Siltstone, greenish-gray to medium and medium dark gray, micaceous and kaolinitic with some carbonaceous material; a moderate amount of interbedded, dark-gray to black (highly carbonaceous) shale
1624	1631	7	Siltstone and shale, medium dark gray, some dark-gray to black
1631	1650	19	Shale, medium dark gray; small amounts of brownish-black and grayish-black limestone and dolomite (cavings?)
1650	1674	24	Shale, medium dark gray, soft, distinctly laminated
1674	1706	32	Shale, medium dark to dark-gray, slightly to moderately calcareous, moderately dolomitic at the top, small amount is highly calcareous
1706	1733	27	Limestone, brownish-black, highly fossiliferous, shaly to a highly calcareous shale; a large amount of medium dark to dark-gray shale (probably mostly cavings)
1733	1741	8	Limestone, dark-gray to brownish-black, shaly to a highly calcareous shale, fossiliferous, 60%; shale, medium dark gray, highly dolomitic, 40%
1741	1760	19	Shale, medium dark to dark-gray, highly dolomitic, calcareous in part, silty
1760	1774	14	Limestone, brownish- and grayish-black, very highly fossiliferous; some medium dark to dark-gray, highly dolomitic shale; trace of white calcite
1774	1790	16	Limestone, brownish- and grayish-black, highly dolomitic, to calcareous dolomite in the upper part to dolomitic and shaly at the bottom; some highly fossiliferous, limestone at the top
1790	1797	7	Limestone, grayish-black, very shaly, dolomitic; shale, medium dark gray, highly calcareous to a grayish-black, highly oolitic limestone

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RUSSELL DOLOFF, TRUSTEES NO. 1 (1236) WELL (Continued)

Top	Bottom	Thickness	
1797	1843	46	Limestone, grayish-black with light- to medium-gray spots, grayish- and brownish-black with more light- and medium-gray in the lower part, very highly oolitic and fossiliferous, more fossiliferous and less oolitic toward the bottom; a large amount of medium dark gray, calcareous and dolomitic shale at 1824-1830' and some in the upper part
1843	1851	8	Shale, grayish-black, silty, highly dolomitic; with light-gray highly calcareous spots
1851	1876	25	Shale, olive-black to brownish- and grayish-black, dolomitic; small amount of brownish-black dolomite; some grayish-black, silty, highly carbonaceous shale at the top
1876	1882	6	Shale, brownish- to grayish-black, dolomitic, 60%; limestone, brownish-black with light- to medium-gray spots, fossiliferous and oolitic, 40%.
1882	1886	4	Shale, medium dark gray (silty) to grayish- and brownish-black, dolomitic in part; some brownish-black, dolomitic in part; some brownish-black to medium-gray limestone
1886	1922	36	Shale (silty)to siltstone, olive-gray to olive-black, dark-gray to grayish-black, moderately calcareous, highly dolomitic, somewhat kaolinitic and micaceous; a large amount of dark-gray to grayish-black shale in the upper part.
1922	1927	5	Siltstone and shale (silty), greenish-gray to dark greenish gray, some medium dark gray, calcareous and dolomitic; some limestone, dark gray to brownish-black with white to medium-gray spots, fossiliferous
1927	1940	13	Shale, dark greenish gray to olive-black, highly calcareous, dolomitic, to a shaly, dolomitic limestone
1940	1952	12	Limestone, dark greenish gray, and dark-gray to brownish-black (with light- to medium-gray spots), highly fossiliferous, shaly to a highly calcareous shale, dolomitic
1952	1971	19	Shale, olive-black to grayish-black, some dark greenish gray to dark-gray, some light- to medium-gray spots, moderately calcaroous and moderately dolomitic
1971	1985	14	Shale, dark-gray to brownish-black (with some light-gray, highly calcareous, fossiliferous spots), highly calcareous, dolomitic; at the bortom, a large amount of grayish- and brownish-black limestone containing many fossil fragments
1985	1991	6	Limestone, dark-gray to grayish-black, mostly oolites, with calcite matrix, somewhat silty and shaly
1991	2000	9	Limestone, medium dark gray to olive-gray, some light-gray, dolomitic in part, shaly; some grayish-black, oolitic limestone
2000	2020	20	Shale (dolomitic) to dolomite (shaly), dark greenish gray to olive-gray, calcareous; some medium dark to dark-gray, somewhat fossiliferous andoolitic limestone
2020	2028	8	Limestone, dark greenish gray to medium dark gray and grayish black, fossiliferous, dolomitic, very shaly; some brownish-gray, highly oolitic and fossiliferous limestone; some dark-gray to black and grayish-red shale (probably cavings)

(Continued on page 9)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top	Bottom	Thickness	GREENBRIER LIMESTONE, 480 FEET
2028	2045	17	Limestone, brownish-gray to brownish-black, some light brownish gray, highly oolitic, fossiliferous
2045	2056	11	Limestone, brownish-black, some brownish-gray, clastic texture, mostly fossil fragments and oolites
2056	2066	10	Limestone, brownish-gray to brownish-black, the brownish-gray is mostly oolites with calcite cement
2066	2075	9	Limestone, brownish-black, somewhat oolitic and fossiliferous
2075	2104	29	Limestone, brownish- and grayish-black with light- to medium-gray spots; a moderate amount of light-gray, highly oolitic limestone in the lower part
2104	2120	16	Limestone; brownish- and grayish-black,shaly,dolomitic in part
2120	2132	12	Limestone, brownish-black, some grayish-black, somewhat silty and shaly
2132	2154	22	Limestone, brownish- and grayish-black, with a large amount of white vein calcite in the upper part and a very large amount in the lower part, silty, some shaly, carbonaceous material, a few pieces are slickensided
2154	2163	9	Limestone, brownish-black with medium-gray spots, somewhat silty and shaly, oolitic in part
2163	2170	7	Limestone, brownish-black with medium-gray spots, oolitic, 50%; limestone (silty to siltstone) (highly calcareous), medium dark to dark-gray, 50%
2170	2195	25	Limestone, light brownish gray to brownish-gray, mostly oolites with calcite cement, somewhat silty at the top
2195	2214	19	Limestone, medium dark gray to brownish-gray, very shaly
2214	2224	10	Dolomite (shaly) to shale (highly dolomitic), dark greenish gray to olive-gray, 40%; limestone, brownish-gray to brownish-black
2224	2238	14	Limestone, medium dark gray to brownish-gray, some brownish black, oolitic in part
2238	2252	14	Limestone and dolomite (shaly and silty) to shale and siltstone (highly calcareous and highly dolomitic), dark greenish gray to olive-gray, medium dark gray to brownish-gray, some grayish-brown
2252	2303	51	Limestone, brownish-gray to medium dark gray (highly oolitic in part), some brownish-black to black (shaly,)silty
2303	2325	22	Limestone, olive-black to brownish-black, some brownish-gray, shaly
2325	2343	18	Limestone, medium dark gray to brownish-gray, silty; limestone, dark greenish gray to brownish-gray, very shaly and silty
2343	2365	22	Limestone, medium dark gray to dark greenish gray and brownish-gray, very shaly in part
2365	2396	31	Limestone, dark-gray to brownish- and olive-black, some dark greenish gray to brownish-gray (shaly)
2396	2410	14	Limestone, brownish-gray to olive-black, somewhat silty, crystalline, texture, very fine grained
2410	2430	20	Limestone, light-gray to brownish-gray, clastic texture, highly oolitic
2430	2454	24	Limestone, brwnish-gray to brownish-black with light- to medium-gray spots, somewhat dolomitic in part
2454	2466	12	Dolomite, olive-gray to medium dark gray, some dark-gray and some dark greenish gray, calcareous in part, shaly and cherty

(Continued on page 10)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top	Bottom	Thickness	
2466	2474	9	Dolomite, light olive gray to olive-gray, some medium-gray, shaly, somewhat cherty and silty, 60%; limestone, brownish and grayish-black with medium-gray spots, 40%
2475	2485	10	Dolomite, olive-gray, small amount of brownish-gray, somewhat calcareous, silty
2485	2491	6	Dolomite, olive-gray, silty, 40%; dolomite, dark-gray to grayish-black, somewhat brownish-black and black, highly calcareous, dolomitic siltstone, 60%; some medium dark to dark-gray, silty dolomite
2491	2500	9	Dolomite, medium dark gray to grayish-black, olive-gray to olive-black, somewhat calcareous, very silty, somewhat shaly
2500	2508	8	Dolomite, dark-gray to grayish-black, olive-gray to brownish-black, very silty, shaly, somewhat calcareous, 80%; shale, grayish-brown to grayish-red, some olive-gray to greenish-gray (very silty), slightly dolomitic, 20%; some white anhydrite
			MACCRADY FORMATION, 45 FEET
2508	2535	27	Shale, grayish-brown, some grayish-red, some dark greenish-gray to olive-gray, silty in part; some white anhydrite; some dark greenish gray siltstone at the bottom; a moderate amount of dark-gray to grayish-black dolomite (cavings)
2535	2553	18	Siltstone to sandstone (very fine), dark greenish gray to greenish- and grayish-black, a moderate amount of grayish-brown to grayish-red (shale) at the top to very dusky red and dusky-brown (siltstone) at the bottom; some medium dark gray to grayish-black shale; trace of anhydrite at the top
			POCONO FORMATION, 789 FEET
2553	2576	23	Siltstone, greenish- and olive-black to brownish-black; a moderate amount of interbedded, dark-gray to grayish-black shale
2576	2630	54	Siltstone, dark greenish gray and olive-gray to greenish- and olive-black (with dark-gray to grayish-black, shaly streaks); at 2602-2610' very shaly, small amount of calcite and dark yellowish brown siderite
2630	2657	27	Siltstone, dark greenish gray to olive-gray with dark-gray to grayish-black, shaly streaks and shale
2657	2682	25	Siltstone, greenish- and olive-black, sideritic in part; shale, dark-gray to grayish-black
2682	2692	10	Siltstone to sandstone (very fine), greenish- and olive-black to brownish-black (sideritic); considerable interbedded, dusky-brown to very dusky red; some dark-gray to grayish-black shale
2692	2700	8	Sandstone (very fine) to siltstone, dark greenish gray to olive-gray, some brownish-gray to brownish-black, slightly dolomitic, moderately sideritic; some dusky-brown to very dusky red siltstone
2700	2715	15	Siltstone and some sandstone (very fine), olive-gray (dolomitic) and dark greenish gray to dark-gray, kaolinitic, some dark-gray to grayish-black shale
2715	2735	20	Siltstone to sandstone (very fine), olive-gray (somewhat sideritic), some medium dark gray, a large amount of interbedded dark-gray to grayish-black shale

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RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top	Bottom	Thickness	
2735	2753	18	Siltstone and some sandstone (very fine), olive-gray to medium dark gray, kaolinitic, micaceous, sideritic in part; a very large amount of interbedded, dark-gray to grayish-black shale
2753	2759	6	Sandstone, light-gray to light olive gray, very fine grained with some broken, very coarse, quartz grains, dolomitic; some brownish-gray to grayish-brown and dark-gray, very fine sandstone; a moderate amount of siltstone and shale, dark-gray to grayish-black (cavings)
2759	2791	32	Sandstone, medium light gray to greenish-gray to plare-red, fine- to medium-grained, some very fine grains at the top, with chlorite and iron oxide in an argillaceous matrix, slightly dolomitic
2791	2801	10	Sandstone, light- to medium-gray and greenish-gray, very fine grained, 30%; shale, medium dark to dark-gray, 70%
2801	2809	8	Shale, dark-gray, some medium dark gray; a large amount of siltstone, medium to medium dark gray
2809	2819	10	Shale, medium dark to dark-gray, some grayish-black, 50%; siltstone to sandstone (very fine), medium light to medium dark gray, 50%.
2819	2900	81	Siltstone, medium- to dark-gray to olive-gray and olive-black; shale, dark-gray, some dark-gray to grayish-black; small amount of dark yellowish brown, sideritic shale
2900	2929	29	Shale (sandy) to sandstone (very fine, shaly), grayish - black to black; considerable interbedded, medium dark to dark-gray shale; a moderate amount of medium to medium dark gray and dark greenish gray, very fine sandstone; a very small amount of disseminated pyrite
2929	2960	21	Shale, dark-gray, some olive-black to grayish-black; some siltstone and sandstone (very fine), medium-gray to olive-gray and greenish-gray; small amount of dark yellowish brown, sideritic shale
2960	2995	35	Sandstone, light greenish gray to greenish-gray, some dark greenish gray to medium dark gray (very silty to siltstone); a very large amount of interbedded shale, dark-gray to grayish-black, some medium dark gray, some olive-black (sideritic) to dark yellowish brown (highly sideritic)
2995	3025	30	Siltstone, greenish-gray and dark greenish gray to medium dark gray, micaceous, kaolinitic; a large amount of interbedded, medium dark to dark-gray shale
3025	3060	35	Shale, medium dark to dark-gray; some siltstone, medium and medium dark gray to dark greenish gray, micaceous; small amount of dark yellowish brown, highly sideritic shale
3060	3100	40	Siltstone, medium light to medium dark gray, some olive-gray, kaolinitic, micaceous; a moderate amount of interbedded, medium dark to dark-gray shale; small amount of dark yellowish brown, highly sideritic shale (at the top)
3100	3130	30	Siltstone, medium light to medium dark gray, some olive-gray, micaceous and kaolinitic; a moderate to large amount of medium dark gray to grayish-black shale; small amount of dark yellowish brown, sideritic shale
3130	3173	43	Shale, grayish-black to black, some brownish-black, highly carbonaceous, very highly carbonaceous at the bottom

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RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top.	Bottom	Thickness	
3173	3183	10	Shale, grayish-black to black, some brownish-black (silty), highly carbonaceous, 50%; siltstone, medium light to medium dark gray, and shale, medium to medium dark gray, 50%; small amount of sandstone, light- to medium-gray, very fine grained
3183	3225	42	Siltstone, medium light to medium dark gray, some olive-gray (sideritic), a large amount of medium dark to dark-gray, a little grayish-black, and some dark yellowish brown (highly sideritic) shale
3225	3320	95	Siltstone, dark greenish gray and olive-gray to medium dark gray, some olive-black and grayish-black, kaolinitic and micaceous; considerable interbedded, medium dark to dark gray shale, some olive-gray (sideritic) to dark yellowish brown (highly sideritic); small amount of grayish-black siltstone in the lower part
3320	3331	11	Shale, grayish-black to black (highly carbonaceous); some medium dark to dark-gray (Sunbury Shale)
3331	3337	6	Shale, grayish-black to black (highly carbonaceous), some medium dark to dark-gray, 60%; sandstone, light-gray to light brownish gray and light olive gray, very fine grained with an occasional coarse grain; contains scattered crystals of pyrite, 40% (Berea)
3337	3342	5	Sandstone, light-gray to light olive gray and light brownish gray, very fine grained with an occasional coarse grain, contains scattered crystals of pyrite, dolomitic in part (Berea); shale, medium dark to dark-gray, grayish-black to black (probably mostly cavings)
			DEVONIAN SHALES, 3566 FEET
3342	3358	16	Siltstone and some shale(silty), medium dark gray, some dark-gray to grayish-black
3358	3363	5	Siltstone and shale, dark-gray and olive-black
3363	3398	35	Siltstone and shale, medium dark to dark-gray, dark greenish gray to olive-gray, some brownish- and olive-black
3398	3406	8	Siltstone and some shale (silty), olive-black to brownish- and grayish-black
3406	3494	88	Siltstone, dark greenish gray to olive-gray, sandy to very fine sandstone, micaceous; shale, medium dark to dark-gray
3494	3509	15	Siltstone to very fine sandstone, light to medium light gray, some medium-gray, micaceous, kaolinitic; moderate amount of medium dark to dark-gray, silty shale
3509	3530	21	Siltstone to sandstone (very fine), dark-gray to grayish-black (slightly to moderately dolomitic, somewhat carbonaceous, shaly), interbedded with medium-gray to greenish-gray; some white, vein dolomite; some white, glassy chert; a moderate amount of medium- to dark-gray shale
3530	3556	26	Siltstone to sandstone (very fine), dark-gray to grayish-black (slightly dolomitic with some shaly, carbonaceous material), dark greenish gray to olive-gray, contains some dolomitic chert; at the top, some medium dark to dark-gray shale increasing to a large amount at the bottom
3556	3582	26	Siltstone, dark greenish gray to medium dark gray, olive-black to grayish-black; a moderate amount of medium dark to dark-gray and some olive-black (silty) shale

(Continued on page 13)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top.	Bortom	Thick-ness	
3582	3675	93	Siltstone, dark greenish gray to medium dark gray, some olive-black to grayish-black; a moderate to large amount of interbedded, medium dark to dark-gray, and a small amount of dark-gray to grayish-black shale
3675	3685	10	Siltstone to sandstone (very fine), light-gray to light olive gray, 80%; shale, medium dark to dark-gray, 20%
3685	3701	16	Siltstone to sandstone (very fine), light-gray to olive-gray and dark-gray to grayish-black (dolomitic in part, contains shaly, carbonaceous material); some medium dark gray to grayish-black shale
3701	3731	30	Siltstone, dark greenish gray to medium dark gray, olive-black to grayish-black (shaly); a moderate amount (at top) to a large amount (at the bottom) of interbedded, medium dark gray to grayish-black shale
3731	3775	44	Shale; medium dark to dark-gray, some olive-black to grayish-black; a small amount of siltstone, dark greenish gray to medium dark gray with some olive-black; at the bottom, the siltstone is 40% of the sample
3775	3809	34	Siltstone, olive-gray and dark greenish gray to medium-gray, dark-gray to olive-black, some grayish-black to black (shaly); a moderate amount of interbedded, medium dark to dark-gray shale
3809	3815	6	Siltstone, medium light gray to olive-gray with dark-gray to olive-black, shaly streaks; some medium dark to dark-gray shale
3815	3898	83	Shale, medium dark to dark-gray, some olive-black to grayish-black; a moderate to large amount of interbedded, dark greenish gray to olive-gray siltstone with dark-gray to olive-black streaks
3898	4001	103	Siltstone, dark greenish gray to medium dark gray (with dark-gray to olive-black, shaly streaks), some medium-gray somewhat micaceous and kaolinitic with traces of pyrite; a moderate amount of medium dark to dark-gray shale, some grayish-black
4001	4045	44	Siltstone and some sandstone (very fine) at the bottom, medium light to medium dark gray with dark-gray to olive-black, shaly streaks, contains some dolomite, Magnesite (?); some medium dark to dark-gray shale in the lower part
4045	4056	11	Siltstone, olive-gray and medium dark gray to dark-gray, olive-black to grayish-black (shaly); some dark-gray to grayish-black shale
4056	4085	29	No Samples
4085	4185	100	Siltstone, olive-gray and medium dark gray to dark-gray, olive black to grayish-black (shaly), kaolinitic and micaceous, contains some dolomitic magnesite (?)
4185	4250	65	No Samples
4250	4275	25	Siltstone, light olive-gray to olive-gray and medium-gray, some dark-gray to olive-gray and grayish-black (shaly); a moderate amount of medium dark gray to grayish-black shale
4275	4300	25	Siltstone, light olive gray to grayish-black, silty shale
4300	4310	10	Siltstone, light olive gray to medium-gray, some dark-gray to olive-black (shaly); some medium dark gray to grayish-black (silty) shale

(Continued on page 14)

RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top.	Bottom.	Thickness	
4310	4360	50	Siltstone, olive-gray and dark greenish gray to medium dark gray, some olive-black to grayish-black (shaly); a moderate to large amount of medium d ark gray to brownish- and grayish-black, silty shale, some black
4360	4387	27	Siltstone, light olive gray to dark greenish gray and medium gray with olive-black and grayish-black, shaly streaks; some medium dark to grayish-black shale
4387	4417	30	Shale, medium dark gray to dark-gray; some grayish-black; considerable interbedded, dark greenish gray to olive-black siltstone
4417	4495	78	Siltstone, olive-gray and dark greenish gray to dark-gray and olive-black, kaolinitic and micaceous; a moderate to large amount of medium dark to dark-gray shale, some olive-black and some grayish-black to black (carbonaceous); a large amount of shale at the bottom
4495	4541	46	No sample
4541	4558	17	Siltstone, dark greenish gray and olive-gray to medium dark gray; a large amount of interbedded, medium dark to dark-gray and grayish-black to black shale
4558	4595	37	Siltstone, dark greenish gray and medium dark gray to olive-black with carbonaceous (black) and dolomitic (white to medium-gray) spots and streaks (veinlets); a large amount of interbedded, medium dark to dark-gray and grayish-black shale
4595	4665	70	Siltstone, dark greenish gray and olive-gray to medium dark gray; a moderate to large amount of medium dark to dark-gray and olive-black shale; a large amount of grayish and brownish- black to black, highly carbonaceous shale
4665	4775	110	Shale, medium dark to dark-gray, some olive-black, grayish-black to black (carbonaceous); siltstone- medium- to dark-gray, olive-gray to olive-black
4775	5029	254	Shale, medium- to dark-gray to olive-black, grayish-black to black (carbonaceous), silty in part; considerable interbedded siltstone, olive-gray to medium dark gray, olive-black to grayish-black, some brownish-gray; the amount of siltstone increases roward the bottom but the amount of grayish-black to black shale decreases
5209	5043	14	Siltstone, olive-gray to olive-black and brownish-black, micaceous and kaolinitic; a moderate amount of interbedded shale, medium dark to dark-gray, some grayish-black to black
5043	5079	36	Shale, medium- to dark-gray, grayish-black to black (carbonaceous), some olive-black; siltstone, olive-gray to medium dark gray, olive-black to brownish-black
5079	5094	15	Shale, brownish- and grayish-black to black, highly carbonaceous, silty; some medium dark to dark-gray shale; small amount of pyrite
5094	5189	95	Shale, medium dark to dark-gray, grayish-black to black (partly silty); a moderate amount of siltstone, olive-gray to medium dark gray, olive-black to brownish-black, kaolinitic; small amount of pyrite
5189	5356	167	Shale, grayish-black to black (highly carbonaceous), medium dark to dark-gray, some olive-black to brownish-black; considerable interbedded siltstone, olive-gray to olive-black, dark-gray to grayish-black, some medium to mediu dark gray; a large amount of the grayish-black to black shale

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RUSSELL & DOLOFF NO. 1 (1236) WELL (Continued)

Top.	Bottom.	Thickness	
			at the top; a large amount of the lower part is siltstone; some pyrite is disseminated throughout the siltstone and shale
5356	5473	117	Siltstone, olive-gray to medium dark gray, some dark-gray, some grayish-black at the top; a few streaks of white to light-gray dolomite and black, carbonaceous material in the lower part
5473	5570	97	Siltstone, olive-gray to medium dark gray, somewhat calcareous and dolomitic at 5507 to 5514'; some interbedded shale, medium dark gray, some medium gray and some dark-gray, some grayish-black to black at the top
5570	5610	40	Shale, medium dark to dark-gray, some grayish-black; a moderate to large amount of siltstone, olive-gray to medium dark gray, some dark-gray to olive-black
5610	5715	105	Siltstone, olive-gray to medium dark gray, some dark-gray to brownish- and olive-black at 5685 to 5700', somewhat dolomitic, slightly calcareous; a large amount of interbedded shale, medium dark gray, some dark-gray to grayish- and olive-black
5715	5841	126	Shale, medium dark to dark-gray, some grayish-black to black (highly carbonaceous, silty); a large amount of interbedded siltstone, medium light to medium dark gray, some olive-gray to dark-gray and olive-black
5841	5855	14	Shale, grayish-black to black (carbonaceous), some medium dark to dark-gray; some siltstone, olive-gray to medium dark gray
5855	5963	108	Shale, medium dark to dark-gray, some grayish-black to black (carbonaceous); some siltstone, olive-gray to medium dark gray, some dark-gray to olive-black
5963	5991	28	Shale, medium dark to dark-gray, some grayish-black, to black; some olive-gray to medium-gray siltstone
5991	6000	9	Shale, grayish-black to black (carbonaceous), some olive-black, medium dark to dark-gray; some siltstone, medium light to medium dark gray
6000	6090	90	Shale, medium dark to dark-gray, grayish-black to black (carbonaceous); a moderate amount of interbedded siltstone, olive-gray to medium dark gray, some dark-gray to olive-black, slightly dolomitic, a large amount of siltstone in the lower part
6090	6138	48	Shale, grayish-black to black (highly carbonaceous), medium dark to dark-gray; siltstone and shale, medium light to medium dark gray to olive-gray, some olive-black; small amount of pyrite; trace of white, vein dolomite
6138	6175	37	Shale, grayish-black to black (highly carbonaceous), medium dark to dark-gray, pyritic; some siltstone, olive-gray to medium-gray
6175	6209	34	Shale, grayish-black to black, some brownish-black, highly carbonaceous; some medium-gray to olive-gray and olive-black siltstone
6209	6245	36	Siltstone and shale, olive-gray to medium dark gray, dark-gray to grayish-black, some olive-black to brownish-black, some black, pyritic in part
6245	6419	174	Shale, medium dark gray to grayish-black, some black (carbonaceous); siltstone, olive-gray to olive-black, some medium dark gray, pyritic in part; trace of dolomite

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RUSSELL & DOLOFF NO. 1 (1236) WELL (CONTINUED)

Top.	Bottom.	Thickness	
6419	6442	23	Shale, dark-gray to grayish-black, some olive-black; some interbedded siltstone, olive-gray to medium dark gray
6442	6510	68	Shale, medium dark to dark-gray, some olive-black, and some grayish-black, the amount of grayish-black increases toward the bottom
6510	6538	28	Shale, dark-gray to brownish- and grayish-black, some black, some medium dark gray, a large amount of black (carbonaceous) at the bottom; trace of dolomite
6538	6572	34	Shale, dark-gray to grayish-black
6572	6674	102	Shale, medium dark to dark-gray (with streaks and spots of white to medium-gray dolomite); some grayish-black, contains some black carbonaceous streaks; some olive-gray to olive-black siltstone
6674	6754	80	Shale, medium dark to dark-gray to olive-black; trace of pyrite; trace of dolomite
6754	6788	34	Shale, medium dark to dark-gray, some grayish-black to black (increases toward the bottom); some olive-gray siltstone; a very small amount of dolomite and dolomitic shale
6788	6815	27	Shale, grayish-black to black (highly carbonaceous), some dark-gray, somewhat pyritic, a few chips have slickensides; trace of dolomite and calcite
6815	6819	4	Shale, grayish-black to black, highly carbonaceous, contains a very large amount of white, vein calcite, some of the shale has a graphitic appearance, some chips show slickensides
6819	6825	6	Shale, grayish-black to black (highly carbonaceous-some has graphitic appearance), some dark-gray, a few chips have slickensides, contains a few chips of altered biotite; some white vein calcite
6825	6850	25	Shale, grayish-black to black(highly carbonaceous), some dark-gray; trace of pyrite; trace of calcite
6850	6870	20	Shale, grayish-black, highly carbonaceous; siltstone, olive-gray to olive-black; some medium to medium dark gray shale
6870	6901	31	Shale, grayish-black to black, highly carbonaceous, pyritic in part, somewhat calcareous in the lower part; some olive-gray to olive-black siltstone at the top
6901	6908	7	Shale, grayish-black to black (highly carbonaceous), some dark gray, highly calcareous and somewhat dolomitic in part; some interbedded, medium-gray and olive-gray to olive-black siltstone and shale; small amount of pyrite
			HUNTERSVILLE CHERT, 82 FEET
6908	6912	4	No sample (Corniferous Lime, 6908', from driller's log)
6912	6923	11	Limestone, medium- to dark-gray, cherty; some dark-gray to grayish-black, calcareous and silicified shale; some white to light-gray chert; some dark yellowish brown and some brownish-gray shale at the top; a large amount of grayish-black to black shale (cavings)
6923	6950	27	Chert, dark-gray to grayish-black, calcareous, shaly to a silicified shale; some light- to medium-gray chert; some medium- to dark-gray, cherty limestone
6950	6956	6	Chert (sandy)to sandstone (very cherty), medium- to dark-gray (very shaly) at the top to medium light and medium dark gray at the bottom, contains a moderate to large amount of glauconite, slightly calcareous and dolomitic

(Continued on page 17)

RUSSELL & DOLOFF NO. 1 (1236) WELL (CONTINUED)

Top.	Bottom	Thickness	
6956	6969	13	Sandstone, light- to medium-gray, very fine grained and silty at the top to very fine and fine-grained at the bottom, cherty, very cherty in the upper part, contains some dark-gray, shaly material, slightly calcareous in the upper part
6969	6976	7	Sandstone, (very fine and shaly) to shale (sandy), dark-gray to grayish-black, some medium-gray, cherty, glauconitic in the lower part, slightly calcareous and dolomitic
6976	6985	9	Chert (medium- to dark-gray, calcareous in part), to shale (grayish-black to black, silicified in part), somewhat glauconitic, very shaly and moderately glauconitic at the bottom
6985	6990	5	Chert (light- to dark-gray) to shale (grayish-black to black, silicified in part), somewhat dolomitic; some medium light to medium dark gray, cherty, somewhat dolomitic limestone
			ORISKANY SANDSTONE (?), 8 FEET
6990	6993	3	Sandstone, very light to light-gray, fine-grained, some medium rounded and frosted grains, mostly quartz (clear and glassy) with some calcareous cement; a large amount of medium-gray limestone to grayish-black and black shale, cherty (cavings?)
6993	6997	4	Sandstone, very light to light-gray, fine to very fine grained (with an occasional medium, rounded grain), much of the sample is broken finer than the individual grains, calcareous, contains some dark, carbonaceous, shaly material
6997	6999	2	No sample (Oriskany, 6990-6998' -- driller's log)
			HELDERBERG FORMATION, 170+ FEET
6999	7006	7	Limestone,(very sandy), to a highly calcareous sandstone, medium- dark-gray, some grayish-black (very shaly), the quartz grains are very fine to fine to with medium, rounded grains, somewhat cherty
7006	7009	3	Sandstone, light-gray (with medium- to dark-gray, shaly streaks), fine- to medium-grained, cherty, highly calcareous, fossiliferous
7009	7019	10	Sandstone, medium-gray, very fine grained, some fine grains and an occasional medium, rounded grain. very highly calcareous, somewhat cherty, some grayish-black, carbonaceous shaly material
7019	7026	7	Limestone (very sandy), medium- to dark-gray) to shale (grayish-black to black, calcareous, sandy), the quartz grains are very fine, slightly cherty
7026	7030	4	Limestone, medium- to dark-gray with light-gray spots, somewhat sandy (fine to very fine), highly fossiliferous
7030	7033	3	Sandstone, light to medium light gray, fine to very fine, grained, highly calcareous
7033	7040	7	Sandstone, (very fine, highly calcareous) to limestone (sandy), medium light to medium dark gray, very cherty, small amount of carbonaceous, shaly material
7040	7045	5	Sandstone, light- to medium-gray, very fine grained, highly calcareous
7045	7049	4	Limestone, medium light to medium dark gray, very sandy (very fine)
7049	7052	3	Sandstone, light to medium light-gray , fine-grained, moderately calcareous
7052	7055	3	Limestone, light- to medium-gray, some dark-gray, very sandy (fine)

(Concluded on page 18)

RUSSELL & DOLOFF NO. 1 (1236) WELL (CONCLUDED)

Top	Bottom	Thickness	
7055	7068	13	Sandstone, light- to medium-gray, some dark-gray, fine to very fine grained, very highly calcareous, some sandy limestone, some fossil fragments
7068	7071	3	Sandstone, light to medium-gray, very fine grained, very cherty, highly calcareous
7071	7076	5	Limestone, light- to dark-gray, highly fossiliferous, very sandy, (fine), cherty; some white, vein calcite; a moderate amount of interbedded, grayish-black shale in the upper part
7076	7082	6	Sandstone (highly calcareous, fine to very fine) to limestone (very sandy), light- to medium-gray with dark-gray spots and streaks, highly fossiliferous, slighly cherty
7082	7097	15	Sandstone, light- to medium-gray, very fine grained, highly calcareous; a large amount of medium light to dark-gray, very sandy, fossiliferous limestone at 7086 to 7090'
7097	7106	9	Limestone, (very sandy) to sandstone (highly calcareous, very fine to medium-grained), medium to dark-gray and grayish-black (very shaly) at the top to medium-gray at the bottom, fossiliferous, some chert
7106	7109	3	Sandstone, light-gray, very fine grained, calcareous
7109	7115	6	Limestone (very sandy) to sandstone (very fine to fine, highly calcareous), medium light to dark-gray, some grayish-black (very shaly); some chert
7115	7126	11	Limestone (very shaly and cherty) to a silicified, calcareous shale, medium- to dark-gray and some grayish-black at the top to dark-gray and grayish-black with some medium-gray at the bottom, very sandy at the top; some light- to medium-gray chert
7126	7148	22	Shale, dark-gray to grayish-black, some medium dark gray at the bottom, calcareous and dolomitic, silicified in part to chert
7148	7151	3	No sample
7151	7156	5	Chert, light to dark-gray, highly calcareous; a large amount of dark-gray to grayish-black shale
7156	7168	12	Shale, (dark-gray to grayish-black, calcareous), to limestone (medium- to dark-gray, shaly), some chert, dolomitic in part, somewhat fossiliferous
7168	7169	1	Limestone, light- to medium-gray with dark-gray to grayish-black, shaly streaks, highly fossiliferous, somewhat cherty
	7173		Total depth (sand-line measurement)