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ORGANIC CARBON CONTENT OF DEVONIAN SHALE SEQUENCE
SAMPLED IN DRILL CUTTINGS FROM TWENTY
WELLS IN SOUTHWESTERN NEW YORK

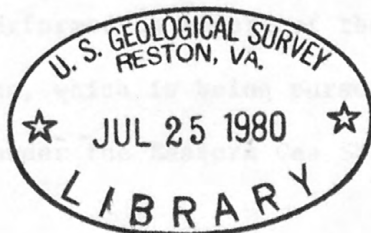
by

George E. Claypool, John W. Hosterman, Dorothy R. Malone

and

Allan W. Stone

Open-File Report 80-810



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This report is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey Standards.

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ORGANIC CARBON CONTENT OF DEVONIAN SHALE SEQUENCE SAMPLED
IN DRILL CUTTINGS FROM TWENTY WELLS IN
SOUTHWESTERN NEW YORK

By George E. Claypool, John W. Hosterman, Dorothy R. Malone
and Allan W. Stone

This report contains results of organic carbon analyses performed by Rinehart Laboratories, Inc., Arvada, Colorado, under contract to the U.S. Geological Survey. The analytical method employs chemical (chromic acid) oxidation of an acid solution containing the rock residue. The detailed analytical specifications are contained in the Rinehart proposal in response to request for proposal 76-79 issued by the U.S. Geological Survey.

The samples analyzed were collected by John W. Hosterman, U.S. Geological Survey, Reston, Virginia, who determined the colors (Munsell system) and has performed clay mineralogical analyses on splits of these same samples.

In the following tabulation, samples are listed by the depth interval (in feet), and stratigraphic unit from which the drill cuttings were collected. Organic carbon values are single determinations. Each well is identified by county, well name, and API number.

These analyses were performed as a part of the U.S. Geological Survey Eastern Black Shales Program, which is being pursued in cooperation with the U.S. Department of Energy under the Eastern Gas Shales Project.

Chautauqua Co., N.Y.

Bates #1 31-013-01457

Depth (ft)	Stratigraphic unit	Organic Carbon (wt. %)	Color
1460-1500	Dunkirk	0.73	N6
1500-1564	"	2.80	10YR5/.5
1564-1671	Hanover	0.40	N6.5
1671-1688	Pipe Creek	5.09	10YR3.5/1
1688-1788	Angola	0.31	N6.5
1788-1887	"	0.40	N6
1887-1990	"	1.31	N5.5
1990-2092	"	1.20	N5.5
2092-2191	Rhinestreet	3.01	10YR5/.5
2191-2266	"	2.97	10YR5/.5
2266-2313	"	0.87	N5.5
2313-2352	"	1.15	10YR5.5/.5
2352-2375	"	0.52	N6
2403-2500	Hamilton	0.61	N6
2500-2555	"	1.87	10YR5.4/.5
2570-2618	Marcellus	3.02	10YR4/.5

Chautauqua Co., N.Y.

Carnoban #1 31-013-04152

Depth (ft)	Stratigraphic unit	Organic Carbon (wt. %)	Color
1522-1585	Dunkirk	2.29	10YR5/.5
1585-1680	Hanover	0.43	7.5YR6/.25
1680-1778	Pipe Creek	0.45	N6.5
1778-1875	Angola	0.43	7.5YR6/.25
1875-1975	"	0.98	10YR5.5/.5
1975-2059	Rhinestreet	2.02	10YR5/.5
2059-2110	"	2.30	10YR5/.5
2190-2261	Hamilton	1.02	10YR5.7/.25
2261-2337	"	1.73	10YR5/.25

Cattaraugus Co., N.Y.

Seneca Nations #1 31-009-04088

Depth (ft)	Stratigraphic unit	Organic Carbon (wt %)	Color
1711-1775	Dunkirk	0.69	5Y5.5/.5
1775-1852	Hanover	0.93	5Y5.5/.5
1852-1946	"	0.17	5Y6.5/-5
1946-1960	Pipe Creek	2.72	8.5YR3.5/1
1960-2268	Angola	0.26	N6.8
2268-2388	"	0.36	N6.5
2388-2438	Rhinestreet	1.77	10YR4/.5
2481-2562	"	2.36	10YR4/.5
2562-2670	"	2.48	10YR3.5/1
2670-2731	"	1.74	10YR4/.5
2731-2815	Cashaqua	0.52	N6
2815-2868	Middlesex	1.70	10YR4/.5
2868-2920	West River	1.80	8.5YR3.5/1
2920-2980	Geneseo	0.71	5Y5.5/5
3000-3103	Hamilton	0.41	N6
3103-3204	"	0.96	10YR5.5/.5
3204-3270	"	1.81	8.5YR3.5/1
3270-3300	Marcellus	5.09	10YR3/.5

Cattaragus Co., N.Y.

Ackerly #1 31-009-05106

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
1765-1844	Dunkirk	0.52	5Y5.5/.5
1844-1936	"	0.48	5Y5.5/.5
1936-2085	"	0.14	N5.8
2085-2115	Pipe Creek	0.23	N6.1
2115-2255	Angola	0.18	N6.7
2255-2418	"	0.28	N6.1
2418-2525	Rhinestreet	0.44	10YR5.8/.5
2525-2651	"	0.50	10YR5.8/.5
2651-2749	"	1.06	10YR5/.5
2749-2850	"	1.54	10YR3.5/1
2850-2950	"	1.38	10YR3.5/1
2950-3060	"	1.36	10YR3.5/1
3060-3160	Cashaqua	1.38	N5.7
3160-3265	Middlesex	1.13	10YR5/.5
3265-3326	West River	1.58	10YR3.5/1
3326-3372	Penn Yan	2.21	10YR3.5/1
3372-3391	Geneseo	1.58	10YR5/.5
3391-3497	Hamilton	0.80	10YR6/.5
3497-3594	"	0.71	10YR6/.5
3594-3699	"	1.14	10YR5/.5
3699-3778	"	2.34	10YR3.5/1
3785-3797	Marcellus	1.31	10YR4.5/1

Erie Co., N.Y.

Well #796 31-029-03269

Depth (ft)	Stratigraphic unit	Organic Carbon (wt.%)	Color
607-677	Dunkirk	1.35	10YR4.7/1
677-730	"	1.84	10YR4.7/1
730-816	Java	0.69	N6
816-846	"	2.90	10YR3.5/1
846-969	Angola	0.29	N6.4
969-1111	"	0.61	N6
1111-1211	Rhinestreet	1.76	10YR3.5/1
1211-1314	"	2.85	10YR3.5/1
1314-1419	Cashaqua	0.52	N6
1419-1454	Middlesex	3.46	10YR3.5/1
1469-1495	Hamilton	0.53	N6
1508-1605	"	0.49	N6
1605-1698	"	0.68	N5.3
1705-1738	"	2.91	10YR3.5/1
1738-1787	"	1.13	10YR5/.75
1787-1810	Marcellus	2.62	10YR3.5/1

Wyoming Co., N.Y.

Hall #1 31-121-04542

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
219-271	West Falls	1.71	10YR5.6/.5
271-340	"	2.15	10YR5/.75
340-428	Rhinestreet	1.78	10YR5/.75
428-498	Cashaqua	0.77	N5.7
498-583	"	0.63	N5.7
583-657	Geneseo	1.84	10YR5/.75
657-721	Hamilton	0.55	N6
721-801	"	0.44	N5.8
811-905	"	1.30	10YR5.6/.5
905-974	"	1.41	10YR4.7/1
994-1003	Marcellus	6.23	10YR2.2/1

Allegheny Co., N.Y.

Ames #1, 31-003-04654

Depth (ft)	Stratigraphic unit	Organic carbon (wt %)	Color
1813-1847	Dunkirk	0.29	N6.2
1847-1880	"	0.69	N5.7
1880-1915	"	0.87	10YR5.7/.25
1915-1952	"	0.68	"
1952-2120	"	0.42	N5.8
2120-2300	"	0.19	N6.7
2300-2320	Pipe Creek	0.98	10YR5.7/.25
2320-2511	"	0.20	N6.7
2511-2710	"	0.33	N6.1
2710-2804	Rhinestreet	0.32	N6.1 2
2804-2900	"	0.31	N6.1
2900-2993	"	0.35	N6.1
2993-3092	"	0.30	N6.1
3092-3193	"	0.62	10YR5.3/.25
3193-3290	"	0.52	N5.7
3290-3392	"	0.73	10YR5.7/.25
3392-3500	"	0.68	"
3500-3596	"	0.65	"
3596-3745	Cashaqua	0.35	N5.9
3745-3872	Middlesex	1.13	10YR3.5/1
3872-3967	West River	1.10	10YR5/.5
3967-4081	Penn Yan	1.69	10YR3.5/1

Allegheny Co., N.Y. (cont'd)

Depth (ft)	Stratigraphic unit	Organic carbon (wt %)	Color
4081-4111	Genesee	3.41	10YR3.2/1
4143-4225	Hamilton	1.19	10YR5/.5
4225-4310	"	0.77	10YR5.7/.5
4310-4393	"	0.99	10YR5/.5
4393-4480	"	0.70	10YR5/.5
4480-4568	"	1.04	10YR3.5/1
4568-4621	Marcellus	4.45	10YR2/1

Livingston Co., N.Y.

Stewart #6701 31-051-14100

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
77.7		0.34	N6.1
80.0	Renwick	0.32	N6.5
92	"	0.36	N6.5
108	"	0.21	N6.1
120.3	"	0.38	N6.1
139.7	Geneseo	0.29	N6.1
155.9	"	0.08	N6.9
168	"	0.14	N6.9
179.8	"	0.28	N6.5
201.4	"	0.55	N5.5
215.8	"	0.38	N6
229	"	0.45	N6
235.8	"	1.81	N5
260.7	Hamilton	0.54	N5.5
269.8	"	0.38	N5.5
288	"	0.39	N5.9
300	"	0.39	10YR5/.5
318.1	"	0.35	10YR5/.5
333.6	"	0.72	10YR5.5/.5
348	"	1.10	10YR5.5/.5
368	"	0.86	10YR5.5/.5
384	"	0.77	10YR6/.5

Livingston Co., N.Y.

Stewart #6701 31-051-14100 (cont'd)

Depth (ft)	Stratigraphic Unit	Organic carbon (wt.%)	Color
398	Hamilton (cont.)	0.84	10YR5.5/.5
403	"	0.46	N6.5
425.5	"	0.79	10YR6/.5
442	"	1.62	10YR5/.5
455.2	"	1.59	10YR5/.5
469.3	"	0.94	10YR5.5/.75
491.5	"	0.98	10YR5.5/.75
506.8	"	1.02	10YR5.5/.75
511.5	"	0.93	10YR5.5/.75
530.5	"	2.45	10YR4/.5
543.4	Marcellus	6.67	10YR3/.5
564.5	"	11.15	10YR3/.5
576.5	"	14.23	10YR2.5/.5

Steuben Co., N.Y.

Blair #1 31-101-02679

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
1068-1134	Middlesex	0.96	N4.8
1134-1204	"	1.07	N4.8
1204-1285	"	0.44	N5.3
1577-1677	Penn Yan	0.85	N5
1677-1751	Geneseo	1.72	10YR3.5/1
1751-1815	"	2.13	10YR3.5/1
1855-1947	Hamilton	0.46	N5.3
1947-2049	"	0.30	N5.5
2049-2145	"	0.64	N4.8
2145-2246	"	0.85	N4.8
2246-2341	"	0.78	N4.8
2341-2442	"	0.40	10YR5.5/.5
2442-2530	"	0.58	10YR5.5/.5
2530-2616	Marcellus	1.92	10YR3.8/.5

Steuben Co., N.Y.

Rogers #1 31-101-00053

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
1395-1415	Dunkirk	0.70	10YR6/.5
2435-2458	Rhinestreet	0.57	10YR5.6/.5
3146-3252	"	0.21	N5.9
3269-3348	"	0.85	10YR5/.5
3348-3453	Cashaqua	0.28	N5.9
3453-3567	"	0.55	10YR6.1/.5
3567-3656	Middlesex	1.52	10YR4/.75
3656-3732	"	1.40	10YR4/.75
3732-3803	Geneseo	0.67	10YR6/.25
3803-3892	"	0.81	10YR5/.5
3892-3986	"	0.90	10YR5/.75
3986-4077	"	1.13	10YR4/.75
4077-4122	"	2.23	10YR3/.75
4170-4272	Hamilton		N5
4272-4377	"	0.71	10YR6/.75
4377-4481	"	1.18	10YR4/.75
4481-4584	"	0.97	10YR4/.75
4584-4690	"	1.11	10YR4/.75
4690-4787	"	3.09	10YR2.2/1

Yates, Co., N.Y.

Borglum #1 31-123-04796

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
243-316	Geneseo	1.39	10YR3.5/.5
336-401	Hamilton	0.11	N5.7
401-497	"	0.52	N5.7
497-626	"	0.56	N5.7
626-700	"	1.11	10YR4/.5
700-799	"	0.73	10YR5/.5
799-896	"	0.54	10YR5/.5
896-996	"	0.64	10YR5.3/.5
996-1095	Marcellus	2.32	10YR3/.5

Chemung Co., N.Y.

Treat #118 31-015-00509

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
1103-1145	Middlesex	0.77	10YR5.5/.25
1980-2049	Geneseo	1.18	10YR3.5/.5
2049-2119	"	1.93	10YR3.5/.5
2189-2290	Hamilton	0.38	N5.7
2290-2390	"	0.25	N5.7
2390-2500	"	0.33	N5.5
2500-2603	"	0.41	N5.5
2603-2703	"	0.29	10YR5/.5
2703-2824	"	0.68	10YR5.2/.5
2824-2902	"	0.67	N5.5
2902-2997	"	1.01	10YR4/.5
2997-3101	"	0.72	10YR4/.5
3101-3203	"	0.64	10YR4.3/.5
3203-3303	"	1.24	10YR3.5/.5
3303-3387	Marcellus	3.98	10YR2.5/.5

Tompkins Co., N.Y.

Cargill #17 31-109-13173

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
77.1	Renwick	0.23	N6.1
93.0	"	0.86	10YR5/.5
113.0	"	0.73	N6.1
149.8	Geneseo	0.54	10YR4/.75
180.2	"	1.11	10YR3.5/1
210.0	"	1.10	10YR3.5/1
240.0	"	1.21	10YR3.5/1
299.8	Hamilton	0.36	N5.8
350.1	"	0.29	N5.8
400.1	"	0.34	N5.8
449.1	"	0.32	N5.8
510.3	"	0.25	N5.8
550.3	"	0.32	N5.8
600.0	"	0.25	N5.7
650.2	"	0.36	N5.7
701.5	"	0.23	N5.8
750.5	"	0.35	N5.5
800.0	"	0.37	N5.5
850.2	"	0.75	N5
900.0	"	1.00	N4.5
950.1	"	0.74	N4.5

Tompkins Co., N.Y.

Cargill #17 31-109-13173 (cont'd)

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
1000.3	Hamilton	0.68	N4.5
1050.0	"	0.42	N5.8
1100.0	"	0.41	N5.8
1150.0	"	0.4	N5.9
1200.1	"	0.44	N5.9
1250.1	"	0.77	N5
1300.5	"		N5.3
1339.3	Marcellus	0.51	10YR2.2/1
1360.0	"	3.63	10YR2/1
1380.1	"	5.51	10YR2/.5
1403.8	"	8.80	10YR2/.5
1420.0	"	7.53	10YR2/.5
1429.8	"	4.87	10YR2/1
1452	Ashbed	0.26	N5.8

Cortland Co., N.Y.

Butler #1 31-023-00644

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
498-579	Geneseo	1.09	10YR5/.5
579-648	"	1.31	10YR4/.5
669-769	Hamilton	0.31	N5.6
769-868	"	0.39	N5.6
868-970	"	0.29	N5.6
970-1066	"	0.35	N5.6
1066-1160	"	0.20	N6
1160-1271	"	0.30	N5.5
1271-1365	"	0.47	N5.5
1365-1472	"	0.39	N5.5
1472-1577	"	0.45	N5.5
1577-1677	"	0.49	N5.4
1677-1783	"	0.47	N5.5
1783-1869	"	2.08	10YR3.8/.5
1869-1932	Marcellus	5.18	N3.1

Cortland Co., N.Y.

Overbaugh #1 31-023-02308

Depth (ft)	Stratigraphic unit	Organic Carbon (wt.%)	Color
930-1036	Geneseo	0.80	10YR5/.5
1073-1175	Hamilton	0.28	N5.8
1175-1278	"	0.28	N6.3
1278-1371	"	0.31	N6.3
1371-1472	"	0.22	N6.3
1472-1575	"	0.40	N6.3
1575-1672	"	0.37	N6.3
1672-1771	"	0.33	N6.3
1771-1875	"	0.53	N5.5
1875-1974	"	0.41	N5.8
1974-2078	"	0.38	N6
2078-2180	"	0.45	N5.8
2180-2287	"	0.45	N5.8
2287-2370	"	0.44	N5.8
2370-2437	Marcellus	1.89	10YR3.5/.5
2437-2503	"	5.03	10YR3.5/.5

Broome Co., N.Y.

Hotchkiss #1 31-007-05087

Depth (ft)	Stratigraphic unit	Organic carbon (wt. %)	Color
1320-1380		0.35	N5.6
1380-1410	Geneseo	0.43	N5.3
1470-1570	Hamilton	0.47	N5.6
1570-1670	"	0.35	N5.6
1670-1770	"	0.36	N5.7
1770-1870	"	0.14	N6.2
1870-1970	"	0.32	N6
1970-2070	"	0.19	N5.7
2070-2170	"	0.18	N5.7
2170-2270	"	0.20	N5.6
2270-2370	"	0.34	N5.3
2370-2470	"	0.32	N5.6
2470-2570	"	0.37	N5.6
2570-2670	"	0.37	N5.3
2670-2770	"	0.33	N5.3
2770-2870	"	0.40	N5.3
2870-2970	Marcellus	1.30	10YR3/.5
2970-3070	"	3.22	10YR2.5/1
3070-3110	"	6.86	10YR2.5/1

Chenango Co., N.Y.

Lobdell #1 31-017-01160

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
244-343	Hamilton	0.37	N5.7
343-445	"	0.26	N5.7
445-548	"	0.29	N5.9
548-645	"	0.23	N5.9
645-744	"	0.35	N5.7
744-845	"	0.38	N5.7
845-941	"	0.28	N5.7
941-1044	"	0.43	N5.3
1044-1144	"	0.61	10YR6/.5
1144-1247	Marcellus	0.65	10YR6/.5
1247-1332	"	0.90	10YR6/.5
1332-1464	"	2.24	10YR3.5/1

Madison Co., N.Y.

Branagan #1 31-053-03970

Depth (ft)	Stratigraphic unit	Organic carbon (wt. %)	Color
600-700	Hamilton	0.27	N5.8
700-807	"	0.29	N5.6
807-916	"	0.36	N5.6
916-997	Marcellus	0.71	N5.5
997-1087	"	0.65	N5.5
1087-1178	"	1.40	N4
1178-1266	"	3.68	10YR3/.5

Delaware Co., NY.

Leslie #1 31-025-04455

Depth (ft)	Stratigraphic unit	Organic carbon (wt.%)	Color
2640-2700	Hamilton	0.41	N5.7
3100-3200	Marcellus	1.63	10YR3.5/.5
3200-3310	"	2.81	10YR3/.5



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