Datasheet 88

The effect of oil emplacement on quartz cementation in a deeply buried sandstone reservoir

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APPENDIX. Petrographic and Related Data

Well	TVD (m)	TVD (ft)	Lithofacies	Water Saturation (Sw) Fraction	Core Porosity (%)	Horizontal Permeability (md)	Vertical Permeability (md)	Primary Intergranular Por Undiff (%)	Secondary Intergranular Por Undiff (%)	Total Point Count For (%)	Mono Quartz Undiff	Poly Quartz Undiff	K-feldspar	Plagioclase	Rock Fragments (ductile)	Rock Fragments (nonductile)	Micritic Rock Fragments	Muscovite	Heavy Minerals	Carb Fossils	Phos Fossils	Carbonaceous Matter	Sponge Spicules	Replacive Calcite	Replacive Fe Calcite	Replacive Dolomite	Replacive Fe Dolomite	Replacive Siderite	Quartz Cement	Microcrystalline Quartz	Chert, Chalcedony	Calcite	Fe-Calcite	Dolomite	Fe-Dolomite	Siderite	Total Bite	Chlorite	Kaolinite Undiff	Total Pyrite	Kspar Cement	Albite cmt	Residual Hydrocarbons	Rutile	Total % Grains	Total – Vis Por	Grain Coating (%)	Grain size (mm)	Grain Sorting
7/12-2	3556.35	11,011.65	Very fine– to fine-grained bioturbated	0.21	22.10	18.00	4.80	4.0	7.5	11.5	23.4	5.9	3.2	15.3	1.4	5.0	0.0	4.1	0.9	0.0	0.0	0.0	0.0	0.9	0.9	2.3	2.5	0.0	1.4	5.4	0.0	0.0	0.0	0.0	0.0	0.0	15.8	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	88.5	100.0	–	0.086	0.512
7/12-2	3557.48	11,015.35	Very fine– to fine-grained bioturbated	0.18	20.40	9.30	–	6.0	0.0	6.0	29.5	1.5	7.5	9.8	0.5	3.5	0.0	5.5	0.8	0.0	0.0	0.0	0.0	3.3	0.0	4.0	0.0	0.3	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	13.8	0.0	0.0	1.0	0.0	0.8	0.5	0.0	0.0	94.0	100.0	–	0.100	0.380
7/12-2	3561.70	11,029.20	Very fine– to fine-grained bioturbated	0.20	14.00	4.30	1.20	8.0	0.0	8.0	27.8	2.0	6.5	11.0	0.5	3.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	8.3	0.0	0.0	0.0	9.0	0.0	0.0	0.0	1.8	0.0	0.0	13.0	0.5	0.0	0.0	0.5	0.3	1.0	0.0	0.0	92.0	100.0	82	0.090	0.260
7/12-2	3565.40	11,041.34	Very fine– to fine-grained bioturbated	0.19	19.60	7.60	4.90	9.0	0.8	9.8	30.7	3.0	9.5	11.0	0.5	1.3	0.0	7.0	0.5	0.0	0.0	0.0	0.0	1.5	0.0	1.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	0.5	0.0	0.3	0.3	0.0	0.0	90.2	100.0	82	0.110	0.490
7/12-2	3567.38	11,047.83	Very fine– to fine-grained bioturbated	0.18	25.10	37.00	29.00	5.4	10.9	16.3	23.8	4.0	7.6	9.9	1.8	5.8	0.0	7.6	0.4	0.0	0.0	0.0	0.0	1.8	1.8	0.0	0.0	0.4	8.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	83.7	100.0	–	0.089	0.481
7/12-2	3579.00	11,085.96	Very fine– to fine-grained bioturbated	0.15	19.90	71.00	53.00	12.0	1.0	13.0	30.0	3.5	12.0	13.0	0.0	3.0	0.0	1.3	0.8	0.0	0.0	0.0	0.3	1.0	0.0	3.5	0.0	0.0	1.0	2.5	0.0	0.0	0.0	0.5	0.0	0.0	14.5	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	87.0	100.0	55	0.150	0.290
7/12-2	3582.60	11,097.77	Very fine– to fine-grained bioturbated	0.13	18.80	152.00	26.00	11.8	0.9	12.7	29.4	10.7	13.8	6.7	0.9	3.1	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.8	1.8	0.0	0.0	0.0	87.3	100.0	–	0.181	0.595
7/12-2	3584.98	11,105.58	Medium-grained graded	0.05	17.00	1960.00	237.00	15.5	0.8	16.3	46.0	15.6	8.3	5.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	83.7	100.0	–	0.321	0.632
7/12-2	3584.01	11,105.58	Medium-grained graded	0.05	17.00	1960.00	237.00	11.0	2.3	13.3	44.0	5.0	12.0	11.0	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	1.5	2.0	0.3	0.0	86.8	100.0	–	0.334	0.580
7/12-2	3589.92	11,121.78	Medium-grained graded	0.05	22.60	2896.00	2769.00	13.5	2.1	15.6	38.4	14.8	13.1	8.9	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	84.4	100.0	–	0.316	0.586
7/12-2	3589.01	11,121.78	Medium-grained graded	0.05	22.60	2898.00	2769.00	14.0	4.3	18.3	41.0	4.3	12.0	11.0	0.8	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	81.8	100.0	47	0.340	0.390
7/12-2	3592.64	11,130.71	Fine– to medium-grained bioturbated	0.07	20.40	1134.00	1509.00	12.0	3.8	15.8	40.0	3.0	12.0	13.5	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.5	100.0	52	0.275	0.570
7/12-2	3596.44	11,145.18	Fine– to medium-grained bioturbated	0.10	19.70	585.00	98.00	13.0	3.0	16.0	30.0	9.3	14.3	8.9	0.0	5.5	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	0.8	1.3	0.4	0.0	0.4	0.0	84.0	100.0	–	0.205	0.499
7/12-2	3597.38	11,148.26	Fine– to medium-grained bioturbated	0.13	12.80	139.00	138.00	7.0	2.8	9.8	45.0	5.5	10.0	11.0	0.5	1.5	0.0	0.3	0.0	0.3	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	0.0	0.3	0.8	0.0	0.0	0.0	90.3	100.0	12	0.233	0.740
7/12-2	3405.07	11,164.93	Medium-grained graded	0.02	22.80	1914.00	1719.00	17.2	2.8	20.0	28.6	15.5	16.7	7.2	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	1.6	0.4	0.0	0.0	80.0	100.0	–	0.264	0.517
7/12-2	3407.93	11,180.87	Fine– to medium-grained bioturbated	0.06	21.80	1731.00	1726.00	14.0	3.8	17.8	40.0	5.8	10.5	14.0	2.0	0.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.0	82.3	100.0	13	0.261	1.000
7/12-2	3408.30	11,182.09	Fine– to medium-grained bioturbated	0.06	22.90	1448.00	1682.00	16.3	4.0	20.3	35.2	12.8	12.4	7.2	0.0	6.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	1.2	0.0	0.0	0.0	79.7	100.0	–	0.268	0.618
7/12-2	3412.07	11,194.46	Fine– to medium-grained bioturbated	0.17	19.20	957.00	668.00	12.0	3.5	15.5	39.0	5.8	12.0	8.3	0.5	0.8	0.0	2.3	0.3	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.5	1.0	0.3	0.0	0.0	84.5	100.0	14	0.178	1.000
7/12-2	3415.91	11,207.05	Fine– to medium-grained bioturbated	0.18	14.10	68.00	48.00	10.0	1.0	11.0	40.5	4.0	13.0	10.0	0.5	1.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	6.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	0.3	1.5	0.5	0.0	0.0	0.0	89.0	100.0	17	0.157	0.500
7/12-2	3416.22	11,208.07	Fine– to medium-grained bioturbated	0.10	13.70	56.00	10.00	4.7	1.4	6.1	33.4	5.9	13.5	10.3	1.0	3.4	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.0	10.3	0.5	0.5	0.0	0.0	0.0	0.0	1.0	0.0	7.8	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0	93.9	100.0	–	0.174	0.594
7/12-2	5419.06	11,217.39	Fine– to medium-grained bioturbated	0.11	18.00	497.00	141.00	9.0	3.5	12.5	35.0	3.8	13.0	10.5	1.5	1.3	0.0	1.3	0.0	0.0	0.0	0.0	0.0	3.3	0.0	1.0	0.0	1.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	1.5	1.0	0.0	0.0	87.5	100.0	19	0.185	0.520
7/12-2	5419.49	11,218.80	Fine– to medium-grained bioturbated	0.11	18.40	231.00	83.00	11.3	2.1	13.4	32.8	9.3	16.4	8.0	0.4	4.0	0.0	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.4	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	86.6	100.0	–	0.180	0.545
7/12-2	5422.25	11,227.85	Fine– to medium-grained bioturbated	0.07	20.60	757.00	464.00	15.8	1.2	17.0	34.7	6.8	12.3	12.3	0.0	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.0	100.0	–	0.196	0.600
7/12-2	5423.08	11,230.58	Fine– to medium-grained bioturbated	0.08	22.40	782.00	627.00	13.0	3.3	16.3	35.5	4.0	10.0	14.0	1.0	1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	1.8	1.0	1.0	0.0	0.0	83.8	100.0	13	0.154	0.560
7/12-2	5427.23	11,244.19	Fine– to medium-grained bioturbated	0.14	25.70	576.00	219.00	12.6	3.7	16.3	25.3	9.5	19.0	10.8	0.4	7.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.5	0.0	0.0	1.7	0.4	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	0.4	0.0	0.4	0.4	0.0	0.0	83.7	100.0	–	0.156	0.416
7/12-2	5427.67	11,245.64	Fine– to medium-grained bioturbated	0.13	26.40	692.00	296.00	9.0	5.3	14.3	34.3	4.0	11.3	15.0	0.3	2.3	0.0	1.5	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	85.8	100.0	19	0.150	0.590
7/12-2	5429.99	11,253.25	Fine-grained bioturbated	0.13	26.00	546.00	275.00	10.2	4.7	14.9	27.1	10.7	15.5	6.0	0.4	3.4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	0.4	0.9	0.0	0.0	0.0	0.0	85.1	100.0	–	0.158	0.499
7/12-2	5433.43	11,264.53	Fine-grained bioturbated	0.14	23.80	264.00	39.00	11.6	5.4	17.0	28.9	11.1	9.8	5.5	0.9	5.1	0.0	2.6	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	0.0	3.8	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.5	0.0	0.0	0.4	0.0	0.0	0.0	0.4	0.0	83.0	100.0	–	0.156	0.549
7/12-2	5434.96	11,269.55	Fine-grained bioturbated	0.16	25.80	607.00	52.00	8.0	5.5	13.5	37.5	3.8	11.0	9.8	1.5	3.3	0.0	3.0	0.3	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.5	0.0	0.0	5.5	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	86.5	100.0	9	0.137	0.680
7/12-2	5435.40	11,271.00	Fine-grained bioturbated	0.16	19.20	59.00	12.00	10.0	3.4	13.4	32.2	7.0	12.2	10.4	0.4	7.0	0.0	2.6	0.4	0.0	0.0	0.0	0.0	1.7	1.7	0.0	0.0	1.7	1.7	2.6	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	86.6	100.0	–	0.132	0.477
7/12-2	5456.58	11,274.87	Fine-grained bioturbated	0.14	23.90	239.00	127.00	12.0	2.5	14.5	37.5	2.0	11.0	10.0	0.8	3.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	0.0	2.0	0.3	0.0	0.0	85.5	100.0	5	0.157	0.590
7/12-2	5439.57	11,284.68	Cemented	0.18	2.60	0.05	0.01	0.0	0.0	0.0	19.5	5.6	14.9	10.7	0.0	2.3	0.0	0.9	0.5	0.0	0.0	0.0	0.0	15.8	0.0	0.5	0.5	0.5	0.0	0.0	0.0	25.2	0.0	0.0	0.0	0.0	4.2	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	100.0	100.0	–	0.155	0.500
7/12-2	5441.61	11,291.37	Fine-grained graded	0.17	19.40	157.00	61.00	10.4	2.6	13.0	27.0	9.5	14.9	9.0	0.5	4.1	0.0	1.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6	0.0	0.0	0.0	0.0	1.4	0.0	0.0	8.1	0.0	0.0	0.5	1.4	0.5	0.0	0.0	0.0	87.0	100.0	–	0.161	0.558
7/12-2	5442.83	11,295.37	Medium-grained graded	0.11	17.90	106.00	47.00	12.0	2.0	14.0	37.0	3.0	13.0	13.0	1.0	2.5	0.0	1.5	0.0	0.0	0.0	0.0	0.5	0.0	1.3	0.0	1.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.8	0.5	0.0	0.0	86.0	100.0	67	0.268	0.610
7/12-3A	5486.02	11,437.07	Very fine– to fine-grained bioturbated	0.41	24.00	15.00	7.80	10.0	5.8	15.8	25.0	3.8	7.3	12.0	0.0	0.0	0.0	0.8	0.5	0.0	0.0	0.0	1.3	0.0	0.0	5.0	0.0	0.0	0.0	9.0	0.0	0.5	0.0	0.0	0.0	0.0	18.3	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.0	84.3	100.0	89	0.105	0.380
7/12-3A	5487.60	11,442.26	Very fine– to fine-grained bioturbated	0.51	20.10	19.00	7.40	7.6	7.7	15.3	21.3	6.7	9.6	9.6	1.3	4.6	0.0	2.5	0.0	0.0	0.0	0.0	0.0	4.2	0.0	2.1	2.1	0.0	2.1	6.3	0.0	2.5	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	84.7	100.0	–	0.109	0.527

(continued)

APPENDIX. Continued

Well	TVD (m)	TVD (ft)	Lithofacies	Water Saturation (Sw) Fraction	Core Porosity (%)	Horizontal Permeability (md)	Vertical Permeability (md)	Primary Intergranular Por Undiff (%)	Secondary Intergranular Por Undiff (%)	Total Point Count Por (%)	Mono Quartz Undiff	Poly Quartz Undiff	K-feldspar	Plagioclase	Rock Fragments (ductile)	Rock Fragments (nonductile)	Micritic Rock Fragments	Muscovite	Heavy Minerals	Carb Fossils	Phos Fossils	Carbonaceous Matter	Sponge Spicules	Replacive Calcite	Replacive Fe Calcite	Replacive Dolomite	Replacive Fe Dolomite	Replacive Siderite	Quartz Cement	Microcrystalline Quartz	Chert, Chalcedony	Calcite	Fe-Calcite	Dolomite	Fe-Dolomite	Siderite	Total Illite	Chlorite	Kaolinite Undiff	Total Pyrite	Kspar Cement	Albite cmt	Residual Hydrocarbons	Rutile	Total % Grains	Total + Vis Por	Grain Coating (%)	Grain size (mm)	Grain Sorting
7/12-3A	3489.13	11,447.28	Very fine– to fine-grained bioturbated	0.44	18.30	9.00	2.70	12.0	3.0	15.0	26.0	3.3	10.0	9.8	0.3	0.8	0.0	4.0	0.5	0.0	0.0	0.5	0.0	0.3	0.0	7.0	0.0	1.0	0.0	6.0	0.0	0.0	0.0	0.5	0.0	1.5	11.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0	85.0	100.0	81	0.094	0.260
7/12-3A	3491.96	11,456.56	Very fine– to fine-grained bioturbated	0.43	14.70	1.50	0.46	7.0	5.8	12.8	26.8	3.3	6.0	9.5	0.0	0.8	0.0	1.0	1.3	0.0	0.0	0.0	0.0	1.5	0.0	14.5	0.0	0.0	0.3	7.0	0.0	0.0	0.0	3.0	0.0	0.5	10.3	1.0	0.0	0.5	0.0	0.0	0.3	0.0	87.3	100.0	85	0.095	0.490
7/12-3A	3496.62	11,471.85	Very fine– to fine-grained bioturbated	0.37	16.70	0.81	1.40	4.0	2.5	6.5	25.0	2.3	6.3	9.3	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.0	16.3	0.0	3.8	0.0	0.0	0.0	0.0	0.0	3.8	10.5	0.0	0.0	0.3	0.0	0.0	0.0	0.0	93.5	100.0	78	0.084	0.290
7/12-3A	3498.27	11,477.26	Very fine– to fine-grained bioturbated	0.38	20.70	8.60	3.00	5.6	8.2	13.8	22.5	4.2	11.9	12.3	1.3	3.8	0.0	3.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	1.7	3.8	0.0	0.0	0.0	0.0	1.7	0.0	12.3	0.0	0.0	0.4	0.0	0.0	0.0	0.0	86.2	100.0	–	0.090	0.521
7/12-3A	3502.68	11,491.73	Very fine– to fine-grained bioturbated	0.41	17.50	3.90	2.70	7.0	6.0	13.0	31.5	4.5	10.0	12.3	0.0	0.5	0.0	1.8	0.5	0.0	0.0	0.0	0.3	1.0	0.0	3.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	3.5	0.0	0.0	9.0	1.3	0.0	0.0	1.0	1.0	0.0	0.0	87.0	100.0	59	0.112	0.380
7/12-3A	3506.05	11,502.79	Very fine– to fine-grained bioturbated	0.43	20.90	14.00	14.00	10.0	3.5	13.5	35.0	4.3	10.3	12.0	0.0	1.8	0.0	3.0	0.5	0.3	0.0	0.0	0.0	1.3	0.0	2.0	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	6.3	1.5	0.0	0.0	1.3	1.0	0.0	0.0	86.5	100.0	81	0.116	0.390
7/12-3A	3509.79	11,515.06	Very fine– to fine-grained bioturbated	0.45	20.10	82.00	30.00	6.5	0.1	6.6	29.4	11.7	12.1	9.8	0.5	5.6	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	0.9	0.0	0.0	0.0	93.4	100.0	–	0.200	0.752
7/12-3A	3510.10	11,516.08	Very fine– to fine-grained bioturbated	0.46	22.80	249.00	197.00	14.0	1.0	15.0	35.3	4.0	14.5	12.0	0.5	2.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.8	0.0	0.0	1.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.8	1.0	0.0	0.0	85.0	100.0	12	0.179	0.570
7/12-3A	3513.03	11,525.69	Fine– to medium-grained bioturbated	0.39	19.20	65.00	44.00	10.6	0.9	11.5	26.8	10.7	12.5	7.1	0.9	3.1	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	15.2	0.0	0.0	0.0	0.0	0.0	0.9	0.0	7.1	0.0	0.0	0.4	0.9	0.0	0.0	0.0	88.5	100.0	–	0.181	0.589
7/12-3A	3515.76	11,534.65	Medium-grained graded	0.35	16.90	114.00	262.00	13.3	0.5	13.8	35.0	4.8	13.5	12.5	0.3	1.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	2.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	3.3	1.3	0.0	0.0	86.3	100.0	17	0.244	0.740
7/12-3A	3518.12	11,542.39	Medium-grained graded	0.41	17.00	231.00	214.00	10.9	1.8	12.7	35.7	15.9	9.7	5.7	0.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.9	0.0	0.0	0.0	87.3	100.0	–	0.344	0.818
7/12-3A	3520.36	11,549.74	Cemented	0.61	5.70	0.25	0.14	0.0	0.0	0.0	33.5	10.0	9.1	5.3	0.0	1.9	0.0	0.0	0.5	0.0	0.0	0.0	0.0	4.8	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.2	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	–	0.306	0.563
7/12-3A	3520.66	11,550.72	Cemented	0.61	5.20	0.22	0.14	0.0	0.0	0.0	35.8	3.0	9.5	11.0	1.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	38.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	35	0.286	1.000
7/12-3A	3521.86	11,554.66	Medium-grained graded	0.50	18.00	185.00	42.00	10.0	2.0	12.0	41.0	3.3	13.5	12.3	0.8	0.5	0.0	1.3	0.0	1.3	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.0	4.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.3	4.3	0.0	0.8	0.0	88.0	100.0	15	0.160	0.520
7/12-3A	3521.31	11,552.85	Medium-grained graded	0.50	17.10	119.00	83.00	12.6	0.4	13.0	41.5	15.3	10.0	5.2	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	1.3	0.0	0.0	0.0	87.0	100.0	–	0.293	0.568
7/12-3A	3525.35	11,566.11	Fine– to medium-grained bioturbated	0.31	19.50	104.00	28.00	9.5	6.8	16.3	34.0	3.5	13.5	13.8	0.0	2.5	0.0	1.3	0.3	0.0	0.0	0.0	0.0	0.8	0.0	1.8	0.0	0.5	3.0	1.8	0.0	0.0	0.3	0.0	0.5	0.0	1.3	0.0	0.0	0.3	4.0	0.5	0.5	0.0	83.8	100.0	25	0.161	0.490
7/12-3A	3532.07	11,588.16	Medium-grained graded	0.54	21.90	168.00	72.00	8.0	2.0	10.0	40.0	1.0	12.0	14.0	0.3	1.5	0.0	0.8	0.5	0.0	0.0	0.3	0.0	0.5	0.0	3.0	0.0	1.0	1.0	3.3	0.0	0.0	0.0	2.0	0.0	0.0	5.8	0.0	0.0	0.3	2.5	0.3	0.3	0.0	90.0	100.0	18	0.154	0.560
7/12-3A	3534.87	11,597.34	Fine– to medium-grained bioturbated	0.55	22.00	103.00	85.00	7.0	9.8	16.8	30.5	1.0	15.0	14.5	0.0	2.3	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.0	4.5	0.0	0.0	0.0	0.5	0.0	1.3	4.0	0.0	0.0	0.0	4.0	1.8	0.3	0.0	83.3	100.0	12	0.214	0.590
7/12-3A	3539.74	11,613.32	Fine– to medium-grained bioturbated	0.54	18.40	173.00	55.00	7.7	1.4	9.1	29.7	8.7	21.9	10.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.9	0.0	0.0	0.0	90.9	100.0	–	0.270	0.671
7/12-3A	3542.39	11,622.01	Fine– to medium-grained bioturbated	0.59	19.90	413.00	157.00	13.9	1.7	15.6	31.2	10.3	15.4	9.4	0.4	2.1	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.4	0.9	0.0	0.0	0.0	84.4	100.0	–	0.300	0.571
7/12-3A	3543.31	11,625.03	Medium-grained graded	0.60	20.80	215.00	208.00	8.0	7.5	15.5	38.0	3.5	12.0	13.5	0.5	1.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	1.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	5.0	2.0	0.3	0.0	84.5	100.0	13	0.203	0.680
7/12-3A	3543.93	11,627.07	Medium-grained graded	0.52	18.30	92.00	42.00	9.8	1.3	11.1	32.1	12.3	21.1	5.3	0.4	2.2	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.9	0.0	0.0	0.0	88.9	100.0	–	0.289	0.547
7/12-3A	3549.40	11,645.01	Fine– to medium-grained bioturbated	0.51	25.10	314.00	208.00	9.0	3.8	12.8	30.0	2.0	15.0	12.3	0.0	1.8	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.3	0.0	0.8	0.5	0.0	5.8	1.0	0.0	0.0	0.0	1.0	0.0	0.0	7.5	0.5	0.0	0.3	4.0	2.5	0.3	0.0	87.3	100.0	21	0.183	0.610
7/12-3A	3551.91	11,653.25	Fine– to medium-grained bioturbated	0.56	25.80	264.00	202.00	7.0	8.0	15.0	32.0	2.8	12.0	14.3	0.0	2.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	1.5	0.0	0.0	5.0	0.8	0.0	0.0	4.3	2.8	0.0	0.0	85.0	100.0	60	0.166	0.490
7/12-3A	3562.44	11,687.80	Fine– to medium-grained bioturbated	0.62	26.00	306.00	157.00	7.0	7.0	14.0	30.2	2.0	11.5	13.0	0.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	3.5	0.0	0.0	2.0	5.5	0.0	0.5	0.0	0.3	0.0	0.8	8.0	0.0	0.0	0.0	2.0	3.3	0.0	0.0	86.0	100.0	38	0.171	0.590
7/12-3A	3563.94	11,692.72	Fine– to medium-grained bioturbated	0.59	23.80	158.00	66.00	9.5	9.0	18.5	29.0	2.5	13.0	9.0	0.5	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	3.0	0.0	0.0	2.3	4.0	0.0	0.3	0.0	2.0	0.0	0.0	4.0	0.0	0.0	0.0	6.5	3.8	0.0	0.0	81.5	100.0	45	0.164	0.510
7/12-3A	3566.62	11,701.51	Fine– to medium-grained bioturbated	0.61	25.50	244.00	149.00	7.0	7.3	14.3	32.0	2.5	13.0	11.0	0.0	1.8	0.0	1.0	0.3	0.0	0.0	1.0	0.0	0.0	0.0	2.0	0.0	0.0	2.8	2.0	0.0	0.0	0.0	0.3	0.0	1.8	9.5	0.0	0.0	0.5	2.8	1.8	0.0	0.0	85.8	100.0	49	0.191	0.630
7/12-3A	3568.94	11,709.12	Fine-grained bioturbated	0.61	27.70	675.00	123.00	8.0	7.5	15.5	36.0	3.5	13.5	11.0	0.0	2.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.5	4.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	3.3	2.8	0.0	0.0	84.5	100.0	58	0.166	0.480
7/12-3A	3645.83	11,961.38	Fine– to medium-grained bioturbated	0.49	16.80	68.00	30.00	8.5	6.3	14.8	32.5	3.5	11.0	13.0	0.0	2.5	0.0	0.5	0.3	0.0	0.0	0.3	0.0	0.3	0.0	3.0	0.0	0.0	5.3	0.3	0.0	0.0	0.0	0.3	0.0	1.0	3.8	0.8	0.0	0.0	4.8	2.5	0.0	0.0	85.3	100.0	22	0.164	0.530
7/12-A13	3636.53	11,930.87	Very fine– to fine-grained bioturbated	1.00	14.40	0.87	0.85	3.7	4.6	8.3	22.8	2.2	8.0	9.8	2.7	1.8	0.0	3.6	0.4	0.0	0.0	0.0	0.0	0.4	0.4	5.4	5.4	0.0	0.0	4.9	0.0	0.0	0.0	0.0	0.4	0.0	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.7	100.0	–	0.094	0.586
7/12-A13	3636.76	11,931.63	Very fine– to fine-grained bioturbated	1.00	12.80	0.48	0.32	6.0	0.0	6.0	40.5	3.3	9.8	10.3	0.5	2.5	0.0	4.3	1.0	0.0	0.0	0.0	0.0	1.0	0.0	6.5	0.0	0.0	1.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	94.0	100.0	65	0.094	0.280
7/12-A13	3637.04	11,932.55	Very fine– to fine-grained bioturbated	1.00	12.80	0.50	0.90	11.0	0.0	11.0	31.0	2.0	9.0	11.0	0.0	1.5	0.0	7.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	5.5	0.0	1.0	1.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	6.8	1.0	0.0	0.3	0.0	0.0	0.3	0.0	89.0	100.0	78	0.093	0.310
7/12-A13	3638.33	11,936.78	Very fine– to fine-grained bioturbated	1.00	10.80	0.11	0.22	4.0	0.0	4.0	38.3	3.0	6.5	9.5	0.0	2.8	0.0	4.5	1.0	0.0	0.0	0.3	0.0	1.5	0.0	13.5	0.0	1.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.3	0.0	0.0	1.0	0.0	96.0	100.0	78	0.094	0.240
7/12-A13	3640.67	11,944.46	Very fine– to fine-grained bioturbated	1.00	12.50	0.27	0.53	10.0	0.0	10.0	36.7	1.5	5.0	10.5	0.0	1.8	0.0	4.0	1.5	0.0	0.0	0.0	0.0	1.8	0.0	6.3	0.0	0.0	1.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	2.0	0.0	0.5	0.0	0.0	0.0	0.0	90.0	100.0	72	0.093	0.360
7/12-A13	3643.00	11,952.10	Very fine– to fine-grained bioturbated	0.89	6.40	0.06	0.46	1.0	4.2	5.2	23.4	3.8	11.5	11.0	3.3	6.7	0.0	4.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.0	0.0	1.0	8.6	0.0	0.0	0.0	0.0	1.4	0.0	14.8	0.0	0.0	1.4	0.0	0.0	0.0	0.0	94.8	100.0	–	0.073	0.543
7/12-A13	3643.01	11,952.10	Very fine– to fine-grained bioturbated	0.83	14.60	0.84	0.95	11.0	0.0	11.0	32.0	3.0	11.0	10.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	5.3	0.0	0.0	1.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	10.3	2.0	0.0	0.8	1.0	0.3	0.3	0.0	89.0	100.0	81	0.100	0.370
7/12-A13	3643.78	11,954.66	Very fine– to fine-grained bioturbated	0.89	15.70	1.33	0.95	7.0	0.5	7.5	35.5	3.0	11.0	11.5	0.3	2.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	13.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	0.3	0.0	2.8	0.5	0.0	92.5	100.0	21	0.160	0.630
7/12-A13	3651.25	11,979.17	Very fine– to fine-grained bioturbated	1.00	13.80	1.74	1.12	6.0	1.3	7.3	33.8	4.3	11.5	11.5	0.3	1.8	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	3.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	92.8	100.0	35	0.149	0.570
7/12-A13	3652.10	11,981.96	Very fine– to fine-grained bioturbated	1.00	8.90	0.92	0.58	4.0	0.0	4.0	36.0	6.0	12.3	7.3	1.5	2.8	0.0	6.0	0.5	0.0	0.0	0.0	0.0	1.3	0.0	3.8	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	14.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	96.0	100.0	14	0.148	0.700
7/12-A13	3656.09	11,995.05	Very fine– to fine-grained bioturbated	1.00	13.10	2.62	2.10	5.0	0.0	5.0	35.7	5.5	10.0	12.0	1.5	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.0	0.0	0.0	0.0	1.0	0.0	0.0	95.0	100.0	11	0.134	0.430
7/12-A13	3656.34	11,995.87	Very fine– to fine-grained bioturbated	0.80	12.80	1.55	1.62	5.6	0.5	6.1	33.9	9.3	14.4	9.8	0.5	3.3	0.5	1.4	0.0	0.5	0.0	0.0	0.0	0.9	0.9	1.4	1.4	0.0	7.4	0.0	0.0	0.0	0.9	0.0	0.5	0.0	6.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	93.9	100.0	–	0.136	0.512
7/12-A13	3658.95	12,004.43	Fine– to medium-grained bioturbated	1.00	8.50	0.79	0.08	4.0	0.0	4.0	38.0	4.3	10.3	9.5	0.0	4.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	3.5	0.0	5.3	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	96.0	100.0	11	0.155	0.530
7/12-A13	3662.19	12,015.06	Medium-grained graded	0.73	10.90	3.67	1.25	6.5	0.5	7.0	36.3	9.3	18.6	6.0	0.5	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	13.9	0.0	0.0	0.0	0.0	0.0	0.9	0.0	3.3	0.0	0.0	0.0	2.3	0.0	0.0	0.0	93.0	100.0	–	0.187	0.573
7/12-A13	3663.75	12,020.18	Fine– to medium-grained bioturbated	0.77	11.00	0.98	1.07	6.0	1.8	7.8	25.9	13.4	13.9	8.8	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	17.1	0.0	0.0	0.0	0.0	0.0	0.9	0.0	4.2	0.0	0.0	0.5	0.5	0.0	0.0	0.5	92.2	100.0	–	0.154	0.549
7/12-A13	3665.03	12,024.38	Fine– to medium-grained bioturbated	0.70	10.70	1.32	0.69	6.0	0.0	6.0	39.0	3.3	10.8	14.0	0.3	3.5	0.0	1.3	0.0	0.0	0.0	0.0	0.0	1.5	0.0	2.5	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	1.8	0.3	0.0	0.0	94.0	100.0	5	0.137	0.460

(continued)

APPENDIX. Continued

Well	TVD (m)	TVD (ft)	Lithofacies	Water Saturation (Sw) Fraction	Core Porosity (%)	Horizontal Permeability (md)	Vertical Permeability (md)	Primary Intergranular Por Undiff (%)	Secondary Intergranular Por Undiff (%)	Total Point Count Por (%)	Mono Quartz Undiff	Poly Quartz Undiff	K-feldspar	Plagioclase	Rock Fragments (ductile)	Rock Fragments (nonductile)	Micritic Rock Fragments	Muscovite	Heavy Minerals	Carb Fossils	Phos Fossils	Carbonaceous Matter	Sponge Spicules	Replacive Calcite	Replacive Fe Calcite	Replacive Dolomite	Replacive Fe Dolomite	Replacive Siderite	Quartz Cement	Microcrystalline Quartz	Chert, Chalcedony	Calcite	Fe-Calcite	Dolomite	Fe-Dolomite	Siderite	Total Illite	Chlorite	Kaolinite Undiff	Total Pyrite	Kupar Cement	Albite cmt	Residual Hydrocarbons	Rutile	Total % Grains	Total ÷ Vis Por	Grain Coating (%)	Grain size (mm)	Grain Sorting
7/12-A13	3667.38	12,032.09	Fine- to medium-grained bioturbated	0.74	9.20	0.34	0.40	8.0	0.0	8.0	30.3	2.5	13.0	14.5	0.3	2.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.3	0.0	3.8	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	92.0	100.0	6	0.180	0.680
7/12-A13	3667.89	12,033.76	Fine- to medium-grained bioturbated	0.72	9.70	0.56	0.41	6.0	0.0	6.0	34.0	4.0	12.0	15.5	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.5	0.5	1.5	0.0	0.0	94.0	100.0	10	0.244	0.760
7/12-A13	3669.47	12,038.94	Fine- to medium-grained bioturbated	0.71	7.30	0.32	0.24	1.9	1.0	2.9	36.2	6.9	14.9	9.4	0.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	13.9	0.0	0.5	0.0	0.0	0.0	1.5	0.0	6.9	0.0	0.0	0.5	1.0	1.0	0.0	0.0	97.1	100.0	–	0.151	0.705
7/12-A13	3671.59	12,045.90	Fine- to medium-grained bioturbated	0.72	8.40	0.34	0.11	8.5	0.0	8.5	32.0	3.0	14.0	14.0	1.0	2.8	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	12.8	1.8	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	3.8	1.8	0.0	0.0	91.5	100.0	6	0.283	0.850
7/12-A13	3698.90	12,135.50	Medium-grained graded	0.66	8.50	1.55	2.56	2.9	0.5	3.4	39.8	15.1	16.5	5.8	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	96.6	100.0	–	0.262	0.686
7/12-A13	3700.22	12,139.83	Medium-grained graded	0.76	7.60	0.67	1.21	6.5	0.0	6.5	36.5	3.0	12.0	10.0	0.8	2.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.0	0.0	2.3	0.0	0.0	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	1.0	1.0	1.5	0.0	0.0	93.5	100.0	18	0.146	0.560
7/12-A13	3700.88	12,141.99	Fine- to medium-grained bioturbated	0.72	8.20	0.11	0.07	1.0	0.0	1.0	35.8	6.9	11.8	10.8	0.0	5.4	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.4	0.0	5.9	0.0	0.0	0.0	0.0	0.0	2.0	0.0	9.8	0.0	0.0	1.0	0.5	0.5	0.0	0.0	99.0	100.0	–	0.114	0.680
7/12-A13	3703.99	12,152.20	Fine- to medium-grained bioturbated	0.68	7.90	0.11	0.15	2.0	0.0	2.0	29.9	7.7	15.4	11.1	0.5	4.3	0.0	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	0.0	11.1	0.0	0.0	0.0	0.0	0.0	1.9	0.0	5.7	0.0	0.0	1.0	0.0	0.0	0.0	0.0	98.0	100.0	–	0.141	0.607
7/12-A13	3706.32	12,159.84	Medium-grained graded	0.62	10.60	11.70	0.15	3.0	0.0	3.0	43.5	2.3	13.0	9.0	1.0	3.3	0.0	1.5	0.0	0.0	0.0	0.0	0.3	0.0	3.5	0.0	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	1.0	0.5	0.0	0.0	97.0	100.0	14	0.154	0.540
7/12-A13	3708.38	12,165.94	Fine- to medium-grained bioturbated	0.95	4.80	0.06	0.07	2.0	0.0	2.0	43.0	4.8	10.5	8.8	0.5	3.0	0.0	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	1.0	1.0	0.0	0.0	98.0	100.0	11	0.146	0.460
7/12-A8	3781.63	12,406.92	Medium-grained graded	0.66	11.70	53.60	42.60	7.0	4.3	11.3	38.7	3.0	13.0	12.0	1.8	1.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	8.3	2.8	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	0.3	1.3	0.5	0.3	0.0	88.7	100.0	12.2	0.220	0.800
7/12-A8	3781.90	12,407.81	Medium-grained graded	0.64	11.90	41.10	36.90	10.6	0.9	11.5	35.0	7.6	9.4	9.4	0.0	3.6	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.0	0.0	14.4	0.0	0.0	0.0	0.0	0.0	2.7	0.0	3.1	0.0	0.0	0.4	0.4	0.0	0.0	0.0	88.5	100.0	–	0.145	0.684
7/12-A8	3783.13	12,411.84	Fine- to medium-grained bioturbated	0.75	10.40	2.44	2.10	7.0	4.3	11.3	35.5	3.5	11.0	14.5	1.0	1.3	0.0	0.3	0.3	0.0	0.0	0.0	0.0	1.0	0.0	3.5	0.0	0.0	5.0	2.8	0.0	0.0	0.0	0.0	2.5	0.0	3.3	0.0	0.0	0.0	1.3	2.0	0.3	0.0	88.8	100.0	12.9	0.189	0.580
7/12-A8	3785.54	12,419.75	Fine- to medium-grained bioturbated	0.77	10.80	1.36	0.12	5.5	1.5	7.0	32.0	5.0	11.8	16.0	1.3	1.3	0.0	0.8	0.0	0.0	0.3	0.0	0.0	1.5	0.0	1.8	0.0	0.0	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	0.5	0.8	0.0	0.0	93.0	100.0	17.4	0.175	0.550
7/12-A8	3788.29	12,428.77	Medium-grained graded	0.69	12.80	54.10	22.50	8.6	1.3	9.9	29.7	8.1	12.2	9.0	0.5	1.8	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	13.1	0.0	0.0	0.0	0.5	0.0	1.8	0.0	8.1	0.0	0.0	0.5	1.4	0.0	0.0	0.0	90.1	100.0	–	0.152	0.566
7/12-A8	3788.63	12,429.89	Medium-grained graded	0.70	12.50	7.06	58.00	4.0	3.0	7.0	34.0	2.5	11.5	11.0	1.5	1.5	0.0	0.3	0.0	0.0	0.0	0.0	0.0	2.0	0.0	1.0	0.0	0.0	12.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0	0.0	0.0	0.5	0.8	0.0	0.5	0.0	93.0	100.0	8.4	0.227	0.800
7/12-A8	3790.57	12,436.25	Medium-grained graded	0.60	11.80	5.32	6.11	4.7	0.5	5.2	29.8	7.2	14.9	8.2	0.5	3.4	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	17.3	0.0	0.0	0.0	0.0	0.0	1.9	0.0	5.8	0.0	0.0	1.0	1.0	0.0	0.0	0.0	94.8	100.0	–	0.150	0.529
7/12-A8	3791.85	12,440.45	Fine- to medium-grained bioturbated	0.64	11.90	0.34	0.33	4.0	1.3	5.3	36.5	1.8	12.0	13.5	1.0	0.5	0.0	1.0	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.3	1.0	0.0	10.5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	1.0	0.8	0.5	0.0	0.0	94.8	100.0	12.7	0.157	0.530
7/12-A8	3795.36	12,445.41	Fine- to medium-grained bioturbated	0.55	11.10	0.88	0.82	2.4	0.5	2.9	26.0	14.7	14.7	8.8	0.5	4.9	0.0	1.0	0.5	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	13.7	0.0	0.0	0.0	0.0	0.0	0.5	0.0	7.8	0.0	0.0	0.5	0.0	0.0	0.0	0.0	97.1	100.0	–	0.110	0.545
7/12-A8	3794.27	12,448.39	Fine- to medium-grained bioturbated	0.58	11.20	0.39	0.40	3.0	0.0	3.0	40.2	2.5	10.0	10.5	0.3	1.5	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	1.0	0.0	0.3	1.8	0.3	0.3	0.0	97.0	100.0	13.5	0.159	0.500
7/12-A8	3797.34	12,458.46	Fine-grained bioturbated	0.74	12.00	0.44	0.44	4.5	0.0	4.3	24.8	10.2	15.1	10.2	1.5	4.4	0.0	2.4	0.0	0.0	0.0	0.0	0.8	1.5	1.5	0.0	0.0	0.0	12.1	0.0	0.0	0.0	0.0	0.0	1.0	0.0	10.2	0.0	0.0	0.0	0.5	0.5	0.0	0.0	95.7	100.0	–	0.098	0.517
7/12-A8	3798.85	12,463.42	Medium-grained graded	0.81	10.30	0.21	0.19	6.0	2.3	8.3	39.0	3.3	10.0	10.0	2.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.3	0.0	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.5	0.0	0.0	0.5	1.5	0.8	0.0	0.0	91.8	100.0	9.7	0.325	1.200
7/12-A8	3799.17	12,464.47	Fine-grained bioturbated	0.90	8.70	0.11	0.11	5.8	1.4	5.2	24.2	7.1	16.1	12.8	0.0	2.4	0.0	2.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	15.2	0.0	0.0	0.0	0.0	0.0	1.9	0.0	8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	94.8	100.0	–	0.083	0.564
7/12-A8	3799.95	12,466.40	Fine-grained graded	0.78	12.30	0.32	0.29	9.0	2.8	11.8	33.0	4.0	13.0	11.0	2.0	2.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	1.5	1.0	1.0	0.0	0.0	88.3	100.0	25.9	0.241	0.750
7/12-A8	3801.88	12,473.36	Cemented	1.00	3.20	0.07	0.07	3.3	0.1	3.4	26.5	9.7	12.5	6.5	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.6	99.9	–	0.102	0.605
7/12-A8	3803.89	12,479.95	Cemented	1.00	7.10	0.09	0.55	0.5	0.0	0.5	27.2	12.4	16.5	8.4	0.5	9.4	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.5	100.0	–	0.101	0.607
7/12-A8	3805.07	12,485.83	Medium-grained graded	0.58	9.10	11.60	5.05	9.0	0.0	9.0	42.5	3.8	13.0	11.0	0.8	1.5	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	91.0	100.0	11.6	0.256	0.950
7/12-A8	3805.38	12,484.84	Medium-grained graded	0.60	6.5	11.60	55.90	11.80	4.7	1.8	6.5	39.0	33.3	11.1	16.7	5.1	0.0	1.9	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.4	1.4	0.0	11.1	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	93.5	100.0	–	0.172	0.638
7/12-A8	3807.13	12,490.58	Fine- to medium-grained bioturbated	0.60	12.20	127.00	181.00	9.4	1.3	10.7	31.0	10.9	12.6	12.6	0.4	3.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.8	0.0	0.0	0.0	89.5	100.0	–	0.186	0.516
7/12-A8	3807.55	12,491.90	Medium-grained graded	0.64	15.20	127.00	181.00	5.0	1.3	6.3	35.0	3.5	11.5	11.8	2.3	1.8	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	0.5	0.3	0.0	0.0	98.3	100.0	19.4	0.210	0.670
7/12-A8	3810.07	12,500.23	Fine- to medium-grained bioturbated	0.70	10.10	4.77	3.11	5.0	0.0	5.0	37.0	4.8	10.0	12.0	1.3	1.3	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0	0.0	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.0	1.8	1.0	0.0	95.0	100.0	9.2	0.286	0.120
7/12-A8	3813.05	12,509.94	Fine- to medium-grained bioturbated	0.62	9.10	2.61	2.79	4.5	0.5	4.8	39.5	12.8	15.2	2.9	0.5	1.4	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.2	100.0	–	0.155	0.544
7/12-A8	3813.33	12,510.93	Fine- to medium-grained bioturbated	0.62	9.20	7.35	8.09	5.0	1.0	6.0	36.5	4.8	12.5	10.0	1.3	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	3.0	0.0	8.0	0.5	0.0	0.0	0.0	0.8	0.0	0.0	94.0	100.0	14.5	0.150	0.670
7/12-A8	3814.66	12,515.29	Fine- to medium-grained bioturbated	0.55	9.40	2.20	0.46	7.0	0.0	7.0	37.0	3.5	12.0	10.0	2.0	2.8	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.0	0.0	0.0	0.0	1.0	1.0	0.0	93.0	100.0	5.8	0.200	0.590
7/12-A8	3817.80	12,525.59	Fine- to medium-grained bioturbated	0.58	9.70	0.12	0.16	6.0	0.0	6.0	38.0	2.3	12.5	11.0	0.0	1.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	1.5	0.0	0.5	0.5	0.0	0.0	0.0	94.0	100.0	11.4	0.183	0.740
7/12-A8	3817.48	12,524.54	Medium-grained graded	0.55	11.50	4.39	2.36	8.0	1.3	9.3	38.0	2.5	10.0	10.0	0.8	1.3	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	2.5	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	1.8	0.5	0.0	0.0	90.8	100.0	6.7	0.150	0.650
7/12-A8	3819.65	12,531.66	Fine- to medium-grained bioturbated	0.74	9.80	1.47	0.16	0.0	0.0	0.0	37.0	1.3	9.0	7.0	1.0	1.3	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	–	0.162	0.430
7/12-A8	3820.58	12,534.71	Fine- to medium-grained bioturbated	0.68	8.10	0.37	1.18	7.0	0.0	7.0	38.7	2.3	11.0	10.8	0.5	0.8	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	12.8	0.0	0.0	0.3	0.0	0.5	0.0	0.0	11.0	0.0	0.0	0.0	0.8	1.8	0.0	0.0	93.0	100.0	10.6	0.175	0.710
7/12-A8	3821.18	12,536.68	Medium-grained graded	0.60	12.60	12.60	11.30	9.0	1.3	10.3	36.3	9.5	14.9	5.0	0.0	3.2	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0	15.8	0.0	0.0	0.0	0.0	0.0	3.2	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.7	100.0	–	0.140	0.491
7/12-A8	3821.78	12,538.65	Medium-grained graded	0.70	10.70	1.65	2.19	5.0	0.0	5.0	38.0	2.0	11.3	11.0	0.5	0.0	0.0	1.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	7.0	0.0	0.0	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.8	0.0	0.0	0.0	0.0	1.3	0.3	0.0	95.0	100.0	8.8	0.147	0.470
7/12-A8	3823.95	12,545.77	Cemented	0.77	6.40	0.72	0.31	4.0	0.0	4.0	38.5	2.8	11.0	9.5	0.8	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	4.0	8.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	8.0	1.0	0.0	0.0	0.0	0.5	1.0	0.0	96.0	100.0	13.6	0.148	0.450

Abbreviations: Carb = carbonate; Gr = grains; Mono = monocrystalline; Phos = phosphate; Poly = polycrystalline; Por = porosity; TVD = true vertical depth; Undiff = undifferentiated.