Datashare 44:
Grain assemblages and strong diagenetic overprinting in siliceous mudrocks, Barnett Shale (Mississippian), Fort Worth Basin, Texas

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Table 1. Analytical Data: Porosity, Permeability, TOC, R_o, XRD

						Particle Size Data: Silt				MICP Data				GRI Analysis			Organic Matter		Whole-Rock Mineralogy by X-ray Diffraction (wt. %)																			Whole-Rock Elemental Composition by XRF (wt. %)									
	Sample	Depth (ft)	Visual Lithology**	Compositional Lithology†	Textural Lithology††	Silt (%)	Median Φ	Mean	Sorting	Porosity (%)	Permeability (md)	Median Pore Diameter (nm)	Modal Pore Diameter (nm)	Gas-Filled Porosity (%)	He Porosity (%)	Permeability (md)	R_o (%)	Organic C	Quartz	Albite	Microcline	Calcite	Mg-Calcite (>2 mole %)	Mg-Calcite (>8 mole %)	Dolomite	Fe-Dolomite	Pyrite	Anatse	Bassanite	Hydroxyapatite	Chlorite	Crystalline Illite	Illite + Smectite	Sum	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2
Upper core interval	1f	8481.2	1	Feldspar and clay bearing quartz rich	Silt bearing clay rich	13.4	7.17	7.54	0.49	4.64	5.10×10^{-5}	6.4	6.0	3.5	6.3	2.6×10^{-5}	1.56	2.7	54.2	8.8	2.6	0.5	0.0	0.0	0.0	4.2	2.0	0.4	0.0	0.0	1.0	4.4	21.7	99.8	10.7	1.22	3.09	1.85	0.81	0.02	1.40	0.07	68.8	0.53
	3f	8494.9	1	Feldspar, clay, and quartz bearing	Silt bearing clay rich	12.9	7.02	7.64	0.55	4.52	6.60×10^{-5}	7.9	8.0	3.6	7.7	3.1×10^{-5}	1.52	2.6	41.8	9.3	2.8	1.2	0.0	0.0	0.0	5.6	2.2	0.5	1.3	0.0	1.3	5.8	28.2	100.0	12.8	3.01	4.11	2.14	1.33	0.02	1.30	0.38	62.5	0.62
	6f	8508.6	2	Clay, dolomite, and quartz bearing	Silt bearing clay rich	20.3	5.72	7.50	0.84	1.57	8.0×10^{-5}	6.0	5.0	0.9	3.9	7.0×10^{-5}	1.52	1.4	47.0	3.5	2.7	1.3	0.0	0.0	8.8	11.2	1.4	0.5	0.0	1.2	1.1	3.3	18.2	100.2	7.05	8.13	5.54	1.08	2.53	0.03	0.70	0.84	58.1	0.37
	7f	8516.6	2	Dolomite, clay, and quartz bearing	Sand and silt bearing clay rich					3.65	4.80×10^{-5}	8.6	7.5	1.3	4.3	2.1×10^{-5}	1.69	1.7	45.9	3.2	3.3	0.0	0.0	0.0	6.0	8.2	7.5	0.5	0.0	0.9	1.2	3.9	18.6	99.2	9.00	4.22	5.50	1.57	1.57	0.02	0.60	0.94	64.2	0.43
	8f	8527.3	2	Clay and quartz bearing	Silt bearing clay rich	26.9	6.78	7.76	0.68	3.90	5.10×10^{-5}	8.1	8.0	2.2	6.2	1.3×10^{-5}	1.83	2.5	38.9	5.5	3.6	4.9	0.0	3.1	3.2	5.1	2.1	0.8	0.0	0.0	1.7	3.9	27.3	100.1	10.5	7.79	3.62	1.60	1.60	0.02	0.90	0.14	58.8	0.51
	9f	8532.5	1	Feldspar, calcite, dolomite, clay, and quartz bearing	Silt bearing clay rich	11.7	7.28	7.67	0.50	2.66	1.90×10^{-5}	6.4	6.0	2.7	5.3	3.4×10^{-5}	1.80	2.5	28.7	6.7	3.6	10.4	0.0	6.3	6.7	7.2	1.9	0.6	0.0	0.0	1.3	4.7	21.8	99.9	11.4	12.2	3.20	1.81	2.06	0.03	1.20	0.29	50.2	0.55
	13f	8552.3	1	Dolomite, clay, and quartz bearing	Silt bearing clay rich	24.5	7.44	7.98	0.56	3.64	3.50×10^{-5}	7.1	7.0	1.4	4.8	1.6×10^{-5}		2.3	34.9	4.6	3.7	4.5	0.0	0.0	3.4	7.1	2.1	0.8	0.0	0.3	1.9	5.3	31.4	100.0	11.8	6.18	4.71	1.81	1.71	0.02	0.80	0.30	56.1	0.56
	14f	8559.8	4	Calcite, clay, and quartz bearing	Silt bearing clay rich	23.8	6.80	7.77	0.69	3.50	4.10×10^{-5}	7.5	7.0	1.9	6.0	1.7×10^{-5}	1.81	2.2	41.0	3.4	2.8	12.0	0.0	0.0	1.2	3.0	2.0	0.7	0.0	0.3	1.3	3.5	28.8	100.0	10.6	8.91	2.55	1.58	0.93	0.01	0.60	0.32	59.7	0.48
	15f	8567.0	4	Dolomite, clay, and quartz bearing	Silt bearing clay rich	20.8	6.64	7.75	0.73	1.96	1.10×10^{-5}	6.6	7.0	1.5	3.7	1.5×10^{-5}	1.76	1.9	42.0	2.5	3.4	7.8	5.0	0.0	5.7	6.7	1.6	0.5	0.0	0.3	0.0	3.4	21.0	99.9	6.11	16.1	4.25	0.98	3.30	0.04	0.40	0.37	45.2	0.30
	18f	8585.5	1	Feldspar, clay, and quartz bearing	Silt bearing clay rich	35.0	5.63	7.74	0.83	2.96	1.10×10^{-5}	6.6	6.0	1.8	5.5	2.9×10^{-5}	1.88	2.2	47.6	6.3	3.3	0.0	0.4	0.0	0.4	0.8	2.0	0.7	0.0	0.8	1.1	5.8	30.7	99.9	11.7	0.50	3.11	1.92	0.64	<0.01	0.80	0.33	68.4	0.64
Lower core interval	20f	8695.5	1	Dolomite, clay, and quartz bearing	Silt bearing clay rich	11.9	7.17	7.57	0.53	0.87	3.0×10^{-6}	6.4	4.0	2.3	4.1	1.1×10^{-5}	1.92	4.0	40.1	5.4	2.5	5.8	0.0	0.0	6.7	6.6	2.0	0.5	0.0	3.0	0.0	5.8	21.4	99.8	11.6	6.92	3.30	2.17	1.87	0.03	0.80	1.74	59.5	0.56
	21f	8700.7	1	Clay and quartz bearing	Silt bearing clay rich	9.8	6.12	7.49	0.75	0.91	3.0×10^{-6}	6.1	4.0	1.8	3.6	1.1×10^{-5}	1.79	2.8	35.4	6.3	2.8	5.9	0.0	0.0	3.8	5.1	2.3	0.5	0.0	2.1	0.0	7.6	28.2	100.0	9.61	8.09	3.18	1.78	1.98	0.03	0.80	0.55	56.8	0.48
	24f	8723.8	5	Calcite, feldspar, clay, and quartz bearing	Silt bearing clay rich	20.7	7.15	7.68	0.57	1.02	3.0×10^{-6}	5.7	4.0	2.4	4.3	2.1×10^{-5}	2.08	3.7	36.7	10.2	3.4	9.6	0.0	0.0	4.5	0.0	2.8	0.6	0.0	1.7	0.0	9.1	21.3	99.9	10.7	6.80	3.19	1.91	1.25	0.02	1.20	0.81	59.3	0.58
	26f	8734.6	Concretion	Quartz bearing calcite cement rich	Indeterminate									0.9	1.5	6.6×10^{-6}	1.98	1.0	12.8	2.7	1.8	68.0	0.0	0.0	3.9	0.0	1.1	0.0	0.0	0.6	0.0	3.3	5.7	99.9	3.79	41.7	1.22	0.66	1.27	0.03	0.40	0.24	19.2	0.20
	26f‡		*1*	Dolomite, feldspar, clay, and quartz bearing	Silt bearing clay rich														*40.1*	*8.5*	*5.6*	*0.0*	*0.0*	*0.0*	*12.2*	*0.0*	*3.4*	*0.0*	*0.0*	*1.9*	*0.0*	*10.3*	*17.9*	100.0										
	27f	8738.3	1	Calcite, clay, and quartz bearing	Silt bearing clay rich	15.6	7.00	7.72	0.61	0.94	3.0×10^{-6}	6.0	4.0	2.7	4.7	1.6×10^{-6}	2.01	1.6	43.9	6.1	2.7	12.1	0.0	0.0	8.1	0.0	2.4	0.5	0.0	3.3	0.0	6.5	14.5	100.1	9.23	2.46	3.25	1.56	0.95	0.01	0.70	0.62	69.2	0.51
	30f	8751.3	1	Clay and quartz bearing	Silt bearing clay rich	21.1	6.57	7.52	0.69					2.4	4.0	2.0×10^{-6}	2.07	2.4	40.5	9.4	3.0	7.8	0.0	0.0	9.6	0.0	2.3	0.6	0.0	1.1	0.0	7.5	18.4	100.2	9.82	8.83	3.07	1.76	1.97	0.03	1.20	0.74	57.0	0.52
	32f	8761.5	1	Feldspar and clay bearing quartz rich	Silt bearing clay rich	18.1	7.11	7.67	0.56	1.16	4.0×10^{-6}	6.1	4.0	3.1	4.9	5.1×10^{-6}	1.99	4.2	53.4	7.2	2.1	0.4	0.0	0.0	3.6	0.0	2.0	0.6	0.0	0.5	0.0	8.7	21.6	100.1	9.69	3.51	2.68	1.97	1.23	0.02	0.80	1.16	66.6	0.50
	34f	8774.0	1	Feldspar, clay, and quartz bearing	Silt bearing clay rich	24.0	7.25	7.86	0.61	0.99	3.0×10^{-6}	6.6	4.0	3.6	5.6	2.5×10^{-6}	2.15	3.8	39.9	10.4	2.8	3.9	0.0	0.0	2.1	0.0	3.1	0.8	0.0	0.6	0.0	9.3	27.1	100.0	12.7	2.49	3.40	2.39	0.81	0.02	1.30	0.40	63.2	0.67
	37f	8785.5	1	Clay bearing quartz rich	Clay dominated	8.8	7.02	7.44	0.50	0.90	2.0×10^{-6}	5.4	4.0	3.8	5.1	2.8×10^{-6}	1.94	2.9	56.2	7.3	0.7	1.8	0.0	0.0	5.2	0.0	2.0	0.4	0.0	0.3	0.0	4.7	21.5	100.1	7.40	3.20	2.36	1.40	0.99	0.02	0.80	0.53	68.6	0.37
	39f	8790.8	1	Clay and Quartz bearing	Silt bearing clay rich	27.0	7.06	7.64	0.59	1.07	4.0×10^{-6}	6.7	4.0	3.1	4.9	1.8×10^{-6}	2.01	3.4	40.5	5.5	0.9	0.0	0.0	0.0	4.7	0.0	2.1	0.7	0.0	0.4	0.0	8.7	36.5	100.0	12.0	1.26	3.06	2.52	1.01	0.02	0.90	0.14	65.1	0.61
	43f	8805.8	1	Clay and quartz bearing	Silt bearing clay rich	33.9	6.88	7.64	0.65	1.31	5.0×10^{-6}	6.2	4.0	2.8	4.7	1.7×10^{-6}	2.04	2.2	44.7	6.9	0.8	0.0	0.0	0.0	1.2	0.0	1.9	0.6	0.0	0.5	0.0	8.5	34.8	99.9	12.4	4.28	3.75	2.72	0.81	0.02	1.00	2.77	63.1	0.64
					Average	**20.0**	**6.8**	**7.7**	**0.6**	**2.2**	$\mathbf{1.95 \times 10^{-5}}$	**6.7**	**5.4**	**2.4**	**4.8**	$\mathbf{2.1 \times 10^{-6}}$	**1.87**	**2.6**	**41.2**	**6.3**	**2.8**	**7.2**	**0.2**	**0.4**	**4.6**	**3.2**	**2.4**	**0.5**	**0.1**	**0.9**	**0.5**	**6.1**	**23.5**	**100.0**	**10.0**	**7.51**	**3.44**	**1.77**	**1.46**	**0.02**	**0.89**	**0.65**	**59.0**	**0.51**
					Average (minus concretion calcite)														***42.5***	***6.5***	***2.8***	***4.5***	***0.3***	***0.4***	***4.6***	***3.4***	***2.4***	***0.6***	***0.1***	***0.9***	***0.6***	***6.2***	***24.3***										

*Silicate-normalized composition.
**Visually determined lithologies (in core with handlens): (1) silt-bearing clay-rich mudstone; (2) sand- and silt-bearing clay-rich mudstone; (3) phosphatic grain layers (too thin for full sampling protocol); (4) calcitic sandy silt-bearing clay-rich mudstone; (5) mollusk-bearing silt-bearing clay-rich mudstone.
†Modified mudstone terminology of Macquaker and Adams (2003); components between 10 and 50 wt. % (-bearing) are listed in order of increasing abundance, components more than 50% are rich.
††Usage of Macquaker and Adams (2003); based on volume percent.