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Subject: FW: Black Oil Tables from EoS for All Temps 11June2010.xls
Attachments: Black Oil Tables from EoS for All Temps 11June2010.xls

Here, kindness of Tony Liao and Yun Wang, are the more extensive tables requested by Curtt. You now have properties for 40-degree temperature increments from 40 to 240 degrees and the gas densities. Please note that we have not provided gas property information above the bubble point as the physical meaning of such values is questionable. Mike Mason is reviewing these now. If he has any changes, I will revert. Kate

<<Black Oil Tables from EoS for All Temps 11June2010.xls>>





 # PVT - Lookup Table #
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Table 1

Temperat (deg F)	Pressure (psig)	Bubble Point (psig)	Gas			Oil			Oil			Gas			Z Factor
			Oil Ratio (scf/STB)	Oil Density (lb/ft3)	Oil Viscosity (centipoise)	Oil FVF (RB/STB)	Oil Compress (1/psi)	Gas Density (lb/ft3)	Gas Viscosity (centipoise)	Gas FVF (ft3/scf)					
40	0	4375.5	0.59	53.1	13.5387	0.99503	4.52E-06	0.06	0.0102	0.96099	0.9951				
40	500	4375.5	369.39	49.53	3.9517	1.1689	7.42E-06	2.01	0.0114	0.024171	0.8776				
40	1097	4375.5	732.92	47.35	1.2305	1.3169	9.49E-06	4.94	0.0132	0.009714	0.7619				
40	1695	4375.5	1066.11	45.62	0.759	1.4424	1.12E-05	8.66	0.0165	0.005634	0.6795				
40	2292	4375.5	1381.23	44.24	0.6194	1.5563	1.24E-05	12.63	0.0221	0.003994	0.6496				
40	2889	4375.5	1709.45	43.01	0.5224	1.6735	1.34E-05	16.14	0.0285	0.003261	0.6665				
40	3487	4375.5	2087.85	41.79	0.4182	1.8091	1.44E-05	19.01	0.035	0.002896	0.711				
40	4084	4375.5	2555.21	40.51	0.3392	1.9777	1.54E-05	21.41	0.0416	0.002694	0.7702				
40	4375.5	4375.5	2833.31	39.84	0.306	2.0786	1.60E-05	22.49	0.045	0.00263	0.8026				
40	4682	4375.5	2833.31	40.03	0.3117	2.0687	1.52E-05								
40	5279	4375.5	2833.31	40.38	0.3227	2.0508	1.38E-05								
40	5876	4375.5	2833.31	40.7	0.3334	2.0347	1.27E-05								
40	6474	4375.5	2833.31	41	0.3441	2.02	1.17E-05								
40	7071	4375.5	2833.31	41.27	0.3546	2.0065	1.08E-05								
40	7668	4375.5	2833.31	41.53	0.3649	1.9941	1.00E-05								
40	8266	4375.5	2833.31	41.77	0.3751	1.9825	9.35E-06								
40	8863	4375.5	2833.31	42	0.3851	1.9719	8.75E-06								
40	9461	4375.5	2833.31	42.21	0.395	1.9619	8.22E-06								
40	10058	4375.5	2833.31	42.41	0.4047	1.9526	7.73E-06								
40	10655	4375.5	2833.31	42.6	0.4142	1.9438	7.29E-06								
40	11253	4375.5	2833.31	42.79	0.4235	1.9356	6.90E-06								
40	11850	4375.5	2833.31	42.96	0.4327	1.9279	6.53E-06								

Table 3

Temperatu (deg F)	Pressure (psig)	Bubble Point (psig)	Gas			Oil			Oil			Gas		
			Oil Ratio (scf/STB)	Oil Density (lb/ft3)	Oil Viscosity (centipoise)	FVF (RB/STB)	Oil Compress (1/psi)	Gas Density (lb/ft3)	Gas Viscosity (centipoise)	Gas FVF (ft3/scf)	Z Factor			
80	0	4988	0	52.98	8.4273	1.0051	5.15E-06	0.05	0.0108	1.0391	0.9957			
80	500	4988	267.93	49.52	2.7038	1.137	8.20E-06	1.88	0.012	0.026727	0.8983			
80	1097	4988	563.13	47.54	1.11	1.2659	1.02E-05	4.45	0.0135	0.01113	0.8081			
80	1695	4988	838.18	45.94	0.7639	1.3763	1.18E-05	7.49	0.0161	0.006669	0.7446			
80	2292	4988	1106.99	44.59	0.6293	1.4793	1.31E-05	10.78	0.0199	0.004752	0.7155			
80	2889	4988	1386.17	43.38	0.5314	1.5839	1.42E-05	13.94	0.0249	0.003805	0.72			
80	3487	4988	1698.08	42.2	0.4289	1.7002	1.51E-05	16.74	0.0302	0.003296	0.7496			
80	4084	4988	2068.22	40.98	0.3533	1.8386	1.61E-05	19.17	0.0358	0.003002	0.7952			
80	4682	4988	2535.96	39.67	0.2907	2.0145	1.72E-05	21.36	0.0417	0.002822	0.8516			
80	4988	4988	2833.31	38.93	0.2615	2.1271	1.79E-05	22.44	0.0451	0.00276	0.8838			
80	5279	4988	2833.31	39.13	0.266	2.1163	1.70E-05							
80	5876	4988	2833.31	39.51	0.2752	2.0959	1.55E-05							
80	6474	4988	2833.31	39.86	0.2844	2.0775	1.41E-05							
80	7071	4988	2833.31	40.19	0.2933	2.0608	1.30E-05							
80	7668	4988	2833.31	40.49	0.3021	2.0455	1.20E-05							
80	8266	4988	2833.31	40.77	0.3108	2.0314	1.11E-05							
80	8863	4988	2833.31	41.03	0.3194	2.0184	1.04E-05							
80	9461	4988	2833.31	41.28	0.3278	2.0063	9.69E-06							
80	10058	4988	2833.31	41.51	0.3361	1.9951	9.08E-06							
80	10655	4988	2833.31	41.73	0.3442	1.9847	8.54E-06							
80	11253	4988	2833.31	41.93	0.3522	1.9749	8.05E-06							
80	11850	4988	2833.31	42.13	0.3601	1.9656	7.60E-06							

Table 4

Temperat (deg F)	Pressure (psig)	Bubble Point (psig)	Gas			Oil			Oil			Gas			Z Factor
			Oil Ratio (scf/STB)	Oil Density (lb/ft3)	Oil Viscosity (centipoise)	FVF (RB/STB)	Compress (1/psi)	Gas Density (lb/ft3)	Gas Viscosity (centipoise)	Gas FVF					
120	0	5504.3	0	52.83	5.6882	1.0151	5.79E-06	0.05	0.0115	1.1262	0.9961				
120	500	5504.3	197.01	49.44	1.9389	1.1169	9.11E-06	1.79	0.0126	0.029219	0.9141				
120	1097	5504.3	442.4	47.57	1.0158	1.2306	1.11E-05	4.11	0.014	0.012454	0.8416				
120	1695	5504.3	676.16	46.06	0.75	1.3303	1.27E-05	6.75	0.0161	0.007618	0.7917				
120	2292	5504.3	909.03	44.75	0.6264	1.4248	1.40E-05	9.58	0.0191	0.005473	0.767				
120	2889	5504.3	1152.24	43.56	0.5272	1.5207	1.51E-05	12.39	0.0229	0.004356	0.7671				
120	3487	5504.3	1420.31	42.4	0.4284	1.6251	1.61E-05	15.02	0.0273	0.003723	0.7878				
120	4084	5504.3	1730.79	41.22	0.3573	1.7459	1.71E-05	17.39	0.0321	0.003341	0.8236				
120	4682	5504.3	2110.8	39.97	0.2981	1.8943	1.81E-05	19.56	0.0371	0.003098	0.8703				
120	5279	5504.3	2602.62	38.58	0.2455	2.0877	1.94E-05	21.61	0.0428	0.002943	0.9255				
120	5504.3	5504.3	2833.31	38.01	0.2269	2.179	2.00E-05	22.38	0.0453	0.002902	0.9485				
120	5876	5504.3	2833.31	38.28	0.2319	2.1634	1.87E-05								
120	6474	5504.3	2833.31	38.69	0.2399	2.1405	1.70E-05								
120	7071	5504.3	2833.31	39.07	0.2477	2.1198	1.55E-05								
120	7668	5504.3	2833.31	39.41	0.2554	2.1012	1.42E-05								
120	8266	5504.3	2833.31	39.74	0.263	2.0841	1.31E-05								
120	8863	5504.3	2833.31	40.04	0.2704	2.0684	1.22E-05								
120	9461	5504.3	2833.31	40.32	0.2778	2.0539	1.13E-05								
120	10058	5504.3	2833.31	40.58	0.285	2.0406	1.06E-05								
120	10655	5504.3	2833.31	40.83	0.292	2.0281	9.91E-06								
120	11253	5504.3	2833.31	41.07	0.299	2.0165	9.31E-06								
120	11850	5504.3	2833.31	41.29	0.3059	2.0057	8.77E-06								

Table 5

Temperat (deg F)	Pressure (psig)	Bubble Point (psig)	Gas			Oil			Gas			Z Factor
			Oil Ratio (scf/STB)	Oil Density (lb/ft3)	Oil Viscosity (centipoise)	FVF (RB/STB)	Compress (1/psi)	Gas Density (lb/ft3)	Gas Viscosity (centipoise)	Gas FVF		
120	0	5504.3	0	52.83	5.6882	1.0151	5.79E-06	0.05	0.0115	1.1262	0.9961	
120	500	5504.3	197.01	49.44	1.9389	1.1169	9.11E-06	1.79	0.0126	0.029219	0.9141	
120	1097	5504.3	442.4	47.57	1.0158	1.2306	1.11E-05	4.11	0.014	0.012454	0.8416	
120	1695	5504.3	676.16	46.06	0.75	1.3303	1.27E-05	6.75	0.0161	0.007618	0.7917	
120	2292	5504.3	909.03	44.75	0.6264	1.4248	1.40E-05	9.58	0.0191	0.005473	0.767	
120	2889	5504.3	1152.24	43.56	0.5272	1.5207	1.51E-05	12.39	0.0229	0.004356	0.7671	
120	3487	5504.3	1420.31	42.4	0.4284	1.6251	1.61E-05	15.02	0.0273	0.003723	0.7878	
120	4084	5504.3	1730.79	41.22	0.3573	1.7459	1.71E-05	17.39	0.0321	0.003341	0.8236	
120	4682	5504.3	2110.8	39.97	0.2981	1.8943	1.81E-05	19.56	0.0371	0.003098	0.8703	
120	5279	5504.3	2602.62	38.58	0.2455	2.0877	1.94E-05	21.61	0.0428	0.002943	0.9255	
120	5504.3	5504.3	2833.31	38.01	0.2269	2.179	2.00E-05	22.38	0.0453	0.002902	0.9485	
120	5876	5504.3	2833.31	38.28	0.2319	2.1634	1.87E-05					
120	6474	5504.3	2833.31	38.69	0.2399	2.1405	1.70E-05					
120	7071	5504.3	2833.31	39.07	0.2477	2.1198	1.55E-05					
120	7668	5504.3	2833.31	39.41	0.2554	2.1012	1.42E-05					
120	8266	5504.3	2833.31	39.74	0.263	2.0841	1.31E-05					
120	8863	5504.3	2833.31	40.04	0.2704	2.0684	1.22E-05					
120	9461	5504.3	2833.31	40.32	0.2778	2.0539	1.13E-05					
120	10058	5504.3	2833.31	40.58	0.285	2.0406	1.06E-05					
120	10655	5504.3	2833.31	40.83	0.292	2.0281	9.91E-06					
120	11253	5504.3	2833.31	41.07	0.299	2.0165	9.31E-06					
120	11850	5504.3	2833.31	41.29	0.3059	2.0057	8.77E-06					

160	0	5934.4	0	52.65	4.0811	1.0244	6.41E-06	0.05	0.0121	1.2271	0.9964
160	500	5934.4	148.54	49.29	1.5007	1.1068	1.02E-05	1.72	0.0132	0.031665	0.9264
160	1097	5934.4	354.56	47.48	0.9368	1.2072	1.22E-05	3.86	0.0145	0.013719	0.867
160	1695	5934.4	557.09	46.03	0.7264	1.2985	1.39E-05	6.24	0.0163	0.008512	0.8271
160	2292	5934.4	762.06	44.76	0.6146	1.3863	1.52E-05	8.76	0.0188	0.006162	0.807
160	2889	5934.4	977.61	43.58	0.5129	1.4757	1.63E-05	11.3	0.0219	0.004901	0.8062
160	3487	5934.4	1214.13	42.44	0.4208	1.5722	1.73E-05	13.73	0.0257	0.00416	0.8222
160	4084	5934.4	1484.38	41.29	0.3545	1.6818	1.83E-05	16	0.0297	0.003698	0.8515
160	4682	5934.4	1808.61	40.07	0.2986	1.8135	1.93E-05	18.12	0.0342	0.003397	0.891
160	5279	5934.4	2216.59	38.75	0.249	1.9801	2.05E-05	20.12	0.0391	0.003195	0.9387
160	5876	5934.4	2767.71	37.22	0.2038	2.2074	2.21E-05	22.14	0.045	0.003065	0.9944
160	5934.4	5934.4	2833.31	37.06	0.1995	2.2346	2.22E-05	22.35	0.0457	0.003056	1.0002
160	6474	5934.4	2833.31	37.49	0.2059	2.2092	2.02E-05				
160	7071	5934.4	2833.31	37.92	0.2129	2.184	1.83E-05				
160	7668	5934.4	2833.31	38.32	0.2197	2.1613	1.67E-05				
160	8266	5934.4	2833.31	38.69	0.2265	2.1407	1.53E-05				
160	8863	5934.4	2833.31	39.03	0.2331	2.122	1.42E-05				
160	9461	5934.4	2833.31	39.35	0.2396	2.1048	1.31E-05				
160	10058	5934.4	2833.31	39.64	0.2459	2.0889	1.22E-05				
160	10655	5934.4	2833.31	39.92	0.2522	2.0743	1.14E-05				
160	11253	5934.4	2833.31	40.19	0.2584	2.0607	1.07E-05				
160	11850	5934.4	2833.31	40.44	0.2645	2.048	1.00E-05				

Table 6

200	2889	6286.6	844.21	43.5	0.4926	1.4441	1.77E-05	10.5	0.0215	0.005437	0.8383
200	3487	6286.6	1056.79	42.37	0.4093	1.5349	1.87E-05	12.77	0.0247	0.004601	0.8519
200	4084	6286.6	1298.07	41.22	0.3473	1.6371	1.97E-05	14.93	0.0283	0.004066	0.877
200	4682	6286.6	1584.09	40.03	0.2945	1.7581	2.07E-05	16.97	0.0322	0.003709	0.9115
200	5279	6286.6	1937.78	38.73	0.2477	1.9084	2.19E-05	18.93	0.0366	0.003465	0.9536
200	5876	6286.6	2402.85	37.26	0.2051	2.1078	2.34E-05	20.9	0.0418	0.003299	1.003
200	6286.6	6286.6	2833.31	36.09	0.1774	2.2944	2.47E-05	22.32	0.0462	0.003224	1.0419
200	6474	6286.6	2833.31	36.26	0.1794	2.284	2.38E-05				
200	7071	6286.6	2833.31	36.75	0.1857	2.2534	2.15E-05				
200	7668	6286.6	2833.31	37.2	0.1919	2.2261	1.95E-05				
200	8266	6286.6	2833.31	37.62	0.198	2.2015	1.78E-05				
200	8863	6286.6	2833.31	38	0.2039	2.1792	1.63E-05				
200	9461	6286.6	2833.31	38.36	0.2098	2.1588	1.51E-05				
200	10058	6286.6	2833.31	38.69	0.2155	2.1402	1.40E-05				
200	10655	6286.6	2833.31	39.01	0.2212	2.1231	1.30E-05				
200	11253	6286.6	2833.31	39.3	0.2267	2.1072	1.21E-05				
200	11850	6286.6	2833.31	39.58	0.2322	2.0925	1.14E-05				

Table 7

Temperatu (deg F)	Pressure (psig)	Bubble Point (psig)	Gas		Oil Density (lb/ft3)	Oil Viscosity (centipoise)	Oil FVF (RB/STB)	Oil Compress (1/psi)	Gas Density (lb/ft3)	Gas Viscosity (centipoise)	Gas FVF (ft3/scf)	Z Factor
			Oil Ratio (scf/STB)	Oil Ratio								
240	0	6568.5	0	52.21	2.1837	1.0416	7.81E-06	0.05	0.0132	1.4375	0.997	
240	500	6568.5	93.15	48.84	1.1398	1.1067	1.27E-05	1.62	0.0144	0.036536	0.9437	
240	1097	6568.5	242.3	47.1	0.818	1.1862	1.50E-05	3.54	0.0155	0.016159	0.9023	
240	1695	6568.5	399.72	45.7	0.6714	1.2645	1.67E-05	5.6	0.0171	0.010213	0.876	
240	2292	6568.5	564.4	44.47	0.5738	1.3423	1.81E-05	7.73	0.019	0.007481	0.8638	
240	2889	6568.5	740.46	43.31	0.4705	1.4227	1.93E-05	9.9	0.0214	0.005968	0.8646	
240	3487	6568.5	934.25	42.19	0.3956	1.5093	2.03E-05	12.03	0.0242	0.005043	0.8771	
240	4084	6568.5	1153.73	41.05	0.3374	1.6064	2.13E-05	14.09	0.0274	0.004441	0.8996	
240	4682	6568.5	1412.23	39.85	0.2875	1.7206	2.24E-05	16.06	0.0309	0.004032	0.9305	
240	5279	6568.5	1728.6	38.57	0.2432	1.8607	2.36E-05	17.98	0.0349	0.003746	0.9685	

240	5876	6568.5	2138.01	37.13	0.2029	2.0435	2.50E-05	19.9	0.0396	0.003548	1.0133
240	6474	6568.5	2716.29	35.42	0.165	2.3053	2.70E-05	21.97	0.0457	0.003421	1.0663
240	6568.5	6568.5	2833.31	35.11	0.1591	2.3589	2.74E-05	22.32	0.0469	0.003407	1.0757
240	7071	6568.5	2833.31	35.57	0.1641	2.3282	2.49E-05				
240	7668	6568.5	2833.31	36.08	0.1697	2.2955	2.25E-05				
240	8266	6568.5	2833.31	36.54	0.1753	2.2663	2.04E-05				
240	8863	6568.5	2833.31	36.97	0.1808	2.2401	1.87E-05				
240	9461	6568.5	2833.31	37.37	0.1861	2.2162	1.72E-05				
240	10058	6568.5	2833.31	37.74	0.1913	2.1945	1.59E-05				
240	10655	6568.5	2833.31	38.08	0.1965	2.1746	1.47E-05				
240	11253	6568.5	2833.31	38.41	0.2015	2.1563	1.37E-05				
240	11850	6568.5	2833.31	38.71	0.2065	2.1393	1.28E-05				