

Gas Quality Reports

LS458 - Canadian Blackwell at Blackwell
5/13/2020 - 8/13/2020

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
05/13/2020	1,034.5	1,016.5	0.591	1,345.46	-38.02	1.910	0.205	92.935	4.572	0.297	0.020	0.037	0.009	0.009	0.004
05/14/2020	1,037.0	1,018.9	0.593	1,346.92	-35.65	1.941	0.184	92.645	4.814	0.324	0.023	0.044	0.011	0.010	0.005
05/15/2020	1,038.5	1,020.4	0.594	1,347.91	-34.00	1.885	0.214	92.530	4.942	0.332	0.023	0.044	0.011	0.011	0.005
05/16/2020	1,035.2	1,017.2	0.592	1,345.79	-34.56	1.877	0.230	92.870	4.640	0.305	0.019	0.036	0.009	0.009	0.004
05/17/2020	1,032.4	1,014.5	0.589	1,345.15	-34.91	1.778	0.245	93.406	4.203	0.294	0.018	0.034	0.009	0.009	0.004
05/18/2020	1,033.5	1,015.6	0.589	1,346.59	-34.64	1.703	0.250	93.434	4.233	0.302	0.018	0.036	0.009	0.009	0.004
05/19/2020	1,031.3	1,013.4	0.587	1,345.72	-36.60	1.696	0.232	93.697	4.059	0.255	0.014	0.027	0.007	0.007	0.004
05/20/2020	1,031.8	1,013.9	0.588	1,345.68	-35.60	1.710	0.242	93.638	4.049	0.283	0.019	0.035	0.009	0.009	0.005
05/21/2020	1,034.4	1,016.4	0.591	1,345.96	-31.95	1.840	0.222	93.192	4.294	0.336	0.028	0.052	0.014	0.013	0.007
05/22/2020	1,035.0	1,016.9	0.591	1,345.81	-29.46	1.834	0.250	93.107	4.336	0.349	0.029	0.056	0.014	0.014	0.007
05/23/2020	1,029.2	1,011.3	0.588	1,342.49	-34.38	1.705	0.335	93.768	3.852	0.258	0.019	0.037	0.010	0.010	0.005
05/24/2020	1,027.4	1,009.5	0.587	1,341.08	-36.50	1.751	0.324	93.872	3.747	0.236	0.017	0.032	0.008	0.008	0.004
05/25/2020	1,025.4	1,007.5	0.586	1,339.59	-51.54	1.786	0.319	94.009	3.616	0.213	0.013	0.025	0.007	0.007	0.003
05/26/2020	1,026.3	1,008.5	0.585	1,341.30	-65.83	1.745	0.284	94.066	3.628	0.222	0.014	0.025	0.006	0.006	0.003
05/27/2020	1,022.6	1,004.8	0.584	1,338.32	-61.53	1.673	0.378	94.417	3.318	0.174	0.010	0.019	0.005	0.005	0.002
05/28/2020	1,022.3	1,004.5	0.583	1,338.44	-42.98	1.746	0.313	94.487	3.210	0.189	0.013	0.025	0.007	0.006	0.003
05/29/2020	1,024.0	1,006.2	0.584	1,340.20	-53.86	1.724	0.284	94.417	3.303	0.219	0.014	0.024	0.006	0.006	0.003
05/30/2020	1,025.0	1,007.2	0.584	1,341.81	-42.78	1.586	0.322	94.436	3.431	0.191	0.009	0.016	0.004	0.004	0.002
05/31/2020	1,022.7	1,004.9	0.583	1,339.85	-45.46	1.655	0.307	94.652	3.147	0.190	0.012	0.023	0.006	0.006	0.003
06/01/2020	1,024.4	1,006.6	0.584	1,340.18	-35.71	1.768	0.268	94.399	3.236	0.240	0.020	0.039	0.010	0.010	0.006
06/02/2020	1,022.5	1,004.7	0.582	1,340.34	-35.80	1.616	0.302	94.767	3.089	0.177	0.011	0.022	0.006	0.006	0.003
06/03/2020	1,025.8	1,008.0	0.584	1,342.70	-41.77	1.602	0.286	94.495	3.339	0.199	0.019	0.037	0.010	0.009	0.004
06/04/2020	1,024.5	1,006.7	0.584	1,341.09	-36.24	1.604	0.333	94.478	3.358	0.171	0.012	0.024	0.007	0.007	0.005
06/05/2020	1,024.3	1,006.5	0.584	1,340.33	-41.25	1.652	0.336	94.398	3.358	0.203	0.014	0.026	0.006	0.006	0.003
06/06/2020	1,028.4	1,010.5	0.587	1,342.72	-30.15	1.675	0.316	94.042	3.582	0.298	0.022	0.037	0.010	0.008	0.006
06/07/2020	1,031.0	1,013.1	0.588	1,344.95	-34.29	1.616	0.317	93.845	3.813	0.328	0.023	0.038	0.009	0.008	0.003
06/08/2020	1,029.9	1,011.9	0.588	1,343.05	-35.16	1.677	0.344	93.804	3.758	0.330	0.022	0.040	0.010	0.009	0.005
06/09/2020	1,029.3	1,011.4	0.587	1,343.15	-38.70	1.649	0.339	93.863	3.790	0.296	0.017	0.029	0.006	0.006	0.003
06/10/2020	1,027.2	1,009.3	0.585	1,343.24	-39.35	1.661	0.261	94.206	3.583	0.238	0.013	0.024	0.006	0.005	0.003
06/11/2020	1,028.9	1,011.0	0.586	1,343.83	-41.14	1.636	0.298	93.954	3.823	0.245	0.011	0.021	0.005	0.005	0.002
06/12/2020	1,027.5	1,009.6	0.586	1,342.68	-42.58	1.643	0.313	94.058	3.718	0.226	0.011	0.020	0.005	0.004	0.002
06/13/2020	1,030.4	1,012.5	0.588	1,344.17	-31.35	1.454	0.447	93.971	3.757	0.289	0.021	0.034	0.009	0.008	0.006
06/14/2020	1,026.8	1,009.0	0.586	1,341.51	-42.94	1.670	0.338	94.049	3.671	0.219	0.013	0.023	0.006	0.006	0.004
06/15/2020	1,027.4	1,009.5	0.587	1,341.29	-66.44	1.797	0.283	93.882	3.714	0.249	0.018	0.035	0.009	0.008	0.004
06/16/2020	1,025.8	1,007.9	0.586	1,340.05	-56.38	1.808	0.293	94.052	3.523	0.245	0.018	0.036	0.009	0.009	0.004
06/17/2020	1,023.7	1,005.9	0.584	1,339.21	-63.03	1.785	0.289	94.290	3.378	0.202	0.013	0.026	0.007	0.007	0.003
06/18/2020	1,023.4	1,005.5	0.584	1,339.17	-69.41	1.761	0.295	94.378	3.302	0.205	0.014	0.027	0.007	0.007	0.003
06/19/2020	1,022.9	1,005.1	0.584	1,339.12	-61.32	1.801	0.259	94.476	3.165	0.229	0.016	0.031	0.008	0.008	0.004
06/20/2020	1,022.8	1,005.0	0.585	1,337.34	-58.47	1.855	0.315	94.237	3.293	0.230	0.016	0.031	0.008	0.008	0.004
06/21/2020	1,026.6	1,008.7	0.586	1,340.76	-55.12	1.786	0.293	94.013	3.565	0.266	0.019	0.035	0.009	0.008	0.004
06/22/2020	1,029.2	1,011.3	0.588	1,342.36	-52.58	1.803	0.277	93.825	3.612	0.386	0.025	0.047	0.009	0.009	0.004
06/23/2020	1,025.4	1,007.5	0.585	1,340.89	-61.05	1.767	0.261	94.319	3.268	0.313	0.020	0.035	0.007	0.006	0.003
06/24/2020	1,025.3	1,007.4	0.585	1,340.85	-60.94	1.764	0.262	94.329	3.269	0.304	0.020	0.035	0.007	0.007	0.003

Gas Quality Reports

LS458 - Canadian Blackwell at Blackwell
5/13/2020 - 8/13/2020

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
06/25/2020	1,025.2	1,007.4	0.585	1,340.91	-61.13	1.756	0.263	94.338	3.271	0.300	0.019	0.034	0.007	0.006	0.003
06/26/2020	1,025.2	1,007.3	0.584	1,340.94	-61.48	1.749	0.265	94.343	3.288	0.286	0.019	0.033	0.007	0.007	0.003
06/27/2020	1,026.5	1,008.7	0.586	1,340.61	-57.24	1.684	0.368	94.045	3.591	0.244	0.017	0.030	0.008	0.008	0.004
06/28/2020	1,022.9	1,005.1	0.582	1,340.66	-58.01	1.334	0.484	94.886	3.105	0.159	0.008	0.015	0.004	0.003	0.002
06/29/2020	1,024.9	1,007.1	0.587	1,337.67	-61.35	1.747	0.435	93.896	3.613	0.278	0.008	0.015	0.003	0.003	0.002
06/30/2020	1,022.9	1,005.1	0.584	1,338.87	-48.54	1.596	0.408	94.477	3.296	0.195	0.007	0.013	0.003	0.003	0.002
07/01/2020	1,024.4	1,006.6	0.586	1,337.88	-47.45	1.932	0.287	93.958	3.485	0.264	0.018	0.034	0.008	0.008	0.005
07/02/2020	1,024.1	1,006.3	0.583	1,340.75	-61.58	1.709	0.266	94.482	3.270	0.216	0.014	0.026	0.006	0.006	0.003
07/03/2020	1,023.1	1,005.3	0.584	1,339.11	-57.37	1.799	0.268	94.405	3.249	0.218	0.015	0.028	0.007	0.007	0.004
07/04/2020	1,022.2	1,004.5	0.582	1,339.40	-68.29	1.719	0.276	94.599	3.190	0.174	0.010	0.019	0.005	0.005	0.003
07/05/2020	1,024.5	1,006.7	0.584	1,340.72	-45.62	1.724	0.272	94.515	3.139	0.254	0.023	0.041	0.012	0.010	0.006
07/06/2020	1,022.7	1,004.9	0.583	1,339.01	-36.25	1.769	0.277	94.528	3.147	0.212	0.016	0.029	0.008	0.007	0.004
07/07/2020	1,022.8	1,005.0	0.582	1,340.65	-55.37	1.669	0.258	94.714	3.126	0.184	0.012	0.022	0.006	0.005	0.003
07/08/2020	1,022.3	1,004.5	0.582	1,340.11	-76.75	1.696	0.256	94.735	3.055	0.211	0.013	0.023	0.005	0.004	0.002
07/09/2020	1,023.7	1,005.9	0.584	1,339.87	-63.66	1.697	0.311	94.497	3.192	0.236	0.017	0.030	0.007	0.007	0.004
07/10/2020	1,021.5	1,003.8	0.581	1,339.87	-59.87	1.628	0.288	94.891	2.969	0.177	0.011	0.021	0.005	0.005	0.003
07/11/2020	1,023.2	1,005.4	0.582	1,341.17	-55.38	1.562	0.314	94.814	3.050	0.204	0.013	0.024	0.007	0.006	0.004
07/12/2020	1,022.7	1,004.9	0.583	1,339.80	-80.29	1.631	0.328	94.608	3.216	0.181	0.009	0.016	0.004	0.004	0.002
07/13/2020	1,028.8	1,010.9	0.586	1,344.34	-50.24	1.529	0.337	94.234	3.531	0.297	0.020	0.032	0.007	0.006	0.004
07/14/2020	1,023.1	1,005.3	0.583	1,339.76	-61.16	1.598	0.363	94.591	3.206	0.201	0.011	0.018	0.004	0.004	0.002
07/15/2020	1,022.3	1,004.5	0.582	1,339.55	-74.73	1.589	0.356	94.674	3.181	0.169	0.008	0.014	0.003	0.003	0.002
07/16/2020	1,028.5	1,010.6	0.587	1,341.90	-79.25	1.793	0.288	93.715	3.867	0.287	0.013	0.024	0.006	0.005	0.002
07/17/2020	1,022.7	1,004.9	0.581	1,341.26	-89.08	1.554	0.298	94.866	3.062	0.190	0.008	0.014	0.003	0.003	0.002
07/18/2020	1,022.2	1,004.4	0.581	1,340.49	-92.00	1.459	0.387	94.882	3.092	0.159	0.005	0.010	0.002	0.002	0.001
07/19/2020	1,020.6	1,002.9	0.581	1,338.48	-93.29	1.600	0.354	94.869	2.973	0.175	0.007	0.013	0.003	0.003	0.001
07/20/2020	1,022.6	1,004.8	0.584	1,337.77	-95.69	1.736	0.365	94.328	3.308	0.237	0.007	0.014	0.002	0.002	0.001
07/21/2020	1,021.7	1,003.9	0.582	1,338.75	-86.84	1.607	0.369	94.727	3.050	0.215	0.008	0.015	0.003	0.003	0.002
07/22/2020	1,021.6	1,003.8	0.583	1,337.96	-94.09	1.787	0.289	94.526	3.134	0.234	0.008	0.016	0.003	0.002	0.001
07/23/2020	1,022.4	1,004.7	0.583	1,338.71	-79.56	1.874	0.217	94.444	3.159	0.253	0.013	0.024	0.006	0.006	0.003
07/24/2020	1,024.8	1,007.0	0.584	1,340.79	-59.67	1.818	0.215	94.389	3.207	0.284	0.021	0.040	0.010	0.010	0.005
07/25/2020	1,027.2	1,009.3	0.586	1,342.39	-45.49	1.675	0.297	94.230	3.423	0.290	0.021	0.038	0.009	0.009	0.005
07/26/2020	1,022.5	1,004.8	0.582	1,339.96	-52.20	1.705	0.264	94.691	3.070	0.215	0.014	0.025	0.006	0.006	0.003
07/27/2020	1,023.5	1,005.7	0.584	1,339.57	-38.13	1.797	0.253	94.492	3.103	0.279	0.019	0.036	0.008	0.007	0.004
07/28/2020	1,023.4	1,005.6	0.583	1,340.30	-63.98	1.751	0.241	94.603	3.072	0.264	0.019	0.034	0.007	0.006	0.003
07/29/2020	1,021.7	1,003.9	0.581	1,340.20	-76.92	1.631	0.273	94.957	2.863	0.224	0.014	0.025	0.006	0.005	0.002
07/30/2020	1,023.4	1,005.6	0.583	1,340.60	-72.33	1.604	0.323	94.681	3.111	0.230	0.013	0.024	0.006	0.005	0.003
07/31/2020	1,022.8	1,005.0	0.580	1,343.48	-64.56	1.382	0.296	95.272	2.836	0.162	0.013	0.023	0.006	0.005	0.003
08/01/2020	1,022.3	1,004.5	0.580	1,342.20	-79.61	1.420	0.324	95.131	2.953	0.136	0.009	0.018	0.004	0.004	0.002
08/02/2020	1,019.8	1,002.1	0.579	1,339.70	-101.89	1.512	0.321	95.196	2.829	0.119	0.006	0.012	0.003	0.003	0.001
08/03/2020	1,020.9	1,003.2	0.582	1,338.66	-96.51	1.702	0.286	94.747	3.072	0.162	0.008	0.015	0.003	0.003	0.002
08/04/2020	1,020.6	1,002.8	0.582	1,337.79	-78.96	1.711	0.316	94.745	3.011	0.176	0.010	0.020	0.005	0.005	0.002
08/05/2020	1,019.3	1,001.5	0.579	1,339.31	-91.03	1.592	0.272	95.214	2.762	0.132	0.007	0.013	0.003	0.003	0.002
08/06/2020	1,018.8	1,001.1	0.578	1,340.06	-101.69	1.516	0.268	95.427	2.655	0.112	0.006	0.011	0.002	0.002	0.001

TSP Name: Southern Star Central Gas Pipeline, Inc.

CSI048

TSP: 007906233

8/13/2020 12:15:11 AM

Gas Quality Reports

LS458 - Canadian Blackwell at Blackwell
5/13/2020 - 8/13/2020

Page 3 of 3

Gas Day	Gross Heating Value (HHV) (Btu/scf)	Net Heating Value (LHV) (Btu/scf)	Specific Gravity	Wobbe Index	Hydrocarbon Dewpoint (HCDP) (deg F)	N2 (mol%)	CO2 (mol%)	Methane (mol%)	Ethane (mol%)	Propane (mol%)	Isobutane (mol%)	N-Butane (mol%)	Isopentane (mol%)	N-Pentane (mol%)	C6 Plus (mol%)
08/07/2020	1,023.8	1,006.0	0.583	1,341.10	-71.81	1.728	0.227	94.540	3.258	0.192	0.014	0.026	0.007	0.006	0.003
08/08/2020	1,022.8	1,005.0	0.582	1,340.19	-71.07	1.773	0.216	94.571	3.202	0.183	0.013	0.025	0.006	0.006	0.003
08/09/2020	1,022.5	1,004.7	0.581	1,340.88	-70.57	1.718	0.205	94.763	3.087	0.176	0.012	0.023	0.006	0.006	0.003
08/10/2020	1,023.0	1,005.2	0.582	1,341.25	-73.75	1.711	0.205	94.686	3.190	0.166	0.010	0.020	0.005	0.005	0.002
08/11/2020	1,022.9	1,005.1	0.579	1,343.88	-80.38	1.493	0.205	95.161	2.967	0.130	0.010	0.020	0.005	0.005	0.002

NOTES:

Wobbe Index: Interchangeability constant calculated using the Gross (or Higher) Heating Value (HHV) divided by the square root of the Specific Gravity

Hydrocarbon Dewpoint (HCDP): Theoretically determined value using the Redlich-Kwong equation of state (EOS)

Selection: Business Unit ID = 70; Analysis_Key = 66324