

Gas Quality Reports

LS145 - So. Glavin at Ottawa X-Over

5/17/2019 - 8/17/2019

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%)
05/17/2019	1,074.4	1,055.7	0.618	1,367.19	-39.18	1.497	0.533	89.418	6.889	1.394	0.079	0.143	0.019	0.016	0.011
05/18/2019	1,089.2	1,070.3	0.625	1,378.03	-32.86	1.115	0.646	88.477	7.780	1.668	0.094	0.171	0.021	0.019	0.010
05/19/2019	1,091.4	1,072.4	0.629	1,375.58	-31.49	1.204	0.795	87.698	8.271	1.710	0.096	0.175	0.022	0.020	0.009
05/20/2019	1,064.2	1,045.7	0.637	1,332.99	-20.23	3.877	0.598	85.761	7.639	1.677	0.115	0.237	0.038	0.038	0.020
05/21/2019	1,073.4	1,054.7	0.624	1,358.57	-35.56	2.060	0.621	87.894	7.931	1.218	0.075	0.143	0.023	0.022	0.014
05/22/2019	1,060.9	1,042.5	0.614	1,353.48	-53.42	2.246	0.383	89.093	7.187	0.928	0.048	0.085	0.012	0.011	0.007
05/23/2019	1,050.8	1,032.5	0.609	1,346.70	-67.17	2.698	0.138	89.622	6.684	0.764	0.029	0.048	0.007	0.005	0.005
05/24/2019	1,050.2	1,032.0	0.608	1,346.66	-55.62	2.447	0.288	90.104	6.208	0.798	0.042	0.078	0.013	0.012	0.010
05/25/2019	1,065.6	1,047.1	0.619	1,354.87	-41.34	2.446	0.323	88.548	7.302	1.143	0.066	0.125	0.019	0.018	0.012
05/26/2019	1,071.3	1,052.6	0.621	1,359.97	-40.98	2.043	0.483	88.468	7.527	1.235	0.071	0.130	0.018	0.016	0.010
05/27/2019	1,073.2	1,054.5	0.622	1,360.41	-39.46	2.042	0.521	88.181	7.738	1.260	0.072	0.138	0.019	0.018	0.010
05/28/2019	1,067.2	1,048.6	0.619	1,356.84	-46.29	2.144	0.463	88.620	7.436	1.131	0.059	0.110	0.015	0.013	0.008
05/29/2019	1,066.6	1,048.1	0.618	1,356.52	-48.45	2.192	0.430	88.630	7.418	1.135	0.057	0.105	0.013	0.012	0.007
05/30/2019	1,067.6	1,049.1	0.622	1,353.52	-46.02	2.407	0.491	88.003	7.651	1.229	0.065	0.120	0.015	0.014	0.006
05/31/2019	1,048.4	1,030.1	0.607	1,345.51	-63.16	2.095	0.523	90.587	5.841	0.813	0.042	0.075	0.009	0.008	0.006
06/01/2019	1,063.4	1,044.9	0.618	1,352.82	-51.88	2.333	0.443	88.620	7.318	1.111	0.054	0.095	0.011	0.009	0.005
06/02/2019	1,061.2	1,042.8	0.618	1,350.31	-53.60	2.423	0.455	88.622	7.249	1.090	0.051	0.088	0.010	0.008	0.005
06/03/2019	1,067.1	1,048.5	0.621	1,354.39	-46.73	2.414	0.420	88.268	7.367	1.343	0.059	0.103	0.011	0.009	0.006
06/04/2019	1,066.8	1,048.2	0.619	1,355.82	-50.62	2.487	0.280	88.369	7.401	1.294	0.053	0.094	0.009	0.008	0.004
06/05/2019	1,069.6	1,051.0	0.615	1,364.26	-45.69	2.029	0.197	89.378	6.890	1.284	0.075	0.111	0.017	0.012	0.008
06/06/2019	1,078.1	1,059.4	0.616	1,374.21	-36.40	1.585	0.202	89.625	6.758	1.600	0.076	0.110	0.017	0.012	0.015
06/07/2019	1,063.9	1,045.4	0.609	1,362.88	-49.58	1.956	0.143	90.185	6.367	1.194	0.051	0.076	0.011	0.008	0.011
06/08/2019	1,056.5	1,038.1	0.606	1,356.78	-54.75	2.056	0.181	90.597	6.032	1.000	0.042	0.063	0.011	0.007	0.011
06/09/2019	1,057.9	1,039.5	0.607	1,357.92	-54.47	2.034	0.175	90.512	6.120	1.016	0.045	0.071	0.010	0.007	0.010
06/10/2019	1,064.3	1,045.8	0.610	1,362.29	-44.56	1.861	0.250	90.073	6.539	1.101	0.052	0.083	0.014	0.011	0.016
06/11/2019	1,055.6	1,037.2	0.611	1,350.23	-47.51	2.470	0.245	89.567	6.666	0.899	0.041	0.071	0.013	0.011	0.016
06/12/2019	1,047.7	1,029.5	0.609	1,342.06	-63.57	2.837	0.208	89.610	6.437	0.797	0.034	0.058	0.008	0.007	0.006
06/13/2019	1,055.5	1,037.2	0.615	1,345.93	-58.38	2.619	0.387	88.988	6.821	1.034	0.048	0.083	0.009	0.008	0.003
06/14/2019	1,062.9	1,044.4	0.620	1,350.13	-49.59	2.470	0.488	88.375	7.296	1.168	0.062	0.112	0.013	0.011	0.005
06/15/2019	1,065.8	1,047.3	0.617	1,356.44	-45.83	2.224	0.387	88.846	7.129	1.230	0.055	0.094	0.013	0.011	0.010
06/16/2019	1,073.1	1,054.4	0.622	1,361.11	-44.77	2.090	0.446	88.158	7.810	1.308	0.058	0.099	0.013	0.011	0.008
06/17/2019	1,067.2	1,048.6	0.618	1,357.22	-45.29	2.048	0.503	88.841	7.182	1.220	0.062	0.108	0.015	0.012	0.009
06/18/2019	1,048.9	1,030.6	0.608	1,344.95	-56.84	2.074	0.584	90.576	5.679	0.940	0.044	0.074	0.010	0.009	0.009
06/19/2019	1,060.4	1,042.0	0.613	1,354.57	-51.10	2.243	0.306	89.450	6.801	1.041	0.048	0.080	0.012	0.010	0.010
06/20/2019	1,046.7	1,028.5	0.604	1,346.76	-61.13	2.094	0.401	91.048	5.532	0.803	0.037	0.058	0.009	0.007	0.010
06/21/2019	1,073.1	1,054.4	0.620	1,362.64	-47.55	2.160	0.313	88.269	7.759	1.335	0.052	0.087	0.010	0.008	0.006
06/22/2019	1,068.9	1,050.3	0.619	1,359.12	-46.65	2.188	0.359	88.631	7.356	1.286	0.056	0.094	0.012	0.010	0.008
06/23/2019	1,065.5	1,046.9	0.616	1,357.85	-48.08	2.188	0.319	89.128	6.957	1.219	0.058	0.098	0.014	0.011	0.008
06/24/2019	1,058.9	1,040.4	0.610	1,355.69	-58.11	2.033	0.332	89.999	6.490	1.009	0.044	0.072	0.009	0.007	0.006
06/25/2019	1,026.8	1,008.9	0.593	1,332.86	-146.06	2.064	0.551	92.975	3.842	0.484	0.023	0.039	0.006	0.005	0.009
06/26/2019	1,066.2	1,047.7	0.614	1,360.53	-54.53	1.984	0.329	89.223	7.252	1.074	0.046	0.071	0.009	0.006	0.006
06/27/2019	1,057.7	1,039.3	0.611	1,353.27	-60.15	2.520	0.110	89.347	7.038	0.874	0.035	0.055	0.008	0.006	0.007
06/28/2019	1,044.0	1,025.9	0.604	1,343.21	-67.56	2.424	0.295	90.776	5.653	0.756	0.029	0.047	0.007	0.005	0.008

Gas Quality Reports

LS145 - So. Glavin at Ottawa X-Over

5/17/2019 - 8/17/2019

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%)
06/29/2019	1,054.1	1,035.7	0.610	1,350.01	-57.38	2.247	0.356	89.935	6.447	0.889	0.039	0.062	0.009	0.007	0.009
06/30/2019	1,060.4	1,042.0	0.613	1,354.15	-56.12	2.179	0.372	89.409	6.845	1.064	0.043	0.068	0.008	0.006	0.006
07/01/2019	1,040.7	1,022.6	0.601	1,342.88	-72.70	2.054	0.451	91.577	5.189	0.633	0.029	0.046	0.007	0.006	0.007
07/02/2019	1,042.2	1,024.1	0.600	1,345.71	-65.63	1.978	0.391	91.815	5.008	0.692	0.032	0.056	0.009	0.009	0.010
07/03/2019	1,070.5	1,051.9	0.616	1,364.39	-51.06	2.227	0.091	88.745	7.643	1.146	0.049	0.076	0.010	0.007	0.007
07/04/2019	1,067.5	1,048.9	0.614	1,362.64	-53.34	2.224	0.094	88.998	7.523	1.022	0.046	0.067	0.010	0.007	0.007
07/05/2019	1,063.8	1,045.3	0.613	1,358.65	-56.37	2.311	0.144	89.091	7.348	0.977	0.044	0.064	0.009	0.006	0.007
07/06/2019	1,048.3	1,030.1	0.605	1,347.32	-65.35	2.220	0.339	90.637	5.925	0.768	0.036	0.054	0.008	0.006	0.008
07/07/2019	1,057.6	1,039.2	0.609	1,354.75	-58.83	2.126	0.285	89.937	6.609	0.921	0.043	0.060	0.008	0.006	0.007
07/08/2019	1,067.2	1,048.6	0.614	1,362.36	-54.97	2.070	0.201	89.129	7.460	1.000	0.048	0.068	0.010	0.007	0.007
07/09/2019	1,063.4	1,044.9	0.613	1,358.74	-57.08	2.180	0.212	89.251	7.295	0.932	0.044	0.064	0.009	0.007	0.007
07/10/2019	1,044.1	1,025.9	0.602	1,345.82	-66.31	1.954	0.460	91.485	5.271	0.717	0.036	0.053	0.009	0.007	0.009
07/11/2019	1,057.4	1,039.0	0.608	1,355.95	-59.59	1.910	0.352	90.248	6.517	0.847	0.042	0.061	0.009	0.007	0.008
07/12/2019	1,058.5	1,040.0	0.609	1,356.29	-51.91	1.998	0.309	90.161	6.458	0.907	0.048	0.083	0.013	0.012	0.011
07/13/2019	1,058.9	1,040.5	0.610	1,356.20	-57.59	2.213	0.189	89.757	6.843	0.871	0.039	0.063	0.010	0.008	0.008
07/14/2019	1,061.8	1,043.4	0.613	1,356.01	-56.55	2.245	0.270	89.213	7.182	0.945	0.046	0.074	0.010	0.009	0.006
07/15/2019	1,058.4	1,039.9	0.611	1,353.84	-51.18	2.058	0.402	89.970	6.358	1.025	0.054	0.101	0.012	0.010	0.009
07/16/2019	1,063.7	1,045.2	0.612	1,359.91	-48.87	1.863	0.360	89.938	6.553	1.063	0.060	0.130	0.014	0.012	0.008
07/17/2019	1,067.0	1,048.4	0.614	1,361.84	-51.51	2.014	0.260	89.278	7.228	1.038	0.053	0.102	0.011	0.009	0.007
07/18/2019	1,059.3	1,040.8	0.610	1,356.32	-59.27	2.169	0.221	89.735	6.876	0.866	0.041	0.070	0.009	0.007	0.006
07/19/2019	1,061.3	1,042.9	0.613	1,355.93	-57.23	2.188	0.297	89.308	7.135	0.952	0.039	0.060	0.008	0.006	0.007
07/20/2019	1,067.4	1,048.8	0.615	1,360.62	-50.14	2.212	0.211	88.820	7.570	1.030	0.046	0.079	0.012	0.010	0.009
07/21/2019	1,049.6	1,031.4	0.605	1,348.97	-65.66	2.086	0.376	90.659	6.019	0.756	0.030	0.052	0.007	0.006	0.008
07/22/2019	1,058.9	1,040.4	0.611	1,354.29	-61.69	2.210	0.295	89.485	7.020	0.880	0.036	0.057	0.007	0.006	0.005
07/23/2019	1,063.2	1,044.7	0.612	1,359.07	-57.07	2.108	0.233	89.414	7.168	0.945	0.042	0.067	0.009	0.007	0.007
07/24/2019	1,060.0	1,041.6	0.611	1,356.31	-56.46	2.197	0.228	89.586	6.952	0.914	0.038	0.060	0.009	0.007	0.009
07/25/2019	1,070.3	1,051.7	0.618	1,361.15	-48.93	2.125	0.333	88.524	7.657	1.199	0.052	0.083	0.011	0.008	0.007
07/26/2019	1,070.5	1,051.9	0.616	1,364.03	-53.11	2.193	0.133	88.678	7.726	1.133	0.045	0.071	0.008	0.006	0.005
07/27/2019	1,069.7	1,051.1	0.615	1,363.80	-49.50	2.145	0.151	88.893	7.551	1.104	0.049	0.078	0.012	0.009	0.009
07/28/2019	1,065.3	1,046.7	0.614	1,359.52	-56.01	2.329	0.130	88.901	7.534	0.974	0.042	0.068	0.010	0.008	0.006
07/29/2019	1,033.3	1,015.3	0.598	1,336.16	-140.63	2.290	0.430	91.899	4.792	0.507	0.024	0.039	0.006	0.006	0.008
07/30/2019	1,072.9	1,054.2	0.619	1,363.21	-43.60	2.323	0.168	88.380	7.526	1.422	0.056	0.094	0.012	0.009	0.009
07/31/2019	1,047.4	1,029.2	0.605	1,347.06	-68.98	2.060	0.430	90.823	5.877	0.708	0.031	0.052	0.007	0.006	0.006
08/01/2019	1,050.0	1,031.7	0.606	1,348.37	-62.05	1.932	0.523	90.723	5.885	0.815	0.037	0.062	0.008	0.007	0.008
08/02/2019	1,037.3	1,019.2	0.597	1,342.26	-140.40	1.993	0.416	91.955	5.164	0.416	0.016	0.027	0.004	0.003	0.006
08/03/2019	1,035.7	1,017.7	0.599	1,338.24	-140.28	2.175	0.469	91.581	5.343	0.374	0.016	0.028	0.004	0.004	0.006
08/04/2019	1,043.3	1,025.1	0.605	1,340.77	-133.29	2.632	0.273	90.167	6.316	0.547	0.019	0.033	0.005	0.004	0.005
08/05/2019	1,040.0	1,021.9	0.601	1,341.65	-137.53	2.072	0.484	91.315	5.601	0.475	0.016	0.025	0.003	0.003	0.006
08/06/2019	1,059.3	1,040.9	0.611	1,355.04	-52.09	2.124	0.323	89.753	6.664	1.003	0.041	0.065	0.010	0.007	0.011
08/07/2019	1,046.1	1,027.9	0.603	1,346.74	-71.34	2.112	0.373	90.846	5.999	0.594	0.023	0.035	0.006	0.005	0.008
08/08/2019	1,058.0	1,039.6	0.612	1,352.49	-56.13	2.465	0.201	89.321	6.942	0.954	0.035	0.058	0.009	0.007	0.009
08/09/2019	1,038.1	1,020.0	0.601	1,339.62	-138.10	2.184	0.463	91.361	5.466	0.461	0.018	0.030	0.005	0.005	0.008
08/10/2019	1,057.5	1,039.1	0.608	1,355.65	-54.82	1.970	0.331	90.327	6.227	1.015	0.039	0.064	0.009	0.007	0.010

Gas Quality Reports

LS145 - So. Glavin at Ottawa X-Over

5/17/2019 - 8/17/2019

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%)
08/11/2019	1,063.2	1,044.7	0.614	1,357.04	-51.47	2.312	0.211	89.191	7.020	1.134	0.040	0.068	0.009	0.007	0.009
08/12/2019	1,041.9	1,023.7	0.602	1,342.94	-136.04	2.056	0.484	91.158	5.730	0.510	0.017	0.030	0.004	0.004	0.007
08/13/2019	1,049.6	1,031.3	0.604	1,350.05	-71.59	1.948	0.407	90.699	6.269	0.602	0.021	0.036	0.005	0.005	0.007
08/14/2019	1,049.7	1,031.4	0.606	1,348.61	-67.69	2.177	0.340	90.423	6.295	0.669	0.028	0.048	0.007	0.006	0.007
08/15/2019	1,064.9	1,046.4	0.615	1,358.01	-45.43	2.334	0.197	89.137	6.930	1.215	0.057	0.094	0.014	0.010	0.012

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 = 48163