

Gas Quality Reports

LS190 - KC 26" at Ottawa X-Over

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	1,041.8	1,041.8	0.598	1,346.74	-137.60	1.913	0.367	91.735	5.462	0.450	0.022	0.033	0.006	0.005	0.007
05/14/2020	1,039.5	1,039.5	0.596	1,346.74	-139.79	1.828	0.350	92.240	5.088	0.422	0.021	0.032	0.006	0.005	0.008
05/15/2020	1,036.2	1,036.2	0.599	1,339.35	-139.67	2.253	0.372	91.651	5.206	0.451	0.019	0.032	0.005	0.005	0.006
05/16/2020	1,050.2	1,050.2	0.605	1,350.33	-71.32	1.886	0.453	90.687	6.275	0.614	0.026	0.042	0.006	0.005	0.006
05/17/2020	1,058.6	1,058.6	0.608	1,357.65	-71.26	1.644	0.471	90.160	6.971	0.681	0.024	0.036	0.005	0.004	0.004
05/18/2020	1,053.4	1,053.4	0.605	1,354.53	-130.28	1.691	0.450	90.713	6.448	0.621	0.025	0.038	0.005	0.004	0.004
05/19/2020	1,055.4	1,055.4	0.607	1,354.90	-128.98	1.793	0.426	90.236	6.850	0.645	0.019	0.023	0.003	0.002	0.004
05/20/2020	1,046.9	1,046.9	0.601	1,349.86	-134.73	1.963	0.321	91.047	6.121	0.505	0.015	0.019	0.003	0.002	0.004
05/21/2020	1,047.9	1,047.9	0.602	1,350.90	-134.02	1.903	0.336	91.081	6.082	0.548	0.017	0.023	0.003	0.002	0.004
05/22/2020	1,045.1	1,045.1	0.600	1,348.97	-135.75	1.966	0.312	91.317	5.844	0.511	0.016	0.022	0.004	0.003	0.005
05/23/2020	1,042.8	1,042.8	0.598	1,348.37	-137.52	1.955	0.281	91.668	5.576	0.470	0.016	0.021	0.004	0.003	0.006
05/24/2020	1,037.7	1,037.7	0.595	1,345.08	-141.08	1.970	0.290	92.218	5.071	0.402	0.015	0.020	0.004	0.003	0.007
05/25/2020	1,047.9	1,047.9	0.600	1,353.19	-134.78	1.760	0.303	91.516	5.824	0.531	0.024	0.028	0.005	0.004	0.006
05/26/2020	1,054.3	1,054.3	0.605	1,355.14	-72.96	1.850	0.339	90.430	6.740	0.572	0.021	0.031	0.006	0.005	0.006
05/27/2020	1,050.8	1,050.8	0.601	1,355.71	-133.42	1.701	0.296	91.217	6.232	0.508	0.016	0.020	0.004	0.002	0.005
05/28/2020	1,051.4	1,051.4	0.602	1,355.52	-132.86	1.725	0.310	91.050	6.360	0.507	0.016	0.021	0.003	0.002	0.005
05/29/2020	1,048.2	1,048.2	0.599	1,354.44	-135.31	1.770	0.238	91.507	5.960	0.476	0.016	0.020	0.004	0.003	0.005
05/30/2020	1,035.3	1,035.3	0.594	1,342.81	-142.59	1.966	0.340	92.409	4.852	0.384	0.015	0.020	0.004	0.003	0.006
05/31/2020	1,041.0	1,041.0	0.597	1,347.20	-138.78	2.022	0.244	91.788	5.471	0.429	0.014	0.018	0.004	0.003	0.006
06/01/2020	1,047.6	1,047.6	0.598	1,354.51	-135.13	1.805	0.194	91.724	5.656	0.550	0.022	0.032	0.006	0.004	0.007
06/02/2020	1,047.2	1,047.2	0.596	1,356.23	-74.40	1.670	0.175	92.156	5.375	0.540	0.025	0.037	0.008	0.006	0.008
06/03/2020	1,018.6	1,018.6	0.589	1,327.50	-153.16	2.311	0.420	93.513	3.431	0.264	0.014	0.026	0.006	0.006	0.009
06/04/2020	1,024.9	1,024.9	0.590	1,334.64	-149.10	2.218	0.290	93.291	3.819	0.303	0.022	0.032	0.008	0.007	0.010
06/05/2020	1,025.3	1,025.3	0.591	1,333.90	-78.23	2.248	0.324	93.170	3.828	0.327	0.027	0.043	0.011	0.009	0.012
06/06/2020	1,025.0	1,025.0	0.592	1,332.20	-148.30	2.224	0.424	92.923	4.057	0.306	0.016	0.028	0.007	0.006	0.009
06/07/2020	1,025.2	1,025.2	0.590	1,334.35	-149.05	2.169	0.351	93.163	3.961	0.296	0.016	0.024	0.005	0.005	0.009
06/08/2020	1,027.5	1,027.5	0.590	1,337.42	-148.05	2.042	0.339	93.221	4.013	0.321	0.019	0.026	0.006	0.005	0.009
06/09/2020	1,027.2	1,027.2	0.590	1,337.18	-148.43	2.046	0.338	93.252	3.979	0.324	0.018	0.026	0.006	0.004	0.007
06/10/2020	1,023.8	1,023.8	0.590	1,332.75	-150.07	2.159	0.399	93.264	3.813	0.307	0.016	0.024	0.005	0.005	0.007
06/11/2020	1,026.7	1,026.7	0.590	1,336.47	-148.32	2.108	0.322	93.226	3.942	0.335	0.020	0.027	0.006	0.005	0.008
06/12/2020	1,027.0	1,027.0	0.591	1,336.27	-147.99	2.114	0.336	93.158	3.977	0.352	0.019	0.026	0.005	0.004	0.008
06/13/2020	1,025.9	1,025.9	0.591	1,334.81	-148.77	2.116	0.383	93.118	4.017	0.316	0.014	0.020	0.005	0.004	0.008
06/14/2020	1,041.6	1,041.6	0.598	1,346.82	-137.90	1.967	0.321	91.738	5.429	0.490	0.019	0.025	0.004	0.002	0.006
06/15/2020	1,038.8	1,038.8	0.597	1,344.57	-139.75	1.964	0.355	92.010	5.158	0.454	0.019	0.027	0.005	0.003	0.005
06/16/2020	1,042.8	1,042.8	0.598	1,348.32	-137.16	1.800	0.384	91.914	5.312	0.506	0.026	0.039	0.007	0.006	0.007
06/17/2020	1,026.9	1,026.9	0.592	1,334.44	-147.51	2.048	0.479	92.974	4.101	0.334	0.017	0.028	0.006	0.005	0.008
06/18/2020	1,043.6	1,043.6	0.600	1,347.36	-72.66	1.815	0.452	91.659	5.461	0.514	0.027	0.047	0.009	0.008	0.008
06/19/2020	1,040.3	1,040.3	0.597	1,346.78	-70.62	1.975	0.273	92.210	4.863	0.568	0.031	0.053	0.010	0.009	0.009
06/20/2020	1,028.5	1,028.5	0.603	1,324.61	-57.32	3.400	0.186	90.911	4.627	0.705	0.045	0.084	0.015	0.015	0.012
06/21/2020	1,036.5	1,036.5	0.593	1,345.71	-68.38	2.001	0.195	92.818	4.332	0.535	0.033	0.055	0.011	0.009	0.011
06/22/2020	1,026.5	1,026.5	0.591	1,335.57	-147.45	2.225	0.287	93.162	3.848	0.397	0.022	0.038	0.007	0.007	0.008
06/23/2020	1,017.7	1,017.7	0.589	1,326.52	-153.06	2.319	0.439	93.674	3.167	0.309	0.022	0.042	0.008	0.008	0.009
06/24/2020	1,019.7	1,019.7	0.586	1,332.45	-154.92	2.089	0.332	94.033	3.265	0.225	0.014	0.023	0.005	0.005	0.009

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5/13/2020 - 8/13/2020

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06/25/2020	1,011.3	1,011.3	0.585	1,322.04	-160.40	2.344	0.464	94.140	2.854	0.157	0.008	0.016	0.004	0.004	0.009
06/26/2020	1,014.4	1,014.4	0.586	1,325.15	-158.41	2.361	0.383	93.825	3.271	0.130	0.006	0.012	0.003	0.003	0.007
06/27/2020	1,020.4	1,020.4	0.586	1,333.31	-154.46	2.168	0.254	93.948	3.345	0.228	0.015	0.024	0.005	0.005	0.008
06/28/2020	1,015.4	1,015.4	0.587	1,325.52	-156.44	2.411	0.361	93.767	3.194	0.214	0.012	0.023	0.005	0.005	0.008
06/29/2020	1,017.6	1,017.6	0.587	1,328.61	-155.68	2.237	0.377	93.838	3.282	0.217	0.012	0.020	0.005	0.004	0.008
06/30/2020	1,013.4	1,013.4	0.585	1,325.35	-159.99	2.162	0.469	94.250	2.936	0.148	0.007	0.013	0.003	0.003	0.008
07/01/2020	1,017.9	1,017.9	0.586	1,329.27	-155.61	2.224	0.357	93.904	3.212	0.259	0.012	0.018	0.004	0.003	0.007
07/02/2020	1,013.1	1,013.1	0.585	1,325.06	-160.02	2.178	0.465	94.291	2.859	0.167	0.009	0.016	0.004	0.003	0.008
07/03/2020	1,013.6	1,013.6	0.585	1,324.86	-158.67	2.255	0.443	94.139	2.925	0.185	0.012	0.021	0.005	0.005	0.009
07/04/2020	1,019.3	1,019.3	0.586	1,331.19	-154.26	2.217	0.301	93.968	3.136	0.317	0.017	0.026	0.005	0.004	0.008
07/05/2020	1,013.8	1,013.8	0.584	1,326.00	-159.18	2.218	0.409	94.271	2.878	0.174	0.011	0.020	0.005	0.005	0.009
07/06/2020	1,012.2	1,012.2	0.585	1,323.95	-159.55	2.284	0.428	94.324	2.713	0.183	0.016	0.028	0.008	0.007	0.010
07/07/2020	1,021.5	1,021.5	0.587	1,333.48	-152.39	2.066	0.346	93.934	3.286	0.295	0.018	0.029	0.007	0.006	0.012
07/08/2020	1,011.0	1,011.0	0.587	1,319.46	-158.49	2.668	0.383	93.679	3.011	0.211	0.012	0.020	0.004	0.004	0.009
07/09/2020	1,015.6	1,015.6	0.588	1,325.03	-155.78	2.494	0.341	93.600	3.282	0.231	0.013	0.023	0.005	0.005	0.007
07/10/2020	1,020.0	1,020.0	0.589	1,329.39	-152.54	2.257	0.396	93.545	3.432	0.313	0.016	0.024	0.005	0.004	0.008
07/11/2020	1,021.0	1,021.0	0.588	1,330.99	-151.85	2.289	0.320	93.542	3.451	0.338	0.017	0.026	0.005	0.004	0.007
07/12/2020	1,022.0	1,022.0	0.587	1,333.81	-151.83	2.195	0.260	93.816	3.293	0.374	0.018	0.027	0.005	0.004	0.007
07/13/2020	1,011.8	1,011.8	0.587	1,320.60	-158.03	2.561	0.417	93.775	2.951	0.243	0.013	0.022	0.005	0.004	0.008
07/14/2020	1,015.2	1,015.2	0.587	1,325.25	-156.43	2.383	0.388	93.841	3.059	0.282	0.012	0.020	0.004	0.003	0.007
07/15/2020	1,017.2	1,017.2	0.587	1,328.17	-155.93	2.241	0.384	93.894	3.181	0.255	0.012	0.019	0.004	0.003	0.007
07/16/2020	1,019.0	1,019.0	0.587	1,330.30	-154.86	2.089	0.425	93.960	3.199	0.275	0.014	0.022	0.005	0.004	0.008
07/17/2020	1,027.0	1,027.0	0.590	1,336.52	-148.01	2.017	0.389	93.288	3.852	0.393	0.017	0.027	0.005	0.004	0.008
07/18/2020	1,025.6	1,025.6	0.592	1,332.80	-147.74	2.244	0.399	92.915	3.981	0.403	0.016	0.027	0.004	0.004	0.006
07/19/2020	1,016.3	1,016.3	0.591	1,321.84	-152.87	2.659	0.432	92.968	3.595	0.296	0.013	0.022	0.004	0.004	0.006
07/20/2020	1,012.0	1,012.0	0.587	1,320.91	-157.94	2.522	0.433	93.829	2.892	0.273	0.013	0.022	0.004	0.004	0.008
07/21/2020	1,017.3	1,017.3	0.587	1,327.36	-155.11	2.240	0.433	93.826	3.151	0.297	0.014	0.023	0.005	0.004	0.007
07/22/2020	1,012.1	1,012.1	0.586	1,322.21	-159.25	2.273	0.526	94.136	2.796	0.219	0.012	0.020	0.005	0.004	0.009
07/23/2020	1,017.9	1,017.9	0.588	1,327.80	-154.92	2.211	0.448	93.736	3.290	0.271	0.011	0.018	0.004	0.003	0.008
07/24/2020	1,024.8	1,024.8	0.592	1,332.13	-148.27	2.365	0.329	92.878	3.999	0.376	0.015	0.023	0.004	0.003	0.007
07/25/2020	1,028.4	1,028.4	0.592	1,336.33	-146.08	2.118	0.375	93.003	3.968	0.466	0.021	0.032	0.005	0.004	0.008
07/26/2020	1,022.9	1,022.9	0.591	1,330.13	-149.34	2.263	0.446	93.131	3.695	0.404	0.018	0.028	0.005	0.004	0.007
07/27/2020	1,019.0	1,019.0	0.592	1,324.69	-150.81	2.496	0.466	93.051	3.528	0.394	0.019	0.030	0.005	0.004	0.007
07/28/2020	1,003.6	1,003.6	0.589	1,307.88	-161.28	2.939	0.606	93.557	2.590	0.245	0.016	0.028	0.006	0.006	0.009
07/29/2020	1,029.6	1,029.6	0.594	1,335.88	-144.38	2.148	0.419	92.724	4.125	0.507	0.022	0.035	0.006	0.005	0.008
07/30/2020	1,024.5	1,024.5	0.593	1,330.08	-146.92	2.488	0.353	92.699	3.920	0.468	0.022	0.034	0.006	0.005	0.006
07/31/2020	1,007.5	1,007.5	0.587	1,314.50	-160.06	2.551	0.619	93.990	2.465	0.311	0.017	0.028	0.005	0.005	0.009
08/01/2020	1,009.2	1,009.2	0.589	1,315.08	-157.99	2.816	0.468	93.447	2.946	0.267	0.014	0.023	0.004	0.004	0.010
08/02/2020	1,021.5	1,021.5	0.590	1,329.94	-150.30	2.435	0.299	93.275	3.510	0.419	0.020	0.029	0.005	0.004	0.006
08/03/2020	1,007.7	1,007.7	0.584	1,318.26	-162.38	2.395	0.522	94.463	2.321	0.242	0.015	0.025	0.005	0.005	0.008
08/04/2020	1,009.3	1,009.3	0.585	1,319.65	-161.17	2.382	0.507	94.284	2.553	0.223	0.012	0.021	0.004	0.004	0.009
08/05/2020	1,012.2	1,012.2	0.585	1,323.68	-159.85	2.172	0.515	94.398	2.632	0.230	0.013	0.022	0.005	0.004	0.009
08/06/2020	1,025.3	1,025.3	0.593	1,331.65	-147.11	2.359	0.376	92.791	3.981	0.429	0.019	0.028	0.005	0.004	0.008

TSP Name: Southern Star Central Gas Pipeline, Inc.

CSI048

TSP: 007906233

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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	1,072.3	1,072.3	0.620	1,361.83	26.92	2.123	0.346	91.257	4.340	0.639	0.148	0.034	0.075	1.028	0.011
08/08/2020	1,035.3	1,035.3	0.594	1,343.29	-79.32	2.023	0.275	92.665	4.417	0.538	0.025	0.036	0.007	0.005	0.010
08/09/2020	1,039.9	1,039.9	0.596	1,347.27	-139.23	2.056	0.181	92.114	5.097	0.487	0.020	0.028	0.006	0.004	0.008
08/10/2020	1,032.2	1,032.2	0.594	1,338.96	-142.85	2.227	0.282	92.483	4.452	0.487	0.020	0.031	0.005	0.004	0.009
08/11/2020	1,020.6	1,020.6	0.593	1,325.65	-149.27	2.534	0.440	92.846	3.693	0.421	0.019	0.029	0.005	0.004	0.008

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 = 48161