

## Gas Quality Reports

LS115 - Glavin to Kansas City

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	1,060.2	1,041.8	0.613	1,354.37	-41.99	1.975	0.486	89.954	6.222	1.116	0.068	0.127	0.020	0.017	0.014
05/18/2019	1,069.7	1,051.1	0.618	1,361.21	-40.34	1.764	0.544	89.299	6.796	1.347	0.074	0.132	0.018	0.014	0.011
05/19/2019	1,086.5	1,067.6	0.629	1,370.41	-30.33	1.583	0.681	87.727	7.978	1.706	0.096	0.175	0.023	0.019	0.012
05/20/2019	1,075.8	1,057.1	0.632	1,352.90	-27.27	2.549	0.701	86.851	7.902	1.633	0.101	0.194	0.029	0.026	0.014
05/21/2019	1,073.5	1,054.8	0.632	1,350.14	-21.08	2.694	0.688	86.745	8.039	1.446	0.098	0.196	0.034	0.033	0.026
05/22/2019	1,066.7	1,048.2	0.620	1,354.73	-43.29	2.247	0.498	88.317	7.671	1.054	0.060	0.109	0.017	0.015	0.011
05/23/2019	1,058.4	1,040.0	0.613	1,352.16	-53.50	2.337	0.317	89.327	6.950	0.920	0.044	0.075	0.011	0.009	0.009
05/24/2019	1,051.1	1,032.8	0.608	1,347.69	-62.87	2.547	0.191	89.854	6.528	0.773	0.032	0.054	0.008	0.006	0.007
05/25/2019	1,058.7	1,040.3	0.613	1,352.23	-47.12	2.444	0.251	89.329	6.832	0.958	0.051	0.094	0.016	0.014	0.013
05/26/2019	1,066.5	1,048.0	0.620	1,355.03	-39.43	2.435	0.352	88.407	7.408	1.154	0.067	0.126	0.020	0.018	0.014
05/27/2019	1,071.4	1,052.8	0.622	1,358.45	-38.12	2.142	0.507	88.225	7.602	1.266	0.073	0.135	0.020	0.017	0.012
05/28/2019	1,070.3	1,051.7	0.622	1,356.86	-39.99	2.226	0.507	88.107	7.691	1.227	0.068	0.129	0.018	0.016	0.011
05/29/2019	1,066.0	1,047.5	0.619	1,355.22	-44.89	2.267	0.433	88.564	7.400	1.130	0.058	0.109	0.015	0.013	0.010
05/30/2019	1,064.8	1,046.2	0.619	1,353.36	-46.34	2.358	0.439	88.456	7.446	1.099	0.058	0.107	0.015	0.013	0.009
05/31/2019	1,070.4	1,051.8	0.624	1,355.40	-42.89	2.295	0.547	87.874	7.749	1.304	0.070	0.125	0.015	0.013	0.007
06/01/2019	1,065.0	1,046.5	0.618	1,354.61	-48.52	2.204	0.479	88.726	7.238	1.159	0.059	0.106	0.013	0.010	0.007
06/02/2019	1,062.3	1,043.8	0.617	1,352.45	-50.59	2.340	0.423	88.794	7.168	1.099	0.054	0.094	0.012	0.009	0.007
06/03/2019	1,060.7	1,042.2	0.618	1,349.48	-50.69	2.472	0.451	88.640	7.149	1.119	0.053	0.090	0.011	0.009	0.007
06/04/2019	1,067.3	1,048.7	0.621	1,354.15	-46.18	2.448	0.417	88.157	7.461	1.326	0.059	0.104	0.011	0.009	0.007
06/05/2019	1,057.2	1,038.8	0.611	1,352.83	-51.24	2.198	0.327	89.979	6.291	1.006	0.061	0.100	0.016	0.013	0.009
06/06/2019	1,073.0	1,054.3	0.617	1,365.84	-39.32	2.091	0.175	89.007	7.074	1.420	0.078	0.111	0.018	0.013	0.013
06/07/2019	1,071.7	1,053.1	0.615	1,366.63	-37.25	1.916	0.204	89.599	6.532	1.530	0.072	0.103	0.016	0.010	0.017
06/08/2019	1,057.9	1,039.5	0.609	1,356.14	-51.28	2.208	0.160	90.193	6.238	1.057	0.045	0.068	0.011	0.007	0.012
06/09/2019	1,050.6	1,032.3	0.604	1,351.45	-55.22	2.039	0.300	91.022	5.629	0.870	0.041	0.066	0.012	0.009	0.012
06/10/2019	1,056.7	1,038.3	0.608	1,354.69	-54.17	2.273	0.159	90.110	6.331	0.994	0.041	0.063	0.010	0.006	0.011
06/11/2019	1,064.2	1,045.7	0.613	1,358.83	-37.16	2.089	0.289	89.569	6.724	1.126	0.057	0.094	0.018	0.013	0.022
06/12/2019	1,046.3	1,028.1	0.607	1,342.99	-57.73	2.582	0.279	90.148	6.184	0.686	0.032	0.057	0.011	0.009	0.012
06/13/2019	1,050.5	1,032.2	0.609	1,345.78	-60.86	2.396	0.379	89.937	6.341	0.813	0.040	0.070	0.010	0.008	0.007
06/14/2019	1,056.9	1,038.5	0.618	1,344.72	-52.25	2.730	0.428	88.585	6.977	1.099	0.056	0.098	0.011	0.010	0.005
06/15/2019	1,065.0	1,046.5	0.620	1,352.89	-46.99	2.332	0.491	88.442	7.348	1.184	0.062	0.108	0.014	0.011	0.007
06/16/2019	1,066.3	1,047.7	0.619	1,355.74	-43.10	2.326	0.374	88.610	7.261	1.242	0.056	0.095	0.014	0.011	0.012
06/17/2019	1,072.1	1,053.5	0.622	1,358.96	-41.92	2.189	0.471	88.079	7.710	1.336	0.065	0.113	0.015	0.012	0.009
06/18/2019	1,058.9	1,040.5	0.615	1,349.87	-47.57	2.231	0.529	89.281	6.662	1.113	0.055	0.092	0.014	0.011	0.011
06/19/2019	1,062.7	1,044.2	0.617	1,353.16	-46.57	2.233	0.466	88.956	7.019	1.146	0.054	0.090	0.013	0.011	0.011
06/20/2019	1,040.2	1,022.1	0.602	1,340.14	-62.78	2.343	0.396	91.226	5.210	0.710	0.033	0.054	0.009	0.007	0.011
06/21/2019	1,063.0	1,044.5	0.616	1,354.96	-48.92	2.242	0.368	89.065	7.031	1.131	0.051	0.081	0.011	0.008	0.010
06/22/2019	1,071.6	1,053.0	0.620	1,360.69	-45.59	2.286	0.295	88.224	7.692	1.332	0.054	0.090	0.011	0.009	0.008
06/23/2019	1,066.8	1,048.2	0.618	1,357.01	-45.64	2.280	0.350	88.693	7.238	1.259	0.056	0.092	0.013	0.010	0.010
06/24/2019	1,066.8	1,048.2	0.618	1,357.01	-45.64	2.280	0.350	88.693	7.238	1.259	0.056	0.092	0.013	0.010	0.010
06/25/2019	1,052.8	1,034.5	0.606	1,352.13	-59.52	1.924	0.409	90.746	5.887	0.906	0.040	0.065	0.009	0.007	0.008
06/26/2019	1,045.0	1,026.8	0.603	1,346.12	-62.80	2.004	0.440	91.312	5.390	0.744	0.033	0.053	0.008	0.006	0.010
06/27/2019	1,063.6	1,045.1	0.613	1,358.87	-55.76	2.170	0.217	89.257	7.260	0.976	0.039	0.059	0.008	0.006	0.008
06/28/2019	1,049.6	1,031.3	0.607	1,347.19	-60.37	2.519	0.190	90.131	6.269	0.782	0.033	0.052	0.008	0.006	0.010

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06/29/2019	1,050.1	1,031.9	0.608	1,346.24	-58.85	2.527	0.255	89.964	6.292	0.849	0.034	0.053	0.008	0.006	0.010
06/30/2019	1,056.0	1,037.6	0.611	1,351.29	-54.53	2.204	0.373	89.756	6.653	0.880	0.041	0.065	0.009	0.007	0.011
07/01/2019	1,052.3	1,033.9	0.609	1,348.46	-60.68	2.200	0.414	90.093	6.314	0.862	0.036	0.058	0.008	0.006	0.008
07/02/2019	1,045.5	1,027.3	0.603	1,346.03	-65.78	2.075	0.416	91.095	5.595	0.711	0.032	0.052	0.008	0.007	0.009
07/03/2019	1,052.2	1,033.9	0.607	1,350.69	-58.87	2.264	0.248	90.269	6.314	0.787	0.036	0.057	0.008	0.006	0.011
07/04/2019	1,070.7	1,052.1	0.615	1,364.97	-49.11	2.177	0.096	88.787	7.706	1.072	0.052	0.081	0.011	0.008	0.009
07/05/2019	1,066.2	1,047.6	0.613	1,361.23	-52.44	2.282	0.093	88.999	7.503	0.988	0.044	0.064	0.010	0.007	0.009
07/06/2019	1,064.6	1,046.1	0.614	1,358.77	-53.33	2.319	0.156	88.988	7.400	1.003	0.045	0.065	0.009	0.006	0.008
07/07/2019	1,048.9	1,030.7	0.606	1,347.48	-61.30	2.232	0.340	90.546	5.989	0.779	0.036	0.054	0.008	0.006	0.009
07/08/2019	1,057.9	1,039.5	0.610	1,354.62	-56.20	2.152	0.284	89.853	6.661	0.921	0.043	0.061	0.009	0.006	0.010
07/09/2019	1,064.7	1,046.1	0.613	1,359.84	-53.54	2.148	0.211	89.222	7.319	0.955	0.048	0.070	0.011	0.008	0.008
07/10/2019	1,064.2	1,045.7	0.614	1,358.22	-55.23	2.287	0.196	88.967	7.460	0.959	0.044	0.064	0.009	0.007	0.007
07/11/2019	1,048.2	1,030.0	0.605	1,347.94	-59.27	1.985	0.455	90.985	5.655	0.795	0.040	0.058	0.009	0.007	0.011
07/12/2019	1,058.8	1,040.4	0.609	1,356.80	-57.31	2.037	0.266	89.966	6.766	0.843	0.040	0.057	0.009	0.006	0.010
07/13/2019	1,063.9	1,045.4	0.612	1,359.54	-50.34	2.133	0.211	89.437	7.056	1.008	0.048	0.075	0.012	0.009	0.011
07/14/2019	1,058.5	1,040.1	0.610	1,355.59	-56.19	2.235	0.194	89.737	6.853	0.855	0.038	0.061	0.010	0.008	0.010
07/15/2019	1,057.7	1,039.3	0.611	1,352.85	-56.30	2.192	0.349	89.649	6.773	0.894	0.045	0.071	0.011	0.008	0.008
07/16/2019	1,064.3	1,045.8	0.614	1,358.09	-44.98	2.044	0.365	89.467	6.809	1.078	0.065	0.133	0.015	0.012	0.011
07/17/2019	1,058.0	1,039.6	0.609	1,355.68	-52.31	1.928	0.374	90.250	6.365	0.899	0.050	0.101	0.012	0.010	0.010
07/18/2019	1,053.3	1,035.0	0.607	1,351.69	-58.80	2.075	0.349	90.414	6.205	0.812	0.041	0.078	0.009	0.007	0.009
07/19/2019	1,028.3	1,010.4	0.594	1,334.41	-146.55	1.967	0.578	92.701	4.394	0.311	0.013	0.020	0.004	0.003	0.009
07/20/2019	1,053.5	1,035.2	0.608	1,351.42	-61.62	2.035	0.398	90.257	6.419	0.794	0.031	0.047	0.007	0.005	0.009
07/21/2019	1,063.8	1,045.3	0.613	1,358.11	-51.03	2.218	0.232	89.144	7.306	0.952	0.043	0.073	0.012	0.010	0.010
07/22/2019	1,026.2	1,008.4	0.592	1,334.03	-148.91	1.879	0.592	93.064	4.172	0.249	0.010	0.017	0.003	0.003	0.009
07/23/2019	1,022.5	1,004.7	0.588	1,333.00	-153.30	1.748	0.615	93.699	3.738	0.171	0.007	0.010	0.002	0.002	0.008
07/24/2019	1,045.7	1,027.6	0.603	1,346.90	-67.26	2.085	0.369	91.032	5.806	0.615	0.028	0.044	0.007	0.005	0.010
07/25/2019	1,047.0	1,028.8	0.607	1,344.29	-65.36	2.133	0.523	90.478	6.081	0.686	0.030	0.048	0.007	0.005	0.009
07/26/2019	1,066.6	1,048.0	0.616	1,359.32	-51.67	2.266	0.223	88.773	7.534	1.055	0.048	0.075	0.010	0.007	0.008
07/27/2019	1,073.3	1,054.7	0.617	1,366.19	-47.03	2.038	0.203	88.642	7.771	1.172	0.056	0.087	0.012	0.009	0.009
07/28/2019	1,065.8	1,047.3	0.615	1,359.51	-48.21	2.300	0.165	88.963	7.356	1.058	0.049	0.075	0.012	0.009	0.011
07/29/2019	1,043.3	1,025.2	0.601	1,345.32	-71.51	2.059	0.397	91.293	5.574	0.593	0.025	0.039	0.006	0.005	0.008
07/30/2019	1,011.8	994.2	0.586	1,321.99	-160.18	2.075	0.658	94.268	2.794	0.160	0.009	0.015	0.004	0.003	0.013
07/31/2019	1,048.2	1,030.0	0.604	1,348.39	-64.92	2.081	0.367	90.830	5.914	0.705	0.030	0.051	0.007	0.005	0.010
08/01/2019	1,037.3	1,019.2	0.598	1,340.83	-139.45	1.822	0.607	92.026	4.984	0.480	0.023	0.039	0.006	0.005	0.008
08/02/2019	1,035.5	1,017.5	0.595	1,342.62	-142.17	1.662	0.557	92.682	4.588	0.443	0.019	0.032	0.005	0.004	0.008
08/03/2019	1,032.4	1,014.4	0.592	1,341.26	-145.66	1.613	0.566	93.030	4.415	0.322	0.014	0.025	0.004	0.003	0.007
08/04/2019	1,032.4	1,014.4	0.597	1,336.68	-143.27	1.989	0.571	92.117	4.974	0.300	0.013	0.021	0.004	0.003	0.008
08/05/2019	1,032.7	1,014.7	0.596	1,337.54	-144.02	1.881	0.605	92.188	5.025	0.266	0.009	0.014	0.002	0.002	0.008
08/06/2019	1,034.3	1,016.3	0.598	1,337.84	-142.55	1.988	0.570	91.756	5.423	0.240	0.006	0.007	0.002	0.001	0.007
08/07/2019	1,032.1	1,014.1	0.597	1,336.29	-144.35	1.995	0.580	91.993	5.181	0.228	0.006	0.006	0.002	0.002	0.007
08/08/2019	1,038.8	1,020.7	0.600	1,340.57	-138.28	2.128	0.469	91.310	5.638	0.405	0.014	0.021	0.004	0.003	0.008
08/09/2019	1,035.6	1,017.5	0.599	1,337.91	-140.50	2.111	0.525	91.571	5.396	0.352	0.012	0.018	0.003	0.003	0.008
08/10/2019	1,033.0	1,015.0	0.594	1,340.68	-144.85	1.699	0.559	92.760	4.616	0.317	0.013	0.022	0.004	0.003	0.007

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08/11/2019	1,031.9	1,014.0	0.593	1,340.54	-146.07	1.677	0.549	92.916	4.534	0.283	0.012	0.017	0.003	0.003	0.007
08/12/2019	1,034.0	1,016.0	0.598	1,337.47	-141.90	2.032	0.552	91.875	5.158	0.342	0.011	0.016	0.003	0.003	0.008
08/13/2019	1,036.1	1,018.0	0.598	1,339.88	-141.49	1.919	0.558	91.765	5.460	0.263	0.008	0.013	0.003	0.003	0.008
08/14/2019	1,042.6	1,024.4	0.601	1,345.30	-137.29	1.885	0.489	91.246	6.000	0.340	0.010	0.017	0.003	0.003	0.008
08/15/2019	1,042.6	1,024.4	0.601	1,345.30	-137.29	1.885	0.489	91.246	6.000	0.340	0.010	0.017	0.003	0.003	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 = 52871