

## Gas Quality Reports

LS235 - On Sugar Creek 16"

11/25/2019 - 2/25/2020

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%)
11/25/2019	1,048.1	1,029.8	0.609	1,342.99	-72.38	2.890	0.134	89.380	6.879	0.636	0.025	0.041	0.006	0.005	0.003
11/26/2019	1,056.5	1,038.2	0.613	1,349.92	-60.84	2.712	0.135	88.987	7.176	0.883	0.032	0.055	0.008	0.006	0.005
11/27/2019	1,052.4	1,034.1	0.610	1,347.83	-69.19	2.702	0.127	89.352	7.013	0.724	0.026	0.041	0.006	0.005	0.004
11/28/2019	1,057.6	1,039.2	0.612	1,352.29	-62.09	2.556	0.138	89.171	7.174	0.861	0.031	0.051	0.007	0.006	0.005
11/29/2019	1,052.1	1,033.8	0.609	1,347.69	-61.13	2.640	0.163	89.546	6.808	0.728	0.035	0.054	0.010	0.007	0.008
11/30/2019	1,054.5	1,036.2	0.612	1,348.33	-60.75	2.780	0.115	89.105	7.058	0.831	0.034	0.057	0.008	0.006	0.006
12/01/2019	1,047.6	1,029.4	0.609	1,342.78	-69.76	2.953	0.089	89.407	6.832	0.634	0.025	0.043	0.006	0.005	0.005
12/02/2019	1,055.3	1,037.0	0.614	1,347.01	-60.95	2.968	0.092	88.698	7.206	0.921	0.035	0.063	0.007	0.006	0.004
12/03/2019	1,066.4	1,047.8	0.617	1,357.35	-49.82	2.377	0.255	88.523	7.605	1.077	0.049	0.087	0.011	0.009	0.008
12/04/2019	1,068.0	1,049.4	0.617	1,359.30	-48.59	2.301	0.246	88.580	7.584	1.101	0.056	0.102	0.012	0.010	0.008
12/05/2019	1,067.5	1,048.9	0.618	1,358.09	-46.06	2.229	0.344	88.660	7.431	1.132	0.064	0.106	0.014	0.010	0.010
12/06/2019	1,069.9	1,051.3	0.618	1,360.44	-43.50	2.234	0.287	88.534	7.550	1.182	0.063	0.114	0.014	0.011	0.011
12/07/2019	1,077.7	1,059.0	0.623	1,365.95	-40.34	2.307	0.179	87.813	8.137	1.292	0.078	0.160	0.014	0.011	0.008
12/08/2019	1,054.1	1,035.8	0.612	1,347.26	-62.10	2.676	0.231	89.006	7.273	0.694	0.036	0.063	0.008	0.007	0.006
12/09/2019	1,054.1	1,035.7	0.610	1,349.46	-65.09	2.247	0.387	89.684	6.830	0.737	0.035	0.061	0.008	0.007	0.005
12/10/2019	1,055.7	1,037.3	0.609	1,352.97	-58.62	2.008	0.400	90.142	6.475	0.845	0.040	0.064	0.010	0.008	0.008
12/11/2019	1,074.0	1,055.3	0.619	1,365.42	-45.54	1.921	0.343	88.522	7.854	1.189	0.053	0.085	0.013	0.010	0.010
12/12/2019	1,062.9	1,044.4	0.612	1,358.29	-56.53	2.322	0.129	89.111	7.434	0.889	0.036	0.056	0.009	0.007	0.008
12/13/2019	1,068.8	1,050.2	0.616	1,361.60	-53.57	2.119	0.263	88.634	7.859	0.996	0.041	0.065	0.009	0.007	0.007
12/14/2019	1,069.7	1,051.1	0.616	1,362.56	-52.49	2.023	0.302	88.661	7.885	0.990	0.043	0.070	0.010	0.008	0.007
12/15/2019	1,067.1	1,048.6	0.616	1,359.96	-56.77	2.177	0.265	88.625	7.883	0.933	0.037	0.060	0.009	0.007	0.006
12/16/2019	1,068.0	1,049.4	0.616	1,360.35	-54.46	2.078	0.336	88.556	8.016	0.883	0.039	0.065	0.010	0.009	0.007
12/17/2019	1,070.2	1,051.6	0.617	1,362.97	-52.84	1.916	0.365	88.698	7.893	0.988	0.044	0.071	0.010	0.008	0.007
12/18/2019	1,059.8	1,041.4	0.610	1,356.99	-58.88	1.880	0.392	89.867	6.933	0.803	0.040	0.061	0.010	0.008	0.008
12/19/2019	1,065.0	1,046.4	0.614	1,358.84	-55.09	2.042	0.347	89.016	7.582	0.882	0.041	0.064	0.010	0.008	0.008
12/20/2019	1,063.3	1,044.8	0.614	1,356.44	-58.78	2.168	0.344	88.865	7.674	0.833	0.037	0.058	0.008	0.007	0.006
12/21/2019	1,060.6	1,042.2	0.611	1,356.57	-60.67	2.153	0.262	89.366	7.337	0.772	0.035	0.053	0.008	0.006	0.007
12/22/2019	1,060.1	1,041.7	0.612	1,354.94	-63.44	2.335	0.218	89.075	7.501	0.775	0.031	0.048	0.007	0.005	0.005
12/23/2019	1,062.4	1,044.0	0.614	1,355.87	-60.24	2.175	0.345	88.910	7.652	0.811	0.034	0.053	0.008	0.006	0.006
12/24/2019	1,064.6	1,046.1	0.615	1,357.27	-57.02	2.142	0.356	88.814	7.657	0.907	0.039	0.063	0.009	0.007	0.006
12/25/2019	1,062.2	1,043.7	0.615	1,354.05	-59.88	2.295	0.360	88.691	7.685	0.856	0.036	0.060	0.008	0.007	0.004
12/26/2019	1,058.5	1,040.0	0.613	1,352.01	-61.37	2.357	0.314	89.101	7.297	0.820	0.036	0.057	0.008	0.006	0.005
12/27/2019	1,066.9	1,048.3	0.615	1,360.04	-55.20	2.147	0.272	88.738	7.774	0.942	0.039	0.064	0.009	0.007	0.007
12/28/2019	1,063.8	1,045.3	0.614	1,358.01	-55.26	2.149	0.285	89.061	7.491	0.886	0.040	0.062	0.010	0.008	0.008
12/29/2019	1,063.4	1,044.9	0.616	1,355.34	-57.04	2.299	0.325	88.650	7.725	0.871	0.039	0.067	0.010	0.008	0.006
12/30/2019	1,064.9	1,046.4	0.616	1,356.47	-55.12	2.228	0.355	88.611	7.761	0.905	0.042	0.071	0.010	0.009	0.006
12/31/2019	1,066.8	1,048.2	0.616	1,359.22	-50.98	2.067	0.365	88.788	7.689	0.936	0.047	0.077	0.012	0.010	0.009
01/01/2020	1,065.1	1,046.6	0.616	1,357.54	-50.94	2.128	0.367	88.845	7.583	0.920	0.047	0.078	0.013	0.010	0.009
01/02/2020	1,056.5	1,038.1	0.612	1,350.12	-65.13	2.600	0.197	88.974	7.374	0.749	0.032	0.056	0.007	0.007	0.004
01/03/2020	1,053.7	1,035.4	0.610	1,349.43	-67.88	2.670	0.100	89.287	7.194	0.650	0.029	0.050	0.008	0.007	0.005
01/04/2020	1,055.8	1,037.5	0.610	1,351.77	-63.55	2.506	0.145	89.350	7.197	0.700	0.031	0.049	0.008	0.007	0.006
01/05/2020	1,065.5	1,047.0	0.615	1,358.59	-51.87	2.195	0.278	88.787	7.694	0.916	0.041	0.061	0.011	0.008	0.010
01/06/2020	1,060.5	1,042.1	0.613	1,354.81	-66.08	2.451	0.162	88.850	7.681	0.772	0.027	0.042	0.006	0.004	0.004

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01/07/2020	1,062.8	1,044.3	0.613	1,357.64	-59.80	2.273	0.191	89.066	7.481	0.884	0.035	0.052	0.007	0.005	0.006
01/08/2020	1,057.9	1,039.5	0.611	1,353.20	-57.47	2.311	0.259	89.475	6.973	0.859	0.042	0.058	0.009	0.006	0.009
01/09/2020	1,057.8	1,039.4	0.611	1,352.79	-59.77	2.471	0.172	89.307	7.067	0.868	0.040	0.056	0.008	0.005	0.007
01/10/2020	1,052.6	1,034.2	0.609	1,348.54	-71.43	2.709	0.086	89.429	6.955	0.736	0.030	0.045	0.005	0.004	0.002
01/11/2020	1,043.4	1,025.2	0.600	1,346.91	-135.76	2.116	0.272	91.396	5.587	0.547	0.026	0.038	0.006	0.005	0.006
01/12/2020	1,062.0	1,043.5	0.611	1,358.45	-56.82	2.159	0.195	89.496	7.119	0.909	0.040	0.059	0.009	0.006	0.008
01/13/2020	1,060.3	1,041.9	0.611	1,356.15	-53.64	2.253	0.209	89.515	6.952	0.933	0.045	0.066	0.010	0.007	0.010
01/14/2020	1,060.7	1,042.2	0.612	1,356.20	-55.14	2.316	0.176	89.384	7.058	0.939	0.041	0.061	0.009	0.006	0.009
01/15/2020	1,037.2	1,019.2	0.599	1,339.95	-138.93	2.475	0.226	91.321	5.462	0.459	0.018	0.029	0.004	0.003	0.004
01/16/2020	1,034.1	1,016.1	0.596	1,339.06	-141.71	2.105	0.418	92.141	4.846	0.418	0.020	0.035	0.006	0.005	0.006
01/17/2020	1,049.4	1,031.1	0.605	1,348.76	-67.46	2.271	0.260	90.443	6.239	0.692	0.030	0.045	0.007	0.005	0.007
01/18/2020	1,043.5	1,025.4	0.602	1,345.17	-134.87	2.308	0.248	90.977	5.826	0.568	0.023	0.035	0.005	0.004	0.006
01/19/2020	1,044.6	1,026.4	0.602	1,345.95	-70.41	2.177	0.325	91.069	5.716	0.616	0.029	0.047	0.008	0.006	0.007
01/20/2020	1,037.9	1,019.8	0.598	1,341.78	-138.84	2.041	0.430	91.867	5.088	0.490	0.024	0.040	0.007	0.006	0.008
01/21/2020	1,052.6	1,034.3	0.607	1,351.12	-62.82	2.107	0.339	90.351	6.307	0.786	0.034	0.054	0.008	0.006	0.007
01/22/2020	1,060.8	1,042.3	0.613	1,355.42	-60.38	2.305	0.231	89.188	7.252	0.916	0.036	0.055	0.007	0.005	0.005
01/23/2020	1,065.0	1,046.5	0.613	1,359.91	-54.63	2.080	0.263	89.218	7.315	0.995	0.043	0.062	0.010	0.006	0.008
01/24/2020	1,063.2	1,044.7	0.612	1,359.32	-56.88	2.152	0.190	89.380	7.223	0.936	0.039	0.057	0.008	0.006	0.008
01/25/2020	1,055.2	1,036.9	0.607	1,353.95	-62.16	2.096	0.273	90.187	6.544	0.795	0.033	0.051	0.008	0.006	0.008
01/26/2020	1,056.3	1,037.9	0.610	1,352.30	-61.59	2.452	0.165	89.459	7.027	0.797	0.032	0.047	0.007	0.005	0.007
01/27/2020	1,059.4	1,040.9	0.611	1,354.97	-59.40	2.356	0.177	89.290	7.249	0.826	0.033	0.046	0.008	0.005	0.008
01/28/2020	1,051.5	1,033.2	0.609	1,347.17	-66.91	2.704	0.132	89.449	6.931	0.701	0.027	0.038	0.007	0.005	0.007
01/29/2020	1,058.7	1,040.3	0.612	1,353.65	-60.14	2.469	0.155	89.147	7.316	0.817	0.031	0.044	0.007	0.005	0.008
01/30/2020	1,063.9	1,045.4	0.613	1,358.39	-57.76	2.245	0.205	89.027	7.466	0.941	0.038	0.058	0.008	0.006	0.006
01/31/2020	1,060.8	1,042.4	0.612	1,355.99	-59.39	2.291	0.209	89.228	7.309	0.845	0.039	0.058	0.008	0.006	0.007
02/01/2020	1,061.9	1,043.4	0.613	1,356.86	-61.43	2.356	0.153	89.010	7.551	0.825	0.035	0.052	0.007	0.005	0.005
02/02/2020	1,057.6	1,039.2	0.612	1,351.70	-66.90	2.563	0.168	89.011	7.356	0.807	0.033	0.049	0.005	0.004	0.003
02/03/2020	1,060.8	1,042.4	0.614	1,353.72	-59.86	2.407	0.261	88.821	7.566	0.818	0.038	0.066	0.010	0.008	0.005
02/04/2020	1,059.5	1,041.0	0.614	1,352.27	-61.68	2.463	0.262	88.826	7.533	0.801	0.035	0.061	0.008	0.007	0.004
02/05/2020	1,035.2	1,017.2	0.597	1,340.00	-141.01	2.080	0.417	92.077	4.927	0.423	0.021	0.036	0.006	0.006	0.007
02/06/2020	1,049.6	1,031.3	0.605	1,349.12	-65.56	2.198	0.294	90.519	6.216	0.666	0.031	0.052	0.008	0.007	0.008
02/07/2020	1,054.1	1,035.7	0.609	1,350.96	-59.09	2.490	0.144	89.737	6.745	0.755	0.039	0.062	0.011	0.008	0.009
02/08/2020	1,058.9	1,040.4	0.611	1,354.86	-47.90	2.304	0.200	89.669	6.737	0.926	0.051	0.075	0.013	0.010	0.015
02/09/2020	1,064.5	1,046.0	0.614	1,358.70	-53.00	2.382	0.116	88.937	7.433	1.003	0.040	0.064	0.009	0.007	0.009
02/10/2020	1,058.7	1,040.2	0.609	1,356.12	-62.35	2.345	0.098	89.520	7.178	0.759	0.032	0.048	0.008	0.006	0.007
02/11/2020	1,061.5	1,043.0	0.610	1,358.59	-58.48	2.214	0.136	89.486	7.210	0.837	0.037	0.057	0.009	0.007	0.008
02/12/2020	1,055.5	1,037.2	0.608	1,353.56	-62.21	2.383	0.115	89.817	6.820	0.755	0.033	0.054	0.008	0.007	0.007
02/13/2020	1,032.8	1,014.8	0.596	1,337.71	-142.17	2.127	0.434	92.261	4.669	0.425	0.022	0.040	0.007	0.006	0.008
02/14/2020	1,047.9	1,029.7	0.604	1,348.06	-67.07	2.056	0.392	90.900	5.814	0.729	0.035	0.053	0.008	0.006	0.007
02/15/2020	1,065.6	1,047.1	0.617	1,356.32	-53.48	2.229	0.385	88.638	7.496	1.116	0.048	0.069	0.008	0.005	0.006
02/16/2020	1,066.1	1,047.5	0.616	1,358.21	-57.68	2.121	0.365	88.777	7.568	1.047	0.045	0.064	0.007	0.004	0.004
02/17/2020	1,057.5	1,039.1	0.611	1,352.64	-66.40	2.451	0.185	89.293	7.133	0.844	0.034	0.049	0.006	0.004	0.003
02/18/2020	1,059.2	1,040.8	0.612	1,354.26	-62.35	2.375	0.199	89.294	7.120	0.905	0.038	0.055	0.007	0.004	0.004

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11/25/2019 - 2/25/2020

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02/19/2020	1,059.3	1,040.8	0.612	1,354.13	-60.46	2.379	0.205	89.270	7.134	0.900	0.039	0.055	0.007	0.005	0.006
02/20/2020	1,063.4	1,044.9	0.612	1,359.64	-56.22	2.111	0.205	89.475	7.108	0.975	0.043	0.063	0.009	0.006	0.008
02/21/2020	1,047.6	1,029.4	0.603	1,349.06	-63.30	2.152	0.264	91.004	5.765	0.698	0.036	0.056	0.009	0.007	0.009
02/22/2020	1,061.5	1,043.0	0.611	1,358.29	-55.26	2.259	0.123	89.566	6.944	0.979	0.041	0.063	0.009	0.006	0.009
02/23/2020	1,056.6	1,038.2	0.609	1,353.51	-62.91	2.485	0.084	89.520	7.032	0.777	0.035	0.050	0.007	0.005	0.006

**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 = 68423