

Gas Quality Reports

LS495 - Grabham to Welda at Grabham
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	1,038.9	1,020.8	0.597	1,344.51	-141.35	1.765	0.496	91.815	5.681	0.221	0.006	0.009	0.002	0.002	0.002
11/26/2019	1,041.7	1,023.6	0.597	1,348.07	-140.50	1.648	0.466	91.758	5.912	0.200	0.005	0.008	0.001	0.001	0.001
11/27/2019	1,043.6	1,025.4	0.598	1,349.62	-139.25	1.641	0.444	91.600	6.084	0.214	0.004	0.007	0.002	0.002	0.002
11/28/2019	1,042.2	1,024.1	0.597	1,349.04	-140.31	1.636	0.437	91.802	5.888	0.224	0.004	0.007	0.001	0.001	0.001
11/29/2019	1,039.0	1,021.0	0.596	1,345.78	-141.90	1.751	0.439	91.947	5.628	0.220	0.004	0.008	0.001	0.001	0.001
11/30/2019	1,038.0	1,019.9	0.597	1,343.70	-141.88	1.844	0.459	91.839	5.611	0.229	0.005	0.008	0.002	0.002	0.002
12/01/2019	1,043.0	1,024.8	0.597	1,350.13	-140.27	1.590	0.432	91.783	5.993	0.191	0.003	0.006	0.001	0.001	0
12/02/2019	1,043.2	1,025.0	0.598	1,349.46	-139.67	1.655	0.431	91.640	6.050	0.209	0.004	0.007	0.001	0.001	0.001
12/03/2019	1,042.5	1,024.4	0.598	1,347.80	-139.46	1.740	0.446	91.510	6.059	0.231	0.004	0.007	0.001	0.001	0.001
12/04/2019	1,038.0	1,020.0	0.594	1,346.59	-143.08	1.672	0.415	92.329	5.345	0.215	0.007	0.012	0.002	0.002	0.001
12/05/2019	1,035.7	1,017.7	0.593	1,344.53	-144.46	1.684	0.445	92.567	5.055	0.215	0.007	0.015	0.003	0.004	0.004
12/06/2019	1,035.1	1,017.1	0.593	1,344.53	-145.57	1.685	0.427	92.605	5.088	0.179	0.005	0.008	0.002	0.002	0.001
12/07/2019	1,035.6	1,017.6	0.594	1,343.65	-144.45	1.744	0.452	92.378	5.201	0.203	0.006	0.010	0.002	0.002	0.002
12/08/2019	1,035.1	1,017.1	0.595	1,341.47	-143.63	1.926	0.437	92.058	5.343	0.218	0.005	0.008	0.002	0.001	0.002
12/09/2019	1,033.2	1,015.2	0.592	1,342.64	-146.71	1.752	0.425	92.688	4.948	0.175	0.003	0.006	0.001	0.001	0.001
12/10/2019	1,030.9	1,012.9	0.591	1,341.27	-148.15	1.795	0.398	92.980	4.624	0.180	0.006	0.011	0.002	0.002	0.002
12/11/2019	1,033.5	1,015.5	0.593	1,342.05	-145.62	1.777	0.450	92.615	4.915	0.212	0.008	0.014	0.003	0.003	0.003
12/12/2019	1,031.0	1,013.1	0.590	1,341.97	-148.57	1.731	0.406	93.065	4.617	0.163	0.005	0.009	0.002	0.002	0.001
12/13/2019	1,031.9	1,013.9	0.592	1,340.89	-147.17	1.805	0.446	92.683	4.886	0.163	0.004	0.008	0.002	0.002	0.001
12/14/2019	1,031.9	1,013.9	0.593	1,340.10	-146.78	1.850	0.459	92.562	4.938	0.174	0.004	0.008	0.002	0.002	0.001
12/15/2019	1,030.4	1,012.5	0.591	1,340.05	-148.16	1.830	0.429	92.860	4.704	0.156	0.005	0.009	0.002	0.002	0.002
12/16/2019	1,031.7	1,013.7	0.590	1,342.60	-148.02	1.713	0.406	93.022	4.682	0.154	0.005	0.010	0.002	0.002	0.003
12/17/2019	1,033.3	1,015.4	0.591	1,343.67	-146.82	1.707	0.404	92.828	4.882	0.159	0.005	0.009	0.002	0.002	0.003
12/18/2019	1,034.0	1,016.0	0.592	1,344.09	-146.28	1.707	0.401	92.765	4.934	0.171	0.005	0.010	0.002	0.002	0.003
12/19/2019	1,034.0	1,016.0	0.591	1,345.32	-146.76	1.597	0.407	93.020	4.775	0.175	0.006	0.012	0.003	0.003	0.003
12/20/2019	1,034.3	1,016.3	0.592	1,344.84	-146.18	1.634	0.419	92.870	4.872	0.176	0.006	0.012	0.003	0.003	0.003
12/21/2019	1,032.9	1,014.9	0.591	1,343.67	-147.06	1.653	0.425	92.996	4.729	0.167	0.007	0.012	0.004	0.003	0.004
12/22/2019	1,031.6	1,013.6	0.591	1,342.11	-147.84	1.716	0.427	93.001	4.667	0.164	0.006	0.011	0.003	0.003	0.003
12/23/2019	1,030.9	1,012.9	0.590	1,342.01	-148.64	1.702	0.418	93.125	4.580	0.152	0.005	0.009	0.002	0.002	0.003
12/24/2019	1,030.6	1,012.6	0.591	1,340.40	-148.04	1.787	0.441	92.950	4.617	0.178	0.007	0.012	0.003	0.003	0.003
12/25/2019	1,033.5	1,015.5	0.592	1,343.34	-145.94	1.690	0.437	92.865	4.757	0.213	0.009	0.015	0.005	0.004	0.006
12/26/2019	1,031.1	1,013.2	0.590	1,342.58	-148.52	1.669	0.418	93.184	4.542	0.161	0.006	0.010	0.003	0.003	0.004
12/27/2019	1,029.9	1,011.9	0.590	1,341.26	-149.18	1.731	0.409	93.227	4.447	0.159	0.006	0.010	0.003	0.003	0.004
12/28/2019	1,030.7	1,012.7	0.590	1,341.58	-148.33	1.714	0.428	93.151	4.496	0.179	0.007	0.013	0.004	0.003	0.004
12/29/2019	1,032.0	1,014.0	0.590	1,343.03	-147.72	1.663	0.425	93.086	4.629	0.168	0.006	0.012	0.003	0.003	0.004
12/30/2019	1,030.6	1,012.7	0.590	1,342.18	-148.74	1.672	0.421	93.258	4.453	0.165	0.007	0.013	0.004	0.004	0.004
12/31/2019	1,031.3	1,013.4	0.590	1,343.21	-148.31	1.619	0.422	93.305	4.447	0.167	0.008	0.016	0.005	0.005	0.005
01/01/2020	1,025.8	1,007.9	0.587	1,338.84	-152.45	1.714	0.423	93.766	3.917	0.151	0.007	0.012	0.004	0.003	0.004
01/02/2020	1,024.9	1,007.1	0.586	1,338.91	-153.55	1.697	0.402	93.961	3.765	0.148	0.006	0.011	0.003	0.003	0.003
01/03/2020	1,025.5	1,007.7	0.586	1,339.29	-152.95	1.704	0.396	93.885	3.833	0.153	0.006	0.012	0.003	0.003	0.004
01/04/2020	1,025.5	1,007.7	0.587	1,339.01	-152.74	1.735	0.392	93.818	3.877	0.150	0.006	0.012	0.003	0.003	0.004
01/05/2020	1,024.8	1,007.0	0.586	1,338.63	-153.52	1.716	0.403	93.914	3.801	0.142	0.005	0.010	0.003	0.003	0.004
01/06/2020	1,022.6	1,004.8	0.584	1,337.77	-156.08	1.713	0.381	94.236	3.525	0.121	0.005	0.010	0.003	0.003	0.003

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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%)
01/07/2020	1,023.3	1,005.5	0.584	1,338.53	-155.83	1.686	0.379	94.203	3.592	0.121	0.004	0.008	0.002	0.002	0.002
01/08/2020	1,024.5	1,006.7	0.586	1,337.87	-153.39	1.784	0.390	93.829	3.826	0.147	0.005	0.011	0.003	0.003	0.003
01/09/2020	1,027.1	1,009.2	0.589	1,338.50	-150.62	1.804	0.424	93.418	4.135	0.188	0.007	0.013	0.003	0.003	0.004
01/10/2020	1,024.5	1,006.7	0.585	1,338.94	-154.25	1.709	0.381	94.049	3.669	0.164	0.007	0.012	0.003	0.003	0.003
01/11/2020	1,026.9	1,009.1	0.587	1,340.84	-152.22	1.653	0.391	93.820	3.963	0.146	0.006	0.012	0.003	0.003	0.003
01/12/2020	1,027.9	1,010.0	0.587	1,341.10	-151.06	1.678	0.391	93.674	4.054	0.169	0.008	0.017	0.004	0.004	0.003
01/13/2020	1,025.0	1,007.1	0.586	1,339.22	-153.20	1.711	0.379	94.011	3.705	0.155	0.008	0.017	0.005	0.005	0.005
01/14/2020	1,024.0	1,006.2	0.586	1,338.12	-154.27	1.760	0.377	93.996	3.691	0.146	0.006	0.013	0.004	0.004	0.004
01/15/2020	1,024.0	1,006.2	0.586	1,337.89	-154.29	1.759	0.389	93.956	3.725	0.144	0.006	0.011	0.003	0.003	0.004
01/16/2020	1,028.9	1,011.0	0.589	1,340.75	-149.64	1.740	0.400	93.401	4.240	0.181	0.008	0.016	0.004	0.004	0.004
01/17/2020	1,029.1	1,011.1	0.589	1,341.01	-149.75	1.731	0.397	93.383	4.286	0.172	0.007	0.013	0.003	0.003	0.004
01/18/2020	1,030.8	1,012.8	0.591	1,341.25	-147.62	1.781	0.404	93.112	4.438	0.217	0.011	0.023	0.005	0.005	0.004
01/19/2020	1,029.3	1,011.4	0.590	1,340.53	-148.71	1.772	0.404	93.318	4.255	0.203	0.011	0.022	0.005	0.006	0.006
01/20/2020	1,029.4	1,011.5	0.590	1,340.26	-148.84	1.785	0.414	93.195	4.383	0.189	0.008	0.014	0.004	0.004	0.005
01/21/2020	1,028.1	1,010.2	0.589	1,339.78	-150.02	1.773	0.408	93.402	4.202	0.181	0.008	0.015	0.004	0.004	0.004
01/22/2020	1,028.5	1,010.6	0.589	1,339.65	-149.65	1.785	0.418	93.299	4.283	0.182	0.007	0.014	0.004	0.004	0.004
01/23/2020	1,027.0	1,009.1	0.588	1,339.23	-151.16	1.780	0.397	93.532	4.094	0.168	0.007	0.013	0.003	0.003	0.004
01/24/2020	1,027.3	1,009.4	0.589	1,338.67	-150.48	1.815	0.414	93.390	4.170	0.179	0.007	0.015	0.003	0.004	0.004
01/25/2020	1,026.9	1,009.0	0.588	1,338.64	-150.98	1.814	0.403	93.460	4.125	0.169	0.007	0.013	0.003	0.003	0.004
01/26/2020	1,027.4	1,009.5	0.589	1,338.63	-150.38	1.850	0.396	93.322	4.228	0.175	0.006	0.013	0.003	0.003	0.003
01/27/2020	1,027.5	1,009.6	0.590	1,338.23	-150.05	1.881	0.401	93.232	4.275	0.181	0.007	0.013	0.003	0.003	0.003
01/28/2020	1,028.4	1,010.5	0.591	1,338.13	-148.89	1.906	0.419	93.050	4.386	0.205	0.008	0.016	0.004	0.004	0.003
01/29/2020	1,026.7	1,008.9	0.590	1,337.23	-150.15	1.901	0.418	93.278	4.170	0.193	0.009	0.017	0.004	0.004	0.004
01/30/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
01/31/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/01/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/02/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/03/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/04/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/05/2020	1,025.6	1,007.7	0.588	1,337.78	-151.85	1.847	0.387	93.597	3.968	0.169	0.007	0.015	0.003	0.004	0.004
02/06/2020	1,026.0	1,008.1	0.589	1,336.99	-150.92	1.889	0.416	93.398	4.077	0.185	0.008	0.016	0.004	0.004	0.004
02/07/2020	1,027.4	1,009.5	0.590	1,337.98	-149.98	1.861	0.423	93.265	4.229	0.188	0.007	0.015	0.003	0.004	0.004
02/08/2020	1,027.5	1,009.6	0.588	1,339.58	-150.50	1.765	0.402	93.531	4.080	0.183	0.008	0.017	0.004	0.005	0.005
02/09/2020	1,027.7	1,009.8	0.588	1,340.28	-150.82	1.738	0.389	93.558	4.117	0.166	0.006	0.014	0.003	0.004	0.004
02/10/2020	1,027.0	1,009.2	0.589	1,338.31	-150.37	1.831	0.415	93.403	4.129	0.184	0.008	0.017	0.004	0.004	0.005
02/11/2020	1,026.6	1,008.7	0.588	1,338.19	-150.83	1.827	0.409	93.482	4.064	0.180	0.008	0.017	0.004	0.004	0.005
02/12/2020	1,025.1	1,007.3	0.589	1,336.23	-151.53	1.893	0.427	93.468	3.996	0.180	0.008	0.016	0.004	0.004	0.004
02/13/2020	1,025.5	1,007.7	0.589	1,335.82	-150.80	1.946	0.427	93.300	4.100	0.188	0.008	0.017	0.004	0.004	0.004
02/14/2020	1,026.4	1,008.5	0.589	1,337.11	-150.45	1.901	0.413	93.339	4.118	0.190	0.008	0.018	0.004	0.004	0.005
02/15/2020	1,028.8	1,010.9	0.589	1,340.38	-149.57	1.764	0.401	93.366	4.238	0.197	0.008	0.015	0.004	0.004	0.004
02/16/2020	1,027.2	1,009.3	0.588	1,339.76	-151.12	1.762	0.385	93.581	4.074	0.166	0.006	0.014	0.003	0.004	0.004
02/17/2020	1,027.6	1,009.7	0.588	1,340.17	-151.04	1.752	0.382	93.548	4.128	0.162	0.006	0.012	0.003	0.003	0.003
02/18/2020	1,028.5	1,010.6	0.590	1,339.11	-149.27	1.841	0.410	93.207	4.314	0.191	0.008	0.017	0.004	0.004	0.004

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%)
02/19/2020	1,029.0	1,011.1	0.591	1,338.36	-148.27	1.902	0.426	92.987	4.437	0.208	0.009	0.019	0.004	0.004	0.004
02/20/2020	1,027.9	1,010.0	0.590	1,338.00	-149.17	1.892	0.420	93.153	4.295	0.200	0.009	0.019	0.004	0.005	0.004
02/21/2020	1,027.9	1,010.0	0.590	1,337.87	-148.98	1.902	0.418	93.166	4.263	0.204	0.010	0.021	0.005	0.005	0.006
02/22/2020	1,032.5	1,014.5	0.592	1,342.03	-57.60	1.785	0.413	92.991	4.501	0.227	0.012	0.029	0.009	0.011	0.022
02/23/2020	1,030.5	1,012.6	0.590	1,341.45	-148.12	1.766	0.396	93.150	4.465	0.185	0.008	0.016	0.004	0.004	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 = 52312