

Gas Quality Reports

LS400 - Oklahoma City to Blackwell
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	1,041.6	1,023.4	0.595	1,350.85	-141.80	1.398	0.471	92.330	5.600	0.182	0.005	0.008	0.001	0	0.004
11/26/2019	1,043.4	1,025.3	0.596	1,351.33	-140.08	1.474	0.455	91.973	5.879	0.198	0.006	0.009	0.002	0.001	0.004
11/27/2019	1,046.6	1,028.4	0.597	1,354.57	-138.55	1.417	0.413	91.792	6.148	0.218	0.004	0.006	0	0	0.003
11/28/2019	1,047.1	1,028.8	0.597	1,355.27	-138.65	1.409	0.395	91.732	6.281	0.175	0.002	0.003	0	0	0.002
11/29/2019	1,047.3	1,029.1	0.597	1,355.31	-138.47	1.407	0.402	91.690	6.317	0.178	0.002	0.003	0	0	0.002
11/30/2019	1,045.6	1,027.4	0.597	1,353.55	-139.12	1.456	0.414	91.788	6.151	0.178	0.003	0.006	0	0	0.003
12/01/2019	1,046.4	1,028.2	0.597	1,354.53	-139.02	1.424	0.405	91.751	6.251	0.162	0.002	0.003	0	0	0.002
12/02/2019	1,045.6	1,027.4	0.597	1,353.42	-139.09	1.477	0.407	91.744	6.183	0.178	0.003	0.004	0	0	0.003
12/03/2019	1,040.9	1,022.8	0.595	1,349.11	-141.61	1.585	0.425	92.084	5.698	0.196	0.004	0.006	0	0	0.002
12/04/2019	1,036.7	1,018.7	0.593	1,346.70	-144.36	1.585	0.422	92.713	5.029	0.217	0.008	0.016	0.002	0.002	0.005
12/05/2019	1,035.3	1,017.3	0.591	1,346.88	-146.64	1.525	0.409	92.928	4.991	0.138	0.003	0.004	0	0	0.002
12/06/2019	1,034.5	1,016.5	0.590	1,347.34	-147.81	1.467	0.397	93.169	4.847	0.112	0.002	0.004	0	0	0.002
12/07/2019	1,031.6	1,013.7	0.588	1,345.75	-150.18	1.446	0.408	93.554	4.483	0.102	0.002	0.003	0	0	0.002
12/08/2019	1,032.3	1,014.3	0.588	1,346.33	-149.83	1.434	0.404	93.497	4.562	0.097	0.001	0.003	0	0	0.002
12/09/2019	1,031.9	1,014.0	0.588	1,345.55	-149.63	1.492	0.396	93.457	4.529	0.117	0.002	0.004	0	0.001	0.002
12/10/2019	1,029.2	1,011.3	0.588	1,342.60	-150.47	1.643	0.373	93.583	4.225	0.155	0.006	0.010	0.001	0.001	0.005
12/11/2019	1,031.5	1,013.5	0.588	1,345.31	-149.73	1.489	0.397	93.549	4.424	0.126	0.003	0.006	0	0.001	0.005
12/12/2019	1,030.4	1,012.5	0.588	1,344.35	-150.51	1.532	0.389	93.585	4.364	0.118	0.003	0.006	0	0	0.003
12/13/2019	1,031.6	1,013.6	0.589	1,343.75	-148.99	1.558	0.440	93.270	4.583	0.135	0.003	0.006	0	0	0.003
12/14/2019	1,030.4	1,012.4	0.588	1,343.72	-150.34	1.545	0.413	93.501	4.415	0.114	0.003	0.005	0	0	0.003
12/15/2019	1,030.3	1,012.4	0.587	1,344.42	-150.72	1.505	0.398	93.631	4.346	0.106	0.003	0.006	0	0	0.004
12/16/2019	1,032.4	1,014.4	0.589	1,345.71	-148.76	1.509	0.391	93.414	4.532	0.136	0.004	0.008	0	0	0.006
12/17/2019	1,031.8	1,013.9	0.588	1,345.42	-149.24	1.511	0.389	93.474	4.482	0.126	0.004	0.008	0	0	0.006
12/18/2019	1,032.0	1,014.0	0.588	1,345.89	-149.49	1.467	0.396	93.528	4.476	0.118	0.003	0.007	0	0	0.005
12/19/2019	1,032.9	1,014.9	0.588	1,346.43	-148.67	1.463	0.397	93.437	4.557	0.128	0.004	0.008	0	0	0.006
12/20/2019	1,033.0	1,015.0	0.589	1,346.34	-148.36	1.474	0.399	93.400	4.576	0.130	0.004	0.009	0.001	0.001	0.007
12/21/2019	1,031.5	1,013.6	0.588	1,345.51	-149.66	1.478	0.395	93.573	4.418	0.117	0.004	0.007	0	0.001	0.006
12/22/2019	1,032.1	1,014.2	0.588	1,345.83	-149.03	1.481	0.395	93.501	4.474	0.127	0.004	0.009	0.001	0.001	0.007
12/23/2019	1,028.6	1,010.7	0.587	1,342.79	-151.31	1.519	0.425	93.830	4.058	0.140	0.007	0.011	0.003	0.002	0.006
12/24/2019	1,029.5	1,011.6	0.588	1,342.27	-150.00	1.583	0.438	93.555	4.236	0.156	0.007	0.012	0.003	0.002	0.006
12/25/2019	1,032.1	1,014.1	0.590	1,343.80	-147.92	1.608	0.420	93.219	4.550	0.174	0.007	0.012	0.003	0.002	0.005
12/26/2019	1,029.2	1,011.3	0.587	1,343.85	-151.47	1.501	0.398	93.804	4.159	0.121	0.004	0.007	0.001	0	0.004
12/27/2019	1,029.8	1,011.9	0.587	1,344.00	-150.85	1.522	0.395	93.698	4.245	0.123	0.004	0.007	0.001	0	0.005
12/28/2019	1,030.1	1,012.2	0.588	1,343.61	-150.16	1.541	0.412	93.601	4.282	0.139	0.005	0.010	0.002	0.001	0.006
12/29/2019	1,031.5	1,013.5	0.588	1,344.91	-148.92	1.494	0.416	93.574	4.326	0.155	0.008	0.014	0.004	0.003	0.008
12/30/2019	1,029.8	1,011.9	0.587	1,344.24	-150.14	1.453	0.427	93.898	4.012	0.165	0.010	0.017	0.005	0.004	0.010
12/31/2019	1,029.1	1,011.2	0.586	1,343.98	-150.61	1.418	0.441	94.062	3.862	0.162	0.012	0.020	0.006	0.005	0.012
01/01/2020	1,025.8	1,008.0	0.584	1,341.93	-153.28	1.461	0.422	94.420	3.483	0.162	0.012	0.020	0.006	0.004	0.010
01/02/2020	1,027.5	1,009.6	0.585	1,343.12	-152.07	1.393	0.453	94.304	3.621	0.180	0.011	0.018	0.006	0.004	0.011
01/03/2020	1,026.4	1,008.6	0.584	1,343.55	-153.40	1.380	0.405	94.576	3.414	0.175	0.011	0.018	0.005	0.004	0.011
01/04/2020	1,024.2	1,006.4	0.582	1,342.47	-156.11	1.396	0.384	94.817	3.226	0.135	0.009	0.015	0.005	0.003	0.009
01/05/2020	1,023.2	1,005.4	0.581	1,341.82	-157.23	1.382	0.398	94.922	3.142	0.121	0.008	0.013	0.004	0.003	0.008
01/06/2020	1,022.2	1,004.4	0.581	1,340.65	-157.96	1.436	0.393	94.925	3.100	0.114	0.007	0.012	0.003	0.002	0.008

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01/07/2020	1,021.7	1,003.9	0.582	1,339.23	-158.04	1.569	0.368	94.687	3.254	0.105	0.004	0.007	0.001	0	0.005
01/08/2020	1,020.4	1,002.7	0.582	1,338.11	-158.80	1.610	0.361	94.782	3.127	0.099	0.004	0.008	0.001	0.001	0.007
01/09/2020	1,018.9	1,001.1	0.580	1,337.49	-160.64	1.599	0.353	95.001	2.938	0.093	0.004	0.007	0	0	0.005
01/10/2020	1,019.5	1,001.7	0.580	1,338.96	-160.85	1.512	0.351	95.111	2.936	0.076	0.003	0.006	0	0	0.005
01/11/2020	1,021.3	1,003.5	0.582	1,339.18	-158.22	1.569	0.358	94.778	3.170	0.101	0.004	0.009	0.001	0.001	0.008
01/12/2020	1,025.4	1,007.5	0.584	1,341.46	-152.63	1.582	0.353	94.456	3.329	0.201	0.016	0.038	0.007	0.008	0.011
01/13/2020	1,020.0	1,002.3	0.581	1,337.67	-158.91	1.640	0.354	94.792	3.085	0.105	0.005	0.010	0.002	0.002	0.007
01/14/2020	1,021.2	1,003.4	0.583	1,337.75	-157.51	1.673	0.363	94.560	3.260	0.117	0.006	0.011	0.002	0.002	0.006
01/15/2020	1,020.1	1,002.3	0.582	1,336.66	-158.43	1.709	0.363	94.595	3.201	0.110	0.005	0.009	0.001	0.001	0.005
01/16/2020	1,024.4	1,006.6	0.584	1,340.48	-154.68	1.597	0.366	94.363	3.498	0.137	0.007	0.015	0.003	0.003	0.009
01/17/2020	1,026.2	1,008.3	0.584	1,342.99	-154.28	1.430	0.396	94.442	3.547	0.153	0.007	0.013	0.003	0.002	0.007
01/18/2020	1,027.5	1,009.6	0.586	1,342.65	-151.39	1.519	0.397	94.173	3.657	0.195	0.013	0.025	0.006	0.005	0.010
01/19/2020	1,026.1	1,008.3	0.584	1,342.87	-152.92	1.444	0.390	94.553	3.360	0.186	0.015	0.027	0.007	0.006	0.012
01/20/2020	1,024.9	1,007.1	0.583	1,341.84	-154.90	1.459	0.398	94.563	3.389	0.148	0.010	0.016	0.004	0.003	0.009
01/21/2020	1,024.4	1,006.5	0.583	1,341.57	-155.29	1.455	0.400	94.649	3.301	0.151	0.010	0.016	0.005	0.004	0.010
01/22/2020	1,024.5	1,006.7	0.583	1,341.39	-155.34	1.476	0.401	94.538	3.410	0.140	0.008	0.013	0.004	0.003	0.008
01/23/2020	1,023.8	1,006.0	0.583	1,340.41	-155.59	1.561	0.376	94.487	3.406	0.134	0.008	0.015	0.004	0.003	0.007
01/24/2020	1,024.6	1,006.8	0.585	1,339.72	-154.21	1.628	0.395	94.186	3.615	0.139	0.008	0.015	0.004	0.003	0.007
01/25/2020	1,023.5	1,005.7	0.584	1,339.41	-155.84	1.631	0.373	94.322	3.535	0.120	0.004	0.008	0.001	0.001	0.006
01/26/2020	1,022.2	1,004.4	0.583	1,338.45	-156.77	1.664	0.362	94.441	3.399	0.112	0.004	0.009	0.001	0.001	0.007
01/27/2020	1,019.9	1,002.2	0.582	1,337.10	-159.02	1.674	0.358	94.691	3.166	0.094	0.004	0.007	0.001	0.001	0.005
01/28/2020	1,024.7	1,006.8	0.584	1,340.59	-154.25	1.598	0.367	94.343	3.506	0.140	0.008	0.019	0.004	0.004	0.010
01/29/2020	1,021.6	1,003.8	0.583	1,337.49	-156.82	1.706	0.369	94.410	3.373	0.118	0.005	0.010	0.001	0.001	0.007
01/30/2020	1,022.2	1,004.4	0.583	1,339.22	-156.90	1.612	0.356	94.585	3.306	0.112	0.005	0.011	0.002	0.002	0.008
01/31/2020	1,025.0	1,007.2	0.584	1,340.78	-153.53	1.593	0.371	94.299	3.557	0.136	0.008	0.016	0.004	0.004	0.012
02/01/2020	1,020.2	1,002.4	0.581	1,338.28	-159.06	1.585	0.361	94.881	3.052	0.095	0.005	0.010	0.001	0.002	0.008
02/02/2020	1,020.4	1,002.6	0.581	1,338.33	-159.03	1.581	0.368	94.830	3.109	0.090	0.004	0.008	0.001	0.001	0.007
02/03/2020	1,020.0	1,002.2	0.581	1,338.04	-159.16	1.604	0.356	94.870	3.053	0.093	0.005	0.010	0.001	0.002	0.008
02/04/2020	1,024.0	1,006.2	0.584	1,339.97	-154.58	1.615	0.369	94.384	3.455	0.132	0.008	0.016	0.004	0.004	0.013
02/05/2020	1,025.4	1,007.6	0.585	1,340.47	-152.35	1.641	0.370	94.183	3.597	0.155	0.009	0.020	0.005	0.005	0.016
02/06/2020	1,027.4	1,009.5	0.586	1,341.73	-71.21	1.625	0.374	93.998	3.765	0.174	0.011	0.023	0.005	0.006	0.018
02/07/2020	1,026.1	1,008.2	0.585	1,341.59	-152.11	1.570	0.377	94.262	3.571	0.161	0.010	0.022	0.005	0.005	0.016
02/08/2020	1,024.2	1,006.4	0.584	1,340.06	-154.29	1.607	0.375	94.385	3.440	0.145	0.009	0.019	0.004	0.003	0.013
02/09/2020	1,023.3	1,005.5	0.584	1,339.65	-155.70	1.601	0.375	94.433	3.438	0.122	0.006	0.013	0	0.001	0.010
02/10/2020	1,023.9	1,006.1	0.584	1,340.14	-154.90	1.590	0.374	94.430	3.432	0.135	0.008	0.018	0.001	0.001	0.013
02/11/2020	1,024.4	1,006.6	0.584	1,340.50	-154.17	1.586	0.371	94.427	3.418	0.144	0.011	0.024	0.002	0.003	0.014
02/12/2020	1,022.7	1,004.9	0.583	1,339.59	-155.32	1.571	0.377	94.716	3.112	0.160	0.013	0.025	0.004	0.006	0.016
02/13/2020	1,017.6	999.9	0.580	1,336.29	-72.75	1.587	0.386	95.357	2.416	0.183	0.013	0.027	0.005	0.006	0.018
02/14/2020	1,001.6	984.2	0.570	1,327.21	-180.81	1.575	0.381	97.402	0.443	0.149	0.008	0.019	0.004	0.004	0.016
02/15/2020	997.7	980.4	0.567	1,324.61	-199.97	1.609	0.376	97.823	0	0.143	0.008	0.018	0.004	0.004	0.014
02/16/2020	997.2	979.9	0.567	1,324.37	-199.97	1.614	0.369	97.853	0	0.124	0.007	0.015	0.003	0.003	0.012
02/17/2020	996.5	979.2	0.567	1,323.90	-199.97	1.627	0.365	97.865	0	0.120	0.004	0.010	0.001	0.001	0.007
02/18/2020	998.0	980.6	0.567	1,325.70	-199.97	1.535	0.374	97.923	0	0.134	0.006	0.014	0.003	0.002	0.010

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	1,000.8	983.4	0.566	1,330.13	-199.97	1.537	0.226	97.995	0	0.185	0.011	0.026	0.001	0.001	0.017
02/20/2020	1,005.7	988.2	0.562	1,341.10	-183.46	1.219	0.009	98.548	0	0.186	0.009	0.018	0	0	0.011
02/21/2020	1,035.6	1,017.5	0.588	1,350.45	-146.36	1.343	0.341	93.739	4.253	0.249	0.018	0.037	0.008	0.007	0.006
02/22/2020	1,033.0	1,015.0	0.588	1,347.15	-148.60	1.393	0.408	93.647	4.322	0.197	0.008	0.017	0.003	0.002	0.003
02/23/2020	1,033.7	1,015.7	0.587	1,349.60	-148.90	1.234	0.403	93.926	4.241	0.157	0.009	0.017	0.004	0.003	0.007

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 = 66333