TSP Name: Southern Star Central Gas Pipeline, Inc.

TSP: 007906233

CSI048

2/25/2020 12:15:23 AM

Gas Quality Reports

LS195 - St. Joe 26" at Ottawa

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	1,032.3	1,014.3	0.595	1,337.85	-144.93	1.935	0.539	92.175	5.116	0.209	0.006	0.010	0.002	0.002	0.005
11/26/2019	1,033.9	1,015.9	0.595	1,340.64	-144.79	1.815	0.515	92.276	5.187	0.186	0.005	0.009	0.002	0.002	0.004
11/27/2019	1,036.7	1,018.6	0.596	1,342.69	-142.47	1.813	0.492	92.006	5.453	0.207	0.007	0.012	0.003	0.003	0.005
11/28/2019	1,038.5	1,020.4	0.598	1,343.44	-140.39	1.850	0.484	91.850	5.447	0.326	0.012	0.020	0.003	0.003	0.005
11/29/2019	1,035.9	1,017.9	0.596	1,341.67	-142.41	1.872	0.485	92.056	5.283	0.269	0.009	0.016	0.003	0.003	0.005
11/30/2019	1,031.3	1,013.3	0.594	1,337.80	-145.76	1.944	0.502	92.395	4.905	0.224	0.007	0.012	0.003	0.002	0.005
12/01/2019	1,037.5	1,019.4	0.598	1,341.67	-140.34	1.917	0.507	91.799	5.385	0.341	0.014	0.024	0.004	0.004	0.006
12/02/2019	1,037.0	1,018.9	0.596	1,343.04	-142.21	1.813	0.481	92.037	5.395	0.243	0.008	0.014	0.003	0.003	0.005
12/03/2019	1,036.4	1,018.4	0.596	1,342.35	-142.54	1.838	0.486	92.005	5.421	0.222	0.007	0.012	0.002	0.002	0.005
12/04/2019	1,035.4	1,017.3	0.596	1,341.19	-142.79	1.906	0.472	92.064	5.264	0.261	0.009	0.015	0.002	0.002	0.004
12/05/2019	1,032.8	1,014.7	0.593	1,340.83	-145.23	1.813	0.468	92.666	4.747	0.258	0.012	0.024	0.004	0.003	0.006
12/06/2019	1,030.3	1,012.3	0.592	1,338.78	-147.28	1.844	0.481	92.814	4.610	0.219	0.008	0.014	0.003	0.003	0.005
12/07/2019	1,030.3	1,012.3	0.592	1,339.02	-147.41	1.840	0.472	92.830	4.618	0.208	0.008	0.014	0.003	0.003	0.005
12/08/2019	1,044.4	1,026.2	0.601	1,346.70	-134.67	2.025	0.375	91.289	5.631	0.588	0.026	0.051	0.006	0.005	0.006
12/09/2019	1,034.0	1,016.0	0.596	1,338.80	-142.41	2.009	0.491	92.089	5.018	0.340	0.014	0.025	0.004	0.004	0.006
12/10/2019	1,038.7	1,020.6	0.599	1,341.83	-138.19	2.007	0.476	91.720	5.225	0.489	0.023	0.040	0.006	0.006	0.008
12/11/2019	1,030.0	1,012.1	0.593	1,337.49	-146.14	1.955	0.471	92.728	4.503	0.290	0.014	0.024	0.004	0.004	0.007
12/12/2019	1,026.8	1,008.9	0.590	1,336.24	-149.84	1.896	0.477	93.114	4.299	0.184	0.007	0.013	0.003	0.003	0.005
12/13/2019	1,026.2	1,008.3	0.590	1,336.25	-150.71	1.880	0.466	93.227	4.244	0.156	0.006	0.011	0.002	0.003	0.005
12/14/2019	1,031.1	1,013.1	0.595	1,337.27	-144.98	1.981	0.501	92.460	4.708	0.298	0.013	0.024	0.004	0.004	0.006
12/15/2019	1,038.0	1,019.9	0.600	1,340.50	-74.26	2.059	0.491	91.709	5.138	0.510	0.026	0.045	0.007	0.007	0.008
12/16/2019	1,037.3	1,019.2	0.598	1,340.87	-138.97	2.014	0.478	91.899	5.035	0.483	0.025	0.044	0.007	0.007	0.008
12/17/2019	1,035.1	1,017.1	0.596	1,340.65	-141.56	1.951	0.463	92.237	4.886	0.391	0.019	0.035	0.006	0.005	0.008
12/18/2019	1,031.0	1,013.0	0.592	1,339.95	-147.09	1.838	0.444	92.799	4.695	0.193	0.007	0.014	0.003	0.003	0.005
12/19/2019	1,030.4	1,012.4	0.591	1,340.86	-148.13	1.753	0.432	93.091	4.510	0.183	0.007	0.013	0.003	0.003	0.006
12/20/2019	1,030.2	1,012.3	0.591	1,340.41	-148.12	1.749	0.454	93.058	4.535	0.171	0.007	0.013	0.003	0.003	0.007
12/21/2019	1,029.0	1,011.1	0.590	1,339.52	-148.94	1.755	0.461	93.182	4.406	0.160	0.007	0.014	0.004	0.004	0.007
12/22/2019	1,026.5	1,008.6	0.590	1,336.69	-150.26	1.850	0.473	93.259	4.222	0.161	0.007	0.013	0.003	0.003	0.007
12/23/2019	1,027.2	1,009.3	0.590	1,337.38	-149.87	1.849	0.458	93.212	4.282	0.166	0.007	0.013	0.003	0.003	0.007
12/24/2019	1,045.8	1,027.6	0.602	1,347.52	-134.21	1.992	0.398	91.014	6.014	0.509	0.021	0.035	0.006	0.005	0.007
12/25/2019	1,054.5	1,036.1	0.609	1,351.61	-65.94	2.090	0.383	89.928	6.805	0.697	0.030	0.048	0.007	0.006	0.007
12/26/2019	1,027.3	1,009.4	0.590	1,337.49	-149.75	1.821	0.473	93.245	4.250	0.175	0.008	0.013	0.004	0.003	0.007
12/27/2019	1,024.3	1,006.4	0.588	1,335.49	-152.25	1.851	0.466	93.550	3.949	0.151	0.007	0.012	0.003	0.003	0.007
12/28/2019	1,026.1	1,008.2	0.589	1,336.44	-150.62	1.861	0.465	93.326	4.140	0.174	0.008	0.013	0.003	0.003	0.007
12/29/2019	1,026.3	1,008.4	0.590	1,336.57	-150.38	1.841	0.478	93.311	4.165	0.167	0.008	0.014	0.004	0.004	0.008
12/30/2019	1,025.9	1,008.1	0.589	1,336.31	-150.63	1.844	0.479	93.352	4.117	0.171	0.008	0.014	0.004	0.004	0.008
12/31/2019	1,025.4	1,007.6	0.589	1,335.95	-150.90	1.848	0.480	93.418	4.041	0.171	0.009	0.017	0.004	0.004	0.008
01/01/2020	1,024.2	1,006.3	0.588	1,336.03	-152.49	1.792	0.472	93.705	3.844	0.148	0.008	0.015	0.004	0.004	0.008
01/02/2020	1,019.7	1,001.9	0.585	1,333.31	-156.86	1.833	0.452	94.204	3.345	0.134	0.007	0.012	0.003	0.003	0.007
01/03/2020	1,022.5	1,004.7	0.587	1,334.52	-153.50	1.864	0.456	93.800	3.674	0.170	0.008	0.015	0.004	0.003	0.007
01/04/2020	1,022.3	1,004.5	0.587	1,334.66	-154.07	1.850	0.450	93.884	3.605	0.171	0.009	0.016	0.004	0.004	0.008
01/05/2020	1,021.1	1,003.3	0.587	1,333.16	-154.87	1.918	0.449	93.855	3.590	0.153	0.007	0.014	0.003	0.003	0.007
01/06/2020	1,021.5	1,003.7	0.586	1,334.15	-154.82	1.859	0.445	93.990	3.487	0.179	0.009	0.017	0.004	0.004	0.007

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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	1,020.1	1,002.3	0.585	1,333.43	-156.34	1.858	0.443	94.122	3.402	0.144	0.007	0.013	0.003	0.003	0.006
01/08/2020	1,019.3	1,001.6	0.585	1,332.89	-157.02	1.873	0.437	94.193	3.330	0.136	0.006	0.012	0.003	0.003	0.006
01/09/2020	1,019.7	1,001.9	0.586	1,332.04	-156.13	1.918	0.464	93.996	3.446	0.144	0.007	0.012	0.003	0.003	0.007
01/10/2020	1,024.4	1,006.5	0.589	1,334.79	-151.07	1.923	0.460	93.498	3.837	0.233	0.012	0.021	0.004	0.004	0.007
01/11/2020	1,030.2	1,012.2	0.592	1,338.36	-146.00	1.898	0.466	92.915	4.333	0.322	0.017	0.031	0.005	0.005	0.008
01/12/2020	1,027.4	1,009.5	0.590	1,337.76	-149.33	1.846	0.445	93.313	4.116	0.234	0.011	0.021	0.004	0.004	0.007
01/13/2020	1,025.4	1,007.5	0.588	1,336.84	-150.81	1.832	0.439	93.652	3.793	0.224	0.013	0.027	0.006	0.006	0.008
01/14/2020	1,020.6	1,002.8	0.585	1,334.23	-155.96	1.848	0.420	94.153	3.396	0.145	0.008	0.015	0.004	0.004	0.008
01/15/2020	1,028.0	1,010.0	0.592	1,336.53	-147.39	1.974	0.445	93.064	4.140	0.312	0.016	0.030	0.005	0.005	0.009
01/16/2020	1,040.0	1,021.8	0.601	1,341.79	-68.30	2.060	0.482	91.572	5.201	0.574	0.030	0.054	0.009	0.008	0.010
01/17/2020	1,032.4	1,014.4	0.594	1,339.19	-143.54	1.944	0.461	92.592	4.560	0.370	0.019	0.035	0.006	0.006	0.009
01/18/2020	1,035.9	1,017.9	0.597	1,340.45	-140.17	2.002	0.465	92.113	4.870	0.462	0.024	0.042	0.007	0.007	0.009
01/19/2020	1,038.0	1,019.9	0.599	1,341.01	-69.27	2.036	0.477	91.849	5.001	0.529	0.029	0.052	0.009	0.008	0.010
01/20/2020	1,039.7	1,021.6	0.601	1,341.54	-66.93	2.061	0.486	91.614	5.142	0.582	0.031	0.056	0.009	0.008	0.010
01/21/2020	1,034.6	1,016.5	0.597	1,339.49	-76.08	2.003	0.474	92.264	4.717	0.450	0.024	0.044	0.007	0.007	0.009
01/22/2020	1,029.1	1,011.2	0.592	1,337.31	-146.79	1.932	0.467	92.928	4.320	0.293	0.015	0.027	0.005	0.005	0.008
01/23/2020	1,024.7	1,006.8	0.589	1,335.46	-151.25	1.912	0.442	93.483	3.917	0.203	0.010	0.018	0.004	0.004	0.007
01/24/2020	1,032.1	1,014.1	0.595	1,338.33	-143.22	1.989	0.469	92.547	4.518	0.396	0.021	0.038	0.007	0.006	0.009
01/25/2020	1,028.9	1,010.9	0.592	1,336.85	-146.68	1.967	0.461	92.921	4.276	0.310	0.016	0.030	0.005	0.005	0.008
01/26/2020	1,025.0	1,007.2	0.589	1,335.54	-150.89	1.933	0.433	93.419	3.961	0.211	0.010	0.019	0.004	0.004	0.007
01/27/2020	1,025.6	1,007.7	0.590	1,335.19	-150.07	1.973	0.445	93.234	4.089	0.217	0.010	0.019	0.004	0.004	0.007
01/28/2020	1,031.7	1,013.7	0.595	1,337.44	-143.34	2.035	0.474	92.473	4.552	0.388	0.020	0.037	0.006	0.006	0.008
01/29/2020	1,031.1	1,013.1	0.595	1,336.96	-143.93	2.038	0.478	92.542	4.478	0.383	0.021	0.038	0.007	0.007	0.009
01/30/2020	1,023.6	1,005.7	0.589	1,333.97	-151.55	1.976	0.445	93.495	3.826	0.210	0.011	0.021	0.004	0.004	0.008
01/31/2020	1,022.5	1,004.7	0.587	1,335.04	-154.12	1.878	0.417	93.851	3.665	0.154	0.007	0.015	0.003	0.004	0.008
02/01/2020	1,023.9	1,006.0	0.588	1,335.59	-152.21	1.898	0.417	93.662	3.801	0.180	0.009	0.017	0.004	0.004	0.009
02/02/2020	1,025.4	1,007.5	0.590	1,334.81	-149.88	2.032	0.420	93.196	4.074	0.232	0.011	0.019	0.004	0.004	0.008
02/03/2020	1,022.5	1,004.6	0.588	1,333.06	-152.83	1.976	0.460	93.530	3.834	0.164	0.007	0.014	0.003	0.003	0.007
02/04/2020	1,025.3	1,007.5	0.590	1,335.31	-150.13	1.943	0.449	93.369	3.946	0.241	0.012	0.023	0.004	0.004	0.008
02/05/2020	1,034.5	1,016.4	0.597	1,338.41	-71.22	2.065	0.489	92.161	4.697	0.486	0.027	0.049	0.008	0.008	0.010
02/06/2020	1,029.5	1,011.5	0.594	1,336.12	-145.37	2.037	0.474	92.714	4.351	0.350	0.018	0.034	0.006	0.006	0.009
02/07/2020	1,028.5	1,010.6	0.593	1,335.50	-146.16	2.035	0.479	92.805	4.277	0.332	0.018	0.033	0.006	0.006	0.009
02/08/2020	1,024.7	1,006.8	0.589	1,335.22	-150.91	1.909	0.456	93.476	3.904	0.205	0.010	0.020	0.004	0.005	0.009
02/09/2020	1,023.3	1,005.4	0.587	1,335.26	-152.88	1.874	0.432	93.741	3.748	0.166	0.008	0.016	0.003	0.004	0.008
02/10/2020	1,024.7	1,006.9	0.589	1,335.38	-150.99	1.909	0.449	93.486	3.902	0.205	0.010	0.020	0.004	0.005	0.009
02/11/2020	1,024.1	1,006.3	0.589	1,334.78	-151.37	1.932	0.447	93.516	3.853	0.204	0.010	0.021	0.004	0.005	0.008
02/12/2020	1,031.5	1,013.5	0.595	1,337.05	-143.05	2.069	0.467	92.472	4.501	0.404	0.022	0.041	0.007	0.007	0.010
02/13/2020	1,034.5	1,016.5	0.598	1,337.78	-67.72	2.104	0.499	92.080	4.700	0.505	0.029	0.053	0.009	0.009	0.012
02/14/2020	1,029.8	1,011.8	0.594	1,335.94	-144.60	2.058	0.480	92.674	4.321	0.381	0.021	0.041	0.007	0.007	0.010
02/15/2020	1,026.6	1,008.7	0.591	1,335.25	-148.57	1.987	0.464	93.096	4.133	0.264	0.013	0.025	0.005	0.005	0.008
02/16/2020	1,024.0	1,006.2	0.588	1,335.41	-151.95	1.895	0.434	93.615	3.825	0.189	0.009	0.018	0.004	0.004	0.008
02/17/2020	1,022.9	1,005.1	0.587	1,335.51	-154.02	1.854	0.420	93.824	3.723	0.146	0.006	0.013	0.003	0.003	0.007
02/18/2020	1,025.3	1,007.5	0.590	1,335.37	-150.32	1.949	0.442	93.342	3.999	0.219	0.011	0.022	0.004	0.004	0.007

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02/19/2020	1,026.6	1,008.6	0.592	1,334.40	-148.24	2.045	0.471	92.957	4.210	0.260	0.013	0.026	0.005	0.005	0.008
02/20/2020	1,028.9	1,011.0	0.594	1,335.28	-145.46	2.074	0.478	92.697	4.328	0.345	0.019	0.036	0.007	0.007	0.010
02/21/2020	1,025.4	1,007.5	0.591	1,333.47	-148.84	2.066	0.469	93.085	4.055	0.260	0.014	0.029	0.006	0.006	0.010
02/22/2020	1,023.9	1,006.0	0.590	1,332.57	-150.43	2.074	0.468	93.180	4.020	0.207	0.011	0.022	0.005	0.005	0.009
02/23/2020	1,026.1	1,008.2	0.590	1,335.35	-149.25	1.967	0.455	93.179	4.151	0.196	0.010	0.021	0.005	0.005	0.012

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 = 52762