21 West Church Street

Jacksonville, Florida 32202-3139

JEA

Jacksonville Electric Authority
21 West Church Street
Jacksonville, Florida 32202-3139

December 18, 1998

A. A. Linero, P.E. Administrator
New Source Review Section
Florida Department of Environmental Protection
111 South Magnolia St., Suite 23
Tallahassee, FL 32301

0310047-002-AC

Dear Mr. Linero:

In response to your letter of November 25, 1998 requesting additional information on the Jacksonville Electric Authority's Kennedy Generating Station construction permit application for a 170 MW simple cycle combustion turbine, we are providing the following information.

1. **Request**: Pursuant to Rule 62-212.400 (2)(e), F.A.C., please recalculate the net emission increases (sum of all 5 year contemporaneous source-wide creditable increases and decreases in the actual emissions of the facility) for all affected PSD pollutants listed in Table 62-212.400-2, F.A.C., to determine PSD applicability.

   Response: The only contemporaneous source-wide emission increases and decreases result from the installation of the proposed combustion turbine (CT) and the retirement of the existing boiler KE-10. These emissions increases are detailed in Attachment 5 of the permit application. There are no other contemporaneous emission increases or decreases.

2. **Request**: Please provide technical information that will explain the simple cycle vs the combined cycle mechanism of fine tuning , etc., in relation to the NO_x emission rate. What is the lowest NOx rate GE guarantees for this type of turbine operating in the simple cycle.

   Response: Simple-cycle CTs are typically used to provide electricity to the grid in response to varying (peaking) electrical load demand. These CTs are generally cycled from a cold (off) condition to a low load or a base load condition several times a day. They may also cycle from low load to base load during an operating day in response to the demand placed on the grid. Base-load CTs are generally used to provide a more constant electrical supply based on the overall demand of the grid and are typically operated in a more steady-state mode of operation. Because combustion and burner conditions are more steady-state, burner performance is generally more constant and amenable to "tuning" as compared to that of a simple-cycle CT. It is this tuning of the combustion section of the CT that enables proper operation of the low-NO_x burners. In simple-cycle (peaking) service, the number of "starts" determines the frequency of maintenance inspections, especially of the combustion section, rather than overall operating hours. This reflects the stress that multiple starts has on the combustion section and affects combustor performance, resulting in slightly increased NO_x emissions.

As mentioned in a letter from GE dated December 8, 1998 (attached) the guarantee that GE provided with these CTs is currently 15 ppm of NO_X, although they are investigating lower values. Note, however, that the guarantee is good only for the "new and clean test" immediately following installation of the unit. Long-term emissions are not guaranteed.

Note also that recent continuous emissions monitoring data (1997 - 1998, attached) from an existing facility utilizing GE 7FA CTs with DLN 2.6 combustors (Fort St. Vrain, Colorado), indicates that NO_X emissions were greater than 9 ppm approximately 27 % of the time. A closer examination of the data reveals that while the CT can typically provide NO_X emissions less than 9 ppm, occasional hourly NO_X emissions can exceed that value. JEA believes the guaranteed NO_X emission rate of 15 ppm is appropriate for this facility.

3. **Request**: Illustrate the emissions performance of the DLN-2.6 combustor employed in this application. Submit the NO_X and CO graph figures (for oil and gas) that will show the GE DLN 2.6 system performance (load at a given temperature vs turbine configuration). Attached is an example of the characteristics of the DLN 2.0 that we wish to have updated for the DLN 2.6.

   Response: GE has provided an updated table showing estimated emissions in relation to the CT load for the DLN 2.6 combustors when firing natural gas. This table is attached to this response. GE has indicated that performance of the DLN 2.6 combustors when firing fuel oil is identical to the earlier DLN 2.0 performance curves.

4. **Request**: Please explain why emissions of NO_X are estimated to be 15 ppm. GE guaranteed a limit of 9 ppm at the City of Tallahassee Combined Cycle Project where similar turbine will be used.

   Response: As mentioned in the response to Question 2, the proposed CT will be operated as a simple-cycle peaking unit rather than as a combined cycle CT. Combined cycle units typically operate in a more steady-state base-load mode of operation rather than cycling up and down in order to meet varying electrical demand during the day. This steady-state method of operation lends itself to additional tuning of the combustion system, and provides for greater maintenance intervals as well, because of the more constant conditions experienced in the combustion section. The combustion section in a simple-cycle peaking CT experiences a significantly greater variation in the overall method of operation resulting in greater and more frequent temperature swings and a slightly higher overall NO_X emission rate. JEA believes the guaranteed NO_X emission rate of 15 ppm is appropriate for this facility.

5. **Request**: If possible provide an 8 X 11' photo or drawing of this site.

   Response: An 8.5 x 11 inch section of the two USGS quadrangles provided in the permit application in attached, detailing the location of the proposed project.

6. **Request**: Describe procedures used to startup and shutdown of this unit to minimize excess emissions.

   Response: A description of the startup and shutdown procedures have been provided by GE and are attached to this response.

7. **Request**: Does this facility comply with the Jacksonville air pollution control regulations?

   Response: Yes

If you have any further questions on this permit application, please do not hesitate to contact me at (904) 665-6247.

Sincerely,

N. Bert Gianazza, P.E.
Environmental Group

Enclosure[s]

cc: Teresa Heron, (FDEP)
Jim Connolly, P.E.

GE Energy Services

Marvin V. Sindel Jr.
Sales Manager

GE Energy Services Sales
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Fx: 904-757-2652
Email: marvin.sindel@ps.ge.com

12/8/98

Subject: GE Frame 7FA Gas Turbine NOx Guarantee for JEA

Mr. Jim Connolly, P.E.
JEA
21 West Church Street
Jacksonville, FL. 32202

Dear Jim,

Pursuant to your question on the NOx emission guarantee for the GE Frame 7FA units that JEA has purchased, the following information is offered:

1. The GE guarantee for the units purchased is 15 ppm NOx. GE will guarantee this level only for the "new and clean" test performed immediately after the installation of the unit is complete. This guarantee is similar to GE guaranteeing the performance of the unit at the "new and clean" condition.

2. The unit will operate at the 15 ppm level only for load conditions above 50% load. Should JEA use the units in their peaking mode for load control and operate the unit below this load point, the NOx level will exceed the 15 ppm .

3. The current NOx guarantee is for 15 ppm. However, with some additional modifications, GE is able to offer an improved guarantee of 9 ppm NOx. GE is working on providing an optional price to JEA to change the contractual guarantee to 9 ppm NOx.

I hope this answers your questions concerning the GE units contractual guarantee concerning NOx emissions. Should you have any further questions regarding the GE units, please contact me at your convenience.

Respectfully,

Marvin Sindel
Sales Manager

cc: J. Grassman - GE Schenectady

Kennedy CT Project
Rec'd 12/8/98 RCT
cc: J. Connolly
E. Bergt
M. Bareta
B. Gianazza
RCT

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1	1/13/97	7	0 25	0	0 1	0 2	0 1	20 7	6 74			
2	1/13/97	8	0									
3	1/13/97	9	0 25	0	0 5	0 2	0 1	20 7	6 74			
4	1/13/97	10	0 25	0	0 1	0.2	0 1	20 7	6 74			
5	1/13/97	11	0 5	1	380.5	12 4	1 5	18 3	27 86			
6	1/13/97	12	1	62	908 8		3 2	15 3		Yes	Yes	Yes
7	1/13/97	13	1	82	1070 4		4 1	13 7		Yes	Yes	Yes
8	1/13/97	14	1	82	1067.8		4 1	13 7		Yes	Yes	Yes
9	1/13/97	15	1	78	1040 8		4	13 9		Yes	Yes	Yes
10	1/13/97	16	1	84	1078		4	13 9		Yes	Yes	Yes
11	1/13/97	17	1	89	1114 4		4 1	13 7		Yes	Yes	Yes
12	1/13/97	18	1	88	1113 6		4.1	13.7		Yes	Yes	Yes
13	1/13/97	19	1	78	1042.5		4	13.9		Yes	Yes	Yes
14	1/13/97	20	1	79	1049 9		4	13.9		Yes	Yes	Yes
15	1/13/97	21	1	82	1072.6		4	13 9		Yes	Yes	Yes
16	1/13/97	22	1	81	1068.9		4	13 9		Yes	Yes	Yes
17	1/13/97	23	1	92	1138		4	13 9		Yes	Yes	Yes
18	1/14/97	0	1	94	1152.9		4	13 9		Yes	Yes	Yes
19	1/14/97	1	1	84	1080.8		4	13 9		Yes	Yes	Yes
20	1/14/97	2	1	77	1036 7		4	13 9		Yes	Yes	Yes
21	1/14/97	3	1	85	1089.7		4 1	13.7		Yes	Yes	Yes
22	1/14/97	4	1	97	1174 8		4 2	13 5		Yes	Yes	Yes
23	1/14/97	5	1	84	1085 4		4 2	13 5		Yes	Yes	Yes
24	1/14/97	6	1	109	1258 3		4 2	13 5		Yes	Yes	Yes
25	1/14/97	7	1	92	1139 3		4.2	13 5		Yes	Yes	Yes
26	1/14/97	8	1	76	1030		4.7	12.7		Yes	Yes	Yes
27	1/14/97	9	0 75	75	1018 7		4 7	12.7		Yes	Yes	Yes
28	1/14/97	10	0 75	63	899 1	29 3	2 6	16 3	37.99	Yes	***** No *****	***** No *****
29	1/14/97	11	0 75	57	829 8	11 7	3 3	15.1	11.95			
30	1/15/97	6	0 25	2	259.1	0 2	1.2	18 8	0 56			
31	1/15/97	7	0					20 9				
32	1/15/97	8	0 75	27	588	4	2.2	17.0	6.13			
33	1/15/97	9	1	113	1294.9	17 6	4 1	13 7	14 47	Yes	***** No *****	Yes
34	1/15/97	10	1	24	572	36 2	2 4	16 7	50 84			
35	1/15/97	11	0 75	3	356	36 6	1.9	17 6	64.93			
36	1/16/97	6	0 25	1	198.8	8.8	0 6	19 8	49 44			
37	1/17/97	6	0 25	0	154.3	1.4	0 9	19 3	5 24			
38	1/17/97	7	0 25	0	183 2	1.6	1	19.1	5.39			
39	1/17/97	15	0 5	21	557 9	21.3	1 6	18 1	44 87			
40	1/17/97	16	1	84	1094	10	4 2	13 5	8 03	Yes	Yes	Yes
41	1/17/97	17	1	85	1096.3	9 6	4 2	13 5	7.70	Yes	Yes	Yes
42	1/17/97	18	0 75	62	864	15 9	3 6	14 6	14 89	Yes	***** No *****	Yes
43	1/23/97	15	0 25	0	128	1 5	1	19 1	5 06			
44	1/23/97	16	0					20.9				
45	1/23/97	17	0 75	4	392	33 3	2	17.4	56.12			
46	1/24/97	7	0 5	7	412 4	20	2 2	17.0	30 64			
47	1/24/97	8	0 25	10	473	64 7	2 3	16 9	94 82			
48	1/25/97	10	0 25	3	359 8	23.7	1.8	17.7	44 38			
49	1/25/97	18	1	11	465	60 5	2.1	17 2	97.11			
50	1/25/97	19	1	13	484 9	43 9	2.4	16 7	61 66			
51	1/26/97	9	1	44	733 5	27 7	2 9	15 8	32 20			
52	1/26/97	10	0 75	97	1127 2	14 9	3 4	14.9	14.77	Yes	***** No *****	Yes
53	1/27/97	17	0 5	55	831.5	24 7	3 5	14 8	23 79			
54	1/27/97	18	1	72	1001	7.7	4 2	13 5	6 18	Yes	Yes	Yes
55	1/27/97	19	1	46	785	14.8	3 9	14.1	12.79			
56	1/27/97	20	0 5	5	434.5		3 3	15 1				
57	1/28/97	14	0 5	56	833 3	33	2 8	16 0	39.73			
58	1/28/97	15	1	73	1003 9	9 7	3 9	14 1	8 38	Yes	Yes	Yes
59	1/28/97	16	1	62	921 9	23.7	3 9	14.1	20 48	Yes	***** No *****	***** No *****
60	1/28/97	17	1	97	1156 8	12.6	3 8	14 2	11 18	Yes	***** No *****	Yes
61	1/29/97	7	0.5	51	781 6	33.3	2 8	16 0	40 09			
62	1/29/97	8	1	88	1108 5	8 8	4	13 9	7 42	Yes	Yes	Yes
63	1/29/97	9	0 25	4	265 7	25 4	1,9	17,6	45 06			
64	1/30/97	7	0 5	29	604.9	22 5	1.8	18 1	47 40			
65	1/30/97	8	1	74	1001 2	10 8	3 8	14 2	9 58	Yes	***** No *****	Yes
66	1/30/97	9	0 25	0	0 3	6 7	0	20 9				
67	2/11/97	16	0 25	0	150 1	3 1	1.2	18 8	8.71			
68	2/11/97	17	0 25	2	337 8	20 7	1.9	17.6	36 72			
69	2/11/97	18	0 25	1	226 3	4 6	1 6	18 1	9 69			
70	2/11/97	19	0 25	1	350 2	21	1,1	19 0	64 35			
71	2/24/97	8	1	62	909 2		3 4	14 9	0 00	Yes	Yes	Yes
72	2/24/97	9	1	76	1031.9	8	4	13 9	6 74	Yes	Yes	Yes
73	2/24/97	10	1	77	1031 4	8 1	4	13 9	6 83	Yes	Yes	Yes
74	2/24/97	11	1	80	1057.9	8 1	4	13 9	6 83	Yes	Yes	Yes
75	2/24/97	12	1	82	1068 4	8 1	4	13 9	6 83	Yes	Yes	Yes
76	2/24/97	13	1	88	1108 2	8 3	4	13 9	6 99	Yes	Yes	Yes
77	2/24/97	14	1	80	1047.9	8 3	3.9	14.1	7.17	Yes	Yes	Yes
78	2/24/97	15	1	76	1023 3	8 2	3 9	14 1	7 09	Yes	Yes	Yes
79	2/24/97	16	1	77	1028	8 1	3 9	14 1	7 00	Yes	Yes	Yes
80	2/24/97	17	1	77	1026 8	8 1	3 9	14.1	7.00	Yes	Yes	Yes
81	2/24/97	18	1	84	1077.3	8 1	3 9	14 1	7 00	Yes	Yes	Yes
82	2/24/97	19	1	75	987 2	9 9	3 8	14 2	8 78	Yes	Yes	Yes
83	2/24/97	20	0 25	0	0	5 4	3 2	15 3	5 69			
84	2/27/97	10	0 5	41	694	32 6	2 6	16 3	42 26			
85	2/27/97	11	1	60	896.9	6.9	3 9	14 1	5 96			
86	2/27/97	12	1	70	963 1	7.5	4	13 9	6 32	Yes	Yes	Yes
87	2/27/97	13	1	71	969 7	7.7	4	13 9	6 49	Yes	Yes	Yes
88	2/27/97	14	1	77	1008	7.4	4	13 9	6 24	Yes	Yes	Yes
89	2/27/97	15	1	66	932.5	7 5	3 9	14 1	6 48	Yes	Yes	Yes
90	2/27/97	16	1	64	915 3	7 4	3.9	14.1	6 40	Yes	Yes	Yes
91	2/27/97	17	1	67	940 3	10 4	3 9	14.1	8 99	Yes	Yes	Yes
92	2/27/97	18	1	110	1253 7	8 1	4	13.9	6 83	Yes	Yes	Yes
93	2/27/97	19	1	77	1007.5	7.6	4	13 9	6 40	Yes	Yes	Yes
94	2/27/97	20	1	68	946 8	8.5	4	13.9	7.16	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
95	2/27/97	21	0 5	59	878 9	1 2	3.9	14 1	1.04			
96	2/28/97	10	0 25	0	139 7		1 4	18 4	0 00			
97	2/28/97	11	1	59	891.2	17.1	3.9	14.1	14 78			
98	2/28/97	12	1	61	904 3	7	4	13 9	5 90	Yes	Yes	Yes
99	2/28/97	13	1	62	909 1	7 4	4	13 9	6 24	Yes	Yes	Yes
100	2/28/97	14	1	61	903.7	6 7	4	13 9	5 65	Yes	Yes	Yes
101	2/28/97	15	1	61	898.7	6 9	4	13.9	5 81	Yes	Yes	Yes
102	2/28/97	16	1	62	905 5	6 7	4	13 9	5 65	Yes	Yes	Yes
103	2/28/97	17	1	77	1017.8	6.9	4	13 9	5 81	Yes	Yes	Yes
104	2/28/97	18	1	64	923	10 5	4	13 9	8 85	Yes	Yes	Yes
105	2/28/97	19	0 5	44	714 5	14 9	3 5	14 8	14.35			
106	3/3/97	7	0 25	0	0	0 1	0 1	20 7	3.37			
107	3/3/97	8	1	54	839 6	15.9	3 2	15 3	16.75			
108	3/3/97	9	1	63	919 3	7.3	3 8	14 2	6 48	Yes	Yes	Yes
109	3/3/97	10	1	63	913 8	7.4	3 8	14 2	6.56	Yes	Yes	Yes
110	3/3/97	11	1	63	912 6	7 3	3 8	14.2	6 48	Yes	Yes	Yes
111	3/3/97	12	1	63	912 4	7.5	3 8	14.2	6.65	Yes	Yes	Yes
112	3/3/97	13	1	63	913 7	7 6	3 8	14 2	6.74	Yes	Yes	Yes
113	3/3/97	14	1	66	933 9	7.6	3 8	14 2	6.74	Yes	Yes	Yes
114	3/3/97	15	1	66	936 1	7 6	3 8	14 2	6 74	Yes	Yes	Yes
115	3/3/97	16	1	66	936 7	7.5	3 8	14 2	6 65	Yes	Yes	Yes
116	3/3/97	17	1	66	938 1	7.4	3 8	14.2	6.56	Yes	Yes	Yes
117	3/3/97	18	1	66	942	7.3	3 9	14.1	6.31	Yes	Yes	Yes
118	3/3/97	19	1	106	1229 9	9 6	3 9	14.1	8 30	Yes	Yes	Yes
119	3/3/97	20	1	139	1487.7	13	4	13 9	10 95	Yes	***** No *****	Yes
120	3/3/97	21	1	92	1126 6	8 8	3 9	14.1	7.61	Yes	Yes	Yes
121	3/3/97	22	1	70	963 3	10 6	3 9	14.1	9 16	Yes	***** No *****	Yes
122	3/4/97	6	0 5	53	806 7	34 5	2 8	16 0	41.53			
123	3/4/97	7	1	79	1038 8	7.2	4	13.9	6 07	Yes	Yes	Yes
124	3/4/97	8	1	80	1044.1	7	4	13 9	5.90	Yes	Yes	Yes
125	3/4/97	9	1	83	1069 2	7.1	4	13.9	5.98	Yes	Yes	Yes
126	3/4/97	10	1	81	1050 5	8 8	4	13.9	7 42	Yes	Yes	Yes
127	3/4/97	11	1	79	1038 6	7.1	4	13.9	5 98	Yes	Yes	Yes
128	3/4/97	12	1	79	1041.1	7 1	4	13 9	5 98	Yes	Yes	Yes
129	3/4/97	13	1	79	1040 4	7.2	4	13.9	6.07	Yes	Yes	Yes
130	3/4/97	14	1	79	1037 4	7.2	4	13 9	6 07	Yes	Yes	Yes
131	3/4/97	15	1	79	1037.3	7.1	4	13.9	5.98	Yes	Yes	Yes
132	3/4/97	16	1	77	1022	7.2	4	13.9	6 07	Yes	Yes	Yes
133	3/4/97	17	1	73	991.3	9 5	4	13.9	8.01	Yes	Yes	Yes
134	3/4/97	18	1	131	1408 4	10 4	4.1	13.7	8.55	Yes	Yes	Yes
135	3/4/97	19	1	132	1417 3	10 7	4.1	13 7	8.80	Yes	Yes	Yes
136	3/4/97	20	1	120	1326 4	10 2	4.1	13 7	8 39	Yes	Yes	Yes
137	3/4/97	21	1	76	1017.6	8 9	4	13 9	7.50	Yes	Yes	Yes
138	3/4/97	22	0 75	51	787 6	13 4	3 8	14 2	11.89			
139	3/5/97	6	1	57	868 7		3 2	15 3	0.00			
140	3/5/97	7	1	87	1109 5	11 4	3 9	14 1	9.85	Yes	***** No *****	Yes
141	3/5/97	8	1	71	988 7	9 8	3 9	14 1	8 47	Yes	Yes	Yes
142	3/5/97	9	1	115	1305.1	10 4	4	13 9	8 76	Yes	Yes	Yes
143	3/5/97	10	1	124	1367	10 4	4	13.9	8.76	Yes	Yes	Yes
144	3/5/97	11	1	72	991.7	8 5	3 9	14.1	7 35	Yes	Yes	Yes
145	3/5/97	12	1	69	966	8 2	3 9	14 1	7.09	Yes	Yes	Yes
146	3/5/97	13	1	65	938	7.1	3 8	14 2	6 30	Yes	Yes	Yes
147	3/5/97	14	1	63	925 6	7	3 8	14 2	6.21	Yes	Yes	Yes
148	3/5/97	15	1	63	920 5	7.1	3 8	14 2	6.30	Yes	Yes	Yes
149	3/5/97	16	1	63	920 4	7	3 8	14 2	6.21	Yes	Yes	Yes
150	3/5/97	17	1	71	977.4	6 9	3 9	14 1	5.96	Yes	Yes	Yes
151	3/5/97	18	1	120	1323 4	9 7	4	13 9	8.17	Yes	Yes	Yes
152	3/5/97	19	1	141	1498 4	12 2	4	13 9	10.28	Yes	***** No *****	Yes
153	3/5/97	20	1	104	1216 7	9 3	4	13 9	7.84	Yes	Yes	Yes
154	3/5/97	21	0 75	51	791 7	11 6	3 5	14 8	11.17			
155	3/6/97	6	1	62	904 2	15 1	3 6	14 6	15.07	Yes	***** No *****	***** No *****
156	3/6/97	7	1	66	951	9 4	3 9	14 1	8 12	Yes	Yes	Yes
157	3/6/97	8	1	69	965 6	8 9	3 9	14.1	7.69	Yes	Yes	Yes
158	3/6/97	9	1	69	969 7	8 1	3 9	14 1	7.00	Yes	Yes	Yes
159	3/6/97	10	1	104	1212 9	8 7	4	13 9	7 33	Yes	Yes	Yes
160	3/6/97	11	1	96	1157 6	9.2	3 9	14.1	7.95	Yes	Yes	Yes
161	3/6/97	12	1	73	988 6	7.5	3 9	14 1	6.48	Yes	Yes	Yes
162	3/6/97	13	1	67	948 6	7.5	3 8	14 2	6.65	Yes	Yes	Yes
163	3/6/97	14	1	64	922.1	7 8	3 8	14 2	6 92	Yes	Yes	Yes
164	3/6/97	15	1	68	946 6	7 9	3 8	14 2	7.01	Yes	Yes	Yes
165	3/6/97	16	1	78	1021.5	8 4	3 8	14 2	7 45	Yes	Yes	Yes
166	3/6/97	17	1	61	902	7.8	3 8	14 2	6 92	Yes	Yes	Yes
167	3/6/97	18	1	107	1239 3	11	3 9	14 1	9 51	Yes	***** No *****	Yes
168	3/6/97	19	1	135	1451	14 8	3 9	14.1	12 79	Yes	***** No *****	Yes
169	3/6/97	20	1	135	1456	14 6	3 9	14 1	12 62	Yes	***** No *****	Yes
170	3/6/97	21	1	92	1131.4	14 7	3 8	14 2	13 04	Yes	***** No *****	Yes
171	3/6/97	22	0 25	39	734 1	66 1	3 7	14 4	60 22			
172	3/7/97	10	0 75	56	833 5	26 4	3	15 6	29 66			
173	3/7/97	11	1	68	956.9	7.9	3 8	14 2	7.01	Yes	Yes	Yes
174	3/7/97	12	1	70	967.5	7 8	3 8	14 2	6 92	Yes	Yes	Yes
175	3/7/97	13	1	63	913	7 7	3 8	14 2	6 83	Yes	Yes	Yes
176	3/7/97	14	1	61	899.1	7.6	3 8	14 2	6 74	Yes	Yes	Yes
177	3/7/97	15	1	61	899 1	7.6	3 8	14 2	6 74	Yes	Yes	Yes
178	3/7/97	16	1	61	900	7.7	3 8	14 2	6 83	Yes	Yes	Yes
179	3/7/97	17	1	61	900 9	7 6	3 8	14 2	6 74	Yes	Yes	Yes
180	3/7/97	18	1	61	901 9	7 5	3 8	14 2	6 65	Yes	Yes	Yes
181	3/7/97	19	0 5	31	622.2	14 7	2 7	16 2	18 35			
182	3/18/97	10	0 25	0	0 2	0 1	0 1	20 7	3 37			
183	3/18/97	11	1	5	411 4	6 7	1 9	17 6	11.89			
184	3/18/97	12	1	32	664 2	11	3	15 6	12.38			
185	3/18/97	13	1	106	1240 2	41 2	3 9	14 1	35 61	Yes	***** No *****	***** No *****
186	3/18/97	14	1	83	1073 8	13 6	3 8	14 2	12 06	Yes	***** No *****	Yes
187	3/18/97	15	1	13	468	5 6	2.5	16 5	7 55			
188	3/20/97	12	1	54	832 9	6 5	3 5	14 8	6 26			

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
189	3/20/97	13	1	77	1032.2	5 8	3 8	14 2	5.14	Yes	Yes	Yes
190	3/20/97	14	1	71	981.2	6 1	3 8	14 2	5 41	Yes	Yes	Yes
191	3/20/97	15	1	73	983 2	6	3 8	14 2	5 32	Yes	Yes	Yes
192	3/20/97	16	1	63	917 2	9 5	3 8	14 2	8 43	Yes	Yes	Yes
193	3/20/97	17	1	65	929 8	31.9	3 8	14 2	28 30	Yes	***** No *****	***** No *****
194	3/20/97	18	0 5	43	677.5	4.7	3 2	15 3	4.95			
195	3/28/97	7	0 75	21	545 6		2.5	16 5				
196	3/28/97	8	1	57	881.3		3 9	14 1				
197	3/28/97	9	1	57	876 3	5 4	3 9	14 1	4 67			
198	3/28/97	10	1	57	872 8	5 3	3 8	14 2	4 70			
199	3/28/97	11	1	57	871.5	5 2	3 8	14 2	4 61			
200	3/28/97	12	1	57	869 7	5 2	3 8	14 2	4 61			
201	3/28/97	13	1	50	775.7	7	3 5	14 8	6 74			
202	3/31/97	15	0 75	53	806 6	22 2	3 2	15 3	23 38			
203	3/31/97	16	1	72	982.1	6 2	3 8	14 2	5 50	Yes	Yes	Yes
204	3/31/97	17	1	64	919.9	6 1	3 8	14 2	5 41	Yes	Yes	Yes
205	3/31/97	18	1	85	1071.4	6 2	3 9	14 1	5 36	Yes	Yes	Yes
206	3/31/97	19	1	87	1089 8	6 1	3 9	14.1	5 27	Yes	Yes	Yes
207	3/31/97	20	0 25	17	351.4	13 3	2 2	17.0	20 38			
208	4/8/97	7	0.25	1	212 2	6	1.5	18 3	13 48			
209	4/8/97	8	1	67	972.4	15 8	3 7	14 4	14 39	Yes	***** No *****	Yes
210	4/8/97	9	1	99	1195 2	5 9	4 1	13 7	4 85	Yes	Yes	Yes
211	4/8/97	10	1	88	1105 8	6 1	4	13 9	5 14	Yes	Yes	Yes
212	4/8/97	11	1	69	968 2	5 3	3 9	14 1	4 58	Yes	Yes	Yes
213	4/8/97	12	1	64	937.5	5	3 9	14 1	4 32	Yes	Yes	Yes
214	4/8/97	13	1	64	936 5	5 1	3 9	14 1	4.41	Yes	Yes	Yes
215	4/8/97	14	1	63	923 8	4 9	3 9	14 1	4 23	Yes	Yes	Yes
216	4/8/97	15	1	63	922 9	5	3 9	14 1	4 32	Yes	Yes	Yes
217	4/8/97	16	1	60	902.1	5 4	3 9	14 1	4 67			
218	4/8/97	17	0.25	1	108 1	17.7	1 1	19 0	54 24			
219	4/10/97	19	0.5	5	436 2	26 2	1 4	18 4	63 08			
220	4/10/97	20	0 25	2	289 9	15	1 6	18 1	31.60			
221	4/10/97	21	0.75	3	370 5	20 1	1.4	18.4	48 39			
222	4/11/97	7	0.5	2	276 2	18 2	1.2	18 8	51 12			
223	4/11/97	8	0.75	54	833	26 8	2 3	16.9	39 28			
224	4/11/97	9	0.5	2	236 7	21.7	1.2	18 8	60.95			
225	4/12/97	10	1	10	478 8	19 4	1 6	18.1	40 87			
226	4/12/97	11	1	74	1014	4 6	3 9	14 1	3 98	Yes	Yes	Yes
227	4/12/97	12	1	74	1006 7	4 7	3.9	14.1	4 06	Yes	Yes	Yes
228	4/12/97	13	1	72	995 9	4.8	3 9	14 1	4.15	Yes	Yes	Yes
229	4/12/97	14	1	72	994 8	4 7	3 9	14 1	4 06	Yes	Yes	Yes
230	4/12/97	15	0.5	37	664 2	13	2.7	16 2	16 23			
231	4/13/97	5	1	32	659 7	40 6	2 6	16 3	52 63			
232	4/13/97	6	0.75	47	778 7	25 5	3 3	15 1	26 05			
233	4/14/97	7	0 5	39	690 6	31.9	3	15 6	35 84			
234	4/14/97	8	1	77	1022.7	4 7	3 9	14 1	4 06	Yes	Yes	Yes
235	4/14/97	9	1	100	1190	5 1	4	13.9	4 30	Yes	Yes	Yes
236	4/14/97	10	1	77	1014	4 8	3 9	14.1	4 15	Yes	Yes	Yes
237	4/14/97	11	1	74	992 5	4 7	3 9	14.1	4.06	Yes	Yes	Yes
238	4/14/97	12	1	72	977.1	4 8	3 8	14 2	4 26	Yes	Yes	Yes
239	4/14/97	13	0.75	14	478 3	35 1	2 3	16 9	51.44			
240	4/14/97	14	0.75	57	824.1	18 6	3 4	14 9	16 44			
241	4/14/97	15	1	74	991 6	4 8	3 9	14 1	4.15	Yes	Yes	Yes
242	4/14/97	16	1	75	998 6	4 8	3 8	14 2	4 26	Yes	Yes	Yes
243	4/14/97	17	1	72	979 2	4 8	3 8	14 2	4.26	Yes	Yes	Yes
244	4/14/97	18	1	92	1130 3	5 1	3 9	14 1	4 41	Yes	Yes	Yes
245	4/14/97	19	1	105	1218 8	5 6	3.9	14.1	4 84	Yes	Yes	Yes
246	4/14/97	20	0 75	59	851.8	8 2	3 4	14 9	8 13			
247	4/16/97	11	0.25	10	356	25 4	2	17 4	42 81			
248	4/16/97	12	1	114	1305 1	12	4	13.9	10 11	Yes	***** No *****	Yes
249	4/16/97	13	1	117	1317.1	5.7	4	13 9	4 80	Yes	Yes	Yes
250	4/16/97	14	1	101	1188 6	5 3	4	13 9	4 47	Yes	Yes	Yes
251	4/16/97	15	1	84	1064 3	4 5	4	13 9	3 79	Yes	Yes	Yes
252	4/16/97	16	1	76	1010 3	4 4	3 9	14 1	3 80	Yes	Yes	Yes
253	4/16/97	17	0.5	36	658 2	11.1	2 8	16 0	13 36			
254	4/18/97	7	0 75	19	526 4	35 6	2 3	16 9	52 17			
255	4/18/97	8	0 5	15	452.3	42.8	2 4	16 7	60 11			
256	4/18/97	9	0 25	4	224.7	22.1	1.7	17.9	43 82			
257	4/19/97	17	0 75	55	818 8	16 4	3 1	15 5	17 83			
258	4/19/97	18	1	88	1101 9	6 7	3 8	14 2	5 94	Yes	Yes	Yes
259	4/19/97	19	1	127	1395 1	6 9	3 9	14 1	5 96	Yes	Yes	Yes
260	4/19/97	20	1	128	1402	6 8	3 9	14.1	5 88	Yes	Yes	Yes
261	4/19/97	21	0.75	88	1033 5	8 3	3 4	14 9	8 23	Yes	Yes	Yes
262	4/21/97	6	0 5	44	713 2	28 9	2.9	15 8	33 59			
263	4/21/97	7	1	88	1097.5	6 3	3 9	14.1	5 44	Yes	Yes	Yes
264	4/21/97	8	1	125	1369.6	6 4	3 9	14.1	5 53	Yes	Yes	Yes
265	4/21/97	9	1	88	1067.5	3 9	2 4	18 7	5 48	Yes	Yes	Yes
266	4/21/97	10	1	87	1067 1	6	3 8	14 2	5 32	Yes	Yes	Yes
267	4/21/97	11	1	81	1043	6 2	3 7	14 4	5 65	Yes	Yes	Yes
268	4/21/97	12	1	82	1043 7	6 3	3 9	14 1	5 44	Yes	Yes	Yes
269	4/21/97	13	1	77	1012 1	6 3	3 8	14 2	5 59	Yes	Yes	Yes
270	4/21/97	14	1	82	1045 3	6 1	3 8	14 2	5 41	Yes	Yes	Yes
271	4/21/97	15	1	75	1002 3	6 3	3 8	14.2	5 59	Yes	Yes	Yes
272	4/21/97	16	1	78	1019 4	6 3	3 8	14.2	5 59	Yes	Yes	Yes
273	4/21/97	17	1	81	1038 8	6 1	3 8	14 2	5 41	Yes	Yes	Yes
274	4/21/97	18	1	77	1023	6 4	3 8	14 2	5 68	Yes	Yes	Yes
275	4/21/97	19	1	84	1074 2	6 3	3 9	14 1	5 44	Yes	Yes	Yes
276	4/21/97	20	0 25	88	1095 9	6 3	3 9	14.1	5 44	Yes	Yes	Yes
277	4/21/97	22	0 25	0	175 2	11 2	1 7	17.9	22.21			
278	4/22/97	5	0 25	0	233 8	9	1.6	18 1	18 96			
279	4/22/97	6	0 5	0	270 7	19 9	1.5	18 3	44.72			
280	4/22/97	7	0 5	52	790 3		2 7	16 2	0 00			
281	4/22/97	8	1	75	1013 3	6 4	3 8	14 2	5 68	Yes	Yes	Yes
282	4/22/97	9	1	76	1014 7	6 3	3 8	14 2	5 59	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
283	4/22/97	10	1	81	1049	6 2	3 7	14 4	5 65	Yes	Yes	Yes
284	4/22/97	11	0 75	81	1038.9	7	3 6	14 6	6 55	Yes	Yes	Yes
285	4/22/97	14	0 25	0	14 6	2 3	0 8	19 5	9 69			
286	4/22/97	19	0 25	1	219.3	19 3	1.6	18 1	40 66			
287	4/28/97	8	0 5	1	246 8	22 4	1.3	18 6	58 08			
288	4/28/97	10	0 75	38	694.1	34 6	2 2	17 0	53 01			
289	4/28/97	11	1	65	940 1	6	3.7	14 4	5 47	Yes	Yes	Yes
290	4/28/97	12	1	65	938 8	5 9	3 8	14 2	5 23	Yes	Yes	Yes
291	4/28/97	13	0 5	48	768 6	11.8	3 4	14 9	11.70			
292	4/29/97	10	1	70	950 5	13 9	3.6	14 6	13 01	Yes	***** No *****	Yes
293	4/29/97	11	1	84	1069 3	6 2	3.7	14 4	5 65	Yes	Yes	Yes
294	4/29/97	12	1	105	1221.5	6 4	3 8	14 2	5 68	Yes	Yes	Yes
295	4/29/97	13	1	75	1002 4	6 8	3 8	14 2	6 03	Yes	Yes	Yes
296	4/29/97	14	1	74	993 5	6 7	3 7	14 4	6 10	Yes	Yes	Yes
297	4/29/97	15	1	81	1038 3	6 5	3 8	14 2	5 77	Yes	Yes	Yes
298	4/29/97	16	1	77	1011	6 7	3 8	14 2	5 94	Yes	Yes	Yes
299	4/29/97	17	1	86	1080 5	6 5	3 7	14 4	5.92	Yes	Yes	Yes
300	4/29/97	18	1	82	1049 3	6 6	3 8	14 2	5 85	Yes	Yes	Yes
301	4/29/97	19	1	80	1037 4	6 3	3 8	14 2	5.59	Yes	Yes	Yes
302	4/29/97	20	0 75	61	869 5	8 8	3 4	14 9	8 72	Yes	Yes	Yes
303	5/2/97	8	0 5	46	735 7	22 5	3 1	15 5	24 46			
304	5/2/97	9	1	78	1032.6	6 7	3 8	14 2	5 94	Yes	Yes	Yes
305	5/2/97	10	0 75	47	740 3	17.5	2 9	15 8	20 34			
306	5/5/97	14	0 75	66	907.6		3.2	15 3		Yes	Yes	Yes
307	5/5/97	15	1	78	1031.5		3 2	15 3		Yes	Yes	Yes
308	5/5/97	16	1	78	1025 9		3 2	15.3		Yes	Yes	Yes
309	5/5/97	17	1	74	1001 9		3 2	15.3		Yes	Yes	Yes
310	5/5/97	18	1	74	1001.9		3 2	15 3		Yes	Yes	Yes
311	5/5/97	19	1	75	1005 3		3 2	15 3		Yes	Yes	Yes
312	5/5/97	20	0 5	50	740 1		3 2	15 3				
313	5/6/97	10	0 25	1	219 5		3 2	15 3				
314	5/6/97	11	1	66	887.7		3 2	15 3		Yes	Yes	Yes
315	5/6/97	12	1	117	1324 8		3 2	15 3		Yes	Yes	Yes
316	5/6/97	13	1	121	1352 6		3 2	15 3		Yes	Yes	Yes
317	5/6/97	14	1	116	1306 7	6 3	3 6	14 6	5 90	Yes	Yes	Yes
318	5/6/97	15	1	77	1013.7	6 4	3 8	14 2	5 68	Yes	Yes	Yes
319	5/6/97	16	1	76	1003 2	6 5	3 8	14 2	5 77	Yes	Yes	Yes
320	5/6/97	17	1	74	993 2	6 5	3 7	14 4	5 92	Yes	Yes	Yes
321	5/6/97	18	1	74	994 2	6 4	3 7	14 4	5 83	Yes	Yes	Yes
322	5/6/97	19	1	74	995 4	6 5	3 8	14 2	5 77	Yes	Yes	Yes
323	5/6/97	20	1	68	934 1	7 9	3 6	14 6	7 40	Yes	Yes	Yes
324	5/7/97	9	0 75	56	826 5	19 4	3.9	14.1	16 77			
325	5/7/97	10	1	78	1027 7	6 7	4 2	13 5	5 38	Yes	Yes	Yes
326	5/7/97	11	1	78	1020	6 4	3 9	14 1	5.53	Yes	Yes	Yes
327	5/7/97	12	1	85	1071.4	6 1	3 8	14 2	5 41	Yes	Yes	Yes
328	5/7/97	13	1	87	1082 3	6	3 9	14.1	5 19	Yes	Yes	Yes
329	5/7/97	14	1	80	1034 1	5 9	3 7	14 4	5 37	Yes	Yes	Yes
330	5/7/97	15	1	82	1050 1	6 4	4	13 9	5 39	Yes	Yes	Yes
331	5/7/97	16	1	79	1027.2	6 8	4 1	13 7	5 59	Yes	Yes	Yes
332	5/7/97	17	1	77	1014 2	6 9	4 1	13 7	5 67	Yes	Yes	Yes
333	5/7/97	18	0 5	47	683	11.7	3 3	15 1	11.95			
334	5/8/97	7	0 5	42	701 6	0 1	0 1	20 7	3 37			
335	5/8/97	8	1	118	1337.4	5 3	3 7	14 4	4 83	Yes	Yes	Yes
336	5/8/97	9	1	118	1326 7	5 7	3 8	14 2	5 06	Yes	Yes	Yes
337	5/8/97	10	1	77	1026 3	5 8	3 7	14 4	5 28	Yes	Yes	Yes
338	5/8/97	11	1	81	1050	5 7	3 6	14 6	5 34	Yes	Yes	Yes
339	5/8/97	12	1	78	1027 7	5 8	3 7	14 4	5 28	Yes	Yes	Yes
340	5/8/97	13	1	80	1045 6	5 7	3 7	14 4	5 19	Yes	Yes	Yes
341	5/8/97	14	1	82	1058 9	5 6	3 6	14 6	5 24	Yes	Yes	Yes
342	5/8/97	15	1	76	1016	5 7	3 6	14 6	5 34	Yes	Yes	Yes
343	5/8/97	16	1	73	996 8	5 7	3 6	14 6	5 34	Yes	Yes	Yes
344	5/8/97	17	1	73	997.7	5 5	3 5	14 8	5 30	Yes	Yes	Yes
345	5/8/97	18	1	73	999 4	5 6	3 6	14 6	5 24	Yes	Yes	Yes
346	5/8/97	19	0 75	59	843 7	7 6	3 2	15 3	8 01			
347	5/9/97	13	1	67	923 3		2 9	15 8		Yes	Yes	Yes
348	5/9/97	14	1	98	1174.9	5 1	3 4	14.9	5 06	Yes	Yes	Yes
349	5/9/97	15	1	81	1044.9	5 6	3.5	14 8	5 39	Yes	Yes	Yes
350	5/9/97	16	1	75	1002 6	6	3 4	14 9	5 95	Yes	Yes	Yes
351	5/9/97	17	1	75	1001 8	5 8	3 4	14 9	5 75	Yes	Yes	Yes
352	5/9/97	18	1	75	1000 3	6.1	3 4	14.9	6 05	Yes	Yes	Yes
353	5/9/97	19	1	74	1002.5	5 9	3 4	14 9	5 85	Yes	Yes	Yes
354	5/9/97	20	0 5	54	783 4	8 7	2.9	15 8	10 11			
355	5/13/97	9	0 5	45	723 7	23 4	2.3	16 9	34 29			
356	5/13/97	10	1	75	1006 2	5.2	3	15 6	5 84	Yes	Yes	Yes
357	5/13/97	11	1	106	1231	5	3	15 6	5 62	Yes	Yes	Yes
358	5/13/97	12	1	100	1179	4 8	3 1	15 5	5 22	Yes	Yes	Yes
359	5/13/97	13	1	126	1392.5	5 1	3 1	15 5	5 55	Yes	Yes	Yes
360	5/13/97	14	1	131	1433.1	5 1	3	15 6	5 73	Yes	Yes	Yes
361	5/13/97	15	1	132	1435 8	5 4	3 1	15 5	5 87	Yes	Yes	Yes
362	5/13/97	16	1	112	1284 4	5 1	3 1	15 5	5 55	Yes	Yes	Yes
363	5/13/97	17	1	79	1027.4	5 1	3	15 6	5 73	Yes	Yes	Yes
364	5/13/97	18	1	74	993	5 3	3 1	15.5	5 76	Yes	Yes	Yes
365	5/13/97	19	1	76	1005 6	5 3	3 1	15 5	5 76	Yes	Yes	Yes
366	5/13/97	20	1	67	922 7	6 8	2.9	15 8	7.90	Yes	Yes	Yes
367	5/14/97	9	0 5	1	182.7	8 3	1.2	18 8	23 31			
368	5/14/97	10	1	71	981 2	10 6	3 1	15 5	11.53	Yes	***** No *****	Yes
369	5/14/97	11	1	74	1002.7	5	3 1	15 5	5 44	Yes	Yes	Yes
370	5/14/97	12	1	118	1322	4 6	3 2	15 3	4.85	Yes	Yes	Yes
371	5/14/97	13	1	119	1323 1	4 5	3 2	15 3	4.74	Yes	Yes	Yes
372	5/14/97	14	1	122	1350 8	4 4	3 2	15 3	4 63	Yes	Yes	Yes
373	5/14/97	15	1	112	1273	4 6	3 3	15 1	4.70	Yes	Yes	Yes
374	5/14/97	16	1	96	1158.7	4 7	3 2	15 3	4 95	Yes	Yes	Yes
375	5/14/97	17	1	79	1031.2	4 8	3 2	15 3	5 06	Yes	Yes	Yes
376	5/14/97	18	1	75	1004 5	4 9	3 2	15 3	5 16	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
377	5/14/97	19	1	122	1346 8	4.7	3 3	15 1	4 80	Yes	Yes	Yes
378	5/14/97	20	0.75	85	1049 4	6 5	3 1	15 5	7.07	Yes	Yes	Yes
379	5/15/97	10	0.5	72	936 2	14 1	2 8	16 0	16 97	Yes	***** No *****	***** No *****
380	5/15/97	11	1	115	1297 3	4 7	3 2	15 3	4 95	Yes	Yes	Yes
381	5/15/97	12	1	125	1372 4	4 4	3 2	15 3	4 63	Yes	Yes	Yes
382	5/15/97	13	1	122	1352.5	4 5	3 3	15 1	4 60	Yes	Yes	Yes
383	5/15/97	14	1	126	1389	4 5	3 2	15 3	4.74	Yes	Yes	Yes
384	5/15/97	15	1	125	1373 6	4 6	3 2	15 3	4 85	Yes	Yes	Yes
385	5/15/97	16	1	110	1258 9	4 6	3 2	15 3	4 85	Yes	Yes	Yes
386	5/15/97	17	1	76	1008	5 1	3 1	15 5	5 55	Yes	Yes	Yes
387	5/15/97	18	1	79	1032 4	5 1	3 2	15 3	5 37	Yes	Yes	Yes
388	5/15/97	19	1	104	1206 1	4 7	3 2	15 3	4 95	Yes	Yes	Yes
389	5/15/97	20	1	86	1076.2	4 9	3 2	15 3	5 16	Yes	Yes	Yes
390	5/15/97	21	0 75	66	918	7	3 1	15 5	7 61	Yes	Yes	Yes
391	5/16/97	8	0 5	52	785.2	16 6	2 7	16 2	20 72			
392	5/16/97	9	1	124	1375 2	4 9	3 3	15 1	5 00	Yes	Yes	Yes
393	5/16/97	10	1	131	1430.9	5 2	3 3	15 1	5 31	Yes	Yes	Yes
394	5/16/97	11	1	131	1432	5 2	3 2	15 3	5 48	Yes	Yes	Yes
395	5/16/97	12	1	131	1431.1	5 3	3 3	15 1	5 41	Yes	Yes	Yes
396	5/16/97	13	1	130	1426.3	5 3	3 3	15 1	5 41	Yes	Yes	Yes
397	5/16/97	14	1	130	1424.4	5 2	3 2	15 3	5 48	Yes	Yes	Yes
398	5/16/97	15	1	131	1430.6	5 3	3 3	15 1	5 41	Yes	Yes	Yes
399	5/16/97	16	1	92	1129.9	5 1	3 2	15 3	5 37	Yes	Yes	Yes
400	5/16/97	17	1	81	1046.1	4 9	3 2	15 3	5 16	Yes	Yes	Yes
401	5/16/97	18	1	83	1056 8	5	3 2	15 3	5 27	Yes	Yes	Yes
402	5/16/97	19	1	116	1310 9	5	3 3	15 1	5 11	Yes	Yes	Yes
403	5/16/97	20	1	103	1216.9	5	3 2	15 3	5.27	Yes	Yes	Yes
404	5/16/97	21	1	95	1149.9	4 9	3 3	15 1	5 00	Yes	Yes	Yes
405	5/16/97	22	0 5	58	833 6	8 8	3	15 6	9.89			
406	5/17/97	6	0.5	57	835.4		3 2	15 3				
407	5/17/97	7	1	91	1115.6	4 8	3 3	15 1	4 90	Yes	Yes	Yes
408	5/17/97	8	1	121	1351.1	5	3 2	15 3	5 27	Yes	Yes	Yes
409	5/17/97	9	1	131	1430 1	5 3	3 3	15.1	5 41	Yes	Yes	Yes
410	5/17/97	10	1	130	1424.3	5 3	3 3	15 1	5 41	Yes	Yes	Yes
411	5/17/97	11	1	129	1418 4	5 2	3 2	15.3	5 48	Yes	Yes	Yes
412	5/17/97	12	1	129	1414	5 3	3 2	15.3	5 58	Yes	Yes	Yes
413	5/17/97	13	1	129	1412 3	5 3	3 2	15 3	5 58	Yes	Yes	Yes
414	5/17/97	14	1	130	1417.4	5 2	3 2	15 3	5 48	Yes	Yes	Yes
415	5/17/97	15	1	130	1419	5 3	3 2	15 3	5 58	Yes	Yes	Yes
416	5/17/97	16	1	130	1420	5 3	3 3	15 1	5 41	Yes	Yes	Yes
417	5/17/97	17	1	130	1419 1	5 2	3 2	15 3	5 48	Yes	Yes	Yes
418	5/17/97	18	1	130	1419 5	5 2	3 3	15 1	5 31	Yes	Yes	Yes
419	5/17/97	19	1	130	1425.3	5 3	3 3	15.1	5 41	Yes	Yes	Yes
420	5/17/97	20	1	131	1428.8	5 2	3 2	15 3	5 48	Yes	Yes	Yes
421	5/17/97	21	0 5	87	1062 1	7.8	3	15 6	8 76	Yes	Yes	Yes
422						19	2 8	16 0	22 87			
423	5/19/97	7	1	102	1201 2	4 8	3 4	14.9	4.76	Yes	Yes	Yes
424	5/19/97	8	1	121	1345 3	4 8	3 3	15 1	4 90	Yes	Yes	Yes
425	5/19/97	9	1	118	1322 6	4 8	3 4	14.9	4.76	Yes	Yes	Yes
426	5/19/97	10	1	126	1385 3	4 9	3 3	15 1	5 00	Yes	Yes	Yes
427	5/19/97	11	1	134	1452 2	5	3 3	15 1	5 11	Yes	Yes	Yes
428	5/19/97	12	1	133	1449 9	5 2	3 3	15 1	5 31	Yes	Yes	Yes
429	5/19/97	13	1	132	1442	5 2	3 3	15.1	5 31	Yes	Yes	Yes
430	5/19/97	14	1	126	1383 1	4 9	3 3	15 1	5 00	Yes	Yes	Yes
431	5/19/97	15	1	102	1193 9	4 8	3 3	15 1	4 90	Yes	Yes	Yes
432	5/19/97	16	1	95	1143 9	4 8	3 3	15 1	4 90	Yes	Yes	Yes
433	5/19/97	17	1	78	1021.2	5 1	3 2	15 3	5.37	Yes	Yes	Yes
434	5/19/97	18	0 5	59	841 6	8 2	3	15 6	9 21			
435	5/20/97	8	0.5	23	483 1	19 3	2	17.4	32 53			
436	5/20/97	9	1	87	1095	5	3 2	15 3	5 27	Yes	Yes	Yes
437	5/20/97	10	1	97	1164 8	4 8	3 3	15 1	4.90	Yes	Yes	Yes
438	5/20/97	11	1	131	1435 6	5 6	3 3	15 1	5 72	Yes	Yes	Yes
439	5/20/97	12	1	111	1266 5	5 3	3 3	15 1	5 41	Yes	Yes	Yes
440	5/20/97	13	1	81	1040 8	5 3	3 3	15 1	5 41	Yes	Yes	Yes
441	5/20/97	14	1	83	1057 6	5 4	3 2	15 3	5 69	Yes	Yes	Yes
442	5/20/97	15	1	79	1029 6	5 6	3 3	15 1	5 72	Yes	Yes	Yes
443	5/20/97	16	0 75	67	920 1	7 3	3 1	15 5	7.94	Yes	Yes	Yes
444	5/21/97	8	0 5	40	658 4	15 1	2 5	16 5	20 36			
445	5/21/97	9	1	73	1001.1	5	3 4	14 9	4 96	Yes	Yes	Yes
446	5/21/97	10	1	69	965	5 5	3 3	15 1	5 62	Yes	Yes	Yes
447	5/21/97	11	0 25	2	217.6	21 3	1.9	17 6	37 79			
448	5/22/97	10	0 25	1	52	0 2	0 4	20 2	1.69			
449	5/22/97	11	0.75	61	909 3	18 3	2 7	16 2	22 85	Yes	***** No *****	***** No *****
450	5/23/97	9	0.75	53	802 5	22 8	2 5	16 5	30 74			
451	5/23/97	10	1	65	912 4	6 2	3 3	15.1	6 33	Yes	Yes	Yes
452	5/28/97	15	0.25	7	330 8	18 8	1.7	17.9	37 28			
453	5/28/97	16	1	81	1060	8	3 5	14 8	7.70	Yes	Yes	Yes
454	5/28/97	17	1	72	985	5 2	3 4	14 9	5 16	Yes	Yes	Yes
455	5/29/97	7	0.75	63	891.8	14 4	3 1	15 5	15 66	Yes	***** No *****	***** No *****
456	5/29/97	8	1	79	1042.3	3 5	3 5	14 8	3 37	Yes	Yes	Yes
457	5/29/97	9	1	83	1059 4	3 6	3 5	14 8	3 47	Yes	Yes	Yes
458	5/29/97	10	1	82	1052 2	3 6	3 5	14 8	3 47	Yes	Yes	Yes
459	5/29/97	11	1	76	1011.1	4 8	3 4	14 9	4 76	Yes	Yes	Yes
460	6/2/97	8	0 75	65	898 1	15	3	15 6	18 85	Yes	***** No *****	***** No *****
461	6/2/97	9	1	97	1167 3	2 6	3 5	14 8	2 50	Yes	Yes	Yes
462	6/2/97	10	1	98	1184 4	4	3 5	14 8	3 85	Yes	Yes	Yes
463	6/2/97	11	1	82	1052 5	3.3	3 4	14.9	3 27	Yes	Yes	Yes
464	6/2/97	12	1	112	1284.1	4 5	3 5	14 8	4 33	Yes	Yes	Yes
465	6/2/97	13	1	117	1313 5	4 8	3 5	14 8	4 62	Yes	Yes	Yes
466	6/2/97	14	1	126	1395 4	5 2	3 5	14 8	5 01	Yes	Yes	Yes
467	6/2/97	15	1	127	1402	5 4	3 5	14 8	5 20	Yes	Yes	Yes
468	6/2/97	16	1	127	1397 4	5 4	3 5	14.8	5 20	Yes	Yes	Yes
469	6/2/97	17	1	93	1132 2	3 7	3 4	14 9	3 67	Yes	Yes	Yes
470	6/2/97	18	1	85	1072 5	3 5	3 5	14 8	3 37	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
471	6/2/97	19	1	86	1083 8	3 4	3 5	14 8	3 27	Yes	Yes	Yes
472	6/2/97	20	1	81	1044 8	4,3	3 4	14 9	4 26	Yes	Yes	Yes
473	6/3/97	8	1	68	937.3	12.8	3,1	15 5	13.92	Yes	***** No *****	Yes
474	6/3/97	9	1	81	1049 6	3 5	3 6	14 6	3 28	Yes	Yes	Yes
475	6/3/97	10	1	83	1060 6	3 4	3 6	14 6	3 18	Yes	Yes	Yes
476	6/3/97	11	1	82	1058 2	3 3	3 5	14 8	3 18	Yes	Yes	Yes
477	6/3/97	12	1	83	1061 2	3 4	3 6	14 6	3 18	Yes	Yes	Yes
478	6/3/97	13	1	83	1061 9	3 4	3 5	14 8	3 27	Yes	Yes	Yes
479	6/3/97	14	1	83	1060	3 3	3 5	14 8	3 18	Yes	Yes	Yes
480	6/3/97	15	1	83	1061 2	3 4	3 5	14 8	3 27	Yes	Yes	Yes
481	6/3/97	16	1	79	1038 6	3 4	3 5	14 8	3 27	Yes	Yes	Yes
482	6/3/97	17	1	81	1051 2	3 4	3 5	14 8	3 27	Yes	Yes	Yes
483	6/3/97	18	1	75	1007.7	3 4	3 5	14 8	3 27	Yes	Yes	Yes
484	6/3/97	19	1	79	1039 2	3 4	3 5	14 8	3 27	Yes	Yes	Yes
485	6/3/97	20	1	74	1004.2	3 3	3 5	14 8	3 18	Yes	Yes	Yes
486	6/3/97	21	0 25	16	522.8	35	3 2	15 3	36 87			
487	6/4/97	7	0 25	16	444.5	28	2 2	17.0	42.90			
488	6/4/97	8	1	83	1066 2	5 7	3 6	14 6	5 34	Yes	Yes	Yes
489	6/4/97	9	1	92	1126	3 9	3 5	14 8	3 76	Yes	Yes	Yes
490	6/4/97	10	1	83	1060 6	3 6	3.5	14 8	3 47	Yes	Yes	Yes
491	6/4/97	11	1	89	1101.2	3 6	3 4	14 9	3 57	Yes	Yes	Yes
492	6/4/97	12	1	87	1088 3	3 6	3 5	14 8	3 47	Yes	Yes	Yes
493	6/4/97	13	1	127	1406	5 3	3 5	14 8	5 10	Yes	Yes	Yes
494	6/4/97	14	1	129	1415.7	5 3	3 5	14 8	5 10	Yes	Yes	Yes
495	6/4/97	15	1	128	1413	5 3	3 5	14.8	5 10	Yes	Yes	Yes
496	6/4/97	16	1	128	1407 8	5 3	3 5	14 8	5 10	Yes	Yes	Yes
497	6/4/97	17	1	109	1256.5	4.5	3 4	14 9	4 46	Yes	Yes	Yes
498	6/4/97	18	1	86	1074 7	3 6	3 4	14 9	3 57	Yes	Yes	Yes
499	6/4/97	19	1	83	1058 4		3 2	15 3		Yes	Yes	Yes
500	6/4/97	20	1	88	1094.2		3 2	15 3		Yes	Yes	Yes
501	6/4/97	21	0.25	55	818		3 2	15 3				
502	6/5/97	9	0 75	59	848 4	14 9	3	15 6	16 74			
503	6/5/97	10	1	82	1054 4	3 5	3 5	14.8	3 37	Yes	Yes	Yes
504	6/5/97	11	1	105	1225 3	4 2	3 4	14.9	4 16	Yes	Yes	Yes
505	6/5/97	12	1	96	1168.4	3.9	3 4	14.9	3 87	Yes	Yes	Yes
506	6/5/97	13	1	125	1393 4	5 4	3 5	14 8	5 20	Yes	Yes	Yes
507	6/5/97	14	1	125	1393.2	5 4	3 4	14 9	5 35	Yes	Yes	Yes
508	6/5/97	15	1	77	1020 2	3 6	3 4	14 9	3 57	Yes	Yes	Yes
509	6/5/97	16	1	74	996 7	3 3	3 4	14 9	3 27	Yes	Yes	Yes
510	6/5/97	17	1	74	994 8	3 3	3 3	15.1	3 37	Yes	Yes	Yes
511	6/5/97	18	1	74	992 7	3 3	3 4	14 9	3 27	Yes	Yes	Yes
512	6/5/97	19	1	80	1041	3 4	3 4	14 9	3 37	Yes	Yes	Yes
513	6/5/97	20	0 5	68	946 5	5 5	3 4	14 9	5 45	Yes	Yes	Yes
514	6/9/97	8	0.75	58	854 5	16 9	2 4	16 7	23 74			
515	6/9/97	9	1	82	1067.8	3 6	3 5	14 8	3 47	Yes	Yes	Yes
516	6/9/97	10	1	82	1063 3	3 5	3 5	14 8	3 37	Yes	Yes	Yes
517	6/9/97	11	1	75	1010.9	3 4	3 4	14 9	3 37	Yes	Yes	Yes
518	6/9/97	12	1	74	1009	3 6	3 5	14 8	3 47	Yes	Yes	Yes
519	6/9/97	13	1	74	1004	3 7	3 5	14 8	3 56	Yes	Yes	Yes
520	6/9/97	14	1	74	1001.5	3 6	3 5	14 8	3 47	Yes	Yes	Yes
521	6/9/97	15	0 75	68	952.5	5 8	3 5	14 8	5 59	Yes	Yes	Yes
522	6/10/97	8	0 25	18	447 3	25 6	2.1	17.2	41.09			
523	6/10/97	9	1	74	1006 3	5 6	3 6	14.6	5 24	Yes	Yes	Yes
524	6/10/97	10	1	74	1000.9	3 6	3 5	14 8	3 47	Yes	Yes	Yes
525	6/10/97	11	1	79	1032.9	3 6	3 5	14 8	3 47	Yes	Yes	Yes
526	6/10/97	12	1	95	1147.5	3 8	3 5	14 8	3 66	Yes	Yes	Yes
527	6/10/97	13	1	107	1240.8	4 5	3 6	14 6	4 21	Yes	Yes	Yes
528	6/10/97	14	1	74	996 8	3 5	3 4	14 9	3 47	Yes	Yes	Yes
529	6/10/97	15	0 5	62	895 2	6 8	3 3	15 1	6 95	Yes	Yes	Yes
530	6/18/97	14	0 25	21	483 4	40 2	3	15 6	45 17			
531	6/18/97	15	1	75	1011.8	5 2	4 2	13 5	4.17	Yes	Yes	Yes
532	6/18/97	16	1	85	1081 8	4 3	3 9	14 1	3,72	Yes	Yes	Yes
533	6/18/97	17	0 25	28	602 4	18 6	3 3	15 1	19 00			
534	6/19/97	8	0 25	27	529 4	29 6	2 6	16 3	38 37			
535	6/19/97	9	1	85	1090	4 2	3 9	14 1	3 63	Yes	Yes	Yes
536	6/19/97	10	1	126	1401 6	5 5	4 1	13 7	4 52	Yes	Yes	Yes
537	6/19/97	11	1	127	1403.2	6	3 9	14 1	5 19	Yes	Yes	Yes
538	6/19/97	12	1	127	1404 9	6 1	4.1	13 7	5 01	Yes	Yes	Yes
539	6/19/97	13	1	105	1232 3	4 7	4	13.9	3.96	Yes	Yes	Yes
540	6/19/97	14	1	80	1038.8	3 8	3 8	14 2	3 37	Yes	Yes	Yes
541	6/19/97	15	1	78	1020 6	3 8	3 9	14 1	3 28	Yes	Yes	Yes
542	6/19/97	16	1	79	1028 3	3 9	3 9	14.1	3 37	Yes	Yes	Yes
543	6/19/97	17	1	77	1015.7	3 7	3 8	14 2	3 28	Yes	Yes	Yes
544	6/19/97	18	1	75	1001.6	3 8	3 9	14 1	3 28	Yes	Yes	Yes
545	6/19/97	19	1	78	1023 1	3 7	3.9	14 1	3 20	Yes	Yes	Yes
546	6/19/97	20	1	78	1026 8	3 7	3 8	14 2	3 28	Yes	Yes	Yes
547	6/19/97	21	0 5	56	826 9	9 6	3 6	14 6	8 99			
548	6/20/97	7	0 5	40	665 3	22 3	3	15 6	25 06			
549	6/20/97	8	1	87	1089.8	4 3	3 9	14.1	3 72	Yes	Yes	Yes
550	6/20/97	9	1	123	1375.7	5 7	3 9	14.1	4.93	Yes	Yes	Yes
551	6/20/97	10	1	93	1134 3	4 5	3 9	14.1	3 89	Yes	Yes	Yes
552	6/20/97	11	1	94	1140	4 6	3 8	14 2	4 08	Yes	Yes	Yes
553	6/20/97	12	1	111	1278	5 3	3 9	14 1	4 58	Yes	Yes	Yes
554	6/20/97	13	1	82	1048.2	4 1	3 8	14 2	3 64	Yes	Yes	Yes
555	6/20/97	14	1	77	1014 4	3 9	3 7	14 4	3 55	Yes	Yes	Yes
556	6/20/97	15	1	69	943.7	5 8	3 7	14 4	5 28	Yes	Yes	Yes
557	6/23/97	8	1	94	1135	13	3 5	14 8	12 52	Yes	***** No *****	Yes
558	6/23/97	9	1	127	1414 2	5 9	4	13 9	4.97	Yes	Yes	Yes
559	6/23/97	10	1	127	1409 2	5 7	4	13 9	4 80	Yes	Yes	Yes
560	6/23/97	11	1	127	1407.7	5 7	3 9	14 1	4 93	Yes	Yes	Yes
561	6/23/97	12	1	93	1137 2	4 3	3 9	14 1	3 72	Yes	Yes	Yes
562	6/23/97	13	1	87	1088 9	3 9	3 9	14.1	3 37	Yes	Yes	Yes
563	6/23/97	14	1	76	1009 2	3 7	3 8	14.2	3 28	Yes	Yes	Yes
564	6/23/97	15	1	75	999 4	3 8	3 8	14 2	3 37	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
565	6/23/97	16	0 75	70	961	5 2	3 8	14.2	4 61	Yes	Yes	Yes
566	6/26/97	15	0 75	77	985 4	25 2	3	15.6	28 31	Yes	***** No *****	***** No *****
567	6/26/97	16	1	118	1329 1	5 2	3.9	14.1	4 49	Yes	Yes	Yes
568	6/26/97	17	1	129	1418 9	5 9	3.9	14.1	5.10	Yes	Yes	Yes
569	6/26/97	18	0 75	95	1144	8 6	3.7	14.4	7 83	Yes	Yes	Yes
570	6/27/97	9	0 25	0	0	0 2	0	20.9				
571	6/27/97	10	1	64	907 5	10 6	3.6	14.6	9.92	Yes	***** No *****	Yes
572	6/27/97	11	1	74	996 4	3 9	3 7	14.4	3.55	Yes	Yes	Yes
573	6/27/97	12	1	74	996 4	3 9	3 8	14 2	3 46	Yes	Yes	Yes
574	6/27/97	13	1	80	1039	4 2	3 8	14 2	3 73	Yes	Yes	Yes
575	6/27/97	14	1	74	1000 4	4	3 7	14 4	3 64	Yes	Yes	Yes
576	6/27/97	15	1	81	1046 7	4 3	3 8	14 2	3 81	Yes	Yes	Yes
577	6/27/97	16	1	75	1004 7	4	3 8	14.2	3 55	Yes	Yes	Yes
578	6/27/97	17	0 75	66	921.4	6 1	3 6	14.6	5 71	Yes	Yes	Yes
579	6/30/97	10	0 75	60	872 3	16	3 3	15.1	16.34			
580	6/30/97	11	1	80	1039 9	3 9	3.7	14.4	3 55	Yes	Yes	Yes
581	6/30/97	12	1	89	1101.8	4 6	3 8	14 2	4 08	Yes	Yes	Yes
582	6/30/97	13	1	113	1293	5 1	3 8	14.2	4.52	Yes	Yes	Yes
583	6/30/97	14	1	121	1343 3	5 1	3.8	14.2	4.52	Yes	Yes	Yes
584	6/30/97	15	1	122	1358 8	5 2	3.9	14.1	4 49	Yes	Yes	Yes
585	6/30/97	16	1	90	1104 6	4 5	3.8	14.2	3 99	Yes	Yes	Yes
586	6/30/97	17	1	79	1023.9	4	3 7	14.4	3.64	Yes	Yes	Yes
587	6/30/97	18	1	75	1002.4	3 9	3 8	14.2	3.46	Yes	Yes	Yes
588	6/30/97	19	1	82	1049 5	3 9	3.8	14.2	3.46	Yes	Yes	Yes
589	6/30/97	20	1	75	1000.3	4	3 7	14.4	3 64	Yes	Yes	Yes
590	6/30/97	21	0 25	12	339 2	29 5	1.9	17.6	52 33			
591	7/7/97	12	0.25	14	393 1	30 5	2 2	17.0	46.73			
592	7/7/97	13	1	65	942	8 5	3 8	14.2	7.54	Yes	Yes	Yes
593	7/7/97	14	1	79	1034 9	3 9	3 7	14.4	3 55	Yes	Yes	Yes
594	7/7/97	15	1	87	1090 1	4 4	3 8	14 2	3.90	Yes	Yes	Yes
595	7/7/97	16	1	78	1023 3	4	3 8	14.2	3.55	Yes	Yes	Yes
596	7/7/97	17	1	79	1033 4	3 9	3 7	14.4	3.55	Yes	Yes	Yes
597	7/7/97	18	0.25	22	404.3	18 7	2	17.4	31.52			
598	7/8/97	9	0 25	9	343 1	17 4	2	17 4	29.33			
599	7/8/97	10	1	92	1141 8	8	3 9	14.1	6 91	Yes	Yes	Yes
600	7/8/97	11	1	117	1319 7	4 9	3 9	14.1	4.23	Yes	Yes	Yes
601	7/8/97	12	1	124	1379 9	5	3 9	14.1	4 32	Yes	Yes	Yes
602	7/8/97	13	1	121	1349 9	5 1	3 9	14.1	4 41	Yes	Yes	Yes
603	7/8/97	14	1	123	1370 2	5 1	3 8	14.2	4.52	Yes	Yes	Yes
604	7/8/97	15	1	123	1363 8	5 2	3.9	14.1	4.49	Yes	Yes	Yes
605	7/8/97	16	1	120	1341.6	5 2	3 9	14.1	4.49	Yes	Yes	Yes
606	7/8/97	17	0 5	67	874.7	9	3 2	15.3	9 48	Yes	***** No *****	Yes
607	7/9/97	13	1	60	857 9	20 4	3 1	15.5	22.18			
608	7/9/97	14	1	79	1028 5	4 2	3.7	14.4	3 83	Yes	Yes	Yes
609	7/9/97	15	1	81	1040 6	4 2	3.7	14.4	3 83	Yes	Yes	Yes
610	7/9/97	16	1	75	997.7	4	3 7	14.4	3 64	Yes	Yes	Yes
611	7/9/97	17	1	67	913	6 1	3.4	14.9	6 05	Yes	Yes	Yes
612	7/9/97	18	0 25	0	0 2	2.1	0 1	20.7	70 78			
613	7/10/97	8	0 25	9	349 3	21 3	1 9	17.6	37.79			
614	7/10/97	9	1	74	1006 4	7.8	3.8	14.2	6 92	Yes	Yes	Yes
615	7/10/97	10	1	74	1002 5	3 9	3 8	14.2	3 46	Yes	Yes	Yes
616	7/10/97	11	1	74	999.3	3 7	3 7	14.4	3 37	Yes	Yes	Yes
617	7/10/97	12	1	92	1135.5	4 5	3 8	14.2	3.99	Yes	Yes	Yes
618	7/10/97	13	1	118	1326 7	5 3	3 9	14.1	4.58	Yes	Yes	Yes
619	7/10/97	14	1	111	1270	5	3 8	14.2	4 44	Yes	Yes	Yes
620	7/10/97	15	1	121	1350 4	5 5	3 9	14.1	4.75	Yes	Yes	Yes
621	7/10/97	16	1	74	992.4	3 9	3 8	14.2	3.46	Yes	Yes	Yes
622	7/10/97	17	0 75	61	850 1	7 6	3.2	15.3	8 01	Yes	Yes	Yes
623	7/11/97	8	0 5	45	718 4	21 2	3	15.6	23 82			
624	7/11/97	9	1	76	1014 9	4 1	3 8	14.2	3 64	Yes	Yes	Yes
625	7/11/97	10	1	75	1004 2	3 9	3 8	14.2	3 46	Yes	Yes	Yes
626	7/11/97	11	1	75	1003 1	3 8	3 7	14.4	3 46	Yes	Yes	Yes
627	7/11/97	12	1	75	1002.7	3 8	3 7	14 4	3 46	Yes	Yes	Yes
628	7/11/97	13	0 25	73	984 5	3 8	3.7	14 4	3 46	Yes	Yes	Yes
629	7/14/97	8	0 25	10	360	24 2	2	17.4	40 79			
630	7/14/97	9	1	94	1162.9	8 3	3 9	14.1	7.17	Yes	Yes	Yes
631	7/14/97	10	1	123	1373 9	5 2	3 9	14.1	4 49	Yes	Yes	Yes
632	7/14/97	11	1	124	1380 8	4 8	3 8	14 2	4 26	Yes	Yes	Yes
633	7/14/97	12	1	123	1367.4	5 2	3 9	14.1	4 49	Yes	Yes	Yes
634	7/14/97	13	1	122	1353 9	5 2	3 9	14.1	4 49	Yes	Yes	Yes
635	7/14/97	14	1	124	1375 6	5 1	3 8	14 2	4 52	Yes	Yes	Yes
636	7/14/97	15	1	122	1355 5	5 1	3 9	14.1	4 41	Yes	Yes	Yes
637	7/14/97	16	1	103	1203 7	5	3 8	14 2	4 44	Yes	Yes	Yes
638	7/14/97	17	1	76	1009 4	3.9	3.7	14.4	3 55	Yes	Yes	Yes
639	7/14/97	18	1	76	1013 3	3 8	3 8	14.2	3 37	Yes	Yes	Yes
640	7/14/97	19	1	92	1126 7	4 2	3 8	14 2	3 73	Yes	Yes	Yes
641	7/14/97	20	1	99	1186 3	4 5	3 8	14 2	3 99	Yes	Yes	Yes
642	7/14/97	21	0 25	38	592 5	14 1	2 5	16 5	19 01			
643	7/15/97	7	0 25	0	257.3	10 8	1.7	17 9	21.41			
644	7/15/97	8	0 25	0	205 8	13 1	1.1	19 0	40 14			
645	7/15/97	12	0 25	0	187 2	9 5	1.7	17.9	18 84			
646	7/15/97	13	1	71	986 4	13 7	3 7	14.4	12.48	Yes	***** No *****	Yes
647	7/15/97	14	1	75	1004.9	4	3 6	14 6	3 75	Yes	Yes	Yes
648	7/15/97	15	1	75	1005 4	4 1	3 7	14 4	3 74	Yes	Yes	Yes
649	7/15/97	16	1	74	1001.5	4 1	3 7	14 4	3 74	Yes	Yes	Yes
650	7/15/97	17	1	74	1000 2	3 9	3 6	14.6	3 65	Yes	Yes	Yes
651	7/15/97	18	1	74	1002 2	4	3 7	14 4	3 64	Yes	Yes	Yes
652	7/15/97	19	1	74	1003 1	4	3 8	14 2	3 55	Yes	Yes	Yes
653	7/15/97	20	0 75	63	868 1	7 2	3 2	15 3	7 58	Yes	Yes	Yes
654	7/16/97	7	0 5	53	798 8	25	3	15 6	28 09			
655	7/16/97	8	1	94	1146 9	4 4	3 7	14 4	4 01	Yes	Yes	Yes
656	7/16/97	9	1	121	1354 5	5 2	3 9	14 1	4 49	Yes	Yes	Yes
657	7/16/97	10	1	93	1129 9	4 5	3 8	14 2	3 99	Yes	Yes	Yes
658	7/16/97	11	1	111	1273 4	5	3 8	14 2	4 44	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
659	7/16/97	12	1	123	1366 9	5 4	3 9	14 1	4 67	Yes	Yes	Yes
660	7/16/97	13	1	122	1357	5 4	3 8	14 2	4.79	Yes	Yes	Yes
661	7/16/97	14	1	118	1330 4	5 4	3 8	14 2	4.79	Yes	Yes	Yes
662	7/16/97	15	1	117	1326 1	5 3	3 9	14 1	4 58	Yes	Yes	Yes
663	7/16/97	16	1	105	1224.1	4 9	3 9	14 1	4 23	Yes	Yes	Yes
664	7/16/97	17	1	94	1143 1	4 6	3 7	14 4	4.19	Yes	Yes	Yes
665	7/16/97	18	1	101	1197.3	4 6	3 8	14 2	4 08	Yes	Yes	Yes
666	7/16/97	19	1	100	1187.6	4 8	3.8	14 2	4 26	Yes	Yes	Yes
667	7/16/97	20	0 5	52	735 6	9 8	2 9	15 8	11.39			
668	7/17/97	7	0 25	0	112.9	1.5	1 4	18 4	3 61			
669	7/17/97	8	1	70	972 9	14 3	3 6	14 6	13 39	Yes	***** No *****	Yes
670	7/17/97	9	1	74	1000 5	4 1	3 7	14 4	3 74	Yes	Yes	Yes
671	7/17/97	10	0 25	73	997 2	4 1	3 7	14 4	3 74	Yes	Yes	Yes
672	7/17/97	13	0 25	0	89	3 1	1 2	18 8	8 71			
673	7/17/97	14	1	69	955 3	11.7	3 5	14 8	11 27	Yes	***** No *****	Yes
674	7/17/97	15	1	74	1000 2	4 2	3 7	14 4	3 83	Yes	Yes	Yes
675	7/17/97	16	1	74	1001 5	4 1	3 7	14 4	3.74	Yes	Yes	Yes
676	7/17/97	17	1	74	1000 6	4	3 6	14 6	3 75	Yes	Yes	Yes
677	7/17/97	18	0 5	54	766 1	10	3	15 6	11.24			
678	7/18/97	9	1	61	867.1	12.7	3 4	14 9	12.59	Yes	***** No *****	Yes
679	7/18/97	10	1	77	1020 3	4 2	3 8	14 2	3.73	Yes	Yes	Yes
680	7/18/97	11	1	97	1167 4	4 4	3 7	14 4	4 01	Yes	Yes	Yes
681	7/18/97	12	1	118	1328 8	5 3	3 9	14.1	4 58	Yes	Yes	Yes
682	7/18/97	13	1	123	1379 5	5 9	3 9	14 1	5.10	Yes	Yes	Yes
683	7/18/97	14	1	107	1244 8	5 4	3 7	14 4	4 92	Yes	Yes	Yes
684	7/18/97	15	1	122	1364 5	5 9	3 9	14 1	5 10	Yes	Yes	Yes
685	7/18/97	16	1	76	1013.1	4 2	3 7	14 4	3 83	Yes	Yes	Yes
686	7/18/97	17	0 5	51	733 6	10	2.9	15 8	11 62			
687	7/21/97	10	1	78	1009 3	15 2	3 2	15 3	16 01	Yes	***** No *****	***** No *****
688	7/21/97	11	1	126	1403 4	8.1	3.9	14 1	5 27	Yes	Yes	Yes
689	7/21/97	12	1	127	1405 1	6 3	4	13 9	5 31	Yes	Yes	Yes
690	7/21/97	13	1	78	1025 5	4 3	3 8	14 2	3 81	Yes	Yes	Yes
691	7/21/97	14	1	75	997.4	4	3.7	14 4	3 64	Yes	Yes	Yes
692	7/21/97	15	1	78	1023 2	4 2	3 8	14 2	3 73	Yes	Yes	Yes
693	7/21/97	16	1	78	1022 8	4 1	3 8	14 2	3.64	Yes	Yes	Yes
694	7/21/97	17	1	75	1005 7	3 8	3.7	14 4	3.46	Yes	Yes	Yes
695	7/21/97	18	1	75	1006 3	4	3 8	14 2	3 55	Yes	Yes	Yes
696	7/21/97	19	1	85	1078	4 3	3 8	14 2	3 81	Yes	Yes	Yes
697	7/21/97	20	1	90	1119 4	4 3	3 8	14 2	3.81	Yes	Yes	Yes
698	7/21/97	21	1	85	1081.2	4 1	3 8	14 2	3 64	Yes	Yes	Yes
699	7/21/97	22	0 5	47	693 4	10 1	2.8	16 0	12.16			
700	7/22/97	6	0 5	41	665 8	25 9	2.6	16 3	33.58			
701	7/22/97	7	1	79	1031.1	4.1	3 8	14 2	3 64	Yes	Yes	Yes
702	7/22/97	8	1	75	1001.9	3 6	3 7	14 4	3 28	Yes	Yes	Yes
703	7/22/97	9	1	86	1082 3	4	3 8	14.2	3.55	Yes	Yes	Yes
704	7/22/97	10	1	107	1250	4.9	3 8	14 2	4 35	Yes	Yes	Yes
705	7/22/97	11	1	114	1297.1	5 1	3 8	14.2	4 52	Yes	Yes	Yes
706	7/22/97	12	1	113	1288	5 3	3.9	14 1	4 58	Yes	Yes	Yes
707	7/22/97	13	1	78	1015 2	4 2	3 8	14 2	3 73	Yes	Yes	Yes
708	7/22/97	14	1	102	1198 7	4 8	3 7	14 4	4 37	Yes	Yes	Yes
709	7/22/97	15	1	126	1388 1	5 9	3 9	14.1	5 10	Yes	Yes	Yes
710	7/22/97	16	1	76	1001.7	4 1	3 8	14 2	3 64	Yes	Yes	Yes
711	7/22/97	17	1	76	998	3 8	3 6	14 6	3 56	Yes	Yes	Yes
712	7/22/97	18	1	80	1027.1	4 1	3.8	14 2	3 64	Yes	Yes	Yes
713	7/22/97	19	1	107	1232.3	5	3.9	14.1	4 32	Yes	Yes	Yes
714	7/22/97	20	1	86	1073 1	4 2	3 8	14 2	3 73	Yes	Yes	Yes
715	7/22/97	21	1	68	920 8	6 3	3 8	14 6	5 90	Yes	Yes	Yes
716	7/22/97	22	0 25	0	0 2	1.7	0	20 9				
717	7/23/97	8	0.75	62	872 9	8 2	3 3	15 1	8 38	Yes	Yes	Yes
718	7/23/97	9	1	79	1035 9	4.1	3 8	14 2	3 64	Yes	Yes	Yes
719	7/23/97	10	1	95	1152.6	4.7	3 9	14 1	4 06	Yes	Yes	Yes
720	7/23/97	11	1	97	1161.7	4 4	3 8	14 2	3 90	Yes	Yes	Yes
721	7/23/97	12	1	94	1136	4 5	3.8	14 2	3 99	Yes	Yes	Yes
722	7/23/97	13	1	114	1292.5	5 5	3 9	14 1	4 75	Yes	Yes	Yes
723	7/23/97	14	1	122	1356 8	5 8	3 9	14.1	5 01	Yes	Yes	Yes
724	7/23/97	15	1	114	1283 2	5 2	3 9	14 1	4 49	Yes	Yes	Yes
725	7/23/97	16	1	100	1185 9	4 8	3 8	14 2	4 26	Yes	Yes	Yes
726	7/23/97	17	1	77	1014 8	3 9	3 8	14 2	3 46	Yes	Yes	Yes
727	7/23/97	18	1	79	1034.9	3 8	3 8	14 2	3.37	Yes	Yes	Yes
728	7/23/97	19	1	90	1113 3	3 9	3 9	14 1	3 37	Yes	Yes	Yes
729	7/23/97	20	0 75	61	858 2	5 1	3 3	15.1	5 21	Yes	Yes	Yes
730	7/24/97	7	0 25	30	556 6	24 6	2.7	16 2	30.71			
731	7/24/97	8	1	80	1045 8	4.3	4	13 9	3 62	Yes	Yes	Yes
732	7/24/97	9	1	98	1175	4 6	4	13 9	3 88	Yes	Yes	Yes
733	7/24/97	10	1	107	1239	4 9	4	13 9	4 13	Yes	Yes	Yes
734	7/24/97	11	1	117	1319 6	5 2	4	13 9	4 38	Yes	Yes	Yes
735	7/24/97	12	1	124	1376 6	5 6	4 1	13 7	4 60	Yes	Yes	Yes
736	7/24/97	13	1	122	1353 7	5 5	4 1	13 7	4 52	Yes	Yes	Yes
737	7/24/97	14	1	121	1344 8	5 1	4	13 9	4 30	Yes	Yes	Yes
738	7/24/97	15	1	121	1345 2	5 1	4	13 9	4 30	Yes	Yes	Yes
739	7/24/97	16	1	121	1347.1	5 1	4	13 9	4 30	Yes	Yes	Yes
740	7/24/97	17	1	112	1277 5	4 8	4	13.9	4 04	Yes	Yes	Yes
741	7/24/97	18	1	112	1277	5 2	4 1	13.7	4 28	Yes	Yes	Yes
742	7/24/97	19	1	96	1149 2	4 5	4	13 9	3 79	Yes	Yes	Yes
743	7/24/97	20	1	80	1029 2	3.9	3 9	14 1	3 37	Yes	Yes	Yes
744	7/24/97	21	0 25	32	524 4	11.9	2 6	16 3	15 43			
745	7/25/97	6	0 25	34	603 8	27.4	2.9	15 8	31.85			
746	7/25/97	7	1	74	1003 4	3 9	4	13 9	3 29	Yes	Yes	Yes
747	7/25/97	8	1	80	1038.5	3 9	3 9	14.1	3 37	Yes	Yes	Yes
748	7/25/97	9	1	81	1042.7	3 9	4	13 9	3 29	Yes	Yes	Yes
749	7/25/97	10	1	88	1091.4	4.1	3 9	14 1	3 54	Yes	Yes	Yes
750	7/25/97	11	1	109	1258 8	4 8	3 9	14.1	4.15	Yes	Yes	Yes
751	7/25/97	12	1	104	1217.7	4.9	4	13 9	4 13	Yes	Yes	Yes
752	7/25/97	13	1	78	1020 8	3 8	4	13.9	3 20	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	QPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
753	7/25/97	14	1	75	1005 1	3 7	3 9	14.1	3 20	Yes	Yes	Yes
754	7/25/97	15	1	75	1004 9	3 8	3 9	14 1	3 28	Yes	Yes	Yes
755	7/25/97	16	1	75	1003 7	3.8	3 9	14 1	3 28	Yes	Yes	Yes
756	7/25/97	17	0 5	55	773.4	8 9	3 2	15 3	9 37			
757	7/29/97	7	0 25	24	500.6	29 4	2 6	16 3	38 11			
758	7/29/97	8	1	73	1004 4	4 3	4	13 9	3 62	Yes	Yes	Yes
759	7/29/97	9	1	113	1296 6	5 1	4 2	13 5	4 09	Yes	Yes	Yes
760	7/29/97	10	1	122	1356 9	5 1	4 1	13 7	4 19	Yes	Yes	Yes
761	7/29/97	11	1	125	1383 7	5 2	4 1	13 7	4 28	Yes	Yes	Yes
762	7/29/97	12	1	126	1391.8	5 7	4 2	13 5	4 57	Yes	Yes	Yes
763	7/29/97	13	1	107	1248 3	5	4 1	13.7	4.11	Yes	Yes	Yes
764	7/29/97	14	1	74	998 4	3 7	4	13 9	3.12	Yes	Yes	Yes
765	7/29/97	15	1	74	998 2	3.7	4	13 9	3 12	Yes	Yes	Yes
766	7/29/97	16	1	74	996 8	3 7	4	13 9	3 12	Yes	Yes	Yes
767	7/29/97	17	1	74	997.8	3 5	4	13 9	2 95	Yes	Yes	Yes
768	7/29/97	18	0.5	49	711 5	9 2	3 1	15 5	10 00			
769	7/30/97	10	1	60	860	11.5	3.7	14 4	10 48			
770	7/30/97	11	1	74	1000.8	3 7	3 9	14 1	3 20	Yes	Yes	Yes
771	7/30/97	12	1	87	1090.5	3 9	4.1	13 7	3 21	Yes	Yes	Yes
772	7/30/97	13	1	98	1165.7	4.2	4 1	13 7	3 45	Yes	Yes	Yes
773	7/30/97	14	1	87	1087.2	3.9	4	13 9	3.29	Yes	Yes	Yes
774	7/30/97	15	1	81	1049.2	3.7	4	13 9	3.12	Yes	Yes	Yes
775	7/30/97	16	1	79	1035 4	3 7	4	13 9	3.12	Yes	Yes	Yes
776	7/30/97	17	1	69	913.4	6.2	3 5	14 8	5 97	Yes	Yes	Yes
777	7/31/97	7	0.25	28	549.3	26	2 8	16 0	31.30			
778	7/31/97	8	1	74	1001.8	4 2	3 9	14 1	3 63	Yes	Yes	Yes
779	7/31/97	9	1	74	999.3	3.7	4	13 9	3 12	Yes	Yes	Yes
780	7/31/97	10	1	78	1024.5	3.9	4	13 9	3.29	Yes	Yes	Yes
781	7/31/97	11	1	84	1074 7	3 7	3 9	14 1	3 20	Yes	Yes	Yes
782	7/31/97	12	1	92	1129.7	4 2	4	13 9	3.54	Yes	Yes	Yes
783	7/31/97	13	1	120	1349 5	5 5	4.1	13 7	4.52	Yes	Yes	Yes
784	7/31/97	14	1	126	1394.4	5 9	4 1	13 7	4 85	Yes	Yes	Yes
785	7/31/97	15	1	69	922.3	6	3 8	14 2	5.32	Yes	Yes	Yes
786	8/1/97	8	0 5	59	823.9	27	2 8	16 0	32.50			
787	8/1/97	9	1	78	1024.6	4	4	13 9	3 37	Yes	Yes	Yes
788	8/1/97	10	1	82	1051.4	4	4	13 9	3.37	Yes	Yes	Yes
789	8/1/97	11	1	110	1258 9	4 8	4	13 9	4 04	Yes	Yes	Yes
790	8/1/97	12	1	118	1320 1	5 3	4 1	13.7	4.36	Yes	Yes	Yes
791	8/1/97	13	1	128	1412.1	6 2	4 1	13 7	5 10	Yes	Yes	Yes
792	8/1/97	14	1	128	1414 7	6 1	4 1	13 7	5 01	Yes	Yes	Yes
793	8/1/97	15	1	127	1415 2	6 1	4 2	13 5	4.90	Yes	Yes	Yes
794	8/1/97	16	1	127	1416 8	6 1	4 2	13 5	4.90	Yes	Yes	Yes
795	8/1/97	17	1	97	1174.1	4 6	4	13 9	3 88	Yes	Yes	Yes
796	8/1/97	18	1	77	1024 5	3 6	4	13 9	3 03	Yes	Yes	Yes
797	8/1/97	19	1	99	1186 3	4 2	4 1	13 7	3.45	Yes	Yes	Yes
798	8/1/97	20	1	80	1042.7	3 8	3 9	14.1	3.28	Yes	Yes	Yes
799	8/1/97	21	0 5	46	691.7	8 6	3 1	15 5	9 35			
800	8/4/97	9	0.5	42	686 4	22 3	3 1	15 5	24 25			
801	8/4/97	10	1	76	1026	3 9	4	13 9	3 29	Yes	Yes	Yes
802	8/4/97	11	1	108	1255	4 6	4	13 9	3 88	Yes	Yes	Yes
803	8/4/97	12	1	96	1166 6	4 3	4	13 9	3 62	Yes	Yes	Yes
804	8/4/97	13	1	78	1031 2	3 7	4	13 9	3 12	Yes	Yes	Yes
805	8/4/97	14	1	75	1011 5	3 5	3 9	14 1	3.02	Yes	Yes	Yes
806	8/4/97	15	1	75	1006 9	3 6	4	13 9	3 03	Yes	Yes	Yes
807	8/4/97	16	1	75	1009 5	3 6	4	13 9	3 03	Yes	Yes	Yes
808	8/4/97	17	1	66	923 2	5 3	3.7	14 4	4 83	Yes	Yes	Yes
809	8/8/97	9	0.25	5	295.5	15 3	2	17 4	25 79			
810	8/8/97	10	1	69	969.9	9 5	4	13 9	8 01	Yes	Yes	Yes
811	8/8/97	11	1	74	999.3	3 9	3 7	14 4	3.55	Yes	Yes	Yes
812	8/8/97	12	1	123	1376 7	5 9	4	13 9	4 97	Yes	Yes	Yes
813	8/8/97	13	1	125	1384 9	6	4	13 9	5 06	Yes	Yes	Yes
814	8/8/97	14	1	124	1377 4	5 9	3 9	14 1	5 10	Yes	Yes	Yes
815	8/8/97	15	1	110	1268.1	5 3	4	13 9	4 47	Yes	Yes	Yes
816	8/8/97	16	1	80	1038.7	4	3 9	14 1	3.46	Yes	Yes	Yes
817	8/8/97	17	1	77	1014 4	3 8	3 8	14 2	3 37	Yes	Yes	Yes
818	8/8/97	18	1	76	1009 6	3 9	3 9	14 1	3 37	Yes	Yes	Yes
819	8/8/97	19	1	75	1005 4	3 9	3 9	14 1	3 37	Yes	Yes	Yes
820	8/8/97	20	0 75	65	886 5	6 3	3 5	14 8	6.07	Yes	Yes	Yes
821	8/12/97	8	1	101	1191	14 8	3 2	15 3	15.59	Yes	***** No *****	***** No *****
822	8/12/97	9	1	125	1394.3	5 3	3 9	14.1	4.58	Yes	Yes	Yes
823	8/12/97	10	1	125	1393.7	5 3	3 9	14.1	4 58	Yes	Yes	Yes
824	8/12/97	11	1	125	1389.9	5 2	3 8	14 2	4 61	Yes	Yes	Yes
825	8/12/97	12	1	125	1389.5	5 3	3 9	14,1	4 58	Yes	Yes	Yes
826	8/12/97	13	1	125	1387.1	5 3	3 9	14 1	4 58	Yes	Yes	Yes
827	8/12/97	14	1	125	1391.3	5 2	3 8	14 2	4 61	Yes	Yes	Yes
828	8/12/97	15	1	125	1391 7	5 3	3 9	14 1	4 58	Yes	Yes	Yes
829	8/12/97	16	1	125	1391.4	5 2	3 9	14 1	4 49	Yes	Yes	Yes
830	8/12/97	17	1	117	1329 2	5	3 8	14 2	4 44	Yes	Yes	Yes
831	8/12/97	18	1	75	1008 6	4	3 9	14 1	3 46	Yes	Yes	Yes
832	8/12/97	19	1	76	1021 6	4	3 9	14 1	3 46	Yes	Yes	Yes
833	8/12/97	20	0 25	43	667 3	11 2	2.9	15 8	13 02			
834	8/13/97	5	0.75	86	1050 9	25	2.9	15 8	29 06	Yes	***** No *****	***** No *****
835	8/13/97	6	1	125	1387.5	5 4	3 9	14,1	4 67	Yes	Yes	Yes
836	8/13/97	7	1	125	1387 9	5 4	3 9	14,1	4 67	Yes	Yes	Yes
837	8/13/97	8	1	126	1393 6	5 2	3 8	14 2	4 61	Yes	Yes	Yes
838	8/13/97	9	1	125	1390	5 3	3 9	14,1	4.58	Yes	Yes	Yes
839	8/13/97	10	1	125	1386 4	5 4	3 8	14 2	4 79	Yes	Yes	Yes
840	8/13/97	11	1	125	1390 6	5 4	3 8	14 2	4 79	Yes	Yes	Yes
841	8/13/97	12	1	125	1391.3	5 5	3 8	14 2	4 88	Yes	Yes	Yes
842	8/13/97	13	1	125	1386 4	5 5	3 8	14 2	4 88	Yes	Yes	Yes
843	8/13/97	14	1	125	1384 6	5 4	3 8	14 2	4.79	Yes	Yes	Yes
844	8/13/97	15	1	125	1386	5 5	3 8	14,2	4 88	Yes	Yes	Yes
845	8/13/97	16	1	125	1385 4	5.4	3 8	14,2	4 79	Yes	Yes	Yes
846	8/13/97	17	1	125	1385 9	5 3	3.7	14 4	4 83	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
847	8/13/97	18	1	125	1387.7	5 4	3 8	14 2	4.79	Yes	Yes	Yes
848	8/13/97	19	1	121	1353 9	5 2	3 8	14.2	4 61	Yes	Yes	Yes
849	8/13/97	20	1	86	1055 6	6 5	3 5	14 8	6 26	Yes	Yes	Yes
850	8/14/97	5	0 25	37	644 4	34	2 8	16 0	40.93			
851	8/14/97	6	1	125	1387.1	6	3 9	14 1	5.19	Yes	Yes	Yes
852	8/14/97	7	1	125	1386 4	4 8	4 1	13 7	3 95	Yes	Yes	Yes
853	8/14/97	8	1	125	1385	5 2	4	13.9	4 38	Yes	Yes	Yes
854	8/14/97	9	1	125	1380 2	5 4	4.1	13 7	4.44	Yes	Yes	Yes
855	8/14/97	10	1	125	1377	5 3	4 1	13 7	4 36	Yes	Yes	Yes
856	8/14/97	11	1	125	1380	5 2	4	13 9	4 38	Yes	Yes	Yes
857	8/14/97	12	1	125	1384 3	5 3	4 1	13 7	4 36	Yes	Yes	Yes
858	8/14/97	13	1	125	1386 6	5 3	4 1	13 7	4.36	Yes	Yes	Yes
859	8/14/97	14	1	125	1387.5	5 3	4.1	13.7	4.36	Yes	Yes	Yes
860	8/14/97	15	1	125	1388 7	4 7	4	13 9	3.96	Yes	Yes	Yes
861	8/14/97	16	1	122	1364 4	5 4	4	13 9	4 55	Yes	Yes	Yes
862	8/14/97	17	0 5	58	814	7 6	3 5	14 8	7.32			
863	8/15/97	5	0 5	51	736 5	25 9	3	15 6	29 10			
864	8/15/97	6	1	125	1390 3	5 3	4 1	13 7	4.36	Yes	Yes	Yes
865	8/15/97	7	1	125	1392 8	5	4	13 9	4.21	Yes	Yes	Yes
866	8/15/97	8	1	126	1393 1	5 3	4	13.9	4.47	Yes	Yes	Yes
867	8/15/97	9	1	125	1393 6	5 7	4	13 9	4.80	Yes	Yes	Yes
868	8/15/97	10	1	125	1391.3	5 7	4	13 9	4 80	Yes	Yes	Yes
869	8/15/97	11	1	125	1391.6	5 8	4	13 9	4 89	Yes	Yes	Yes
870	8/15/97	12	1	125	1394 5	6.1	4	13 9	5.14	Yes	Yes	Yes
871	8/15/97	13	1	125	1389 5	6 2	4	13 9	5 22	Yes	Yes	Yes
872	8/15/97	14	1	125	1387.3	6 2	4	13 9	5 22	Yes	Yes	Yes
873	8/15/97	15	1	124	1375 1	6 2	4	13.9	5.22	Yes	Yes	Yes
874	8/15/97	16	1	121	1350 1	5 9	4	13 9	4 97	Yes	Yes	Yes
875	8/15/97	17	1	81	1017.3	6 5	3 7	14 4	5 92	Yes	Yes	Yes
876	8/15/97	18	0 25	0	0 1	1.9	0 3	20 4	21.35			
877	8/19/97	9	0 25	0	140 6	6 6	2.3	16 9	9 67			
878	8/19/97	10	1	70	982 2	12 7	3 9	14 1	10 98	Yes	***** No *****	Yes
879	8/19/97	11	1	74	1004 5	3.7	3.9	14 1	3.20	Yes	Yes	Yes
880	8/19/97	12	1	75	1004 4	3 8	4	13 9	3.20	Yes	Yes	Yes
881	8/19/97	13	1	74	1001.8	3 8	4	13 9	3 20	Yes	Yes	Yes
882	8/19/97	14	1	74	999 4	3 7	3 9	14 1	3.20	Yes	Yes	Yes
883	8/19/97	15	1	74	999 8	3 8	4	13 9	3.20	Yes	Yes	Yes
884	8/19/97	16	0 5	44	670 2	10 1	3	15 6	11.35			
885	8/20/97	7	0 5	45	723 5	31	2.8	16 0	37 32			
886	8/20/97	8	1	76	1017.1	3 8	3 9	14 1	3 28	Yes	Yes	Yes
887	8/20/97	9	1	75	1010	3 9	3 9	14.1	3.37	Yes	Yes	Yes
888	8/20/97	10	1	76	1014 3	3 9	3 9	14.1	3 37	Yes	Yes	Yes
889	8/20/97	11	1	76	1012 6	3 8	3 9	14.1	3 28	Yes	Yes	Yes
890	8/20/97	12	1	75	1005 4	3 9	3 9	14.1	3 37	Yes	Yes	Yes
891	8/20/97	13	1	104	1225.1	4.8	4	13 9	4 04	Yes	Yes	Yes
892	8/20/97	14	1	112	1284 1	5	3 9	14.1	4 32	Yes	Yes	Yes
893	8/20/97	15	1	103	1212.2	4 8	4	13 9	4 04	Yes	Yes	Yes
894	8/20/97	16	1	109	1252 3	4 9	4	13.9	4.13	Yes	Yes	Yes
895	8/20/97	17	1	75	1009 5	3 7	3 8	14 2	3 28	Yes	Yes	Yes
896	8/20/97	18	1	75	1008 2	3 7	3 9	14 1	3 20	Yes	Yes	Yes
897	8/20/97	19	1	96	1160 2	4 3	4	13 9	3 62	Yes	Yes	Yes
898	8/20/97	20	0 5	54	776	7 7	3 3	15.1	7.86			
899	8/21/97	7	0 75	60	864 2	17.2	3 4	14.9	17.05			
900	8/21/97	8	1	76	1017.9	3 9	3 9	14 1	3 37	Yes	Yes	Yes
901	8/21/97	9	1	93	1140 2	3 8	4	13 9	3 20	Yes	Yes	Yes
902	8/21/97	10	1	108	1253 1	5 1	4	13 9	4.30	Yes	Yes	Yes
903	8/21/97	11	1	97	1168 2	4 6	3 9	14.1	3 98	Yes	Yes	Yes
904	8/21/97	12	1	97	1166 9	4 7	4	13 9	3 96	Yes	Yes	Yes
905	8/21/97	13	1	114	1289 2	5 1	4	13 9	4 30	Yes	Yes	Yes
906	8/21/97	14	1	109	1253 7	5	3 9	14 1	4 32	Yes	Yes	Yes
907	8/21/97	15	1	92	1129 4	4.5	4	13 9	3 79	Yes	Yes	Yes
908	8/21/97	16	1	77	1021.1	4	3 9	14.1	3 46	Yes	Yes	Yes
909	8/21/97	17	1	74	998	3 8	3 9	14.1	3 28	Yes	Yes	Yes
910	8/21/97	18	1	75	1002.9	3 9	3 9	14.1	3 37	Yes	Yes	Yes
911	8/21/97	19	1	92	1126 6	4.3	4	13.9	3 62	Yes	Yes	Yes
912	8/21/97	20	0 5	60	828 5	7.5	3 5	14 8	7.22			
913	8/22/97	10	0 5	49	748 3	19 6	3 3	15.1	20 02			
914	8/22/97	13	0 75	63	873 4	11,5	3 1	15 5	12.50	Yes	***** No *****	Yes
915	8/22/97	14	1	79	1029 8	4 2	3 9	14.1	3 63	Yes	Yes	Yes
916	8/22/97	15	1	75	1004 9	4	3 9	14.1	3 46	Yes	Yes	Yes
917	8/22/97	16	1	74	998 4	4.1	3 9	14 1	3 54	Yes	Yes	Yes
918	8/22/97	17	0 5	54	775 4	8 1	3 3	15 1	8 27			
919	8/23/97	11	0 25	0	167	6 8	1.6	18 1	14 33			
920	8/23/97	12	1	72	982 1	12 7	3 8	14 2	11 27	Yes	***** No *****	Yes
921	8/23/97	13	1	76	1006 8	4 1	3 9	14.1	3 54	Yes	Yes	Yes
922	8/23/97	14	1	81	1038 7	4 9	3 8	14.2	4 35	Yes	Yes	Yes
923	8/23/97	15	0 25	1	71 6	17 5	1	19 1	58 99			
924	8/25/97	7	0 25	6	286 7	14.5	1.8	17.7	27.15			
925	8/25/97	8	1	75	1012.3	9 4	3 9	14.1	8 12	Yes	Yes	Yes
926	8/25/97	9	1	93	1136 3	4 5	4	13 9	3 79	Yes	Yes	Yes
927	8/25/97	10	1	110	1263 5	5	4	13 9	4 21	Yes	Yes	Yes
928	8/25/97	11	1	105	1228 9	5	3 9	14.1	4.32	Yes	Yes	Yes
929	8/25/97	12	1	123	1366 2	5 8	4	13 9	4 89	Yes	Yes	Yes
930	8/25/97	13	1	123	1368 4	5 8	4	13 9	4 89	Yes	Yes	Yes
931	8/25/97	14	1	101	1193	4 8	3 9	14 1	4 15	Yes	Yes	Yes
932	8/25/97	15	1	75	997.2	3 9	3 9	14 1	3.37	Yes	Yes	Yes
933	8/25/97	16	1	74	997.7	3 9	3 9	14 1	3 37	Yes	Yes	Yes
934	8/25/97	17	1	74	997.7	3 7	3 8	14 2	3 28	Yes	Yes	Yes
935	8/25/97	18	1	74	996 8	3 7	3 9	14.1	3 20	Yes	Yes	Yes
936	8/25/97	19	1	74	998 7	3 7	3 9	14 1	3 20	Yes	Yes	Yes
937	8/25/97	20	0 5	56	791.7	7 2	3 3	15 1	7.35			
938	8/26/97	8	1	63	889.3		3 6	14 6		Yes	Yes	Yes
939	8/26/97	9	1	76	1010 6		3 6	14 6		Yes	Yes	Yes
940	8/26/97	10	1	94	1145 8	4 5	3 9	14.1	3 89	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
941	8/26/97	11	1	92	1124	4 4	3 9	14.1	3 80	Yes	Yes	Yes
942	8/26/97	12	1	98	1172.9	4 7	3 9	14 1	4 06	Yes	Yes	Yes
943	8/26/97	13	1	115	1303 8	5 5	4	13 9	4 63	Yes	Yes	Yes
944	8/26/97	14	1	101	1195 3	5 1	3 9	14.1	4 41	Yes	Yes	Yes
945	8/26/97	15	1	75	999 3	4.1	3 9	14 1	3 54	Yes	Yes	Yes
946	8/26/97	16	1	74	992	4	3 9	14 1	3 46	Yes	Yes	Yes
947	8/26/97	17	1	73	992 5	3.9	3 8	14.2	3 46	Yes	Yes	Yes
948	8/26/97	18	1	73	993	4	3 9	14 1	3 46	Yes	Yes	Yes
949	8/26/97	19	1	74	996 8	3 9	3 9	14 1	3 37	Yes	Yes	Yes
950	8/26/97	20	0.75	60	849 3	6 3	3 4	14 9	6 25			
951	8/27/97	4	0.25	0	0	0	0	20 9				
952	8/27/97	5	0.25	24	0	38 5	2 3	18 9	56 42			
953	8/27/97	6	1	75	0	5 6	4	13 9	4.72	Yes	Yes	Yes
954	8/27/97	7	1	75	110 8	4	3 8	14 2	3 55	Yes	Yes	Yes
955	8/27/97	8	1	75	1008 8	4	3 8	14 2	3 55	Yes	Yes	Yes
956	8/27/97	9	1	74	999.2	4 1	3 9	14 1	3 54	Yes	Yes	Yes
957	8/27/97	10	1	73	995 8	4	3 9	14 1	3 46	Yes	Yes	Yes
958	8/27/97	11	1	73	992.5	4	3 8	14 2	3 55	Yes	Yes	Yes
959	8/27/97	12	1	78	1018 5	4 2	3 8	14 2	3 73	Yes	Yes	Yes
960	8/27/97	13	1	91	1115 3	4 6	3 9	14 1	3 98	Yes	Yes	Yes
961	8/27/97	14	1	126	1392	6 5	3 9	14 1	5 62	Yes	Yes	Yes
962	8/27/97	15	1	126	1389 5	6 6	4	13 9	5 56	Yes	Yes	Yes
963	8/27/97	16	1	126	1389 9	6 6	4	13 9	5 56	Yes	Yes	Yes
964	8/27/97	17	1	126	1389 2	6 6	3 9	14 1	5 70	Yes	Yes	Yes
965	8/27/97	18	1	84	1066 4	4 4	3 9	14 1	3 80	Yes	Yes	Yes
966	8/27/97	19	1	77	1019 8	4 3	3 9	14.1	3 72	Yes	Yes	Yes
967	8/27/97	20	1	74	990 7	4.7	3 8	14 2	4 17	Yes	Yes	Yes
968	8/27/97	21	0.25	1	85.7	16.8	0 9	19.3	62 92			
969	8/28/97	7	0.75	61	873	19 4	3 2	15 3	20 43	Yes	***** No *****	***** No *****
970	8/28/97	8	1	78	1028	4.1	3 8	14 2	3 64	Yes	Yes	Yes
971	8/28/97	9	1	99	1179	4 6	3 9	14.1	3 98	Yes	Yes	Yes
972	8/28/97	10	1	108	1244 8	4 9	3 9	14 1	4.23	Yes	Yes	Yes
973	8/28/97	11	1	102	1194.4	4 9	3 8	14.2	4 35	Yes	Yes	Yes
974	8/28/97	12	1	120	1336 2	5.5	3 9	14 1	4 75	Yes	Yes	Yes
975	8/28/97	13	1	113	1280	5 2	3 9	14 1	4 49	Yes	Yes	Yes
976	8/28/97	14	1	119	1330 3	5 5	3 8	14 2	4 88	Yes	Yes	Yes
977	8/28/97	15	1	93	1130 7	4 7	3 9	14 1	4 06	Yes	Yes	Yes
978	8/28/97	16	1	75	1000 5	4	3 8	14 2	3 55	Yes	Yes	Yes
979	8/28/97	17	1	74	995 2	3 9	3 7	14 4	3 55	Yes	Yes	Yes
980	8/28/97	18	1	88	1099 5	4 3	3 9	14 1	3 72	Yes	Yes	Yes
981	8/28/97	19	1	86	1084	4 3	3 9	14 1	3.72	Yes	Yes	Yes
982	8/28/97	20	1	69	922 7	5 9	3 5	14 8	5 68	Yes	Yes	Yes
983	8/29/97	9	1	64	892	16 9	3 3	15 1	17 26	Yes	***** No *****	***** No *****
984	8/29/97	10	1	75	1002 5	4 1	3 8	14 2	3 64	Yes	Yes	Yes
985	8/29/97	11	1	79	1030 4	4 1	3 7	14 4	3 74	Yes	Yes	Yes
986	8/29/97	12	1	101	1193 5	4.9	3 9	14 1	4 23	Yes	Yes	Yes
987	8/29/97	13	1	79	1024.9	4 1	3 8	14.2	3 64	Yes	Yes	Yes
988	8/29/97	14	1	78	1016 6	4	3 7	14 4	3 64	Yes	Yes	Yes
989	8/29/97	15	1	77	1011 7	4	3 8	14 2	3 55	Yes	Yes	Yes
990	8/29/97	16	1	79	1023 8	4	3 8	14 2	3 55	Yes	Yes	Yes
991	8/29/97	17	1	78	1019 4	3.8	3 8	14 2	3 37	Yes	Yes	Yes
992	8/29/97	18	1	85	1071.2	4 1	3 8	14 2	3 64	Yes	Yes	Yes
993	8/29/97	19	1	92	1125 1	4 3	3 9	14 1	3 72	Yes	Yes	Yes
994	8/29/97	20	0 75	68	902.3	6 8	3 4	14 9	6 74	Yes	Yes	Yes
995	9/2/97	7	0 25	20	472 4	28.3	2 4	16 7	39 75			
996	9/2/97	8	1	75	1018 7	4 9	3 9	14 1	4 23	Yes	Yes	Yes
997	9/2/97	9	1	74	1010 2	3 9	3 9	14 1	3 37	Yes	Yes	Yes
998	9/2/97	10	1	75	1010 4	3 7	3 9	14.1	3 20	Yes	Yes	Yes
999	9/2/97	11	1	74	1009 4	3 8	3 8	14.2	3 37	Yes	Yes	Yes
1000	9/2/97	12	1	75	1010	3 8	3 9	14 1	3 28	Yes	Yes	Yes
1001	9/2/97	13	1	74	1006 7	3 8	3 9	14 1	3 28	Yes	Yes	Yes
1002	9/2/97	14	0 5	48	715 3	8 7	3 1	15 5	9 46			
1003	9/3/97	12	0.75	60	868 3	15 8	3 4	14 9	15 66			
1004	9/3/97	13	1	75	1011.7	3 8	3 9	14 1	3 28	Yes	Yes	Yes
1005	9/3/97	14	1	102	1211.1	4 6	3 9	14 1	3 98	Yes	Yes	Yes
1006	9/3/97	15	1	105	1228.6	4 9	4	13 9	4 13	Yes	Yes	Yes
1007	9/3/97	16	1	76	1010 2	3.8	3 9	14 1	3 28	Yes	Yes	Yes
1008	9/3/97	17	1	77	1020 3	3 7	3 8	14 2	3 28	Yes	Yes	Yes
1009	9/3/97	18	1	77	1022 2	3 6	3 8	14 2	3 19	Yes	Yes	Yes
1010	9/3/97	19	1	77	1025 5	3 8	3 9	14.1	3 28	Yes	Yes	Yes
1011	9/3/97	20	0 5	56	793 3	7.8	3.3	15 1	7 97			
1012	9/4/97	5	0 25	3	284 4	11.4	1.8	17.7	21.35			
1013	9/4/97	6	1	74	1004	11.8	3 9	14 1	10 20	Yes	***** No *****	Yes
1014	9/4/97	7	1	81	1053	4	3 9	14.1	3 46	Yes	Yes	Yes
1015	9/4/97	8	1	105	1228 6	4 5	3 9	14 1	3 89	Yes	Yes	Yes
1016	9/4/97	9	1	127	1402 2	5 8	4	13 9	4 89	Yes	Yes	Yes
1017	9/4/97	10	1	92	1130	4 6	3.9	14 1	3 98	Yes	Yes	Yes
1018	9/4/97	11	1	92	1127 4	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1019	9/4/97	12	1	113	1287 3	5.1	3 9	14 1	4 41	Yes	Yes	Yes
1020	9/4/97	13	1	76	1016 4	4	3 9	14 1	3 46	Yes	Yes	Yes
1021	9/4/97	14	1	74	1001.7	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1022	9/4/97	15	1	74	997 7	4	3 8	14 2	3.55	Yes	Yes	Yes
1023	9/4/97	16	1	75	1004 9	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1024	9/4/97	17	1	96	1158 1	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1025	9/4/97	18	1	122	1364 7	5 3	4	13 9	4 47	Yes	Yes	Yes
1026	9/4/97	19	1	113	1291	4 8	4	13 9	4 04	Yes	Yes	Yes
1027	9/4/97	20	1	78	1032 4	3 8	3 8	14 2	3 37	Yes	Yes	Yes
1028	9/4/97	21	1	84	1078 3	4 1	3 9	14 1	3 54	Yes	Yes	Yes
1029	9/4/97	22	0 25	21	421 4	14 8	2 3	16 9	21 69			
1030	9/5/97	7	1	60	869.7	11.7	3 5	14 8	11.27			
1031	9/5/97	8	1	118	1337.7	5	3 9	14 1	4 32	Yes	Yes	Yes
1032	9/5/97	9	1	122	1367.3	5 8	4	13 9	4 89	Yes	Yes	Yes
1033	9/5/97	10	1	128	1416 2	6 3	4	13 9	5 31	Yes	Yes	Yes
1034	9/5/97	11	1	128	1415 8	6 2	3 9	14 1	5 36	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1035	9/5/97	12	1	98	1186 6	5 1	3 9	14 1	4 41	Yes	Yes	Yes
1036	9/5/97	13	1	76	1012 7	4	3 8	14 2	3 55	Yes	Yes	Yes
1037	9/5/97	14	1	87	1090.2	4 2	3 8	14 2	3.73	Yes	Yes	Yes
1038	9/5/97	15	1	90	1110 5	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1039	9/5/97	16	1	84	1068 2	4	3 8	14 2	3 55	Yes	Yes	Yes
1040	9/5/97	17	1	77	1018 8	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1041	9/5/97	18	1	91	1124 8	4 2	3 8	14.2	3 73	Yes	Yes	Yes
1042	9/5/97	19	1	96	1164.8	4.4	3 9	14 1	3 80	Yes	Yes	Yes
1043	9/5/97	20	1	78	1029 4	3 8	3 8	14 2	3 37	Yes	Yes	Yes
1044	9/5/97	21	0 75	61	859.3	6.6	3 4	14.9	6 54	Yes	Yes	Yes
1045	9/6/97	10	1	83	1044.4	14 3	3 4	14.9	14.18	Yes	***** No *****	Yes
1046	9/6/97	11	1	112	1288 5	5 4	3 9	14.1	4 67	Yes	Yes	Yes
1047	9/6/97	12	1	121	1358 1	5 5	3 9	14.1	4 75	Yes	Yes	Yes
1048	9/6/97	13	1	119	1341.9	5.3	3 9	14.1	4 58	Yes	Yes	Yes
1049	9/6/97	14	1	99	1177 9	4.5	3 8	14 2	3 99	Yes	Yes	Yes
1050	9/6/97	15	0 5	82	1054 6	4	3 8	14 2	3 55	Yes	Yes	Yes
1051	9/6/97	16	1	0	348.6	17.1	1.9	17 6	30 34			
1052	9/6/97	17	1	0	372 4	17 3	1.9	17.6	30 69			
1053	9/6/97	18	1	44	752 9	15 3	3 1	15 5	16 64			
1054	9/6/97	19	1	75	1013.2	3.8	3 8	14 2	3 37	Yes	Yes	Yes
1055	9/6/97	20	0 5	54	776 6	8.1	3 2	15 3	8 53			
1056	9/7/97	11	0 75	55	804.9	24.2	3 2	15 3	25 49			
1057	9/7/97	12	1	78	1026 8	4.4	3 8	14 2	3.90	Yes	Yes	Yes
1058	9/7/97	13	1	93	1135.2	4.7	3 8	14.2	4 17	Yes	Yes	Yes
1059	9/7/97	14	1	86	1083 1	4 3	3 8	14.2	3 81	Yes	Yes	Yes
1060	9/7/97	15	1	78	1025.5	4	3.8	14 2	3 55	Yes	Yes	Yes
1061	9/7/97	16	1	77	1020 2	4	3 8	14 2	3 55	Yes	Yes	Yes
1062	9/7/97	17	1	69	945	5 8	3 6	14 6	5 43	Yes	Yes	Yes
1063	9/7/97	18	0 25	0	0 1	1.7	0.1	20.7	57.30			
1064	9/8/97	7	0 75	55	830.7	18.7	3 3	15 1	19 10			
1065	9/8/97	8	1	72	993 2	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1066	9/8/97	9	1	72	988 8	4.2	3 8	14 2	3 73	Yes	Yes	Yes
1067	9/8/97	10	1	72	986 5	4 1	3.8	14 2	3 64	Yes	Yes	Yes
1068	9/8/97	11	1	77	1019 3	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1069	9/8/97	12	1	112	1278 4	5 1	3.9	14.1	4 41	Yes	Yes	Yes
1070	9/8/97	13	1	82	1051	4.2	3 8	14 2	3 73	Yes	Yes	Yes
1071	9/8/97	14	1	94	1140 1	4.6	3.8	14 2	4 08	Yes	Yes	Yes
1072	9/8/97	15	1	94	1142 9	4.5	3 8	14 2	3 99	Yes	Yes	Yes
1073	9/8/97	16	1	77	1018.5	4.1	3 8	14 2	3 64	Yes	Yes	Yes
1074	9/8/97	17	1	75	959	6	3 5	14 8	5 78	Yes	Yes	Yes
1075	9/9/97	5	0 5	52	786 2	32.5	2.8	16 0	39 12			
1076	9/9/97	6	1	75	1009.2	4.2	3 8	14 2	3 73	Yes	Yes	Yes
1077	9/9/97	7	1	74	1005 7	4.2	3 8	14 2	3.73	Yes	Yes	Yes
1078	9/9/97	8	1	75	1006 8	4	3.7	14 4	3 64	Yes	Yes	Yes
1079	9/9/97	9	1	75	1005.9	4	3 8	14 2	3 55	Yes	Yes	Yes
1080	9/9/97	10	1	75	1007	3 8	3 8	14 2	3 37	Yes	Yes	Yes
1081	9/9/97	11	1	75	1006	3.9	3 7	14 4	3 55	Yes	Yes	Yes
1082	9/9/97	12	1	75	1003 6	4	3 8	14 2	3 55	Yes	Yes	Yes
1083	9/9/97	13	1	74	1002.5	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1084	9/9/97	14	1	77	1022 5	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1085	9/9/97	15	1	82	1056 6	4	3.8	14 2	3 55	Yes	Yes	Yes
1086	9/9/97	16	1	77	1018	4	3 8	14 2	3 55	Yes	Yes	Yes
1087	9/9/97	17	0 75	63	872 8	6 6	3.3	15 1	6 74	Yes	Yes	Yes
1088	9/10/97	7	1	63	897 9	16 1	3 3	15.1	16 44	Yes	***** No *****	***** No *****
1089	9/10/97	8	1	75	1011.1	4.1	3 8	14 2	3 64	Yes	Yes	Yes
1090	9/10/97	9	1	76	1015 8	4 1	3.8	14 2	3 64	Yes	Yes	Yes
1091	9/10/97	10	1	80	1044.7	4 1	3 8	14 2	3 64	Yes	Yes	Yes
1092	9/10/97	11	1	75	1002 2	3.9	3 7	14 4	3 55	Yes	Yes	Yes
1093	9/10/97	12	1	92	1127.8	4.5	3 8	14 2	3 99	Yes	Yes	Yes
1094	9/10/97	13	1	111	1268 5	5.3	3 9	14 1	4 58	Yes	Yes	Yes
1095	9/10/97	14	1	108	1238	5.1	3 8	14 2	4 52	Yes	Yes	Yes
1096	9/10/97	15	1	87	1084 8	4.6	3 8	14 2	4.08	Yes	Yes	Yes
1097	9/10/97	16	1	78	1017.8	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1098	9/10/97	17	1	78	1018 6	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1099	9/10/97	18	1	76	1003	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1100	9/10/97	19	1	77	1008 5	4	3 7	14 4	3 64	Yes	Yes	Yes
1101	9/10/97	20	0 25	32	534.5	13 2	2.6	16.3	17 11			
1102	9/11/97	7	0 75	59	846 4	14 2	3 4	14.9	14 08			
1103	9/11/97	8	1	81	1045 6	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1104	9/11/97	9	1	76	1011 5	4	3 7	14 4	3 64	Yes	Yes	Yes
1105	9/11/97	10	1	79	1031 4	4	3.7	14 4	3 64	Yes	Yes	Yes
1106	9/11/97	11	1	77	1016 2	4	3.7	14 4	3 64	Yes	Yes	Yes
1107	9/11/97	12	1	83	1051.1	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1108	9/11/97	13	1	78	1016 2	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1109	9/11/97	14	1	80	1030 7	4	3.7	14 4	3 64	Yes	Yes	Yes
1110	9/11/97	15	1	81	1043 7	4	3 7	14 4	3 64	Yes	Yes	Yes
1111	9/11/97	16	1	78	1018 7	4	3 7	14 4	3 64	Yes	Yes	Yes
1112	9/11/97	17	1	87	1083 4	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1113	9/11/97	18	1	94	1135 6	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1114	9/11/97	19	1	83	1054 4	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1115	9/11/97	20	0.75	68	946 5	4 5	3.8	14 2	3 99	Yes	Yes	Yes
1116	9/12/97	7	0 25	29	547.5	27.5	2.5	16 5	37 08			
1117	9/12/97	8	1	72	984 1	4 5	3.7	14 4	4 10	Yes	Yes	Yes
1118	9/12/97	9	1	72	978 2	4	3.7	14 4	3 64	Yes	Yes	Yes
1119	9/12/97	10	1	72	978	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1120	9/12/97	11	1	72	980 6	4 1	3.6	14 6	3 84	Yes	Yes	Yes
1121	9/12/97	12	1	108	1244 9	5	3 8	14 2	4 44	Yes	Yes	Yes
1122	9/12/97	13	1	125	1383 6	5 5	3 8	14 2	4 88	Yes	Yes	Yes
1123	9/12/97	14	1	126	1396 4	5 7	3 8	14.2	5 06	Yes	Yes	Yes
1124	9/12/97	15	1	126	1394 4	5 8	3.9	14 1	5 01	Yes	Yes	Yes
1125	9/12/97	16	1	105	1229 6	5 1	3 8	14 2	4 52	Yes	Yes	Yes
1126	9/12/97	17	1	76	1006 3	3.9	3 7	14 4	3 55	Yes	Yes	Yes
1127	9/12/97	18	0 5	57	801.8	7 4	3 2	15 3	7 79			
1128	9/13/97	7	0 25	2	0 3	0 2	0 5	20 0	1.35			

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1129	9/13/97	8	1	85	1076	12.5	3.5	14.8	12 04	Yes	***** No *****	Yes
1130	9/13/97	9	1	126	1393 5	5.1	3 9	14 1	4 41	Yes	Yes	Yes
1131	9/13/97	10	1	127	1399 6	5 3	3 9	14.1	4 58	Yes	Yes	Yes
1132	9/13/97	11	1	127	1399 9	5 2	3 8	14 2	4 61	Yes	Yes	Yes
1133	9/13/97	12	1	88	1102 5	4.4	3 8	14 2	3 90	Yes	Yes	Yes
1134	9/13/97	13	1	109	1255 3	4.8	3 8	14 2	4 26	Yes	Yes	Yes
1135	9/13/97	14	1	125	1381 8	5	3.8	14 2	4 44	Yes	Yes	Yes
1136	9/13/97	15	1	125	1385 7	5 1	3 9	14 1	4 41	Yes	Yes	Yes
1137	9/13/97	16	1	125	1386 7	5.1	3.9	14 1	4 41	Yes	Yes	Yes
1138	9/13/97	17	1	108	1254 5	4.6	3 8	14 2	4 08	Yes	Yes	Yes
1139	9/13/97	18	1	113	1285 6	4.8	3.9	14 1	4.15	Yes	Yes	Yes
1140	9/13/97	19	1	94	1141.3	4.4	3.9	14 1	3 80	Yes	Yes	Yes
1141	9/13/97	20	1	78	1010 5	3 9	3.7	14 4	3 55	Yes	Yes	Yes
1142	9/13/97	21	0 75	60	850 5	6.6	3 4	14 9	6 54			
1143	9/14/97	8	0 25	20	457.5	27 1	2.3	18 9	39 72			
1144	9/14/97	9	1	81	1052	5.2	3.9	14.1	4.49	Yes	Yes	Yes
1145	9/14/97	10	1	108	1250 6	4.9	3.9	14.1	4.23	Yes	Yes	Yes
1146	9/14/97	11	1	86	1080	4.1	3 7	14 4	3.74	Yes	Yes	Yes
1147	9/14/97	12	1	103	1212.9	4 8	3 8	14 2	4 26	Yes	Yes	Yes
1148	9/14/97	13	1	102	1196 7	4.7	3.8	14 2	4.17	Yes	Yes	Yes
1149	9/14/97	14	1	101	1190 6	4 7	3 8	14 2	4 17	Yes	Yes	Yes
1150	9/14/97	15	1	111	1271.3	5	3 8	14.2	4.44	Yes	Yes	Yes
1151	9/14/97	16	1	125	1384	5	3 9	14.1	4.32	Yes	Yes	Yes
1152	9/14/97	17	1	102	1200 2	4.4	3 8	14.2	3 90	Yes	Yes	Yes
1153	9/14/97	18	1	121	1349 4	5.1	3.9	14 1	4 41	Yes	Yes	Yes
1154	9/14/97	19	1	99	1179 6	4.5	3.9	14 1	3 89	Yes	Yes	Yes
1155	9/14/97	20	1	92	1125.6	4.2	3.8	14 2	3 73	Yes	Yes	Yes
1156	9/14/97	21	1	76	1012.1	3 9	3.8	14 2	3 46	Yes	Yes	Yes
1157	9/14/97	22	1	75	964.2	6.1	3 5	14 8	5 87	Yes	Yes	Yes
1158	9/15/97	5	0 5	45	727 5	26 3	2 2	17.0	40 30			
1159	9/15/97	6	1	74	1004 7	4.2	3 8	14 2	3.73	Yes	Yes	Yes
1160	9/15/97	7	1	78	1032.7	4.1	3.8	14.2	3 64	Yes	Yes	Yes
1161	9/15/97	8	1	78	1026 7	3.9	3 7	14.4	3 55	Yes	Yes	Yes
1162	9/15/97	9	1	77	1021.2	4	3.7	14 4	3 64	Yes	Yes	Yes
1163	9/15/97	10	1	78	1023 6	4	3 7	14 4	3 64	Yes	Yes	Yes
1164	9/15/97	11	1	79	1030 1	4	3.7	14 4	3 64	Yes	Yes	Yes
1165	9/15/97	12	1	77	1016 6	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1166	9/15/97	13	1	85	1068 5	4.3	3 7	14.4	3 92	Yes	Yes	Yes
1167	9/15/97	14	1	78	1019 2	4	3 6	14 6	3 75	Yes	Yes	Yes
1168	9/15/97	15	1	79	1027	4	3 7	14.4	3 64	Yes	Yes	Yes
1169	9/15/97	16	1	80	1039	4	3.7	14 4	3.64	Yes	Yes	Yes
1170	9/15/97	17	1	85	1072.3	4	3.7	14 4	3 64	Yes	Yes	Yes
1171	9/15/97	18	1	96	1152.7	4.6	3.8	14 2	4 08	Yes	Yes	Yes
1172	9/15/97	19	1	93	1128 2	4 4	3.8	14 2	3 90	Yes	Yes	Yes
1173	9/15/97	20	1	89	1103 4	4.3	3.7	14 4	3 92	Yes	Yes	Yes
1174	9/15/97	21	1	113	1282.3	4 9	3.8	14.2	4 35	Yes	Yes	Yes
1175	9/15/97	22	0.75	78	966 8	7.9	3 4	14 9	7.83	Yes	Yes	Yes
1176	9/16/97	5	0 75	58	842.7	15.6	3.1	15 5	16 96			
1177	9/16/97	6	1	76	1015 5	4.1	3.8	14 2	3 64	Yes	Yes	Yes
1178	9/16/97	7	1	74	1001 5	4	3 7	14 4	3 64	Yes	Yes	Yes
1179	9/16/97	8	1	75	1004 5	4	3 6	14 6	3 75	Yes	Yes	Yes
1180	9/16/97	9	1	82	1052.1	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1181	9/16/97	10	1	93	1132 2	4.3	3.8	14 2	3 81	Yes	Yes	Yes
1182	9/16/97	11	1	101	1194 9	4 6	3 7	14 4	4 19	Yes	Yes	Yes
1183	9/16/97	12	1	77	1018 5	4	3 8	14.2	3 55	Yes	Yes	Yes
1184	9/16/97	13	1	75	1007.4	4	3 7	14 4	3 64	Yes	Yes	Yes
1185	9/16/97	14	1	76	1011.1	4	3.6	14 6	3 75	Yes	Yes	Yes
1186	9/16/97	15	1	97	1159 9	4.6	3.8	14 2	4 08	Yes	Yes	Yes
1187	9/16/97	16	1	92	1127 5	4 6	3.8	14 2	4 08	Yes	Yes	Yes
1188	9/16/97	17	1	64	887 4	6 1	3.3	15 1	6 23	Yes	Yes	Yes
1189	9/17/97	9	0.5	41	679 8	24 6	2 9	15 8	28 59			
1190	9/17/97	10	1	80	1045 4	4 6	3 8	14 2	4 08	Yes	Yes	Yes
1191	9/17/97	11	1	103	1212.7	5	3.7	14.4	4 56	Yes	Yes	Yes
1192	9/17/97	12	1	82	1052 3	4.4	3 7	14 4	4 01	Yes	Yes	Yes
1193	9/17/97	13	1	84	1065 9	4 5	3 7	14.4	4.10	Yes	Yes	Yes
1194	9/17/97	14	1	85	1069 8	4 4	3 6	14 6	4 12	Yes	Yes	Yes
1195	9/17/97	15	1	82	1049	4 3	3.7	14 4	3 92	Yes	Yes	Yes
1196	9/17/97	16	1	80	1038 2	4 3	3.7	14 4	3 92	Yes	Yes	Yes
1197	9/17/97	17	1	78	1024 9	4 1	3.6	14 6	3 84	Yes	Yes	Yes
1198	9/17/97	18	1	98	1180 1	4 8	3.7	14 4	4 37	Yes	Yes	Yes
1199	9/17/97	19	1	87	1087.9	4 5	3.8	14 2	3 99	Yes	Yes	Yes
1200	9/17/97	20	0 25	25	443 3	14 7	2 2	17.0	22.52			
1201	9/18/97	6	0 5	48	745 8	30.9	2.4	16 7	43 40			
1202	9/18/97	7	1	83	1061.4	4.3	3.7	14 4	3 92	Yes	Yes	Yes
1203	9/18/97	8	1	108	1253 4	5	3 8	14 2	4 44	Yes	Yes	Yes
1204	9/18/97	9	1	117	1323	5 3	3 8	14 2	4 70	Yes	Yes	Yes
1205	9/18/97	10	1	114	1294 1	5 2	3.8	14 2	4 61	Yes	Yes	Yes
1206	9/18/97	11	1	78	1026 5	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1207	9/18/97	12	1	92	1123 8	4 4	3 8	14 2	3.90	Yes	Yes	Yes
1208	9/18/97	13	1	75	1008 5	4	3 7	14 4	3 64	Yes	Yes	Yes
1209	9/18/97	14	1	84	1067.3	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1210	9/18/97	15	1	76	1009 1	4	3.7	14 4	3 64	Yes	Yes	Yes
1211	9/18/97	16	1	76	1008 1	3 9	3.7	14 4	3 55	Yes	Yes	Yes
1212	9/18/97	17	1	76	1013 7	3 9	3.7	14 4	3 55	Yes	Yes	Yes
1213	9/18/97	18	1	88	1094 3	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1214	9/18/97	19	1	80	1041.8	4 1	3 8	14 2	3 64	Yes	Yes	Yes
1215	9/18/97	20	0 75	59	822.9	7 2	3 4	14 9	7.14			
1216	9/22/97	6	0 5	33	624 4	29 8	2 7	16 2	37 20			
1217	9/22/97	7	1	76	1021 4	4 2	3 9	14 1	3 63	Yes	Yes	Yes
1218	9/22/97	8	1	75	1016 1	4.1	3 9	14 1	3 54	Yes	Yes	Yes
1219	9/22/97	9	1	76	1014 7	4	3 9	14.1	3 46	Yes	Yes	Yes
1220	9/22/97	10	1	75	1013 2	4	3 9	14.1	3 46	Yes	Yes	Yes
1221	9/22/97	11	1	75	1010 8	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1222	9/22/97	12	1	75	1013	4	3 9	14.1	3 48	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1223	9/22/97	13	1	75	1012 4	4 1	3 9	14 1	3 54	Yes	Yes	Yes
1224	9/22/97	14	1	76	1013 6	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1225	9/22/97	15	1	75	1010 5	4	3 9	14 1	3 46	Yes	Yes	Yes
1226	9/22/97	16	1	75	1012.1	4	3 9	14 1	3 46	Yes	Yes	Yes
1227	9/22/97	17	1	75	1012.1	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1228	9/22/97	18	1	78	1031.2	3 9	3.9	14.1	3.37	Yes	Yes	Yes
1229	9/22/97	19	0 5	53	771.4	8 5	3 2	15 3	8.95			
1230	9/26/97	10	0 5	38	645 7	27 9	2.8	16 0	33 59			
1231	9/26/97	11	1	127	1417.3	6	3 8	14 2	5 32	Yes	Yes	Yes
1232	9/26/97	12	1	119	1338 6	5 7	3 9	14 1	4 93	Yes	Yes	Yes
1233	9/26/97	13	1	83	1061 6	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1234	9/26/97	14	1	69	953 4	5.8	3.6	14 6	5 43	Yes	Yes	Yes
1235	9/26/97	15	0.25	0	0 3	4 6	0 1	20 7				
1236	9/27/97	9	1	69	936.6	10 2	3 6	14 6	9 55	Yes	***** No *****	Yes
1237	9/27/97	10	1	91	1115 8	4 5	3 8	14 2	3 99	Yes	Yes	Yes
1238	9/27/97	11	1	78	1023.9	4 2	3.7	14 4	3 83	Yes	Yes	Yes
1239	9/27/97	12	1	78	1019 9	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1240	9/27/97	13	1	77	1011.9	4.3	3 7	14 4	3 92	Yes	Yes	Yes
1241	9/27/97	14	1	77	1010 7	4 2	3 6	14 6	3.93	Yes	Yes	Yes
1242	9/27/97	15	1	75	1002.5	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1243	9/27/97	16	1	77	1013 2	4 2	3 7	14 4	3 83	Yes	Yes	Yes
1244	9/27/97	17	0.25	31	517.7	14 2	2 5	16 5	19 15			
1245	9/29/97	11	1	64	903 8	15 3	3 1	15 5	16 64	Yes	***** No *****	***** No *****
1246	9/29/97	12	1	75	1004.5	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1247	9/29/97	13	0.5	44	655 5	10 7	2 8	16 0	12 88			
1248	9/30/97	9	0 75	57	839 9	25 1	2 8	16 0	30 22			
1249	9/30/97	10	1	75	1006 3	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1250	9/30/97	11	1	75	1000 8	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1251	9/30/97	12	1	97	1164 6	4 8	3 8	14 2	4 26	Yes	Yes	Yes
1252	9/30/97	13	1	79	1031.9	4.2	3 8	14 2	3 73	Yes	Yes	Yes
1253	9/30/97	14	1	89	1104.3	4.4	3 7	14 4	4 01	Yes	Yes	Yes
1254	9/30/97	15	1	81	1047	4.4	3.7	14 4	4.01	Yes	Yes	Yes
1255	9/30/97	16	1	81	1049	4.2	3 7	14 4	3 83	Yes	Yes	Yes
1256	9/30/97	17	1	98	1174 8	4.7	3 7	14.4	4 28	Yes	Yes	Yes
1257	9/30/97	18	1	111	1271.8	5 3	3 8	14 2	4.70	Yes	Yes	Yes
1258	9/30/97	19	1	124	1377 4	5 5	3 9	14 1	4.75	Yes	Yes	Yes
1259	9/30/97	20	0.75	70	919 1	6.1	3 3	15 1	6 23	Yes	Yes	Yes
1260	10/1/97	5	0.25	19	447 6	32.7	2.2	17.0	50 10			
1261	10/1/97	6	1	78	1040	7 6	3.9	14 1	6 57	Yes	Yes	Yes
1262	10/1/97	7	1	93	1143 8	4 6	3 9	14 1	3.98	Yes	Yes	Yes
1263	10/1/97	8	1	89	1108 2	4 5	3 8	14 2	3 99	Yes	Yes	Yes
1264	10/1/97	9	1	90	1111.9	4 5	3 8	14 2	3 99	Yes	Yes	Yes
1265	10/1/97	10	1	85	1079 9	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1266	10/1/97	11	1	82	1053 7	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1267	10/1/97	12	1	107	1247.1	4.9	3 8	14 2	4 35	Yes	Yes	Yes
1268	10/1/97	13	1	108	1255 8	5 2	3.8	14 2	4 61	Yes	Yes	Yes
1269	10/1/97	14	1	126	1397.9	6.1	3 8	14 2	5 41	Yes	Yes	Yes
1270	10/1/97	15	1	128	1421.9	6 4	3 9	14 1	5 53	Yes	Yes	Yes
1271	10/1/97	16	1	128	1417.5	6 4	3.9	14 1	5.53	Yes	Yes	Yes
1272	10/1/97	17	1	112	1278 8	5 1	3.8	14 2	4 52	Yes	Yes	Yes
1273	10/1/97	18	1	129	1421.9	6 2	3 9	14 1	5 36	Yes	Yes	Yes
1274	10/1/97	19	1	94	1152 2	4 8	3 8	14 2	4 26	Yes	Yes	Yes
1275	10/1/97	20	0 5	46	694 9	11.1	3	15 6	12.47			
1276	10/2/97	8	0.75	56	839	20 5	2 6	16 3	26 58			
1277	10/2/97	9	1	90	1127.1	4 9	3.8	14 2	4 35	Yes	Yes	Yes
1278	10/2/97	10	1	95	1154 3	4 9	3 8	14 2	4 35	Yes	Yes	Yes
1279	10/2/97	11	1	95	1159 6	4 7	3 7	14 4	4 28	Yes	Yes	Yes
1280	10/2/97	12	1	128	1413 1	6 5	3 9	14 1	5 62	Yes	Yes	Yes
1281	10/2/97	13	1	128	1412 6	6 5	3 9	14.1	5 62	Yes	Yes	Yes
1282	10/2/97	14	1	128	1412.7	6 3	3 8	14 2	5 59	Yes	Yes	Yes
1283	10/2/97	15	1	100	1191.5	5 2	3 8	14 2	4 61	Yes	Yes	Yes
1284	10/2/97	16	1	87	1090 5	4 5	3 7	14 4	4 10	Yes	Yes	Yes
1285	10/2/97	17	1	98	1177.2	4 8	3 7	14 4	4 37	Yes	Yes	Yes
1286	10/2/97	18	1	124	1380.2	5 9	3.8	14 2	5 23	Yes	Yes	Yes
1287	10/2/97	19	1	113	1298 8	5 9	3.8	14 2	5 23	Yes	Yes	Yes
1288	10/2/97	20	0 75	63	875 3	6 9	3.3	15 1	7.05	Yes	Yes	Yes
1289	10/3/97	7	0 25	17	430.1	30.8	2.1	17 2	49 44			
1290	10/3/97	8	1	87	1096	6 9	3 6	14 6	6 46	Yes	Yes	Yes
1291	10/3/97	9	1	81	1047.2	4.2	3.7	14 4	3 83	Yes	Yes	Yes
1292	10/3/97	10	1	75	1011.5	4.2	3 7	14 4	3 83	Yes	Yes	Yes
1293	10/3/97	11	1	74	1005 2	4	3 6	14 6	3 75	Yes	Yes	Yes
1294	10/3/97	12	1	75	1005 3	4 1	3 6	14 6	3 84	Yes	Yes	Yes
1295	10/3/97	13	1	85	1075 8	4 4	3 7	14 4	4 01	Yes	Yes	Yes
1296	10/3/97	14	1	76	1016 2	4.1	3 6	14 6	3 84	Yes	Yes	Yes
1297	10/3/97	15	1	74	998.7	4.1	3 6	14 6	3 84	Yes	Yes	Yes
1298	10/3/97	16	1	74	999 2	4 3	3 6	14 6	4 03	Yes	Yes	Yes
1299	10/3/97	17	1	74	1002	4.1	3 6	14 6	3 84	Yes	Yes	Yes
1300	10/3/97	18	1	74	1004.7	4 2	3.7	14 4	3 83	Yes	Yes	Yes
1301	10/3/97	19	0.25	26	481 7	15.5	2 4	16 7	21.77			
1302	10/8/97	9	1	64	911 7	12 8	3 4	14.9	12.69	Yes	***** No *****	Yes
1303	10/8/97	10	1	76	1018 7	4 3	3.7	14 4	3 92	Yes	Yes	Yes
1304	10/8/97	11	1	75	1013 3	4 2	3 6	14 6	3 93	Yes	Yes	Yes
1305	10/8/97	12	1	89	1111 9	4 4	3 7	14 4	4 01	Yes	Yes	Yes
1306	10/8/97	13	1	94	1142.8	4.7	3 7	14 4	4 28	Yes	Yes	Yes
1307	10/8/97	14	1	111	1280 1	5 2	3 7	14 4	4 74	Yes	Yes	Yes
1308	10/8/97	15	1	132	1452 2	6 1	3 8	14 2	5 41	Yes	Yes	Yes
1309	10/8/97	16	1	124	1375 3	5 4	3 7	14 4	4.92	Yes	Yes	Yes
1310	10/8/97	17	1	119	1340 1	5 1	3 7	14 4	4 65	Yes	Yes	Yes
1311	10/8/97	18	1	135	1474 3	6 2	3 8	14 2	5 50	Yes	Yes	Yes
1312	10/8/97	19	1	96	1170 8	4 9	3 7	14 4	4.46	Yes	Yes	Yes
1313	10/8/97	20	1	101	1212 5	4 9	3.7	14 4	4 46	Yes	Yes	Yes
1314	10/8/97	21	0 75	63	868 6	7 8	3 2	15 3	8 22	Yes	Yes	Yes
1315	10/9/97	5	0 5	38	686 7	29 5	2 8	16 0	35 51			
1316	10/9/97	6	1	76	1032.8	4 6	3.7	14 4	4.19	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1317	10/9/97	7	1	78	1041.9	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1318	10/9/97	8	1	106	1243.6	4 6	3 7	14 4	4 19	Yes	Yes	Yes
1319	10/9/97	9	1	83	1077.6	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1320	10/9/97	10	1	77	1029.3	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1321	10/9/97	11	1	79	1043.7	4	3 6	14 6	3 75	Yes	Yes	Yes
1322	10/9/97	12	1	107	1254.8	4.9	3 7	14 4	4 46	Yes	Yes	Yes
1323	10/9/97	13	1	133	1457.3	6.1	3 8	14 2	5 41	Yes	Yes	Yes
1324	10/9/97	14	1	114	1311.6	5.5	3 7	14 4	5 01	Yes	Yes	Yes
1325	10/9/97	15	1	83	1064.2	4.3	3.7	14 4	3 92	Yes	Yes	Yes
1326	10/9/97	16	1	75	1009.4	4.2	3.7	14 4	3 83	Yes	Yes	Yes
1327	10/9/97	17	1	97	1174.7	4 8	3 7	14 4	4 37	Yes	Yes	Yes
1328	10/9/97	18	1	81	1054	4 3	3 7	14 4	3.92	Yes	Yes	Yes
1329	10/9/97	19	0 75	60	849 7	7 8	3 3	15 1	7.97			
1330	10/10/97	6	0 75	58	856 4	27.1	2 8	16 0	32 62			
1331	10/10/97	7	1	72	999.1	4.4	3 7	14 4	4 01	Yes	Yes	Yes
1332	10/10/97	8	1	71	990.5	4.1	3 6	14 6	3 84	Yes	Yes	Yes
1333	10/10/97	9	1	71	988	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1334	10/10/97	10	1	71	982.6	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1335	10/10/97	11	1	72	987.8	4	3 6	14 6	3 75	Yes	Yes	Yes
1336	10/10/97	12	1	72	987.8	4.1	3.7	14 4	3 74	Yes	Yes	Yes
1337	10/10/97	13	1	72	985.1	4.1	3 8	14 6	3 84	Yes	Yes	Yes
1338	10/10/97	14	1	72	987.2	4	3 8	14 6	3 75	Yes	Yes	Yes
1339	10/10/97	15	1	72	989.4	4	3 6	14 6	3 75	Yes	Yes	Yes
1340	10/10/97	16	1	72	989.2	4.1	3 6	14 6	3 84	Yes	Yes	Yes
1341	10/10/97	17	1	72	990.2	4	3 5	14 8	3 85	Yes	Yes	Yes
1342	10/10/97	18	0 75	59	845 3	6.8	3 2	15 3	7.16			
1343	10/11/97	4	0 75	66	911.4	20.7	3	15 6	23 26	Yes	***** No *****	***** No *****
1344	10/11/97	5	1	92	1132.9	4.5	3 6	14 6	4 21	Yes	Yes	Yes
1345	10/11/97	6	1	76	1018.7	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1346	10/11/97	7	1	75	1007 3	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1347	10/11/97	8	1	87	1096 6	4 2	3 6	14 6	3 93	Yes	Yes	Yes
1348	10/11/97	9	1	127	1413.8	6.2	3.8	14 2	5 50	Yes	Yes	Yes
1349	10/11/97	10	1	94	1145.3	4.8	3 7	14 4	4 37	Yes	Yes	Yes
1350	10/11/97	11	1	75	998.2	4	3.5	14 8	3 85	Yes	Yes	Yes
1351	10/11/97	12	1	79	1028 6	4 1	3 5	14 8	3 95	Yes	Yes	Yes
1352	10/11/97	13	1	80	1034 5	4 1	3 5	14 8	3 95	Yes	Yes	Yes
1353	10/11/97	14	1	76	1003.3	4	3 5	14 8	3 85	Yes	Yes	Yes
1354	10/11/97	15	1	75	1003	4 1	3 5	14 8	3 95	Yes	Yes	Yes
1355	10/11/97	16	0 75	57	803.4	7.3	3	15 6	8 20			
1356	10/13/97	5	0 25	15	435.2	26 3	1 6	18 1	55 41			
1357	10/13/97	6	0 75	62	904 4	20 7	3	15 6	23 26	Yes	***** No *****	***** No *****
1358	10/13/97	7	1	75	1022.9	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1359	10/13/97	8	1	74	1015.3	4	3 6	14 6	3 75	Yes	Yes	Yes
1360	10/13/97	9	1	73	1009.6	4	3 6	14 6	3 75	Yes	Yes	Yes
1361	10/13/97	10	0 25	36	597.9	13.6	2 6	16 3	17 63			
1362	10/14/97	4	1	65	928	16.9	3 3	15 1	17 26	Yes	***** No *****	***** No *****
1363	10/14/97	5	1	75	1022.6	4 1	3 7	14 4	3 74	Yes	Yes	Yes
1364	10/14/97	6	1	74	1017.9	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1365	10/14/97	7	0 5	48	719 9	18.1	1 9	17 6	32 11			
1366	10/15/97	7	0 25	0	0 3	0 4	0 8	19 5	1.69			
1367	10/15/97	8	1	66	958 9	15 7	3 5	14 8	15 12	Yes	***** No *****	***** No *****
1368	10/15/97	9	1	80	1057 5	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1369	10/15/97	10	1	84	1082 1	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1370	10/15/97	11	1	78	1038.6	4 2	3 7	14 4	3 83	Yes	Yes	Yes
1371	10/15/97	12	1	82	1070.7	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1372	10/15/97	13	1	75	1016.4	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1373	10/15/97	14	1	74	1010.5	4.2	3 7	14 4	3 83	Yes	Yes	Yes
1374	10/15/97	15	1	61	873.7	6.4	3 4	14 9	6 34	Yes	Yes	Yes
1375	10/16/97	7	0 5	58	866 1	29.1	3 1	15 5	31 64			
1376	10/16/97	8	1	78	1052 4	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1377	10/16/97	9	1	77	1041.7	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1378	10/16/97	10	1	76	1024.7	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1379	10/16/97	11	1	75	1022.4	4 2	3 7	14 4	3 83	Yes	Yes	Yes
1380	10/16/97	12	1	79	1043 1	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1381	10/16/97	13	1	81	1056 6	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1382	10/16/97	14	1	85	1084.2	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1383	10/16/97	15	1	81	1057	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1384	10/16/97	16	1	73	999 2	4 6	3 7	14 4	4 19	Yes	Yes	Yes
1385	10/16/97	17	0 25	2	140 6	22 3	1 2	18 8	62 64			
1386	10/20/97	5	0 5	37	644 7	29 9	2 7	16 2	37 33			
1387	10/20/97	6	1	77	1041	4 9	3 8	14 2	4 35	Yes	Yes	Yes
1388	10/20/97	7	1	75	1022.5	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1389	10/20/97	8	1	75	1021 2	4.2	3 7	14 4	3 83	Yes	Yes	Yes
1390	10/20/97	9	1	75	1028 4	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1391	10/20/97	10	1	77	1039 8	4 3	3.8	14 2	3 81	Yes	Yes	Yes
1392	10/20/97	11	1	76	1031.9	4.2	3.7	14 4	3 83	Yes	Yes	Yes
1393	10/20/97	12	1	79	1050.8	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1394	10/20/97	13	1	84	1084	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1395	10/20/97	14	1	77	1036 9	4 2	3 7	14 4	3 83	Yes	Yes	Yes
1396	10/20/97	15	1	77	1038 1	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1397	10/20/97	16	1	82	1071	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1398	10/20/97	17	1	100	1202 5	4 8	3 8	14 2	4 26	Yes	Yes	Yes
1399	10/20/97	18	0 75	65	886 2	7.7	3 4	14 9	7.63	Yes	Yes	Yes
1400	10/21/97	5	0 25	3	257 8	8 6	1,7	17 9	17.05			
1401	10/21/97	6	1	76	1035 3	13 9	3 8	14 2	12.33	Yes	***** No *****	Yes
1402	10/21/97	7	1	95	1157 2	4 6	3.9	14 1	3.98	Yes	Yes	Yes
1403	10/21/97	8	1	83	1076 3	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1404	10/21/97	9	1	85	1088 9	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1405	10/21/97	10	1	87	1103	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1406	10/21/97	11	1	85	1090 2	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1407	10/21/97	12	0 75	65	896 6	7.4	3 3	15 1	7.56	Yes	Yes	Yes
1408	10/24/97	7	0 5	45	732 2	30 8	2 9	15 8	35 80			
1409	10/24/97	8	1	134	1474.3	6 2	3 8	14 2	5 50	Yes	Yes	Yes
1410	10/24/97	9	1	134	1469 3	6 3	3 8	14 2	5 59	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1411	10/24/97	10	1	105	1233 4	4.7	3 8	14.2	4.17	Yes	Yes	Yes
1412	10/24/97	11	0 5	55	798.3	9.1	3 2	15.3	9.59			
1413	10/25/97	16	0 5	1	287.2	8 8	1 2	18 8	24 72			
1414	10/25/97	17	1	105	1250 6	17.9	3 4	14 9	17.75	Yes	***** No *****	***** No *****
1415	10/25/97	18	1	98	1196 6	4 8	3 8	14 2	4 26	Yes	Yes	Yes
1416	10/25/97	19	1	76	1036 5	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1417	10/25/97	20	1	77	1041,1	4,1	3 7	14 4	3.74	Yes	Yes	Yes
1418	10/25/97	21	0 5	56	820 9	9	3 1	15 5	9 79			
1419	10/26/97	16	0.75	59	860 8	17.8	3 1	15 5	19.35			
1420	10/26/97	17	1	95	1175 7	4 4	3 6	14 6	4 12	Yes	Yes	Yes
1421	10/26/97	18	1	91	1138 9	4,1	3 7	14 4	3 74	Yes	Yes	Yes
1422	10/26/97	19	1	95	1159 7	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1423	10/26/97	20	1	82	1071	4	3 6	14.6	3 75	Yes	Yes	Yes
1424	10/26/97	21	0.75	64	892 2	8 2	3 2	15.3	8 64	Yes	Yes	Yes
1425	10/28/97	10	1	65	922 1	19 1	3 1	15 5	20.77	Yes	***** No *****	***** No *****
1426	10/28/97	11	1	78	1044	4 3	3 6	14 6	4 03	Yes	Yes	Yes
1427	10/28/97	12	1	79	1044 4	4 5	3.7	14 4	4.10	Yes	Yes	Yes
1428	10/28/97	13	1	79	1040 9	4 5	3.7	14.4	4 10	Yes	Yes	Yes
1429	10/28/97	14	1	79	1041 4	4 4	3 6	14 6	4 12	Yes	Yes	Yes
1430	10/28/97	15	1	79	1042,1	4 4	3.7	14 4	4.01	Yes	Yes	Yes
1431	10/28/97	16	1	79	1043 5	4 4	3 7	14 4	4 01	Yes	Yes	Yes
1432	10/28/97	17	1	79	1045 3	4 3	3 6	14.6	4.03	Yes	Yes	Yes
1433	10/28/97	18	1	79	1046 9	4 4	3.7	14.4	4 01	Yes	Yes	Yes
1434	10/28/97	19	0.75	60	846	8.1	3 2	15 3	8 53			
1435	10/30/97	17	1	80	1019 2	14 2	3 3	15 1	14 50	Yes	***** No *****	Yes
1436	10/30/97	18	1	104	1225 6	5 2	3 8	14 2	4 61	Yes	Yes	Yes
1437	10/30/97	19	1	92	1130 5	4 6	3 8	14 2	4.08	Yes	Yes	Yes
1438	10/30/97	20	1	69	935.7	8 3	3 1	15 5	9.02	Yes	***** No *****	Yes
1439	11/5/97	13	0 25	0	244 2	11,2	1 5	18.3	25 17			
1440	11/5/97	14	1	14	489	34 2	2 3	16.9	50 12			
1441	11/5/97	15	0.75	33	650	63 8	3 1	15.5	69 37			
1442	11/5/97	16	1	70	979 2	14.1	3 6	14 6	13 20	Yes	***** No *****	Yes
1443	11/5/97	17	1	119	1342	4 9	3 7	14 4	4.46	Yes	Yes	Yes
1444	11/5/97	18	0 75	97	1131.6	9 3	3 3	15.1	9.50	Yes	***** No *****	Yes
1445	11/6/97	8	0 25	18	453 4	29 2	2.1	17.2	46 87			
1446	11/6/97	9	1	76	1026	8 3	3 5	14.8	7 99	Yes	Yes	Yes
1447	11/6/97	10	1	76	1019 5	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1448	11/6/97	11	1	75	1012 4	3 9	3 6	14.6	3 65	Yes	Yes	Yes
1449	11/6/97	12	0.75	63	878 2	6 8	3.3	15 1	6 95	Yes	Yes	Yes
1450	11/9/97	15	0 25	0	0	0 2	0 3	20.4	2 25			
1451	11/9/97	16	1	76	1020.9	26.1	3 1	15 5	28 38	Yes	***** No *****	***** No *****
1452	11/9/97	17	1	140	1519.9	5 1	3 6	14 6	4.78	Yes	Yes	Yes
1453	11/9/97	18	1	87	1106 2	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1454	11/9/97	19	1	80	1057,7	3 9	3 8	14 2	3 46	Yes	Yes	Yes
1455	11/9/97	20	1	81	1062,3	3 8	3 7	14 4	3 46	Yes	Yes	Yes
1456	11/9/97	21	0 25	16	370 7	19 1	2	17.4	32.19			
1457	11/10/97	7	0 5	57	846 4	24 7	3 1	15 5	26 86			
1458	11/10/97	8	1	87	1102.5	3 6	3 5	14 8	3 47	Yes	Yes	Yes
1459	11/10/97	9	1	84	1081	3 8	3 7	14.4	3 46	Yes	Yes	Yes
1460	11/10/97	10	1	86	1092	4	3 8	14.2	3 55	Yes	Yes	Yes
1461	11/10/97	11	1	87	1100 8	3.9	3 7	14.4	3 55	Yes	Yes	Yes
1462	11/10/97	12	0.75	65	894 4	7.4	3 3	15.1	7.56	Yes	Yes	Yes
1463	11/11/97	8	0 75	47	704 2	16 3	2 3	16 9	23 69			
1464	11/11/97	9	1	82	1069 7	3 6	3 6	14.6	3 37	Yes	Yes	Yes
1465	11/11/97	10	1	80	1053 9	3.9	3 7	14 4	3 55	Yes	Yes	Yes
1466	11/11/97	11	1	80	1052.9	3 8	3 6	14 6	3 56	Yes	Yes	Yes
1467	11/11/97	12	1	68	924 8	6 9	3 3	15 1	7.05	Yes	Yes	Yes
1468	11/11/97	16	0 25	15	432,9	26 6	2	17.4	44.83			
1469	11/11/97	17	1	110	1282.9	8.1	3 7	14 4	7 38	Yes	Yes	Yes
1470	11/11/97	18	1	120	1358 5	5	3 8	14 2	4 44	Yes	Yes	Yes
1471	11/11/97	19	1	80	1054 8	3 9	3 7	14.4	3 55	Yes	Yes	Yes
1472	11/11/97	20	0 5	59	826 4	8 8	3 1	15.5	9 57			
1473	11/12/97	6	0.75	62	878	29.1	2 5	16 5	39 24	Yes	***** No *****	***** No *****
1474	11/12/97	7	1	86	1091,9	4	3 6	14.6	3.75	Yes	Yes	Yes
1475	11/12/97	8	1	82	1065 7	3 8	3 6	14 6	3 56	Yes	Yes	Yes
1476	11/12/97	9	1	82	1059 8	3 9	3 6	14 6	3.65	Yes	Yes	Yes
1477	11/12/97	10	1	81	1055 5	3 9	3 6	14.6	3 65	Yes	Yes	Yes
1478	11/12/97	11	1	82	1060 3	3 8	3 5	14 8	3 66	Yes	Yes	Yes
1479	11/12/97	12	1	80	1046	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1480	11/12/97	13	1	79	1039 4	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1481	11/12/97	14	1	79	1037.7	3 8	3 5	14.8	3 66	Yes	Yes	Yes
1482	11/12/97	15	1	78	1036 2	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1483	11/12/97	16	1	84	1074	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1484	11/12/97	17	1	86	1090 8	3 8	3 6	14.6	3.56	Yes	Yes	Yes
1485	11/12/97	18	1	80	1046 8	3 9	3 6	14.6	3 65	Yes	Yes	Yes
1486	11/12/97	19	0 25	32	548,1	15 1	2 4	16.7	21 21			
1487	11/13/97	7	0 5	46	725 6	24 5	2.3	16 9	35 91			
1488	11/13/97	8	1	80	1055,7	3 9	3 5	14 8	3.76	Yes	Yes	Yes
1489	11/13/97	9	1	81	1056 2	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1490	11/13/97	10	1	80	1046 5	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1491	11/13/97	11	1	80	1046 8	3 8	3 5	14 8	3 66	Yes	Yes	Yes
1492	11/13/97	12	1	80	1045 6	3.9	3 6	14 6	3 65	Yes	Yes	Yes
1493	11/13/97	13	1	80	1043.5	3.9	3 6	14 6	3 65	Yes	Yes	Yes
1494	11/13/97	14	1	80	1045 7	3 8	3 5	14 8	3 66	Yes	Yes	Yes
1495	11/13/97	15	1	80	1044 6	3 9	3 6	14 6	3 65	Yes	Yes	Yes
1496	11/13/97	16	1	80	1048	3 9	3 6	14.6	3 65	Yes	Yes	Yes
1497	11/13/97	17	1	97	1177	4,1	3 6	14 6	3 84	Yes	Yes	Yes
1498	11/13/97	18	1	100	1199 8	4 5	3,7	14 4	4 10	Yes	Yes	Yes
1499	11/13/97	19	1	80	1046 9	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1500	11/13/97	20	0 75	64	887.3	7.2	3 2	15 3	7 58	Yes	Yes	Yes
1501	11/14/97	5	0 25	0	0	0	0	20 9				
1502	11/14/97	6	0 25	0	201	2.1	1.4	18 4	5 06			
1503	11/14/97	7	1	74	1019 6	14 8	3 5	14 8	14 25	Yes	***** No *****	Yes
1504	11/14/97	8	1	80	1061 2	3 9	3 8	14 2	3 46	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1505	11/14/97	9	1	101	1209 8	4.3	3 9	14 1	3 72	Yes	Yes	Yes
1506	11/14/97	10	1	79	1052.6	4	3 8	14 2	3 55	Yes	Yes	Yes
1507	11/14/97	11	1	79	1050 5	3 9	3 7	14 4	3 55	Yes	Yes	Yes
1508	11/14/97	12	1	79	1048 3	4	3 8	14 2	3 55	Yes	Yes	Yes
1509	11/14/97	13	1	80	1055 7	4	3 8	14 2	3 55	Yes	Yes	Yes
1510	11/14/97	14	1	80	1057 7	3.9	3 7	14 4	3 55	Yes	Yes	Yes
1511	11/14/97	15	1	80	1055 8	4	3 8	14 2	3 55	Yes	Yes	Yes
1512	11/14/97	16	1	80	1057.5	4	3 8	14 2	3 55	Yes	Yes	Yes
1513	11/14/97	17	1	76	1013 9	3 9	3.6	14 6	3 65	Yes	Yes	Yes
1514	11/14/97	18	1	72	999 2	11.4	3 7	14 4	10 39	Yes	***** No *****	Yes
1515	11/14/97	19	1	80	1061 2	4	3 8	14 2	3 55	Yes	Yes	Yes
1516	11/14/97	20	0 25	14	335 3	20 6	1 8	17.7	38 58			
1517	11/15/97	16	0 25	35	635 3	33 4	2 6	16 3	43 30			
1518	11/15/97	17	1	81	1068	4.2	3.8	14.2	3 73	Yes	Yes	Yes
1519	11/15/97	18	1	79	1048 5	4	3 8	14 2	3 55	Yes	Yes	Yes
1520	11/15/97	19	0 25	40	624 9	13 7	2 7	16 2	17.10			
1521	11/16/97	18	0 75	85	1058 4	18 6	3 3	15 1	19 00	Yes	***** No *****	***** No *****
1522	11/16/97	19	1	83	1080 8	4 4	3 9	14.1	3 80	Yes	Yes	Yes
1523	11/16/97	20	1	74	1004	7.4	3.6	14 6	6 93	Yes	Yes	Yes
1524	11/16/97	21	0 25	0	0 1	5 4	0.2	20 5				
1525	11/17/97	6	1	69	959 5	18 1	3 4	14.9	17.94	Yes	***** No *****	***** No *****
1526	11/17/97	7	1	84	1084 6	4 3	3 9	14.1	3 72	Yes	Yes	Yes
1527	11/17/97	8	1	90	1120 9	4 2	3 8	14.2	3 73	Yes	Yes	Yes
1528	11/17/97	9	1	80	1054 5	4	3 8	14 2	3 55	Yes	Yes	Yes
1529	11/17/97	10	1	78	1037 1	4	3 8	14 2	3 55	Yes	Yes	Yes
1530	11/17/97	11	0.75	64	878 2	7.5	3 3	15 1	7 66	Yes	Yes	Yes
1531	11/17/97	16	0.25	2	0 2	0 2	0.4	20 2	1 69			
1532	11/17/97	17	1	117	1321.8	13 6	3.7	14 4	12 39	Yes	***** No *****	Yes
1533	11/17/97	18	1	139	1504.7	6 7	4	13 9	5 65	Yes	Yes	Yes
1534	11/17/97	19	1	138	1492.8	6 4	4	13 9	5 39	Yes	Yes	Yes
1535	11/17/97	20	1	85	1056 7	7 7	3 5	14.8	7.42	Yes	Yes	Yes
1536	11/18/97	6	0 25	15	431 8	27.2	2.1	17 2	43 66			
1537	11/18/97	7	1	80	1061.9	10 8	3.9	14 1	9 33	Yes	***** No *****	Yes
1538	11/18/97	8	1	80	1056 4	4	3.8	14.2	3 55	Yes	Yes	Yes
1539	11/18/97	9	1	80	1053 8	4	3 8	14 2	3 55	Yes	Yes	Yes
1540	11/18/97	10	1	87	1103 2	4	3.9	14.1	3 46	Yes	Yes	Yes
1541	11/18/97	11	1	84	1078 3	4	3 8	14 2	3 55	Yes	Yes	Yes
1542	11/18/97	12	0.75	66	902	7.8	3 5	14.8	7.51	Yes	Yes	Yes
1543	11/18/97	16	0 5	42	688 5	32 5	2.9	15.8	37.78			
1544	11/18/97	17	1	84	1084 8	4.5	3 8	14.2	3 99	Yes	Yes	Yes
1545	11/18/97	18	0 5	61	841.4	9 3	3.2	15 3	9 80	Yes	***** No *****	Yes
1546	11/19/97	7	0 5	54	797.9	29 5	2 9	15 8	34 29			
1547	11/19/97	8	1	84	1091 6	3 8	3 8	14 2	3 37	Yes	Yes	Yes
1548	11/19/97	9	1	84	1085 2	3 8	3 8	14 2	3 37	Yes	Yes	Yes
1549	11/19/97	10	1	84	1083 5	3.9	3.8	14 2	3 46	Yes	Yes	Yes
1550	11/19/97	11	1	84	1078 2	3 8	3 7	14 4	3 46	Yes	Yes	Yes
1551	11/19/97	12	0.75	67	896 9	7.5	3 4	14 9	7.44	Yes	Yes	Yes
1552	11/20/97	6	0 5	58	856 2	34	2 8	16 0	40 93			
1553	11/20/97	7	1	84	1081.6	4 2	3.8	14 2	3 73	Yes	Yes	Yes
1554	11/20/97	8	1	94	1147 9	4 1	3 8	14 2	3 64	Yes	Yes	Yes
1555	11/20/97	9	1	92	1134 5	4.3	3 8	14 2	3 81	Yes	Yes	Yes
1556	11/20/97	10	1	95	1159 7	4 4	3 8	14 2	3 90	Yes	Yes	Yes
1557	11/20/97	11	1	92	1128 4	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1558	11/20/97	12	1	89	1112 6	4 2	3.8	14 2	3 73	Yes	Yes	Yes
1559	11/20/97	13	1	86	1091.7	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1560	11/20/97	14	1	87	1098 9	4.1	3 7	14 4	3 74	Yes	Yes	Yes
1561	11/20/97	15	1	91	1126 5	4 3	3 8	14 2	3 81	Yes	Yes	Yes
1562	11/20/97	16	1	103	1219 3	4 7	3 8	14 2	4 17	Yes	Yes	Yes
1563	11/20/97	17	1	130	1427.1	5 8	3 9	14 1	5 01	Yes	Yes	Yes
1564	11/20/97	18	1	133	1452 7	6 2	3.9	14 1	5 36	Yes	Yes	Yes
1565	11/20/97	19	1	84	1080 9	4 3	3 9	14 1	3 72	Yes	Yes	Yes
1566	11/20/97	20	1	82	1068 5	4	3 8	14 2	3 55	Yes	Yes	Yes
1567	11/20/97	21	0.75	64	874 8	8 2	3 3	15.1	8 38	Yes	Yes	Yes
1568	11/21/97	5	1	86	920 7	14 3	3 3	15 1	14 61	Yes	***** No *****	Yes
1569	11/21/97	6	1	87	1102 2	4 1	3 8	14 2	3 64	Yes	Yes	Yes
1570	11/21/97	7	1	91	1128 5	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1571	11/21/97	8	1	89	1118 5	4 2	3 7	14 4	3 83	Yes	Yes	Yes
1572	11/21/97	9	1	89	1114 6	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1573	11/21/97	10	1	86	1094 4	4	3 8	14 2	3 55	Yes	Yes	Yes
1574	11/21/97	11	1	86	1095 2	3.9	3 7	14.4	3 55	Yes	Yes	Yes
1575	11/21/97	12	0 5	56	785 3	10 7	3 1	15 5	11 63			
1576	11/21/97	16	0 5	55	824.9	20 5	3 3	15 1	20 94			
1577	11/21/97	17	1	79	1047 8	4 3	3 7	14 4	3 92	Yes	Yes	Yes
1578	11/21/97	18	1	78	1037.7	4 3	3.8	14 2	3 81	Yes	Yes	Yes
1579	11/21/97	19	0 25	5	197 4	25 8	1.5	18.3	57 98			
1580	11/22/97	16	0 25	0	0 3	0 4	0 2	20 5	6 74			
1581	11/22/97	17	1	64	914 2	18 9	3 2	15.3	19 91	Yes	***** No *****	***** No *****
1582	11/22/97	18	1	75	1021.4	4.1	3 8	14 2	3 64	Yes	Yes	Yes
1583	11/22/97	19	1	76	1022.9	4.1	3 8	14 2	3 64	Yes	Yes	Yes
1584	11/22/97	20	1	135	1472.1	5.5	3 9	14 1	4 75	Yes	Yes	Yes
1585	11/22/97	21	1	129	1424 2	5 5	4	13 9	4 63	Yes	Yes	Yes
1586	11/22/97	22	0 75	62	855 3	8 3	3 4	14 9	8 23	Yes	Yes	Yes
1587	11/23/97	16	0 25	0	201.5	5 4	0 4	20 2	45 50			
1588	11/23/97	17	0 5	45	735 7	26 7	3	15 6	30 00			
1589	11/23/97	18	1	85	1092 1	4 3	3 9	14 1	3 72	Yes	Yes	Yes
1590	11/23/97	19	1	89	1114 5	4 2	3.9	14.1	3 63	Yes	Yes	Yes
1591	11/23/97	20	1	81	1053 4	5 8	3.8	14 2	5 14	Yes	Yes	Yes
1592	11/23/97	21	0 25	0	29 9	12.5	0 5	20 0	84 27			
1593	11/24/97	6	1	71	967 6	19 8	3 4	14 9	19 63	Yes	***** No *****	***** No *****
1594	11/24/97	7	1	83	1079 4	4 2	4	13 9	3 54	Yes	Yes	Yes
1595	11/24/97	8	1	82	1069 8	4	3 9	14.1	3 46	Yes	Yes	Yes
1596	11/24/97	9	1	83	1076 4	4.1	3 9	14 1	3 54	Yes	Yes	Yes
1597	11/24/97	10	1	85	1087.3	4.1	3 9	14 1	3 54	Yes	Yes	Yes
1598	11/24/97	11	1	88	1109	4	3 9	14 1	3 46	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1599	11/24/97	12	1	86	1090 7	4 1	3.9	14.1	3 54	Yes	Yes	Yes
1600	11/24/97	13	0 75	65	885	8	3.5	14 8	7 70	Yes	Yes	Yes
1601	11/25/97	15	0 25	0	0 2	0 3	0.7	19 7	1 44			
1602	11/25/97	16	1	72	990 1	16 1	3 6	14 6	15 07	Yes	***** No *****	***** No *****
1603	11/25/97	17	1	84	1079 1	4.1	3 8	14 2	3 64	Yes	Yes	Yes
1604	11/25/97	18	1	84	1077.9	4 1	3.9	14.1	3 54	Yes	Yes	Yes
1605	11/25/97	19	0 25	38	606 4	14.4	2.8	16.0	17.34			
1606	11/28/97	16	1	89	1094 3	19 8	3.2	15.3	20.86	Yes	***** No *****	***** No *****
1607	11/28/97	17	1	134	1470 3	5.9	3 9	14 1	5 10	Yes	Yes	Yes
1608	11/28/97	18	0 5	58	777.6	13 6	3	15 6	15 28			
1609	12/1/97	7	0 5	60	873		3 4	14.9	0 00			
1610	12/1/97	8	1	84	1083.3	4.1	3.8	14 2	3.64	Yes	Yes	Yes
1611	12/1/97	9	0 75	63	861 5	8 6	3.4	14 9	8 53	Yes	Yes	Yes
1612	12/1/97	17	0 5	56	821.3	19 7	3 3	15 1	20 12			
1613	12/1/97	18	1	89	1114 6	4 4	3 9	14 1	3 80	Yes	Yes	Yes
1614	12/1/97	19	1	88	1105 5	4 2	3 9	14.1	3 63	Yes	Yes	Yes
1615	12/1/97	20	1	70	938	6.9	3.5	14.8	6 65	Yes	Yes	Yes
1616	12/2/97	7	0 75	64	902.6	23.1	3.2	15 3	24 33	Yes	***** No *****	***** No *****
1617	12/2/97	8	1	80	1057.1	3 5	3 6	14 6	3 28	Yes	Yes	Yes
1618	12/2/97	9	1	88	1112 4	3 9	4	13.9	3 29	Yes	Yes	Yes
1619	12/2/97	10	1	90	1124 6	3.7	3.9	14.1	3 20	Yes	Yes	Yes
1620	12/2/97	11	1	77	991 2	6 4	3.6	14 8	5 99	Yes	Yes	Yes
1621	12/2/97	16	0 75	69	929.7	15 6	3.5	14 8	15 02	Yes	***** No *****	***** No *****
1622	12/2/97	17	1	90	1123 3	4 1	3.9	14 1	3 54	Yes	Yes	Yes
1623	12/2/97	18	1	87	1103 2	3 9	4	13.9	3 29	Yes	Yes	Yes
1624	12/2/97	19	1	82	1073.1	4	3.9	14.1	3 46	Yes	Yes	Yes
1625	12/2/97	20	0 5	60	835.1	8.5	3.3	15.1	8 68			
1626	12/3/97	6	0 5	59	851 1	28 7	2.8	16 0	34 55			
1627	12/3/97	7	1	87	1111.1	4.2	3.9	14.1	3 63	Yes	Yes	Yes
1628	12/3/97	8	1	87	1107 2	4	3 9	14.1	3 46	Yes	Yes	Yes
1629	12/3/97	9	0 5	52	753 2	11.9	3 1	15 5	12 94			
1630	12/4/97	6	0 5	77	979 6	25.1	3	15.6	28 20	Yes	***** No *****	***** No *****
1631	12/4/97	7	1	86	1103.7	4.2	3.9	14.1	3 63	Yes	Yes	Yes
1632	12/4/97	8	1	83	1076.8	4.1	3.8	14 2	3 64	Yes	Yes	Yes
1633	12/4/97	9	1	83	1077 6	4.1	3 9	14 1	3 54	Yes	Yes	Yes
1634	12/4/97	10	1	83	1077 7	4.1	3 9	14 1	3 54	Yes	Yes	Yes
1635	12/4/97	11	1	70	941.5	6 8	3.5	14.8	6 55	Yes	Yes	Yes
1636	12/4/97	16	0 75	62	872	18.7	3.3	15 1	19 10	Yes	***** No *****	***** No *****
1637	12/4/97	17	1	99	1184 6	4 3	3.9	14.1	3.72	Yes	Yes	Yes
1638	12/4/97	18	1	127	1410 4	5 2	3 9	14 1	4 49	Yes	Yes	Yes
1639	12/4/97	19	1	140	1516 7	5 7	3.9	14.1	4.93	Yes	Yes	Yes
1640	12/4/97	20	1	141	1517.6	5 6	3.9	14 1	4 84	Yes	Yes	Yes
1641	12/4/97	21	0 5	62	800.4	12.6	3	15 6	14.16	Yes	***** No *****	Yes
1642	12/5/97	6	0 5	41	677.7	33 3	2.7	16 2	41 57			
1643	12/5/97	7	1	88	1116 9	4 6	4	13.9	3 88	Yes	Yes	Yes
1644	12/5/97	8	1	85	1094 4	4.2	3.9	14.1	3 63	Yes	Yes	Yes
1645	12/5/97	9	1	82	1072.6	4 2	4	13.9	3 54	Yes	Yes	Yes
1646	12/5/97	10	1	82	1074.1	4 2	4	13.9	3 54	Yes	Yes	Yes
1647	12/5/97	11	1	82	1073.7	4.1	3.9	14.1	3 54	Yes	Yes	Yes
1648	12/5/97	12	1	82	1073.3	4.2	4	13 9	3 54	Yes	Yes	Yes
1649	12/5/97	13	1	82	1070.9	4.2	4	13.9	3 54	Yes	Yes	Yes
1650	12/5/97	14	1	82	1071.1	4.2	3 9	14.1	3 63	Yes	Yes	Yes
1651	12/5/97	15	1	82	1070 8	4.2	4	13 9	3 54	Yes	Yes	Yes
1652	12/5/97	16	1	104	1239 3	4.7	4	13 9	3 96	Yes	Yes	Yes
1653	12/5/97	17	1	99	1196 2	4 7	3 9	14.1	4 06	Yes	Yes	Yes
1654	12/5/97	18	1	83	1081.7	4 2	4	13.9	3 54	Yes	Yes	Yes
1655	12/5/97	19	0 5	59	828 9	10 3	3 3	15 1	10 52			
1656	12/7/97	15	0 25	14	419.7	27.1	2	17.4	45 67			
1657	12/7/97	16	1	96	1173 5	7 7	4	13.9	6 49	Yes	Yes	Yes
1658	12/7/97	17	1	86	1091 4	4 2	3.8	14.2	3 73	Yes	Yes	Yes
1659	12/7/97	18	1	91	1124 7	4	3 9	14.1	3 46	Yes	Yes	Yes
1660	12/7/97	19	0 5	61	843 8	9 2	3 3	15.1	9 40	Yes	***** No *****	Yes
1661	12/8/97	9	0 5	46	706 9	21.9	2 9	15 8	25 45			
1662	12/8/97	10	1	79	1048	4 7	3 9	14.1	4 06	Yes	Yes	Yes
1663	12/8/97	11	1	79	1042.7	4	3 8	14.2	3 55	Yes	Yes	Yes
1664	12/8/97	12	1	79	1038 8	4 2	3 9	14 1	3 63	Yes	Yes	Yes
1665	12/8/97	13	1	80	1040 7	4 3	3 8	14.2	3 81	Yes	Yes	Yes
1666	12/8/97	14	1	80	1040	4 2	3 8	14 2	3 73	Yes	Yes	Yes
1667	12/8/97	15	1	80	1039.9	4 4	3 9	14.1	3 80	Yes	Yes	Yes
1668	12/8/97	16	1	100	1192.7	5	3.9	14.1	4.32	Yes	Yes	Yes
1669	12/8/97	17	1	128	1406 5	6	3.8	14 2	5.32	Yes	Yes	Yes
1670	12/8/97	18	1	135	1462.7	6 3	3 9	14 1	5 44	Yes	Yes	Yes
1671	12/8/97	19	1	135	1466 3	6 3	3 9	14.1	5 44	Yes	Yes	Yes
1672	12/8/97	20	1	135	1468 9	6	3 8	14 2	5 32	Yes	Yes	Yes
1673	12/8/97	21	1	115	1311.5	5 6	3 9	14.1	4 84	Yes	Yes	Yes
1674	12/8/97	22	0 5	42	626 9	12 9	2 8	16 0	15 53			
1675	12/9/97	14	0 75	67	931.8	24.1	3 4	14.9	23 89	Yes	***** No *****	***** No *****
1676	12/9/97	15	1	131	1444 3	5 8	4.1	13 7	4 77	Yes	Yes	Yes
1677	12/9/97	16	1	136	1485 6	5 9	4 1	13 7	4 85	Yes	Yes	Yes
1678	12/9/97	17	1	137	1495 2	5 7	4	13 9	4 80	Yes	Yes	Yes
1679	12/9/97	18	1	138	1499	5 7	4 1	13.7	4 69	Yes	Yes	Yes
1680	12/9/97	19	1	110	1281.2	4 9	4 1	13.7	4 03	Yes	Yes	Yes
1681	12/9/97	20	0 25	20	411 4	17 7	2.3	16 9	25 94			
1682	12/10/97	7	0 5	55	800 4	30 3	2.5	16 5	40 85			
1683	12/10/97	8	1	92	1145.7	4 2	3 9	14.1	3 63	Yes	Yes	Yes
1684	12/10/97	9	1	89	1121 6	4 1	4	13 9	3 45	Yes	Yes	Yes
1685	12/10/97	10	1	87	1109 4	4	4	13 9	3 37	Yes	Yes	Yes
1686	12/10/97	11	1	86	1099 3	3 9	3 9	14.1	3 37	Yes	Yes	Yes
1687	12/10/97	12	1	82	1071 7	4	3 9	14.1	3 46	Yes	Yes	Yes
1688	12/10/97	13	1	82	1071	4 1	3 9	14 1	3 54	Yes	Yes	Yes
1689	12/10/97	14	1	82	1071 4	4	3 9	14.1	3 46	Yes	Yes	Yes
1690	12/10/97	15	1	82	1071 2	4 1	4	13 9	3 45	Yes	Yes	Yes
1691	12/10/97	16	1	105	1241 2	4 4	4	13 9	3 71	Yes	Yes	Yes
1692	12/10/97	17	1	117	1339 7	5 2	3 9	14 1	4 49	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1693	12/10/97	18	1	84	1092.5	4 1	4	13 9	3 45	Yes	Yes	Yes
1694	12/10/97	19	1	83	1085 7	4 1	4	13 9	3 45	Yes	Yes	Yes
1695	12/10/97	20	1	84	1089 7	4	3 9	14 1	3 46	Yes	Yes	Yes
1696	12/10/97	21	0 75	68	916 4	7 8	3 5	14 8	7.51	Yes	Yes	Yes
1697	12/11/97	17	0 25	0	174	1 9	1 3	18 6	4.93			
1698	12/11/97	18	1	80	1067.2	16 4	3 8	14 2	14 55	Yes	***** No *****	Yes
1699	12/11/97	19	1	78	1030 4	6 7	3 8	14 2	5.94	Yes	Yes	Yes
1700	12/11/97	20	0 25	0	0 2	3 8	0	20 9				
1701	12/20/97	17	0 75	64	917.8	0 1	3 3	15 1		Yes	Yes	Yes
1702	12/20/97	18	1	79	1053 8		3.9	14.1		Yes	Yes	Yes
1703	12/20/97	19	1	81	1062 8		3.9	14 1		Yes	Yes	Yes
1704	12/20/97	20	1	85	1090 2		3 9	14 1		Yes	Yes	Yes
1705	12/20/97	21	1	83	1078 4		3 9	14 1		Yes	Yes	Yes
1706	12/20/97	22	0 5	51	740 1		3	15 6				
1707	12/21/97	16	1	75	991 9	16 5	3 5	14 8	15 89	Yes	***** No *****	***** No *****
1708	12/21/97	17	1	113	1308 8	4 9	4	13 9	4.13	Yes	Yes	Yes
1709	12/21/97	18	1	139	1510 3	5 4	4	13 9	4.55	Yes	Yes	Yes
1710	12/21/97	19	1	136	1475 9	5	4	13 9	4.21	Yes	Yes	Yes
1711	12/21/97	20	1	129	1416 6	4 8	4	13 9	4.04	Yes	Yes	Yes
1712	12/21/97	21	1	82	1071 9	4 1	4	13 9	3.45	Yes	Yes	Yes
1713	12/21/97	22	1	83	1077 3	4 1	4	13.9	3.45	Yes	Yes	Yes
1714	12/21/97	23	0 25	23	454.7	18 2	2 4	16 7	25.56			
1715	12/22/97	6	0.5	46	730 1	24 6	3 1	15 5	26.75			
1716	12/22/97	7	1	85	1095 7	4 4	4 1	13 7	3 62	Yes	Yes	Yes
1717	12/22/97	8	1	86	1100	3 6	4	13 9	3 03	Yes	Yes	Yes
1718	12/22/97	9	1	86	1101.3	4	4 1	13 7	3.29	Yes	Yes	Yes
1719	12/22/97	10	1	85	1091 2	3 9	4.1	13 7	3.21	Yes	Yes	Yes
1720	12/22/97	11	1	82	1071 8	3 9	3 9	14.1	3.37	Yes	Yes	Yes
1721	12/22/97	12	1	82	1071.2	4.1	4	13 9	3 45	Yes	Yes	Yes
1722	12/22/97	13	1	82	1068 3	4 1	4	13 9	3.45	Yes	Yes	Yes
1723	12/22/97	14	1	82	1066 6	4	3 9	14 1	3.46	Yes	Yes	Yes
1724	12/22/97	15	1	82	1067.2	4.1	4	13 9	3 45	Yes	Yes	Yes
1725	12/22/97	16	1	82	1069 8	4 1	4	13 9	3.45	Yes	Yes	Yes
1726	12/22/97	17	1	108	1258 1	4 5	4	13 9	3.79	Yes	Yes	Yes
1727	12/22/97	18	1	122	1362	5 1	4 1	13 7	4.19	Yes	Yes	Yes
1728	12/22/97	19	1	101	1204 2	4 4	4 1	13 7	3.62	Yes	Yes	Yes
1729	12/22/97	20	1	134	1458 5	5 2	4	13.9	4.38	Yes	Yes	Yes
1730	12/22/97	21	1	91	1137 4	4 4	4 1	13 7	3 62	Yes	Yes	Yes
1731	12/22/97	22	0 5	55	787.9	11 2	3 3	15.1	11.44			
1732	12/24/97	9	1	104	1218 8	20 5	3 4	14 9	20.32	Yes	***** No *****	***** No *****
1733	12/24/97	10	1	86	1101 2	4 2	4	13 9	3.54	Yes	Yes	Yes
1734	12/24/97	11	1	84	1081.5	3 9	3 9	14 1	3.37	Yes	Yes	Yes
1735	12/24/97	12	0 75	65	886 4	7 9	3 5	14 8	7.61	Yes	Yes	Yes
1736	12/28/97	14	0 25	24	526	37 5	2 4	16 7	52.67			
1737	12/28/97	15	1	78	1048 6	5 1	4	13 9	4.30	Yes	Yes	Yes
1738	12/28/97	16	1	78	1043.3	4	4	13 9	3.37	Yes	Yes	Yes
1739	12/28/97	17	1	86	1097	4	4	13 9	3 37	Yes	Yes	Yes
1740	12/28/97	18	1	83	1073 4	4 1	4	13 9	3.45	Yes	Yes	Yes
1741	12/28/97	19	0 5	54	770 5	11 2	3 2	15 3	11.80			
1742	12/30/97	15	0 25	20	490 5	38	2 5	16 5	51.23			
1743	12/30/97	16	1	79	1052.7	34 1	4 1	13.7	28 03	Yes	***** No *****	***** No *****
1744	12/30/97	17	1	97	1134 4	7.5	3 6	14 6	7.02	Yes	Yes	Yes
						1998 CEMS Data						
1745	1/5/98	6	0.5	46	736 6	27 4	3.1	15 5	29 79			
1746	1/5/98	7	1	83	1080 4	4 5	4	13 9	3 79	Yes	Yes	Yes
1747	1/5/98	8	1	121	1354 8	4 8	4	13 9	4.04	Yes	Yes	Yes
1748	1/5/98	9	1	133	1450 6	5 4	4 1	13 7	4 44	Yes	Yes	Yes
1749	1/5/98	10	1	137	1491.7	6.1	4 1	13 7	5 01	Yes	Yes	Yes
1750	1/5/98	11	1	89	1110 6	4 2	4	13.9	3 54	Yes	Yes	Yes
1751	1/5/98	12	1	83	1064 7	3 8	4	13.9	3 20	Yes	Yes	Yes
1752	1/5/98	13	1	84	1064 1	3 9	4	13.9	3 29	Yes	Yes	Yes
1753	1/5/98	14	1	83	1062.5	3 9	3 9	14 1	3 37	Yes	Yes	Yes
1754	1/5/98	15	1	83	1063 9	3 8	4	13.9	3 20	Yes	Yes	Yes
1755	1/5/98	16	1	83	1063 2	3 8	4	13 9	3.20	Yes	Yes	Yes
1756	1/5/98	17	1	95	1150 1	4	4	13 9	3 37	Yes	Yes	Yes
1757	1/5/98	18	1	89	1104 2	4 2	4	13 9	3.54	Yes	Yes	Yes
1758	1/5/98	19	1	99	1179 7	4 3	4 1	13 7	3 54	Yes	Yes	Yes
1759	1/5/98	20	1	83	1067.9	3 7	4	13 9	3 12	Yes	Yes	Yes
1760	1/5/98	21	0 75	67	896.7	7	3 6	14 6	6 55	Yes	Yes	Yes
1761	1/6/98	17	1	69	958 9	16	3 5	14 8	15 41	Yes	***** No *****	***** No *****
1762	1/6/98	18	1	106	1242 2	4 7	4 1	13 7	3 86	Yes	Yes	Yes
1763	1/6/98	19	1	106	1240 9	4 7	4 1	13 7	3 86	Yes	Yes	Yes
1764	1/6/98	20	0.75	66	895 1	8 5	3 5	14 8	8 19	Yes	Yes	Yes
1765	1/7/98	5	0 75	71	953 8	24 9	3 2	15 3	26 23	Yes	***** No *****	***** No *****
1766	1/7/98	6	1	82	1077 3	4 4	4	13 9	3 71	Yes	Yes	Yes
1767	1/7/98	7	1	82	1072.5	4 1	4	13 9	3 45	Yes	Yes	Yes
1768	1/7/98	8	1	81	1062 4	4 2	4	13 9	3 54	Yes	Yes	Yes
1769	1/7/98	9	1	81	1064 8	4 2	4	13 9	3 54	Yes	Yes	Yes
1770	1/7/98	10	1	82	1066 1	4.1	4	13 9	3 45	Yes	Yes	Yes
1771	1/7/98	11	0 25	35	571.7	15 8	2.7	16 2	19.72			
1772	1/7/98	18	1	75	991.3	12 1	3 8	14 2	10 73	Yes	***** No *****	Yes
1773	1/7/98	19	1	82	1071.4	4 1	4	13 9	3 45	Yes	Yes	Yes
1774	1/7/98	20	1	96	1169 3	4.5	4 1	13 7	3.70	Yes	Yes	Yes
1775	1/7/98	21	0 5	59	826 5	10 4	3 4	14.9	10 31			
1776	1/8/98	6	0 5	65	898 5	33 9	2.9	15 8	39 40	Yes	***** No *****	***** No *****
1777	1/8/98	7	1	87	1104 1	4 6	4	13 9	3 88	Yes	Yes	Yes
1778	1/8/98	8	1	87	1102 6	4 5	4	13 9	3.79	Yes	Yes	Yes
1779	1/8/98	9	1	87	1101.8	4 5	4	13 9	3.79	Yes	Yes	Yes
1780	1/8/98	10	1	95	1150 6	4 4	4	13 9	3 71	Yes	Yes	Yes
1781	1/8/98	11	1	86	1087 6	4 3	3 9	14.1	3 72	Yes	Yes	Yes
1782	1/8/98	12	1	87	1092.9	4 3	4	13.9	3 62	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
1783	1/8/98	13	1	86	1090 7	4.3	4	13 9	3 62	Yes	Yes	Yes
1784	1/8/98	14	1	92	1130 2	4 4	4	13 9	3 71	Yes	Yes	Yes
1785	1/8/98	15	1	117	1317 6	5 2	4	13 9	4 38	Yes	Yes	Yes
1786	1/8/98	16	1	95	1148 8	4 4	4	13 9	3 71	Yes	Yes	Yes
1787	1/8/98	17	1	130	1423 6	5 4	4	13.9	4.55	Yes	Yes	Yes
1788	1/8/98	18	1	130	1418.4	5 2	4	13.9	4.38	Yes	Yes	Yes
1789	1/8/98	19	1	104	1212 4	4 7	4	13 9	3 96	Yes	Yes	Yes
1790	1/8/98	20	1	82	1057.9	4 2	4	13 9	3 54	Yes	Yes	Yes
1791	1/8/98	21	1	80	1047 6	4 2	4	13 9	3 54	Yes	Yes	Yes
1792	1/8/98	22	0 25	8	257.9	24 1	1 8	17.7	45.13			
1793	1/9/98	6	0 5	47	746 2	28 9	3 1	15 5	31 42			
1794	1/9/98	7	1	85	1093 7	4 5	4	13 9	3 79	Yes	Yes	Yes
1795	1/9/98	8	1	98	1183 4	4 3	4 1	13 7	3 54	Yes	Yes	Yes
1796	1/9/98	9	1	83	1083 2	4.1	4	13 9	3.45	Yes	Yes	Yes
1797	1/9/98	10	1	83	1082 4	4.1	4	13 9	3 45	Yes	Yes	Yes
1798	1/9/98	11	1	85	1099 7	4	3 9	14 1	3 46	Yes	Yes	Yes
1799	1/9/98	12	1	87	1103 2	4 1	4	13 9	3 45	Yes	Yes	Yes
1800	1/9/98	13	1	84	1087.5	4.1	4	13 9	3.45	Yes	Yes	Yes
1801	1/9/98	14	1	83	1080.7	4.1	4	13 9	3.45	Yes	Yes	Yes
1802	1/9/98	15	1	82	1071.8	4 1	4	13.9	3.45	Yes	Yes	Yes
1803	1/9/98	16	1	83	1077.8	4.1	4	13 9	3 45	Yes	Yes	Yes
1804	1/9/98	17	1	85	1090 7	4	3 9	14 1	3 46	Yes	Yes	Yes
1805	1/9/98	18	1	89	1118 8	4 2	4	13.9	3.54	Yes	Yes	Yes
1806	1/9/98	19	1	82	1072 4	4 1	4	13 9	3.45	Yes	Yes	Yes
1807	1/9/98	20	1	82	1070 8	4	4	13.9	3 37	Yes	Yes	Yes
1808	1/9/98	21	0 5	59	823 6	9 5	3 4	14 9	9.42			
1809	1/10/98	9	0 75	69	944 4	24.7	3 2	15.3	26.02	Yes	***** No *****	***** No *****
1810	1/10/98	10	1	84	1081	4 4	4	13 9	3.71	Yes	Yes	Yes
1811	1/10/98	11	1	83	1078 1	4 1	3 9	14 1	3 54	Yes	Yes	Yes
1812	1/10/98	12	1	83	1076 8	4 1	4	13 9	3.45	Yes	Yes	Yes
1813	1/10/98	13	1	83	1071.5	4.1	4	13 9	3.45	Yes	Yes	Yes
1814	1/10/98	14	0 25	22	441.2	19 1	2.3	16 9	27 99			
1815	1/11/98	18	0 25	30	596.4	38 2	2.7	16 2	47.69			
1816	1/11/98	19	1	110	1267.3	5 6	4	13.9	4.72	Yes	Yes	Yes
1817	1/11/98	20	1	92	1127 6	4 5	4	13 9	3 79	Yes	Yes	Yes
1818	1/11/98	21	1	71	930	7.2	3 6	14 6	6 74	Yes	Yes	Yes
1819	1/12/98	6	0 25	5	288	10	1.7	17 9	19.83			
1820	1/12/98	7	1	85	1097.7	13 2	4	13 9	11 12	Yes	***** No *****	Yes
1821	1/12/98	8	1	103	1219 3	4 3	4.1	13 7	3 54	Yes	Yes	Yes
1822	1/12/98	9	1	123	1368.7	4.7	4.1	13 7	3.86	Yes	Yes	Yes
1823	1/12/98	10	1	82	1074 7	4	4	13 9	3 37	Yes	Yes	Yes
1824	1/12/98	11	1	82	1074	4	3 9	14.1	3 46	Yes	Yes	Yes
1825	1/12/98	12	1	82	1071	4 1	4	13.9	3.45	Yes	Yes	Yes
1826	1/12/98	13	1	82	1070.3	4 1	4	13 9	3.45	Yes	Yes	Yes
1827	1/12/98	14	1	81	1069 8	4 1	4	13 9	3 45	Yes	Yes	Yes
1828	1/12/98	15	1	82	1072 6	4 1	4	13 9	3 45	Yes	Yes	Yes
1829	1/12/98	16	1	86	1098 9	4 1	4	13.9	3 45	Yes	Yes	Yes
1830	1/12/98	17	1	107	1246 5	4 3	3 9	14 1	3.72	Yes	Yes	Yes
1831	1/12/98	18	1	120	1349 2	4 6	4 1	13 7	3 78	Yes	Yes	Yes
1832	1/12/98	19	1	123	1366 4	4.7	4.1	13 7	3 86	Yes	Yes	Yes
1833	1/12/98	20	1	104	1224 6	4 4	4 1	13 7	3 62	Yes	Yes	Yes
1834	1/12/98	21	0 5	62	844	9 3	3 3	15 1	9 50	Yes	***** No *****	Yes
1835	1/18/98	23	0 75	3	377.8		3 3	15 1				
1836	1/19/98	17	0 75	96	1138 5	18 1	3 3	15 1	18 49	Yes	***** No *****	***** No *****
1837	1/19/98	18	1	113	1290 4	4 8	4	13 9	4 04	Yes	Yes	Yes
1838	1/19/98	19	1	85	1030 4	7.1	3 6	14 6	6.65	Yes	Yes	Yes
1839	2/6/98	19	0 25	0	283 2	10 7	1.7	17 9	21.22			
1840	2/6/98	20	0 25	0	399 4		2	17.4				
1841	2/7/98	8	0 75	7	416 4	30.7	2 2	17 0	47.04			
1842	2/7/98	9	1	53	850.9	49.7	3 8	14 2	44.09			
1843	2/7/98	10	1	69	970 9	12.9	3 9	14 1	11.15	Yes	***** No *****	Yes
1844	2/7/98	11	1	111	1271 6	13 6	4 1	13.7	11.18	Yes	***** No *****	Yes
1845	2/7/98	12	1	126	1384 6	15 7	4	13 9	13 23	Yes	***** No *****	Yes
1846	2/7/98	13	1	135	1472.9	16 3	4	13 9	13.74	Yes	***** No *****	Yes
1847	2/7/98	14	1	112	1279 3	14 6	4	13 9	12 30	Yes	***** No *****	Yes
1848	2/7/98	15	1	58	883.2	9 4	3 9	14 1	8 12			
1849	2/7/98	16	0 5	32	667.8	42 6	3 5	14 8	41 03			
1850	2/8/98	8	0 75	9	455 6	21	1 6	18 1	44.24			
1851	2/8/98	9	1	64	901.5	46 2	3 3	15 1	47 19	Yes	***** No *****	***** No *****
1852	2/8/98	10	1	49	758 6	20	2.8	16 0	24.08			
1853	2/8/98	11	0 75	37	682 8	21.9	3 3	15 1	22.37			
1854	2/8/98	12	0 5	29	640 5	22.9	3 3	15 1	23 39			
1855	2/9/98	15	0 25	1	235.6	6 3	1 5	18 3	14.16			
1856	2/9/98	16	1	52	803 1	38 6	2 4	16 7	54 21			
1857	2/9/98	17	1	129	1424 2	14 8	3 9	14.1	12.79	Yes	***** No *****	Yes
1858	2/9/98	18	1	61	855 5	34 1	2.7	16 2	42 57	Yes	***** No *****	***** No *****
1859	2/9/98	19	1	25	589 5	46	2 6	16 3	59.64			
1860	2/9/98	20	1	73	938 3	60 5	2 8	16 0	72 83	Yes	***** No *****	***** No *****
1861	2/9/98	21	0 25	31	502.7	38	1.9	17 6	67 41			
1862	2/10/98	16	0 75	11	449 5	23 8	2 2	17 0	36.46			
1863	2/10/98	17	1	13	436 4	29 1	2 1	17 2	46 71			
1864	2/10/98	18	1	29	550 4	45 2	1 9	17.6	80 19			
1865	2/10/98	19	0 75	33	604.7	54 4	2 1	17 2	87.32			
1866	2/11/98	11	0 25	0	0	0	0	20 9				
1867	2/14/98	10	0 5	52	762.8	31.8	3	15 6	35 73			
1868	2/14/98	11	1	88	1112 3	14 1	4	13 9	11 88	Yes	***** No *****	Yes
1869	2/14/98	12	1	83	1066 5	12.1	3 9	14 1	10 46	Yes	***** No *****	Yes
1870	2/14/98	13	0 25	12	319	25.7	2 1	17 2	41.25			
1871	2/16/98	9	1	63	911.2	25 2	3 2	15 3	26 54	Yes	***** No *****	***** No *****
1872	2/16/98	10	1	79	1041.2	10 3	3 9	14 1	8 90	Yes	Yes	Yes
1873	2/16/98	11	1	79	1033 3	10 1	3 9	14 1	8 73	Yes	Yes	Yes
1874	2/16/98	12	1	80	1048 1	10 3	4	13 9	8 68	Yes	Yes	Yes
1875	2/16/98	13	1	99	1190	13	4	13.9	10 95	Yes	***** No *****	Yes
1876	2/16/98	14	1	125	1383 4	17.5	4 1	13 7	14.39	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1877	2/16/98	15	1	106	1231 8	14.7	4 1	13 7	12 09	Yes	***** No *****	Yes
1878	2/16/98	16	1	111	1278.7	15.3	4.1	13 7	12.58	Yes	***** No *****	Yes
1879	2/16/98	17	1	120	1351.5	16 5	4 1	13 7	13 57	Yes	***** No *****	Yes
1880	2/16/98	18	1	115	1318 9	16 2	4	13 9	13.65	Yes	***** No *****	Yes
1881	2/16/98	19	1	115	1309 6	15 2	4 1	13 7	12 50	Yes	***** No *****	Yes
1882	2/16/98	20	1	100	1192 7	12.9	4 1	13 7	10 61	Yes	***** No *****	Yes
1883	2/16/98	21	1	83	1070 6	10 6	4	13 9	8 93	Yes	Yes	Yes
1884	2/16/98	22	0 75	69	932	12.7	3 7	14 4	11.57	Yes	***** No *****	Yes
1885	2/19/98	16	0 25	0	50	0 6	1 1	19 0	1 84			
1886	2/19/98	17	1	88	1117 1	14 4	3 9	14.1	12.45	Yes	***** No *****	Yes
1887	2/19/98	18	1	135	1485.6	16 5	4.1	13.7	13 57	Yes	***** No *****	Yes
1888	2/19/98	19	1	138	1500 5	16 8	4.1	13 7	13 81	Yes	***** No *****	Yes
1889	2/19/98	20	1	138	1503	15 6	4 1	13 7	12 83	Yes	***** No *****	Yes
1890	2/19/98	21	0 25	39	614 4	16 4	2.9	15 8	19.06			
1891	2/22/98	8	0 25	35	618	24 9	2 7	16 2	31.09			
1892	2/22/98	9	1	72	1000.7	11 1	4	13 9	9.35	Yes	***** No *****	Yes
1893	2/22/98	10	1	71	983 1	9.8	3.9	14.1	8.47	Yes	Yes	Yes
1894	2/22/98	11	1	70	974.6	9.7	3 9	14.1	8.38	Yes	Yes	Yes
1895	2/22/98	12	1	70	974	9 7	3 9	14.1	8 38	Yes	Yes	Yes
1896	2/22/98	13	1	71	975 3	9 6	3.9	14.1	8.30	Yes	Yes	Yes
1897	2/22/98	14	1	71	980 8	9.8	3 9	14 1	8 47	Yes	Yes	Yes
1898	2/22/98	15	1	71	978 9	9.8	3 9	14.1	8.30	Yes	Yes	Yes
1899	2/22/98	16	1	71	980 5	9 6	3 9	14 1	8.30	Yes	Yes	Yes
1900	2/22/98	17	1	72	988.5	9.5	3 9	14.1	8.21	Yes	Yes	Yes
1901	2/22/98	18	1	127	1411.7	14.5	4	13 9	12.22	Yes	***** No *****	Yes
1902	2/22/98	19	1	123	1364 8	13 9	4	13 9	11 71	Yes	***** No *****	Yes
1903	2/22/98	20	1	102	1210 8	12.8	4	13.9	10.79	Yes	***** No *****	Yes
1904	2/22/98	21	1	75	1014 7	9 6	4	13.9	8 09	Yes	Yes	Yes
1905	2/22/98	22	1	66	916.7	10.9	3.7	14 4	9.93	Yes	***** No *****	Yes
1906	2/23/98	6	0 5	45	730 2	22 4	3.2	15 3	23 59			
1907	2/23/98	7	1	72	1002.9	10.1	4	13.9	8 51	Yes	Yes	Yes
1908	2/23/98	8	1	74	1010.7	9.5	4	13 9	8.01	Yes	Yes	Yes
1909	2/23/98	9	1	70	986	9	4	13.9	7.58	Yes	Yes	Yes
1910	2/23/98	10	1	70	985.2	9.2	3 9	14.1	7.95	Yes	Yes	Yes
1911	2/23/98	11	1	71	989.1	9 1	3.9	14.1	7 86	Yes	Yes	Yes
1912	2/23/98	12	1	71	978 6	9 2	3 9	14 1	7 95	Yes	Yes	Yes
1913	2/23/98	13	1	71	977 5	9.3	3.9	14.1	8 04	Yes	Yes	Yes
1914	2/23/98	14	1	71	975 2	9 6	3 9	14 1	8 30	Yes	Yes	Yes
1915	2/23/98	15	1	72	993 7	9 6	3 9	14.1	8 30	Yes	Yes	Yes
1916	2/23/98	16	1	72	994.9	9.5	3 9	14 1	8 21	Yes	Yes	Yes
1917	2/23/98	17	1	97	1185 2	11 4	4	13 9	9 61	Yes	***** No *****	Yes
1918	2/23/98	18	1	136	1486	14 9	4.1	13.7	12.25	Yes	***** No *****	Yes
1919	2/23/98	19	1	121	1359 2	14.3	4 1	13 7	11 76	Yes	***** No *****	Yes
1920	2/23/98	20	1	75	1019 4	9.7	4	13 9	8.17	Yes	Yes	Yes
1921	2/23/98	21	1	72	961 6	10 9	3.7	14.4	9 93	Yes	***** No *****	Yes
1922	2/24/98	7	0 25	32	599 3	26 1	2 7	16 2	32 58			
1923	2/24/98	8	1	81	1067 7	10.7	4	13.9	9 02	Yes	***** No *****	Yes
1924	2/24/98	9	1	136	1490 6	14 5	4	13 9	12 22	Yes	***** No *****	Yes
1925	2/24/98	10	1	84	1082 8	10.7	3 9	14.1	9.25	Yes	***** No *****	Yes
1926	2/24/98	11	1	72	985.5	9	3 8	14.2	7 98	Yes	Yes	Yes
1927	2/24/98	12	1	71	988	8 7	3 9	14 1	7.52	Yes	Yes	Yes
1928	2/24/98	13	1	75	1004.4	9 6	3 9	14.1	8.30	Yes	Yes	Yes
1929	2/24/98	14	1	78	1028 9	10.1	3.9	14 1	8 73	Yes	Yes	Yes
1930	2/24/98	15	1	78	1022.4	10 5	3 9	14 1	9 07	Yes	***** No *****	Yes
1931	2/24/98	16	1	74	998 4	10 3	3 8	14 2	9 14	Yes	***** No *****	Yes
1932	2/24/98	17	1	78	1014 2	10 2	3 8	14 2	9 05	Yes	***** No *****	Yes
1933	2/24/98	18	1	128	1417.3	15.7	3 9	14.1	13.57	Yes	***** No *****	Yes
1934	2/24/98	19	1	91	1130 8	12 3	3 9	14 1	10 63	Yes	***** No *****	Yes
1935	2/24/98	20	0 5	41	629 2	11.8	2.8	16 0	14 21			
1936	2/25/98	6	1	74	972 8	17 4	3 4	14 9	17 25	Yes	***** No *****	***** No *****
1937	2/25/98	7	1	131	1434 8	14.9	3 7	14 4	13 57	Yes	***** No *****	Yes
1938	2/25/98	8	1	100	1193 7	11.1	3 9	14.1	9 59	Yes	***** No *****	Yes
1939	2/25/98	9	1	95	1156 2	11.6	4	13.9	9.78	Yes	***** No *****	Yes
1940	2/25/98	10	1	85	1077	11.4	4	13.9	9 61	Yes	***** No *****	Yes
1941	2/25/98	11	1	72	984 1	9 4	3 9	14 1	8.12	Yes	Yes	Yes
1942	2/25/98	12	1	72	985 7	9 4	3 9	14.1	8 12	Yes	Yes	Yes
1943	2/25/98	13	1	74	998.7	9.7	3 9	14 1	8 38	Yes	Yes	Yes
1944	2/25/98	14	1	73	991.2	9 6	3 9	14 1	8 30	Yes	Yes	Yes
1945	2/25/98	15	1	72	990 8	9 2	3 9	14 1	7.95	Yes	Yes	Yes
1946	2/25/98	16	1	72	991 7	9 4	4	13.9	7 92	Yes	Yes	Yes
1947	2/25/98	17	1	76	1015 3	9 5	4	13 9	8 01	Yes	Yes	Yes
1948	2/25/98	18	1	131	1442.7	15 2	4	13.9	12 81	Yes	***** No *****	Yes
1949	2/25/98	19	1	135	1473 7	15 5	4 1	13 7	12 74	Yes	***** No *****	Yes
1950	2/25/98	20	1	135	1476 6	15 6	4 1	13.7	12 83	Yes	***** No *****	Yes
1951	2/25/98	21	1	101	1180 3	14.7	3 8	14.2	13 04	Yes	***** No *****	Yes
1952	2/26/98	6	0 75	78	1004	23 9	3 8	14 2	21.20	Yes	***** No *****	***** No *****
1953	2/26/98	7	1	73	1004 2	9 8	4	13 9	8 26	Yes	Yes	Yes
1954	2/26/98	8	1	75	1015 2	9 8	4	13.9	8 26	Yes	Yes	Yes
1955	2/26/98	9	1	117	1313 8	14.1	4.1	13 7	11.59	Yes	***** No *****	Yes
1956	2/26/98	10	1	93	1136 5	11	3 9	14 1	9 51	Yes	***** No *****	Yes
1957	2/26/98	11	1	79	1041.6	10 2	4	13 9	8 60	Yes	Yes	Yes
1958	2/26/98	12	1	77	1022 3	10 3	4	13 9	8 68	Yes	Yes	Yes
1959	2/26/98	13	1	73	1000	9 5	4	13 9	8 01	Yes	Yes	Yes
1960	2/26/98	14	1	72	989 6	9 8	4	13 9	8 26	Yes	Yes	Yes
1961	2/26/98	15	1	72	987 3	9 5	4	13 9	8 01	Yes	Yes	Yes
1962	2/26/98	16	1	97	1172	11.9	4	13 9	10.03	Yes	***** No *****	Yes
1963	2/26/98	17	1	133	1451	14 7	4	13.9	12.39	Yes	***** No *****	Yes
1964	2/26/98	18	1	136	1479 5	14 4	4	13.9	12.13	Yes	***** No *****	Yes
1965	2/26/98	19	1	130	1425 1	14 2	4.1	13 7	11 67	Yes	***** No *****	Yes
1966	2/26/98	20	1	106	1247.3	12 8	4.1	13 7	10 52	Yes	***** No *****	Yes
1967	2/26/98	21	1	72	997.9	9 3	4	13 9	7.84	Yes	Yes	Yes
1968	2/26/98	22	1	66	909.3	10 8	3 7	14 4	9 84	Yes	***** No *****	Yes
1969	2/27/98	6	0 5	51	787.4	22 2	3 3	15 1	22 68			
1970	2/27/98	7	1	128	1419	14 1	4 1	13 7	11 59	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
1971	2/27/98	8	1	136	1476 8	14 4	4 1	13 7	11 84	Yes	***** No *****	Yes
1972	2/27/98	9	1	108	1257.6	13 4	4 1	13 7	11 02	Yes	***** No *****	Yes
1973	2/27/98	10	1	99	1187.1	12	4 1	13.7	9 87	Yes	***** No *****	Yes
1974	2/27/98	11	1	80	1054 8	10.7	4	13.9	9 02	Yes	***** No *****	Yes
1975	2/27/98	12	1	73	1000 9	9 7	4	13.9	8.17	Yes	Yes	Yes
1976	2/27/98	13	1	70	979 2	8 7	4	13.9	7 33	Yes	Yes	Yes
1977	2/27/98	14	1	70	979 3	9.3	4	13 9	7.84	Yes	Yes	Yes
1978	2/27/98	15	1	75	1016 5	9 6	4	13.9	8 09	Yes	Yes	Yes
1979	2/27/98	16	1	95	1165 7	11.8	4	13 9	9 94	Yes	***** No *****	Yes
1980	2/27/98	17	1	112	1294	12.5	4.1	13 7	10 28	Yes	***** No *****	Yes
1981	2/27/98	18	1	136	1480 2	14.9	4.1	13.7	12.25	Yes	***** No *****	Yes
1982	2/27/98	19	1	136	1476 9	15	4.1	13.7	12.33	Yes	***** No *****	Yes
1983	2/27/98	20	1	99	1200 2	12 3	4 1	13 7	10.11	Yes	***** No *****	Yes
1984	2/27/98	21	1	71	996 1	9 2	4	13 9	7.75	Yes	Yes	Yes
1985	2/27/98	22	1	73	982 8	11	3 9	14.1	9.51	Yes	***** No *****	Yes
1986	2/27/98	23	0 25	0	0 4	1.7	0	20 9				
1987	3/2/98	6	0 5	58	858 6	20 9	3.5	14.8	20.13			
1988	3/2/98	7	1	86	1108.1	10 6	4.1	13.7	8.71	Yes	Yes	Yes
1989	3/2/98	8	1	102	1207.4	12.7	4	13.9	10.70	Yes	***** No *****	Yes
1990	3/2/98	9	1	92	1142 3	12 2	4	13 9	10 28	Yes	***** No *****	Yes
1991	3/2/98	10	1	72	999 5	9 5	3 9	14 1	8.21	Yes	Yes	Yes
1992	3/2/98	11	1	72	1000 4	9 3	3 9	14 1	8.04	Yes	Yes	Yes
1993	3/2/98	12	1	72	998 9	9 5	3.9	14.1	8.21	Yes	Yes	Yes
1994	3/2/98	13	1	72	996 3	9 4	3.9	14.1	8.12	Yes	Yes	Yes
1995	3/2/98	14	1	72	997	9 5	3.9	14.1	8.21	Yes	Yes	Yes
1996	3/2/98	15	1	72	995 3	9 5	3 9	14.1	8 21	Yes	Yes	Yes
1997	3/2/98	16	1	72	996	9 5	3 9	14.1	8 21	Yes	Yes	Yes
1998	3/2/98	17	1	69	967 2	9 3	3 8	14.2	8 25	Yes	Yes	Yes
1999	3/2/98	18	1	48	811 5	13.6	3 7	14.4	12.39			
2000	3/2/98	19	1	51	839 6	13 2	3 7	14.4	12.03			
2001	3/2/98	20	1	111	1286 1	13 3	4	13.9	11 21	Yes	***** No *****	Yes
2002	3/2/98	21	0 5	53	780 7	12.8	3 3	15.1	13.07			
2003	3/3/98	6	1	48	797 4	11 4	3 6	14.6	10.67			
2004	3/3/98	7	1	99	1207.5	12.3	3 9	14.1	10 63	Yes	***** No *****	Yes
2005	3/3/98	8	1	136	1477 5	14 5	3 9	14.1	12.53	Yes	***** No *****	Yes
2006	3/3/98	9	1	136	1491.8	14.5	3.9	14.1	12.53	Yes	***** No *****	Yes
2007	3/3/98	10	1	135	1482 7	15 6	3 9	14.1	13.48	Yes	***** No *****	Yes
2008	3/3/98	11	1	133	1467.9	15 1	3 9	14.1	13.05	Yes	***** No *****	Yes
2009	3/3/98	12	1	132	1458 2	14.3	3 9	14.1	12.36	Yes	***** No *****	Yes
2010	3/3/98	13	1	129	1429 9	13	3 9	14.1	11.24	Yes	***** No *****	Yes
2011	3/3/98	14	1	130	1433 3	17.8	3.9	14.1	15 38	Yes	***** No *****	***** No *****
2012	3/3/98	15	1	132	1450 8	18 8	3 9	14.1	16.25	Yes	***** No *****	***** No *****
2013	3/3/98	16	1	56	868 3	9 3	3 7	14.4	8.47			
2014	3/3/98	17	1	51	828 7	7.9	3 7	14.4	7.20			
2015	3/3/98	18	1	52	837	8	3 7	14.4	7.29			
2016	3/3/98	19	1	46	793 9	13 5	3 6	14.6	12 64			
2017	3/3/98	20	0 75	20	506.7	25 8	2	17.4	43.48			
2018	3/10/98	5	0 25	0	193 2	3 6	1.3	18.6	9 33			
2019	3/10/98	6	1	48	833 2	63.9	3 7	14.4	58.21			
2020	3/10/98	7	1	46	808 8	32	3 7	14 4	29 15			
2021	3/10/98	8	1	46	805 3	12 3	3 8	14.2	10 91			
2022	3/10/98	9	1	46	807 2	13	3 8	14 2	11.53			
2023	3/10/98	10	1	47	808 4	13 2	3 8	14 2	11.71			
2024	3/10/98	11	1	70	983	9 9	3 9	14.1	8 56	Yes	Yes	Yes
2025	3/10/98	12	1	72	996 3	9.5	3 9	14.1	8 21	Yes	Yes	Yes
2026	3/10/98	13	1	130	1443.1	14.9	4	13.9	12.56	Yes	***** No *****	Yes
2027	3/10/98	14	1	60	905.5	9	3 8	14.2	7 98			
2028	3/10/98	15	1	30	652.7	16 2	2 5	16 5	21 84			
2029	3/10/98	16	1	30	618 2	24.4	2 3	16 9	35 76			
2030	3/10/98	17	1	43	773	18 8	3 6	14.6	17 60			
2031	3/10/98	18	1	105	1246 4	13 1	3.9	14.1	11.32	Yes	***** No *****	Yes
2032	3/10/98	19	1	136	1480 3	13 7	4	13 9	11 54	Yes	***** No *****	Yes
2033	3/10/98	20	1	136	1476 1	13 9	4 1	13.7	11.43	Yes	***** No *****	Yes
2034	3/10/98	21	1	78	1036 7	13 9	3 8	14.2	12.33	Yes	***** No *****	Yes
2035	3/10/98	22	0 25	0	372 1	25 6	1 9	17 6	45.42			
2036	3/11/98	21	0 75	30	628 9	15 1	2 7	16.2	18 85			
2037	3/12/98	16	0.5	34	655.9		2 6	16 3				
2038	3/12/98	17	1	14	502 9	31.8	2 4	16.7	44 66			
2039	3/12/98	18	1	7	437	40 3	2.2	17.0	61.75			
2040	3/12/98	19	1	23	562.6	39	2 2	17.0	59.75			
2041	3/12/98	20	1	34	685.8	43 9	3 2	15 3	46 24			
2042	3/12/98	21	0 25	0	338 4	26 7	1 8	17 7	50 00			
2043	3/15/98	17	0 25	0	0	1 2	1.3	18.6	3 11			
2044	3/15/98	18	1	91	0	17 1	3 8	14.2	15.17	Yes	***** No *****	***** No *****
2045	3/15/98	19	1	134	0	16 1	4	13 9	13 57	Yes	***** No *****	Yes
2046	3/15/98	20	1	135	0	16 2	4	13 9	13.65	Yes	***** No *****	Yes
2047	3/15/98	21	1	82	0	11.2	3 9	14 1	9.68	Yes	***** No *****	Yes
2048	3/15/98	22	0 25	4	0	19	1 5	18 3	42 70			
2049	3/16/98	5	0 5	35	0	15.6	1 8	17 7	29.21			
2050	3/16/98	6	1	57	0	8 5	3 9	14 1	7.35			
2051	3/16/98	7	1	54	0	7 8	3 8	14.2	6 92			
2052	3/16/98	8	1	52	0	7 4	3 8	14.2	6 56			
2053	3/16/98	9	1	133	0	13.3	4	13 9	11.21	Yes	***** No *****	Yes
2054	3/16/98	10	1	136	0	14 1	4	13.9	11 88	Yes	***** No *****	Yes
2055	3/16/98	11	1	135	0	14 5	4	13 9	12.22	Yes	***** No *****	Yes
2056	3/16/98	12	1	54	0	8 1	3 8	14 2	7.18			
2057	3/16/98	13	1	58	0	8	3 8	14 2	7 10			
2058	3/16/98	14	1	52	0	7 5	3 8	14 2	6.65			
2059	3/16/98	15	1	50	0	7.5	3 8	14 2	6 65			
2060	3/16/98	16	1	54	0	7 7	3 8	14 2	6 83			
2061	3/16/98	17	1	55	0	7 6	3 8	14 2	6 74			
2062	3/16/98	18	1	79	0	9.8	3 9	14 1	8 47	Yes	Yes	Yes
2063	3/16/98	19	1	68	0	9 2	3 8	14 2	8 16	Yes	Yes	Yes
2064	3/16/98	20	1	62	0	8 4	3 9	14 1	7 26	Yes	Yes	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
2065	3/16/98	21	1	52	0	9 3	3 5	14 8	8 96			
2066	3/17/98	9	0 5	33	621 1	20 9	1.9	17 6	37.08			
2067	3/17/98	10	1	51	836 3	8	3 8	14 2	7 10			
2068	3/17/98	11	1	51	831.5	7.6	3 8	14 2	6.74			
2069	3/17/98	12	1	50	829 8	7 5	3 8	14 2	6 65			
2070	3/17/98	13	1	51	830	7.5	3 8	14 2	6 65			
2071	3/17/98	14	1	56	869 4	8	3 8	14 2	7.10			
2072	3/17/98	15	1	50	826 7	7.6	3 7	14 4	6 92			
2073	3/17/98	16	1	51	828 6	7.8	3 7	14 4	7.11			
2074	3/17/98	17	1	51	831.8	7.9	3 7	14 4	7 20			
2075	3/17/98	18	1	55	864 9	8	3 8	14 2	7.10			
2076	3/17/98	19	1	104	1222.8	12.1	4	13 9	10 20	Yes	***** No *****	Yes
2077	3/17/98	20	1	113	1298 2	13 2	4	13 9	11 12	Yes	***** No *****	Yes
2078	3/17/98	21	1	33	670 7	17 9	3 1	15 5	19 46			
2079	3/17/98	22	1	23	553 8	28 8	2 6	16 3	37.34			
2080	3/18/98	10	0 75	45	768 5	29 3	3 2	15 3	30 86			
2081	3/18/98	11	1	92	1141 2	10.9	4	13 9	9 19	Yes	***** No *****	Yes
2082	3/18/98	12	1	101	1205 2	12.3	4	13 9	10 36	Yes	***** No *****	Yes
2083	3/18/98	13	1	93	1146 7	11.3	4	13 9	9 52	Yes	***** No *****	Yes
2084	3/18/98	14	1	52	851.8	7.2	3 8	14 2	6 39			
2085	3/18/98	15	1	52	851.9	7	3 9	14 1	6 05			
2086	3/18/98	16	1	53	856 7	7.1	3 9	14 1	6 14			
2087	3/18/98	17	1	59	902 2	7 6	3 9	14.1	6 57			
2088	3/18/98	18	1	71	991.7	9	3 9	14.1	7.78	Yes	Yes	Yes
2089	3/18/98	19	1	51	842	7.1	3 8	14 2	6 30			
2090	3/18/98	20	1	50	839 4	7 2	3.9	14 1	6 22			
2091	3/18/98	21	0 75	42	724.9	8 8	3 4	14 9	8 72			
2092	3/19/98	8	0 5	53	817.7	25 5	3 2	15 3	26 86			
2093	3/19/98	9	1	75	1022.9	9 6	3 9	14 1	8 30	Yes	Yes	Yes
2094	3/19/98	10	1	52	850 4	7.5	3 9	14 1	6 48			
2095	3/19/98	11	1	54	864.1	7.6	3 9	14 1	6 57			
2096	3/19/98	12	1	52	851.3	7 5	3 9	14 1	6 48			
2097	3/19/98	13	1	54	861.3	7.7	3 9	14 1	6 65			
2098	3/19/98	14	1	54	865 1	7 8	3 9	14 1	6 74			
2099	3/19/98	15	1	51	843	7.6	3 9	14.1	6 57			
2100	3/19/98	16	1	51	845 5	7 4	3 9	14 1	6 40			
2101	3/19/98	17	1	53	863 3	7.5	4	13 9	6 32			
2102	3/19/98	18	1	74	1019 8	9 4	4	13 9	7.92	Yes	Yes	Yes
2103	3/19/98	19	1	81	1063 3	10	4.1	13.7	8 22	Yes	Yes	Yes
2104	3/19/98	20	1	122	1371	13 6	4 2	13 5	10 91	Yes	***** No *****	Yes
2105	3/19/98	21	1	59	868 3	10 4	3 7	14 4	9 47			
2106	3/20/98	9	0 25	23	516 8	30.1	2 4	16 7	42 27			
2107	3/20/98	10	1	73	1011.5	11 3	4 1	13 7	9 29	Yes	***** No *****	Yes
2108	3/20/98	11	1	88	1119.3	11.2	4.1	13 7	9 21	Yes	***** No *****	Yes
2109	3/20/98	12	1	59	900 9	8 4	4	13 9	7.08			
2110	3/20/98	13	1	52	856 9	7 8	3 9	14 1	6 74			
2111	3/20/98	14	1	57	893	8	4	13 9	6 74			
2112	3/20/98	15	1	51	845	7 7	3 9	14.1	6 65			
2113	3/20/98	16	1	51	836 3	7.7	3 9	14 1	6 65			
2114	3/20/98	17	1	51	836 2	7 8	3 9	14 1	6 74			
2115	3/20/98	18	1	51	838 7	7 7	3 9	14.1	6 65			
2116	3/20/98	19	1	51	840 9	7.7	3 9	14 1	6 65			
2117	3/20/98	20	0 5	39	688 2	9 6	3 4	14 9	9 52			
2118	3/21/98	21	0 75	0	371		2 2	17.0				
2119	3/21/98	22	1	0	392 5	11 7	1.1	19 0	35 85			
2120	3/21/98	23	0 5	0	302 6	15 6	1.1	19 0	47.80			
2121	3/22/98	18	1	94	1059 5	20 9	3.8	14 2	18 54	Yes	***** No *****	***** No *****
2122	3/22/98	19	1	130	1444 6	16 3	4	13 9	13 74	Yes	***** No *****	Yes
2123	3/22/98	20	1	71	983 4	10 3	3.8	14 2	9 14	Yes	***** No *****	Yes
2124	3/22/98	21	0.75	40	688 9	9.1	3 3	15 1	9 29			
2125	3/23/98	13	0 5	35	653 4	20 5	3 1	15 5	22.29			
2126	3/23/98	14	1	68	960 6	10 6	3 9	14 1	9 16	Yes	***** No *****	Yes
2127	3/23/98	15	1	55	862.7	8 6	3 8	14 2	7.63			
2128	3/23/98	16	1	51	829 8	7.9	3 7	14 4	7 20			
2129	3/23/98	17	1	51	829	7.9	3 7	14 4	7.20			
2130	3/23/98	18	1	89	1119 6	10.9	3 9	14 1	9 42	Yes	***** No *****	Yes
2131	3/23/98	19	1	118	1339 4	14 5	4	13 9	12 22	Yes	***** No *****	Yes
2132	3/23/98	20	1	110	1270	12 2	4	13 9	10 28	Yes	***** No *****	Yes
2133	3/23/98	21	0.75	89	1063 8	12 5	3 6	14 6	11.70	Yes	***** No *****	Yes
2134	3/24/98	12	0.5	83	689 2		3.7	14 4		Yes	Yes	Yes
2135	3/24/98	13	1	117	1333 8	13 5	3 9	14 1	11.67	Yes	***** No *****	Yes
2136	3/24/98	14	1	118	1335 7	14 8	3 9	14.1	12.79	Yes	***** No *****	Yes
2137	3/24/98	15	1	113	1292 8	13 4	3 9	14.1	11.58	Yes	***** No *****	Yes
2138	3/24/98	16	1	112	1283 8	13 3	3 9	14 1	11.49	Yes	***** No *****	Yes
2139	3/24/98	17	1	111	1272.8	12 8	3 9	14 1	11 06	Yes	***** No *****	Yes
2140	3/24/98	18	1	119	1347.2	14 4	3 9	14 1	12 45	Yes	***** No *****	Yes
2141	3/24/98	19	1	111	1268 2	12 9	3 9	14 1	11.15	Yes	***** No *****	Yes
2142	3/24/98	20	0 75	94	1112 4	13 4	3 7	14 4	12 21	Yes	***** No *****	Yes
2143	3/25/98	10	1	4	393	37 7	2	17 4	63 54			
2144	3/25/98	11	0 5	4	389 2		2 3	16 9				
2145	3/25/98	12	0 25	21	480.9		2.3	16 9				
2146	3/25/98	13	1	25	588.1	25 7	2 6	16 3	33 32			
2147	3/25/98	14	0 5	13	469 1	26.3	2.1	17.2	42.21			
2148	3/25/98	16	0 75	34	641	13 1	0 4	20 2	110 39			
2149	3/26/98	5	0 25	0	0	0	0	20 9				
2150	3/27/98	17	0 25	0	371.5	20 4	0 7	19 7	98 23			
2151	3/28/98	11	0 25	41	725	67 6	1 8	17 7	126 59			
2152	3/28/98	12	1	30	636	38 3	2 9	15 8	44.52			
2153	3/28/98	13	1	34	665	54.3	2 7	16 2	67 79			
2154	3/28/98	14	0 25	14	339 6	40 2	2	17.4	67 75			
2155	3/30/98	8	0 25	5	296 4	10 8	1.7	17 9	21.41			
2156	3/30/98	9	1	110	1283	19 6	4	13 9	16 52	Yes	***** No *****	***** No *****
2157	3/30/98	10	1	116	1311 8	14 2	4	13 9	11.97	Yes	***** No *****	Yes
2158	3/30/98	11	1	111	1267	14 4	4	13 9	12.13	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
2159	3/30/98	12	0.75	99	976.5	16.4	3.8	14.2	14.55	Yes	***** No *****	Yes
2160	3/30/98	17	0.5	44	762	56.6	2.4	16.7	79.49			
2161	3/30/98	18	1	45	772.6	19.7	3.5	14.8	18.97			
2162	3/30/98	19	1	49	823.8	7.4	3.8	14.2	6.56			
2163	3/30/98	20	1	49	821.8	7.2	3.8	14.2	6.39			
2164	3/30/98	21	1	48	815	7.2	3.8	14.2	6.39			
2165	3/30/98	22	0.25	2	150.9	17.7	1.3	18.6	45.89			
2166	3/31/98	3	1	61	880.8	15.5	3.6	14.6	14.51	Yes	***** No *****	Yes
2167	3/31/98	4	1	55	869.2	8.1	3.9	14.1	7.00			
2168	3/31/98	5	1	51	840.6	7.5	3.8	14.2	6.65			
2169	3/31/98	6	1	59	900.7	7.8	3.8	14.2	6.92			
2170	3/31/98	7	1	125	1397.2	13.7	4	13.9	11.54	Yes	***** No *****	Yes
2171	3/31/98	8	1	137	1489	14.2	3.9	14.1	12.27	Yes	***** No *****	Yes
2172	3/31/98	9	1	137	1490.3	14.1	3.9	14.1	12.19	Yes	***** No *****	Yes
2173	3/31/98	10	1	137	1491.6	15	4	13.9	12.64	Yes	***** No *****	Yes
2174	3/31/98	11	1	136	1480.5	15.5	4	13.9	13.06	Yes	***** No *****	Yes
2175	3/31/98	12	1	135	1468.6	15.6	4	13.9	13.15	Yes	***** No *****	Yes
2176	3/31/98	13	1	133	1454.2	15.8	3.9	14.1	13.66	Yes	***** No *****	Yes
2177	3/31/98	14	1	132	1447.3	16	3.9	14.1	13.83	Yes	***** No *****	Yes
2178	3/31/98	15	1	132	1445.1	16.1	3.9	14.1	13.91	Yes	***** No *****	Yes
2179	3/31/98	16	1	132	1448.3	16	3.9	14.1	13.83	Yes	***** No *****	Yes
2180	3/31/98	17	1	132	1450.9	16.1	4	13.9	13.57	Yes	***** No *****	Yes
2181	3/31/98	18	1	133	1459	16	4	13.9	13.48	Yes	***** No *****	Yes
2182	3/31/98	19	1	134	1467.2	15.8	4	13.9	13.31	Yes	***** No *****	Yes
2183	3/31/98	20	1	136	1481.7	15.5	4	13.9	13.06	Yes	***** No *****	Yes
2184	3/31/98	21	0.5	78	966.3	14.3	3.3	15.1	14.61	Yes	***** No *****	Yes
2185	4/1/98	7	1	47	790.6	15.7	3.4	14.9	15.56			
2186	4/1/98	8	1	53	856.7	7.9	3.8	14.2	7.01			
2187	4/1/98	9	1	49	824.3	8.4	3.8	14.2	7.45			
2188	4/1/98	10	0.25	3	574.3	29.2	1.6	18.1	61.52			
2189	4/1/98	11	0.5	39	701.7		2.2	17.0	0.00			
2190	4/1/98	12	1	44	739.3	16.5	2.9	15.8	19.18			
2191	4/1/98	13	1	60	901	8.9	3.8	14.2	7.89			
2192	4/1/98	14	1	60	898.7	8.9	3.8	14.2	7.89			
2193	4/1/98	15	1	60	898.1	9	3.8	14.2	7.98			
2194	4/1/98	16	1	31	627.4	45.6	2.8	16.0	54.89			
2195	4/1/98	17	0.5	45	756		2.7	16.2	0.00			
2196	4/1/98	20	0.25	45	762	63.5	3	15.6	71.35			
2197	4/1/98	21	0.5	30	691		3	15.6	0.00			
2198	4/2/98	6	0.5	38	677.7		3	15.6	0.00			
2199	4/2/98	7	1	54	861.4	6.5	3.1	15.5	7.07			
2200	4/2/98	8	1	55	869.6	7.9	3.8	14.2	7.01			
2201	4/2/98	9	1	52	846.1	7.6	3.8	14.2	6.74			
2202	4/2/98	10	1	70	976.8	9.1	3.9	14.1	7.86	Yes	Yes	Yes
2203	4/2/98	11	1	81	915.4	7.9	3.9	14.1	6.83	Yes	Yes	Yes
2204	4/2/98	12	1	53	849.9	7.3	3.6	14.6	6.84			
2205	4/2/98	13	1	50	830	7	3.8	14.2	6.21			
2206	4/2/98	14	0.25	27	658.5	20	2.7	16.2	24.97			
2207	4/4/98	12	0.75	39	697.1		3.3	15.1	0.00			
2208	4/4/98	13	1	39	734.3		3.5	14.8	0.00			
2209	4/5/98	19	1	100	1180.3	18.4	3.4	14.9	18.24	Yes	***** No *****	***** No *****
2210	4/5/98	20	0.5	65	879.1	12.7	3.3	15.1	12.97	Yes	***** No *****	Yes
2211	4/6/98	5	0.75	84	1052.4	19.5	3.6	14.6	18.26	Yes	***** No *****	***** No *****
2212	4/6/98	6	1	126	1399.7	13.1	4	13.9	11.04	Yes	***** No *****	Yes
2213	4/6/98	7	1	123	1372.7	12.8	4	13.9	10.79	Yes	***** No *****	Yes
2214	4/6/98	8	0.25	14	658.9	26.6	2.6	16.3	34.48			
2215	4/6/98	14	0.25	60	794.4	26.1	3.5	14.8	25.14			
2216	4/6/98	15	1	126	1394	12.2	4	13.9	10.28	Yes	***** No *****	Yes
2217	4/6/98	16	1	126	1395.1	12.6	4	13.9	10.62	Yes	***** No *****	Yes
2218	4/6/98	17	1	120	1347.9	12.2	4	13.9	10.28	Yes	***** No *****	Yes
2219	4/6/98	18	1	125	1385.9	12.3	4	13.9	10.36	Yes	***** No *****	Yes
2220	4/6/98	19	1	125	1384.3	12.2	4.1	13.7	10.03	Yes	***** No *****	Yes
2221	4/6/98	20	1	98	1180.1	10.7	4	13.9	9.02	Yes	***** No *****	Yes
2222	4/6/98	21	0.75	56	824.3	10.2	3.6	14.6	9.55			
2223	4/7/98	13	0.5	39	728.2	21	3.3	15.1	21.45			
2224	4/7/98	14	1	53	854.5	7.5	3.8	14.2	6.65			
2225	4/7/98	15	1	53	851.5	7.8	3.8	14.2	6.92			
2226	4/7/98	16	1	53	851.7	7.7	3.8	14.2	6.83			
2227	4/7/98	17	1	52	847.5	7.6	3.8	14.2	6.74			
2228	4/7/98	18	1	92	1146.8	10.4	4	13.9	8.76	Yes	Yes	Yes
2229	4/7/98	19	1	109	1271.7	12.8	4.1	13.7	10.52	Yes	***** No *****	Yes
2230	4/7/98	20	1	45	768.3	8.6	3.6	14.6	8.05			
2231	4/8/98	13	0.25	4	302.3	16	1.8	17.7	29.96			
2232	4/8/98	14	1	51	846.8	14.9	3.8	14.2	13.22			
2233	4/8/98	15	1	50	835.4	7.8	3.8	14.2	6.92			
2234	4/8/98	16	1	50	833.7	7.4	3.9	14.1	6.40			
2235	4/8/98	17	1	53	865.5	7.5	3.9	14.1	6.48			
2236	4/8/98	18	1	87	1116.9	10.3	4	13.9	8.68	Yes	Yes	Yes
2237	4/8/98	19	1	105	1242.4	12.1	4.1	13.7	9.95	Yes	***** No *****	Yes
2238	4/8/98	20	1	51	848.4	7.3	3.9	14.1	6.31			
2239	4/8/98	21	0.75	41	732.1	8.8	3.5	14.8	8.47			
2240	4/9/98	12	0.5	39	681.4	24	2.6	16.3	31.11			
2241	4/9/98	13	1	64	940.8	9.2	3.9	14.1	7.95	Yes	Yes	Yes
2242	4/9/98	14	1	93	1153.4	10.7	3.9	14.1	9.25	Yes	***** No *****	Yes
2243	4/9/98	15	1	125	1394.5	13.1	4	13.9	11.04	Yes	***** No *****	Yes
2244	4/9/98	16	1	125	1394.9	13.2	4	13.9	11.12	Yes	***** No *****	Yes
2245	4/9/98	17	1	125	1395.7	13	4	13.9	10.95	Yes	***** No *****	Yes
2246	4/9/98	18	1	106	1251.3	12.3	4	13.9	10.36	Yes	***** No *****	Yes
2247	4/9/98	19	1	94	1166	11.5	3.9	14.1	9.94	Yes	***** No *****	Yes
2248	4/9/98	20	1	93	1149.5	11.2	4	13.9	9.44	Yes	***** No *****	Yes
2249	4/9/98	21	0.5	44	709.9	11.1	3.2	15.3	11.69			
2250	4/13/98	11	0.5	82	1079.1	25	3.7	14.4	22.78	Yes	***** No *****	***** No *****
2251	4/13/98	12	1	126	1410.7	13.5	3.9	14.1	11.67	Yes	***** No *****	Yes
2252	4/13/98	13	1	127	1404.4	13.4	4	13.9	11.29	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
2253	4/13/98	14	1	126	1392.9	13 2	4	13 9	11.12	Yes	***** No *****	Yes
2254	4/13/98	15	1	126	1394 2	12.8	4	13 9	10 79	Yes	***** No *****	Yes
2255	4/13/98	16	1	126	1394.7	12 7	4	13 9	10 70	Yes	***** No *****	Yes
2256	4/13/98	17	1	126	1391.6	12 7	4	13 9	10 70	Yes	***** No *****	Yes
2257	4/13/98	18	1	126	1399 1	12 6	4 1	13 7	10 36	Yes	***** No *****	Yes
2258	4/13/98	19	1	126	1395 6	12.5	4.1	13 7	10 28	Yes	***** No *****	Yes
2259	4/13/98	20	1	126	1391.1	12 4	4 1	13 7	10 19	Yes	***** No *****	Yes
2260	4/13/98	21	1	105	1199 4	12 8	3 8	14 2	11.35	Yes	***** No *****	Yes
2261	4/14/98	5	0.75	50	796 7	21 2	3 4	14.9	21.02			
2262	4/14/98	6	1	54	867 3	7 6	3 9	14.1	6 57			
2263	4/14/98	7	1	64	939 7	7 9	3 9	14.1	6 83	Yes	Yes	Yes
2264	4/14/98	8	1	123	1373 7	12	4	13 9	10 11	Yes	***** No *****	Yes
2265	4/14/98	9	1	126	1395 2	12 4	4 1	13 7	10 19	Yes	***** No *****	Yes
2266	4/14/98	10	1	126	1390 4	12 5	4.1	13 7	10 28	Yes	***** No *****	Yes
2267	4/14/98	11	1	126	1397.9	12 4	4	13.9	10 45	Yes	***** No *****	Yes
2268	4/14/98	12	1	126	1398 9	12 3	4	13 9	10 36	Yes	***** No *****	Yes
2269	4/14/98	13	1	125	1396 3	12 5	4	13 9	10 53	Yes	***** No *****	Yes
2270	4/14/98	14	1	76	1026 6	9 4	3 9	14 1	8 12	Yes	Yes	Yes
2271	4/14/98	15	1	55	867.4	7 3	3 8	14 2	6 48			
2272	4/14/98	16	1	52	846 9	7 3	3 8	14 2	6 48			
2273	4/14/98	17	1	52	853 2	7 5	3 8	14 2	6 65			
2274	4/14/98	18	1	82	1073 8	9 4	3 9	14 1	8.12	Yes	Yes	Yes
2275	4/14/98	19	1	133	1470 8	14 4	4 1	13 7	11 84	Yes	***** No *****	Yes
2276	4/14/98	20	1	135	1487.8	14 8	4 1	13 7	12 17	Yes	***** No *****	Yes
2277	4/14/98	21	1	57	885	8 2	3 9	14 1	7.09			
2278	4/14/98	22	0 25	17	400 7	13 2	2 4	16 7	18 54			
2279	4/15/98	5	0.75	47	790 2	12 2	3 5	14 8	11.75			
2280	4/15/98	6	1	85	1091 2	9 8	4	13.9	8 26	Yes	Yes	Yes
2281	4/15/98	7	1	127	1398 2	13 1	4.1	13.7	10 77	Yes	***** No *****	Yes
2282	4/15/98	8	1	127	1398 1	13	4.1	13.7	10 69	Yes	***** No *****	Yes
2283	4/15/98	9	1	127	1397 7	12 8	4	13 9	10 79	Yes	***** No *****	Yes
2284	4/15/98	10	1	127	1393 7	12.8	4.1	13.7	10 52	Yes	***** No *****	Yes
2285	4/15/98	11	1	128	1393 5	12 7	4 1	13 7	10 44	Yes	***** No *****	Yes
2286	4/15/98	12	1	128	1392 8	12 8	4	13 9	10 79	Yes	***** No *****	Yes
2287	4/15/98	13	1	127	1393 1	12 9	4	13.9	10.87	Yes	***** No *****	Yes
2288	4/15/98	14	1	127	1394 1	12 9	4	13 9	10 87	Yes	***** No *****	Yes
2289	4/15/98	15	1	127	1395 6	12.9	4	13 9	10 87	Yes	***** No *****	Yes
2290	4/15/98	16	1	128	1394 2	13	4	13 9	10 95	Yes	***** No *****	Yes
2291	4/15/98	17	1	132	1429 6	13 6	4	13 9	11 46	Yes	***** No *****	Yes
2292	4/15/98	18	1	137	1483 9	14 3	4	13 9	12 05	Yes	***** No *****	Yes
2293	4/15/98	19	1	136	1478.7	13 9	4	13 9	11.71	Yes	***** No *****	Yes
2294	4/15/98	20	1	136	1475 6	13 4	4	13 9	11.29	Yes	***** No *****	Yes
2295	4/15/98	21	1	81	1029 9	11 4	3 7	14 4	10 39	Yes	***** No *****	Yes
2296	4/16/98	5	0.5	42	727 1	17 9	3 6	14.6	16.76			
2297	4/16/98	6	1	51	838 4	7 6	3 9	14.1	6.57			
2298	4/16/98	7	1	120	1354 4	12 8	4.1	13 7	10 52	Yes	***** No *****	Yes
2299	4/16/98	8	1	81	1065 2	9 8	4	13 9	8 26	Yes	Yes	Yes
2300	4/16/98	9	1	132	1449 4	13 9	4.1	13 7	11.43	Yes	***** No *****	Yes
2301	4/16/98	10	1	136	1479 7	13 4	4	13 9	11 29	Yes	***** No *****	Yes
2302	4/16/98	11	1	137	1477.7	13 5	4	13 9	11 38	Yes	***** No *****	Yes
2303	4/16/98	12	1	137	1480 7	13 7	4	13 9	11.54	Yes	***** No *****	Yes
2304	4/16/98	13	1	137	1482	14 1	4	13 9	11.88	Yes	***** No *****	Yes
2305	4/16/98	14	1	137	1485.1	14	4	13 9	11 80	Yes	***** No *****	Yes
2306	4/16/98	15	1	137	1486 8	14 5	4	13 9	12 22	Yes	***** No *****	Yes
2307	4/16/98	16	1	75	1013 4	9 9	3 9	14.1	8 56	Yes	Yes	Yes
2308	4/16/98	17	1	67	951 6	8 6	3 9	14.1	7.43	Yes	Yes	Yes
2309	4/16/98	18	1	131	1439	14 1	4 1	13.7	11 59	Yes	***** No *****	Yes
2310	4/16/98	19	1	138	1506 2	15	4.1	13.7	12.33	Yes	***** No *****	Yes
2311	4/16/98	20	1	132	1450 6	14 7	4.1	13 7	12.09	Yes	***** No *****	Yes
2312	4/16/98	21	0 5	55	788	11 8	3 3	15 1	12.05			
2313	4/17/98	7	0 5	51	776 4	18 2	3 3	15 1	18 59			
2314	4/17/98	8	1	71	983 8	9 3	4	13 9	7.84	Yes	Yes	Yes
2315	4/17/98	9	1	71	980 1	8 9	4	13 9	7.50	Yes	Yes	Yes
2316	4/17/98	10	1	70	976 9	8 8	4	13 9	7.42	Yes	Yes	Yes
2317	4/17/98	11	1	70	976	8 8	3 9	14.1	7 61	Yes	Yes	Yes
2318	4/17/98	12	1	70	975 6	8 9	3 9	14.1	7 69	Yes	Yes	Yes
2319	4/17/98	13	1	68	954 1	9 5	3 9	14.1	8 21	Yes	Yes	Yes
2320	4/17/98	14	0 25	4	247 5	23 7	1.5	18 3	53 26			
2321	4/18/98	0	0.25	1	0	0	0	20 9				
2322	4/18/98	7	0.75	97	1158 9	18 2	3 6	14 6	17.04	Yes	***** No *****	***** No *****
2323	4/18/98	8	1	129	1436 8	13 4	4.1	13 7	11.02	Yes	***** No *****	Yes
2324	4/18/98	9	1	74	1013 2	9 8	4	13.9	8 26	Yes	Yes	Yes
2325	4/18/98	10	0.75	45	756 3	8 6	3 6	14 6	8 05			
2326	4/20/98	9	0.25	32	594 7	23	2 8	16 0	27.69			
2327	4/20/98	10	1	94	1171.5	9 9	3 8	14 2	8 78	Yes	Yes	Yes
2328	4/20/98	11	1	134	1477 2	14 9	4 1	13 7	12.25	Yes	***** No *****	Yes
2329	4/20/98	12	1	134	1474 9	15 8	4 1	13 7	12.99	Yes	***** No *****	Yes
2330	4/20/98	13	1	134	1473 9	15 9	4 1	13 7	13 07	Yes	***** No *****	Yes
2331	4/20/98	14	1	126	1410.1	15 4	4 1	13 7	12.66	Yes	***** No *****	Yes
2332	4/20/98	15	1	111	1298 6	12 6	4	13 9	10 62	Yes	***** No *****	Yes
2333	4/20/98	16	1	117	1344.1	13 4	4 1	13 7	11.02	Yes	***** No *****	Yes
2334	4/20/98	17	1	136	1490 8	14 6	4.1	13 7	12.00	Yes	***** No *****	Yes
2335	4/20/98	18	1	135	1487.4	13 8	4.1	13 7	11 35	Yes	***** No *****	Yes
2336	4/20/98	19	1	136	1494 8	14 4	4 1	13 7	11.84	Yes	***** No *****	Yes
2337	4/20/98	20	1	136	1493 8	14 7	4 1	13 7	12 09	Yes	***** No *****	Yes
2338	4/20/98	21	0.5	67	857.5	14 1	3 2	15 3	14 85	Yes	***** No *****	Yes
2339	4/21/98	8	1	97	1165 7	16 8	3.7	14 4	15 30	Yes	***** No *****	***** No *****
2340	4/21/98	9	1	105	1254 6	12 2	4 1	13 7	10 03	Yes	***** No *****	Yes
2341	4/21/98	10	1	115	1332 9	13 3	4 1	13 7	10 93	Yes	***** No *****	Yes
2342	4/21/98	11	1	133	1473 6	16 2	4.1	13 7	13 32	Yes	***** No *****	Yes
2343	4/21/98	12	1	132	1466.3	16 3	4 1	13 7	13 40	Yes	***** No *****	Yes
2344	4/21/98	13	1	128	1430 9	15 4	4.1	13 7	12 66	Yes	***** No *****	Yes
2345	4/21/98	14	1	120	1362 5	14	4 1	13 7	11 51	Yes	***** No *****	Yes
2346	4/21/98	15	1	127	1413	15 5	4.1	13 7	12.74	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
2347	4/21/98	16	1	63	921 7	9 1	3 9	14.1	7.86	Yes	Yes	Yes
2348	4/21/98	17	1	71	985 3	9 4	3 9	14.1	8 12	Yes	Yes	Yes
2349	4/21/98	18	1	85	1096 5	10 2	4	13 9	8 60	Yes	Yes	Yes
2350	4/21/98	19	1	135	1480 4	15 7	4.1	13.7	12 91	Yes	***** No *****	Yes
2351	4/21/98	20	1	104	1212 5	13 7	3 8	14 2	12.15	Yes	***** No *****	Yes
2352	4/22/98	5	0 25	0	134.8	1 4	1.5	18 3	3 15			
2353	4/22/98	6	1	79	1054 9	14 5	4	13 9	12.22	Yes	***** No *****	Yes
2354	4/22/98	7	1	130	1433 1	13 2	4 2	13 5	10 59	Yes	***** No *****	Yes
2355	4/22/98	8	1	130	1430 6	13	4.1	13.7	10 69	Yes	***** No *****	Yes
2356	4/22/98	9	1	130	1434	13 1	4.1	13 7	10 77	Yes	***** No *****	Yes
2357	4/22/98	10	1	130	1436	13 2	4 1	13 7	10 85	Yes	***** No *****	Yes
2358	4/22/98	11	1	129	1436 4	14.3	4 1	13 7	11 76	Yes	***** No *****	Yes
2359	4/22/98	12	1	129	1436 6	16 1	4 1	13 7	13 24	Yes	***** No *****	Yes
2360	4/22/98	13	1	129	1427.6	16 4	4 1	13 7	13 48	Yes	***** No *****	Yes
2361	4/22/98	14	1	129	1422 2	16 3	4	13 9	13 74	Yes	***** No *****	Yes
2362	4/22/98	15	1	129	1419 6	16 5	4 1	13 7	13 57	Yes	***** No *****	Yes
2363	4/22/98	16	1	129	1422	16 5	4 1	13 7	13 57	Yes	***** No *****	Yes
2364	4/22/98	17	1	130	1424.2	16 5	4.1	13 7	13 57	Yes	***** No *****	Yes
2365	4/22/98	18	1	128	1406 1	16 4	4.1	13 7	13 48	Yes	***** No *****	Yes
2366	4/22/98	19	1	59	886.4	8 6	3.9	14.1	7.43			
2367	4/22/98	20	0.75	45	725.7	9 4	3 5	14.8	9 05			
2368	4/23/98	7	1	51	808 3	12.7	3 7	14 4	11.57			
2369	4/23/98	8	1	60	894.5	8.5	3 9	14 1	7 35			
2370	4/23/98	9	1	57	883 5	8 2	3 8	14 2	7.27			
2371	4/23/98	10	1	55	872.2	8 2	3 8	14 2	7.27			
2372	4/23/98	11	1	56	876 7	8 4	3 8	14 2	7.45			
2373	4/23/98	12	1	58	890 4	8 8	3 8	14 2	7 61			
2374	4/23/98	13	1	67	952 4	9 8	3 8	14 2	8 69	Yes	Yes	Yes
2375	4/23/98	14	1	55	863 4	8 5	3.7	14 4	7.74			
2376	4/23/98	15	1	92	1151 6	12.2	3.8	14 2	10 82	Yes	***** No *****	Yes
2377	4/23/98	16	1	122	1375 2	16 4	3.9	14 1	14 17	Yes	***** No *****	Yes
2378	4/23/98	17	1	123	1379 5	16 5	3 9	14 1	14 26	Yes	***** No *****	Yes
2379	4/23/98	18	1	125	1392.3	16.3	3.9	14 1	14 09	Yes	***** No *****	Yes
2380	4/23/98	19	1	126	1407	16 1	4	13 9	13 57	Yes	***** No *****	Yes
2381	4/23/98	20	1	127	1412 4	15 9	4	13 9	13 40	Yes	***** No *****	Yes
2382	4/23/98	21	1	74	955.5	12 4	3 6	14 6	11 61	Yes	***** No *****	Yes
2383	4/28/98	7	1	25	582.1	47 2	2 1	17.2	75.76			
2384	4/28/98	8	0 5	19	484 4	44 6	2	17 4	75 17			
2385	5/1/98	19	0 75	13	443 1	32.1	1 5	18 3	72 13			
2386	5/4/98	7	0 5	13	429 4	35 9	2	17 4	60 50			
2387	5/4/98	8	0.5	15	501	35 6	1.6	18.1	75 00			
2388	5/4/98	17	0 25	15	495 4		2.5	16 5				
2389	5/5/98	21	1	44	773 4	15 2	3.4	14 9	15 07			
2390	5/5/98	22	0.25	0	0 2	0 9	0	20 9				
2391	5/6/98	7	1	45	764 5	8	3 8	14 2	7.10			
2392	5/6/98	8	1	62	923 5	8 1	3 9	14 1	7.00	Yes	Yes	Yes
2393	5/6/98	9	1	42	732.8	32.9	3.1	15 5	35 77			
2394	5/6/98	10	1	15	506.7	19 2	2 7	16 2	23 97			
2395	5/6/98	11	0 25	12	577.9	20 5	2 4	16 7	28.79			
2396	5/6/98	13	0 25	30	620 1	54 3	2 3	16 9	79 58			
2397	5/6/98	21	0 25	18	881.7	35	2 9	15 8	40 68			
2398	5/7/98	7	0 75	24	560 1	29 3	2 7	16 2	36 58			
2399	5/7/98	8	0 75	30	636 4	12 8	2.7	16 2	15 98			
2400	5/7/98	9	0 5	31	639	12.7	2.7	16 2	15 85			
2401	5/7/98	16	0 25	8	965 9		2 2	17 0				
2402	5/8/98	5	1	53	790 2		2 2	17 0				
2403	5/8/98	6	1	65	947.8		2 2	17.0		Yes	Yes	Yes
2404	5/8/98	7	1	63	906 1	3.1	1.6	18 1	6 53	Yes	Yes	Yes
2405	5/8/98	8	1	74	894.2	3 9	3 4	14 9	3 87	Yes	Yes	Yes
2406	5/9/98	10	0 25	29	424.1	55 7	3 2	15 3	58 67			
2407	5/9/98	11	0 5	30	636 3	30 9	2.9	15 8	35 92			
2408	5/9/98	14	0 75	30	644	51.5	2 9	15 8	59 86			
2409	5/9/98	15	1	64	934 4	9 5	3.8	14 2	8 43	Yes	Yes	Yes
2410	5/9/98	16	1	63	930 7	8 6	3 8	14 2	7 63	Yes	Yes	Yes
2411	5/9/98	17	1	63	930 3	8 4	3 8	14 2	7.45	Yes	Yes	Yes
2412	5/9/98	18	1	63	925 7	8 3	3 8	14 2	7.36	Yes	Yes	Yes
2413	5/9/98	19	1	91	1125 7	11 1	3 9	14 1	9 59	Yes	***** No *****	Yes
2414	5/9/98	20	0 5	75	430 8	6 2	1.7	17.9	12.29	Yes	***** No *****	Yes
2415	5/11/98	7	1	78	818.5	12 8	3	15 6	14 38	Yes	***** No *****	Yes
2416	5/11/98	8	1	67	954.7	8.7	3 9	14 1	7.52	Yes	Yes	Yes
2417	5/11/98	9	1	65	941.9	7.6	3 5	14 8	7 32	Yes	Yes	Yes
2418	5/11/98	10	1	98	1170 1	11.9	3 9	14.1	10 28	Yes	***** No *****	Yes
2419	5/11/98	11	1	117	1331	14.7	3 9	14 1	12.70	Yes	***** No *****	Yes
2420	5/11/98	12	1	126	1405.7	16 2	3 9	14 1	14 00	Yes	***** No *****	Yes
2421	5/11/98	13	1	126	1407.4	16 2	3 9	14 1	14 00	Yes	***** No *****	Yes
2422	5/11/98	14	1	126	1403 7	16 3	3 9	14.1	14 09	Yes	***** No *****	Yes
2423	5/11/98	15	1	128	1418 9	16	3 9	14 1	13 83	Yes	***** No *****	Yes
2424	5/11/98	16	1	129	1430 4	16	3 9	14 1	13 83	Yes	***** No *****	Yes
2425	5/11/98	17	1	127	1410.5	16	3 9	14.1	13 83	Yes	***** No *****	Yes
2426	5/11/98	18	1	66	944 8	8 5	3 8	14 2	7.54	Yes	Yes	Yes
2427	5/11/98	19	1	97	1164 4	11.9	3 9	14.1	10 28	Yes	***** No *****	Yes
2428	5/11/98	20	1	80	1016 7	11.6	3 8	14 2	10 29	Yes	***** No *****	Yes
2429	5/12/98	3	0 75	61	551.8	9 1	1.5	18 3	20 45	Yes	***** No *****	***** No *****
2430	5/12/98	4	1	89	1115 1	11	3.9	14 1	9 51	Yes	***** No *****	Yes
2431	5/12/98	5	1	77	1027 5	9 6	2.5	16 5	12 94	Yes	***** No *****	Yes
2432	5/12/98	6	0 75	63	495 3	3	1 6	18 1	6 32	Yes	Yes	Yes
2433	5/12/98	8	0 25	0	11.9	0 3	0 2	20 5	5 06			
2434	5/12/98	9	1	62	925	18 8	3 8	14 2	16 88	Yes	***** No *****	***** No *****
2435	5/12/98	10	1	70	976 1	8 8	3 9	14 1	7 61	Yes	Yes	Yes
2436	5/12/98	11	1	96	1156 8	12.3	4	13 9	10 36	Yes	***** No *****	Yes
2437	5/12/98	12	1	101	1192.5	11.4	3 7	14 4	10 39	Yes	***** No *****	Yes
2438	5/12/98	13	1	100	1186 6	13 5	3 9	14 1	11.67	Yes	***** No *****	Yes
2439	5/12/98	14	1	97	1169 3	12 4	3 9	14 1	10 72	Yes	***** No *****	Yes
2440	5/12/98	15	1	100	1185 3	11.9	3 9	14.1	10 28	Yes	***** No *****	Yes

1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
2441	5/12/98	16	1	89	1111.7	12.1	3 9	14 1	10 46	Yes	***** No *****	Yes
2442	5/12/98	17	1	84	1075 9	11	3 9	14 1	9 51	Yes	***** No *****	Yes
2443	5/12/98	18	1	96	1156 9	12.3	3 9	14.1	10 63	Yes	***** No *****	Yes
2444	5/12/98	19	1	100	1189 9	12.1	3 9	14.1	10 46	Yes	***** No *****	Yes
2445	5/12/98	20	1	72	989	9.7	3 9	14.1	8 38	Yes	Yes	Yes
2446	5/12/98	21	0 25	8	16 7	1.5	0 2	20 5	25 28			
2447	5/13/98	5	0 25	13	87 7	5 2	0 6	19 8	29 21			
2448	5/13/98	6	1	65	952	10 2	3 9	14 1	8 82	Yes	Yes	Yes
2449	5/13/98	7	1	65	946 9	8 3	3 9	14 1	7.17	Yes	Yes	Yes
2450	5/13/98	8	1	66	950 7	8 3	3 9	14.1	7 17	Yes	Yes	Yes
2451	5/13/98	9	1	67	955 1	8 5	3 9	14.1	7.35	Yes	Yes	Yes
2452	5/13/98	10	1	66	948 9	8 6	3 9	14.1	7.43	Yes	Yes	Yes
2453	5/13/98	11	1	66	946 5	8 8	3 8	14 2	7.81	Yes	Yes	Yes
2454	5/13/98	12	1	96	1181.3	12.5	3 8	14 2	11 09	Yes	***** No *****	Yes
2455	5/13/98	13	1	119	1353 8	16 5	3 9	14.1	14 26	Yes	***** No *****	Yes
2456	5/13/98	14	1	118	1343 4	16 7	3 9	14 1	14 43	Yes	***** No *****	Yes
2457	5/13/98	15	1	118	1339 5	16.7	3 9	14 1	14.43	Yes	***** No *****	Yes
2458	5/13/98	16	1	118	1338 3	16 7	3 9	14 1	14 43	Yes	***** No *****	Yes
2459	5/13/98	17	1	120	1359	16 2	3 9	14 1	14 00	Yes	***** No *****	Yes
2460	5/13/98	18	1	107	1240 9	12.2	3 9	14.1	10.54	Yes	***** No *****	Yes
2461	5/13/98	19	1	127	1411.4	15 8	4	13 9	13.31	Yes	***** No *****	Yes
2462	5/13/98	20	1	104	1235 5	13 8	3 9	14 1	11 93	Yes	***** No *****	Yes
2463	5/13/98	21	0 5	43	668 4	10 3	3	15 6	11 57			
2464	5/14/98	4	0 25	5	271.5	8 4	1.8	17.7	15 73			
2465	5/14/98	5	1	65	948	14 5	3 9	14 1	12 53	Yes	***** No *****	Yes
2466	5/14/98	6	1	82	1078 3	10 4	4	13 9	8 76	Yes	Yes	Yes
2467	5/14/98	7	1	131	1452.9	15 8	4	13 9	13 31	Yes	***** No *****	Yes
2468	5/14/98	8	1	130	1450	15 9	4	13 9	13 40	Yes	***** No *****	Yes
2469	5/14/98	9	1	132	1463 4	15 1	4	13 9	12.72	Yes	***** No *****	Yes
2470	5/14/98	10	1	131	1455 1	15 1	4.1	13 7	12 41	Yes	***** No *****	Yes
2471	5/14/98	11	1	124	1379 2		4	13 9		Yes	Yes	Yes
2472	5/14/98	12	1	90	1102 7		4	13 9		Yes	Yes	Yes
2473	5/14/98	13	1	66	977 6		4	13 9		Yes	Yes	Yes
2474	5/14/98	14	1	77	977.6		4	13 9		Yes	Yes	Yes
2475	5/14/98	15	1	108	1215 2		4	13 9		Yes	Yes	Yes
2476	5/14/98	16	1	65	946	8 2	3 9	14.1	7.09	Yes	Yes	Yes
2477	5/14/98	17	1	65	945 2	8 1	3 9	14 1	7 00	Yes	Yes	Yes
2478	5/14/98	18	1	78	1034	9.6	3 9	14 1	8.30	Yes	Yes	Yes
2479	5/14/98	19	1	72	995 2	8 9	3 9	14.1	7.69	Yes	Yes	Yes
2480	5/14/98	20	1	81	1026 7	11 3	3 8	14 2	10.02	Yes	***** No *****	Yes
2481	5/15/98	5	0 5	4	692.5	10 2	3 8	14 2	9 05			
2482	5/15/98	6	0 25	15	496 9	17 6	2 8	16 0	21.19			
2483	5/15/98	7	0 25	14	480 9	33 7	1.9	17.6	59 79			
2484	5/15/98	13	0 5	59	884 2	10 2	3 8	14 2	9 05			
2485	5/15/98	14	1	93	1138 6	12 3	3 9	14 1	10.63	Yes	***** No *****	Yes
2486	5/15/98	15	1	113	1311 8	12 8	3 9	14 1	11 06	Yes	***** No *****	Yes
2487	5/15/98	16	1	128	1426 7	16 1	4	13 9	13.57	Yes	***** No *****	Yes
2488	5/15/98	17	0 5	87	1045	15 7	3 4	14 9	15 58	Yes	***** No *****	***** No *****
2489	5/16/98	7	0 75	14	495 5	44.9	2.1	17 2	72 07			
2490	5/16/98	8	1	73	988 4	19 4	3 5	14 8	18 68	Yes	***** No *****	***** No *****
2491	5/16/98	9	1	86	1095 5	11.9	3 8	14 2	10 56	Yes	***** No *****	Yes
2492	5/16/98	10	1	87	1100 9	12 2	3 8	14 2	10 82	Yes	***** No *****	Yes
2493	5/16/98	11	1	87	1103 4	12.4	3 8	14 2	11.00	Yes	***** No *****	Yes
2494	5/16/98	12	1	80	1052.5	11.8	3 8	14 2	10 47	Yes	***** No *****	Yes
2495	5/16/98	13	1	65	939 6	9	3 7	14 4	8 20	Yes	Yes	Yes
2496	5/16/98	14	1	66	948 9	9 2	3 7	14 4	8 38	Yes	Yes	Yes
2497	5/16/98	15	1	83	1072.8	11.3	3.7	14 4	10 29	Yes	***** No *****	Yes
2498	5/16/98	16	1	99	1182 1	12 3	3 8	14 2	10 91	Yes	***** No *****	Yes
2499	5/16/98	17	1	89	1113 6	12	3 8	14 2	10.64	Yes	***** No *****	Yes
2500	5/16/98	18	1	69	974 8	9 5	3 7	14 4	8 65	Yes	Yes	Yes
2501	5/16/98	19	1	69	976 1	9 4	3 7	14 4	8.56	Yes	Yes	Yes
2502	5/16/98	20	1	69	977 8	9 2	3 7	14 4	8 38	Yes	Yes	Yes
2503	5/16/98	21	0 5	61	897.6	10 7	3.7	14 4	9.75	Yes	***** No *****	Yes
2504	5/18/98	7	0.75	55	835 4	20 6	3	15 6	23 15			
2505	5/18/98	8	1	129	1438 3	13 8	4	13 9	11.63	Yes	***** No *****	Yes
2506	5/18/98	9	1	130	1449 5	15 4	4	13 9	12.98	Yes	***** No *****	Yes
2507	5/18/98	10	1	130	1452	15 7	4	13 9	13 23	Yes	***** No *****	Yes
2508	5/18/98	11	1	130	1450 5	15 7	4	13 9	13 23	Yes	***** No *****	Yes
2509	5/18/98	12	1	130	1449 1	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2510	5/18/98	13	1	130	1450 7		4	13 9		Yes	Yes	Yes
2511	5/18/98	14	1	130	1450 8		4	13 9		Yes	Yes	Yes
2512	5/18/98	15	1	130	1449 1		4	13 9		Yes	Yes	Yes
2513	5/18/98	16	1	130	1452		4	13 9		Yes	Yes	Yes
2514	5/18/98	17	1	131	1453		4	13 9		Yes	Yes	Yes
2515	5/18/98	18	1	109	1280		3 9	14 1		Yes	Yes	Yes
2516	5/18/98	19	1	81	1058 1		3.9	14 1		Yes	Yes	Yes
2517	5/18/98	20	1	76	1021.5		3 9	14 1		Yes	Yes	Yes
2518	5/18/98	21	0 5	44	210 5		2 4	16 7				
2519	5/19/98	8	0 25	0	0 1	0 7	0 9	19 3	2 62			
2520	5/19/98	9	0 5	22	463 4	16 7	2 5	16 5	22.52			
2521	5/19/98	10	1	130	1455 5	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2522	5/19/98	11	1	130	1460 8		4	13 9		Yes	Yes	Yes
2523	5/19/98	12	1	130	1460 6		4	13 9		Yes	Yes	Yes
2524	5/19/98	13	1	127	1429 4	15 8	4	13 9	13 31	Yes	***** No *****	Yes
2525	5/19/98	14	1	130	1449 1	15 6	4	13 9	13 15	Yes	***** No *****	Yes
2526	5/19/98	15	1	130	1450 1	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2527	5/19/98	16	1	130	1448 2	15 4	4	13.9	12.98	Yes	***** No *****	Yes
2528	5/19/98	17	1	130	1450 9	15 6	4	13 9	13.15	Yes	***** No *****	Yes
2529	5/19/98	18	1	131	1451.3	15 7	4	13 9	13 23	Yes	***** No *****	Yes
2530	5/19/98	19	1	103	1214 1	12 2	3 9	14.1	10 54	Yes	***** No *****	Yes
2531	5/19/98	20	0 5	74	935 3	12.8	3 3	15.1	13 07	Yes	***** No *****	Yes
2532	5/20/98	12	0 25	127	1443 4	6	1 5	18 3	13 48	Yes	***** No *****	Yes
2533	5/20/98	15	1	129	1440 5	15	4	13 9	12 64	Yes	***** No *****	Yes
2534	5/20/98	16	1	128	1438 9	14 9	4	13 9	12.56	Yes	***** No *****	Yes

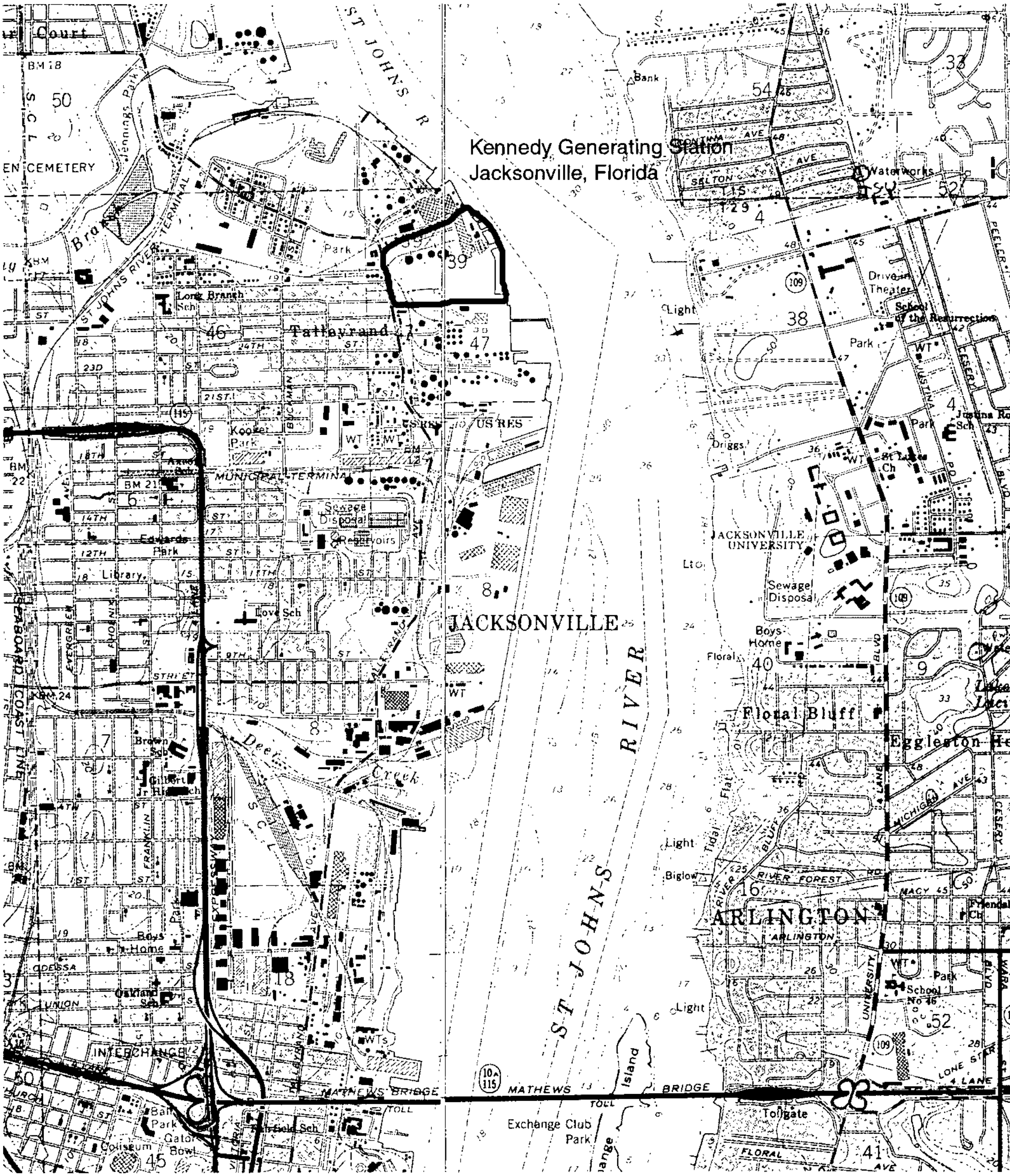
1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2	
											< 9 ppm	< 15 ppm
2535	5/20/98	17	1	129	1442 8	14.7	4	13.9	12.39	Yes	***** No *****	Yes
2536	5/20/98	18	1	88	1122	10 9	3.9	14 1	9 42	Yes	***** No *****	Yes
2537	5/20/98	19	0 75	58	850 6	9 4	3 6	14 6	8 80			
2538	5/21/98	14	1	128	1431.9	15 3	4	13 9	12 89	Yes	***** No *****	Yes
2539	5/21/98	15	1	128	1433 5	15 2	4	13.9	12 81	Yes	***** No *****	Yes
2540	5/21/98	16	1	129	1433 6	15	4	13.9	12 64	Yes	***** No *****	Yes
2541	5/21/98	17	1	102	1226 2	12.3	4	13.9	10 36	Yes	***** No *****	Yes
2542	5/21/98	18	1	65	942 6	8 1	3 9	14 1	7.00	Yes	Yes	Yes
2543	5/21/98	19	0 25	33	566 5	10 3	3 1	15 5	11 20			
2544	5/22/98	9	0 25	131	1458	15 3	4	13 9	12 89	Yes	***** No *****	Yes
2545	5/22/98	10	1	130	1451.2	15	4	13.9	12 64	Yes	***** No *****	Yes
2546	5/22/98	11	1	130	1450 3	15 1	4	13 9	12 72	Yes	***** No *****	Yes
2547	5/22/98	12	1	131	1451 6	14 5	4	13.9	12 22	Yes	***** No *****	Yes
2548	5/22/98	13	1	108	1261 6	12.7	4	13.9	10 70	Yes	***** No *****	Yes
2549	5/22/98	14	1	66	950 6	7.9	3 8	14 2	7 01	Yes	Yes	Yes
2550	5/22/98	15	1	83	1073 9	10 2	3.9	14 1	8 82	Yes	Yes	Yes
2551	5/22/98	16	1	65	945 9	7.9	3 9	14.1	6 83	Yes	Yes	Yes
2552	5/22/98	17	0 75	67	950 7	9 3	3 8	14 2	8 25	Yes	Yes	Yes
2553	5/23/98	14	0.25	43	621 2	14 5	3 7	14 4	13 21			
2554	5/23/98	19	0.25	106	1462.1	14 1	3 2	15 3	14 85	Yes	***** No *****	Yes
2555	5/23/98	20	0 25	49	795 4	15 7	3 8	14.2	13 93			
2556	5/24/98	15	0.25	133	1471.3	15 8	3 7	14 4	14 39	Yes	***** No *****	Yes
2557	5/24/98	16	0 75	97	1179 9	13 1	3 7	14 4	11 93	Yes	***** No *****	Yes
2558	5/26/98	9	1	22	551.9	23 5	2 1	17.2	37.72			
2559	5/26/98	10	1	126	1418 1	14 5	4	13 9	12 22	Yes	***** No *****	Yes
2560	5/26/98	11	1	91	992.5	13 7	3 7	14 4	12 48	Yes	***** No *****	Yes
2561	5/26/98	12	0 75	23	527.3	31.3	2 4	16 7	43 96			
2562	5/26/98	13	1	125	1408	14 6	4	13 9	12 30	Yes	***** No *****	Yes
2563	5/26/98	14	1	95	1166 5	12	3 9	14.1	10 37	Yes	***** No *****	Yes
2564	5/26/98	15	1	76	1024 3	9 8	3 9	14 1	8.47	Yes	Yes	Yes
2565	5/26/98	16	1	78	1031.6	9 9	3 9	14 1	8.56	Yes	Yes	Yes
2566	5/26/98	17	0 5	17	490 3	26 9	2 4	16.7	37 78			
2567	5/28/98	8	0.5	48	747 7	21 6	2 5	16 5	29 12			
2568	5/28/98	9	1	130	1463 3	15 9	4.1	13.7	13.07	Yes	***** No *****	Yes
2569	5/28/98	10	1	130	1462	15 8	4 1	13 7	12 99	Yes	***** No *****	Yes
2570	5/28/98	11	1	130	1458	15 8	4	13 9	13 31	Yes	***** No *****	Yes
2571	5/28/98	12	1	130	1451.1	15 9	4	13 9	13 40	Yes	***** No *****	Yes
2572	5/28/98	13	1	130	1449	16	4 1	13.7	13.15	Yes	***** No *****	Yes
2573	5/28/98	14	1	129	1443 2	15.7	4	13 9	13 23	Yes	***** No *****	Yes
2574	5/28/98	15	1	129	1445 5	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2575	5/28/98	16	1	129	1445 2	15 4	4	13.9	12.98	Yes	***** No *****	Yes
2576	5/28/98	17	1	129	1442.1	15 2	4	13 9	12 81	Yes	***** No *****	Yes
2577	5/28/98	18	1	129	1440 5	15 4	4	13.9	12.98	Yes	***** No *****	Yes
2578	5/28/98	19	1	129	1450 7	15.1	4	13 9	12 72	Yes	***** No *****	Yes
2579	5/28/98	20	1	124	1413 1	15	4	13 9	12 64	Yes	***** No *****	Yes
2580	5/28/98	21	0.5	57	879	9 5	3 8	14 2	8 43			
2581	5/29/98	5	0 25	16	410 5	22	2 1	17.2	35 31			
2582	5/29/98	6	1	65	961.7	10 4	4	13 9	8 76	Yes	Yes	Yes
2583	5/29/98	7	1	67	972	8 6	3 9	14.1	7 43	Yes	Yes	Yes
2584	5/29/98	8	1	128	1437.1	13 5	4	13.9	11 38	Yes	***** No *****	Yes
2585	5/29/98	9	1	129	1441.4	13 9	4	13.9	11.71	Yes	***** No *****	Yes
2586	5/29/98	10	1	130	1456 9	15 4	4 1	13.7	12 66	Yes	***** No *****	Yes
2587	5/29/98	11	1	129	1445 5	15 1	4 1	13.7	12 41	Yes	***** No *****	Yes
2588	5/29/98	12	1	128	1434 6	14.9	4.1	13 7	12 25	Yes	***** No *****	Yes
2589	5/29/98	13	1	128	1435 5	14.9	4 1	13.7	12 25	Yes	***** No *****	Yes
2590	5/29/98	14	1	128	1441.7	15 1	4	13 9	12.72	Yes	***** No *****	Yes
2591	5/29/98	15	1	128	1438 2	15 4	4	13 9	12 98	Yes	***** No *****	Yes
2592	5/29/98	16	1	128	1438	15 1	4	13 9	12 72	Yes	***** No *****	Yes
2593	5/29/98	17	1	128	1437.9	15	4	13 9	12 64	Yes	***** No *****	Yes
2594	5/29/98	18	1	128	1434 5	14 9	4	13.9	12.56	Yes	***** No *****	Yes
2595	5/29/98	19	1	128	1437 8	15	4	13 9	12 64	Yes	***** No *****	Yes
2596	5/29/98	20	1	88	1127 6	11	3 9	14 1	9 51	Yes	***** No *****	Yes
2597	5/29/98	21	0 5	57	880 6	9 2	3 8	14 2	8.16			
2598	6/1/98	6	0 25	2	290 3	13 8	1 8	17.7	25 84			
2599	6/1/98	7	1	65	950 4	15 4	3 7	14 4	14 03	Yes	***** No *****	Yes
2600	6/1/98	8	1	90	1132.1	11.7	3 9	14 1	10 11	Yes	***** No *****	Yes
2601	6/1/98	9	1	130	1452 4	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2602	6/1/98	10	1	129	1452.9	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2603	6/1/98	11	1	130	1452 8	15 6	4	13.9	13 15	Yes	***** No *****	Yes
2604	6/1/98	12	1	129	1450 3	15 7	4	13.9	13 23	Yes	***** No *****	Yes
2605	6/1/98	13	1	129	1449 7	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2606	6/1/98	14	1	129	1444.9	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2607	6/1/98	15	1	129	1442 6	15 6	4	13.9	13 15	Yes	***** No *****	Yes
2608	6/1/98	16	1	129	1442 6	15 6	4	13 9	13 15	Yes	***** No *****	Yes
2609	6/1/98	17	1	106	1245 6	12 8	3 9	14 1	11 06	Yes	***** No *****	Yes
2610	6/1/98	18	1	83	1071.6	11 7	3 8	14 2	10 38	Yes	***** No *****	Yes
2611	6/1/98	19	1	83	1074 9	10 6	3 8	14 2	9 40	Yes	***** No *****	Yes
2612	6/1/98	20	1	98	1190	12	3 9	14.1	10 37	Yes	***** No *****	Yes
2613	6/1/98	21	1	65	939	10 7	3 8	14 2	9 49	Yes	***** No *****	Yes
2614	6/2/98	6	0 5	44	724	16	3 2	15 3	16 85			
2615	6/2/98	7	1	64	944 5	9 1	3.8	14 2	8 07	Yes	Yes	Yes
2616	6/2/98	8	1	64	941.9	9 1	3 8	14.2	8 07	Yes	Yes	Yes
2617	6/2/98	9	1	70	988 4	9 4	3 8	14 2	8 34	Yes	Yes	Yes
2618	6/2/98	10	1	113	1311.8	13	3 9	14 1	11 24	Yes	***** No *****	Yes
2619	6/2/98	11	1	111	1291 2	12 6	3 9	14.1	10 89	Yes	***** No *****	Yes
2620	6/2/98	12	1	127	1425 7	14 7	4	13 9	12.39	Yes	***** No *****	Yes
2621	6/2/98	13	1	129	1443 3	15 4	4	13 9	12.98	Yes	***** No *****	Yes
2622	6/2/98	14	1	128	1440 9	15 5	4	13 9	13 06	Yes	***** No *****	Yes
2623	6/2/98	15	1	128	1439 4	15 6	4	13 9	13 15	Yes	***** No *****	Yes
2624	6/2/98	16	1	127	1428 9	15 2	4	13 9	12 81	Yes	***** No *****	Yes
2625	6/2/98	17	1	109	1268 6	12 3	3.9	14.1	10 63	Yes	***** No *****	Yes
2626	6/2/98	18	1	101	1204	12.1	3 9	14 1	10 46	Yes	***** No *****	Yes
2627	6/2/98	19	1	108	1265 8	12 5	3 9	14.1	10 80	Yes	***** No *****	Yes
2628	6/2/98	20	1	96	1185	11 7	3 9	14.1	10 11	Yes	***** No *****	Yes

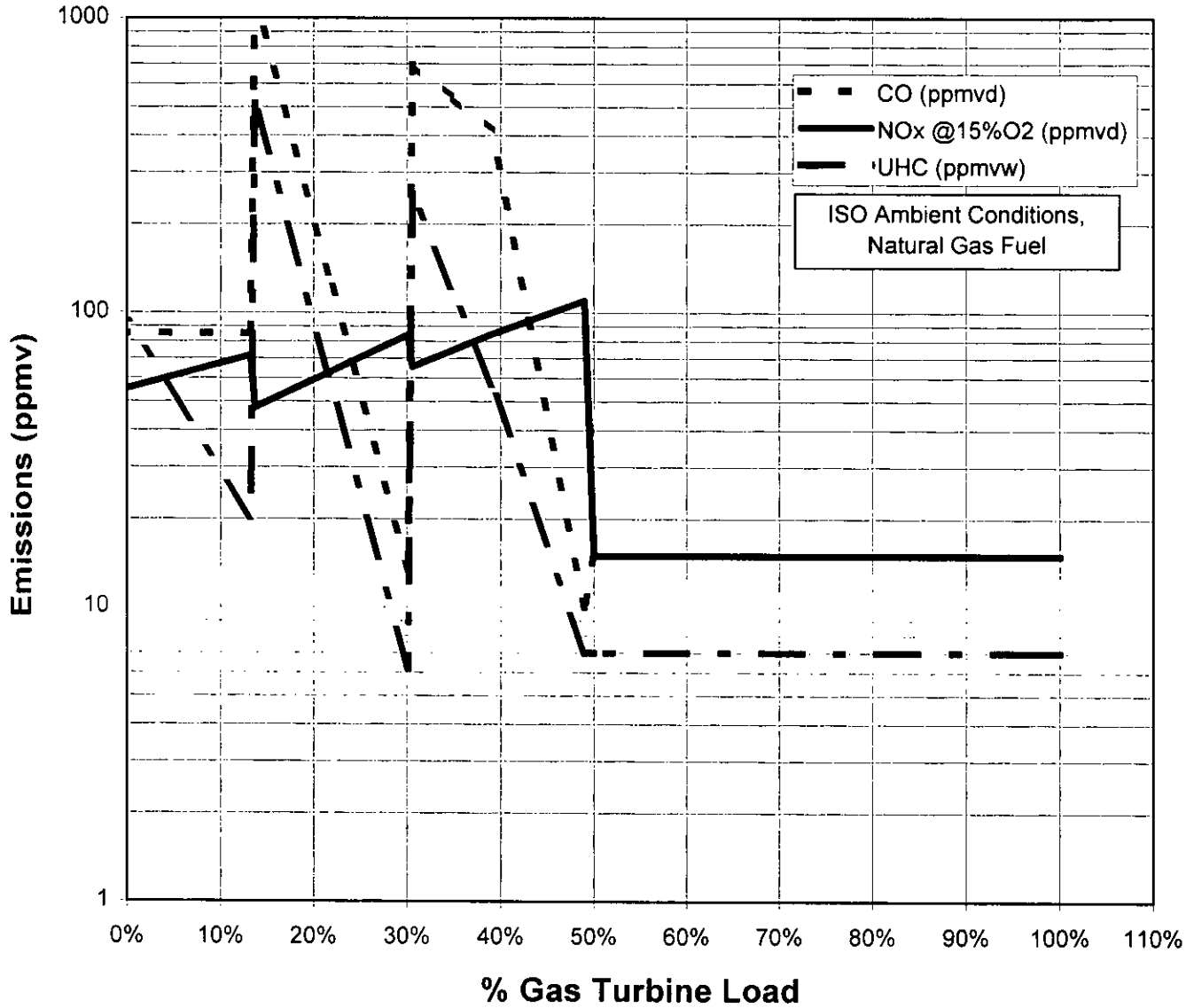
1997-1998 CEMS DATA FROM P.S.Co. of COLORADO -- FT. ST. VRAIN STATION
7FA with DLN 2.6 COMBUSTORS (BASE LOAD ~130-140 MW)

Data No.	Date	Hour	OPT	Load MW	Heat Input MBtu/hr	NOx ppm	CO2 percent	Calculated O2 percent	Calculated NOx ppm @ 15% O2	Load > 60 MW	NOx ppm @ 15% O2 < 9 ppm	NOx ppm @ 15% O2 < 15 ppm
2629	6/2/98	21	1	63	933.3	8.1	3.8	14.2	7.18	Yes	Yes	Yes
2630	6/2/98	22	0.5	56	866.7	9.7	3.8	14.2	8.60			
2631	6/3/98	3	0.75	48	781.6	15.7	3.4	14.9	15.56			
2632	6/3/98	4	1	62	934.7	8.4	3.8	14.2	7.45	Yes	Yes	Yes
2633	6/3/98	5	1	64	947.6	8.3	3.8	14.2	7.36	Yes	Yes	Yes
2634	6/3/98	6	1	65	954.9	8.3	3.8	14.2	7.36	Yes	Yes	Yes
2635	6/3/98	7	1	65	952.2	8.3	3.8	14.2	7.36	Yes	Yes	Yes
2636	6/3/98	8	1	65	954.7	8.4	3.8	14.2	7.45	Yes	Yes	Yes
2637	6/3/98	9	1	80	1067.7	9.3	3.9	14.1	8.04	Yes	Yes	Yes
2638	6/3/98	10	1	129	1434.4	13.4	3.9	14.1	11.58	Yes	***** No *****	Yes
2639	6/3/98	11	1	123	1383.2	13.1	3.9	14.1	11.32	Yes	***** No *****	Yes
2640	6/3/98	12	1	126	1410.6	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2641	6/3/98	13	1	126	1413	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2642	6/3/98	14	1	127	1413.5	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2643	6/3/98	15	1	127	1412	13.3	3.9	14.1	11.49	Yes	***** No *****	Yes
2644	6/3/98	16	1	127	1413.6	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2645	6/3/98	17	1	127	1413.3	13.1	3.9	14.1	11.32	Yes	***** No *****	Yes
2646	6/3/98	18	1	127	1412.9	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2647	6/3/98	19	0.75	105	1236.3	14.1	3.9	14.1	12.19	Yes	***** No *****	Yes
2648	6/5/98	6	0.75	34	666.3	19.8	2.9	15.8	23.01			
2649	6/5/98	7	1	63	945.2	8.4	3.9	14.1	7.26	Yes	Yes	Yes
2650	6/5/98	8	1	114	1328.4	13	4	13.9	10.95	Yes	***** No *****	Yes
2651	6/5/98	9	1	118	1347.6	13.3	4	13.9	11.21	Yes	***** No *****	Yes
2652	6/5/98	10	1	57	880.7	12.2	3.6	14.6	11.42			
2653	6/5/98	11	1	10	474.2	20.8	2.4	16.7	29.21			
2654	6/5/98	12	0.5	13	489.5	22	2.3	16.9	32.24			
2655	6/7/98	14	1	64	878.7	9.5	3.7	14.4	8.65	Yes	Yes	Yes
2656	6/7/98	15	0.25	8	233.6	12.2	1.6	18.1	25.70			
2657	6/10/98	15	0.75	84	998.8	9.9	3.9	14.1	8.56	Yes	Yes	Yes
2658	6/10/98	16	1	67	956.8	8.8	3.8	14.2	7.81	Yes	Yes	Yes
2659	6/10/98	17	1	67	956.4	9	3.8	14.2	7.98	Yes	Yes	Yes
2660	6/10/98	18	0.25	14	324	12.2	2	17.4	20.56			
2661	6/11/98	14	0.25	11	800.2	19.3	2.4	16.7	27.11			
2662	6/11/98	15	0.25	2	135.8		3.2	15.3	0.00			
2663	6/19/98	14	1	118	1349.4	17.7	3.9	14.1	15.30	Yes	***** No *****	***** No *****
2664	6/19/98	15	1	117	1343.3	17.1	3.9	14.1	14.78	Yes	***** No *****	Yes
2665	6/19/98	16	1	106	1248.5	14.9	3.9	14.1	12.88	Yes	***** No *****	Yes
2666	6/19/98	17	1	95	1150.1	12	3.9	14.1	10.37	Yes	***** No *****	Yes
2667	6/19/98	18	1	96	1158.7	11.8	3.9	14.1	10.20	Yes	***** No *****	Yes
2668	6/19/98	19	1	97	1169.2	12.4	3.9	14.1	10.72	Yes	***** No *****	Yes
2669	6/19/98	20	1	95	1153.5	12.6	3.9	14.1	10.89	Yes	***** No *****	Yes
2670	6/19/98	21	1	95	1149	13	3.9	14.1	11.24	Yes	***** No *****	Yes
2671	6/19/98	22	0.25	40	612.5	18.9	2.7	16.2	23.59			
2672	6/22/98	12	0.5	127	1430.5	14.9	4.1	13.7	12.25	Yes	***** No *****	Yes
2673	6/22/98	13	1	128	1434.9	15.3	4.1	13.7	12.58	Yes	***** No *****	Yes
2674	6/22/98	14	1	128	1433.3	15.3	4.1	13.7	12.58	Yes	***** No *****	Yes
2675	6/22/98	15	1	129	1441	15.3	4.1	13.7	12.58	Yes	***** No *****	Yes
2676	6/22/98	16	1	128	1438.5	15.1	4.1	13.7	12.41	Yes	***** No *****	Yes
2677	6/22/98	17	1	94	1162.4	11.8	3.9	14.1	10.20	Yes	***** No *****	Yes
2678	6/22/98	18	1	51	839.4	6.9	3.8	14.2	6.12			
2679	6/22/98	19	1	54	860.2	7	3.8	14.2	6.21			
2680	6/22/98	20	1	65	950.8	8.3	3.9	14.1	7.17	Yes	Yes	Yes
2681	6/22/98	21	0.5	37	619.7	8.9	3.1	15.5	9.68			
2682	6/24/98	14	0.75	71	936.7		3.5	14.8	0.00	Yes	Yes	Yes
2683	6/24/98	15	1	127	1429	15.2	4	13.9	12.81	Yes	***** No *****	Yes
2684	6/24/98	16	1	108	1269.6	13.2	3.9	14.1	11.41	Yes	***** No *****	Yes
2685	6/24/98	17	1	99	1191.7	11.6	3.8	14.2	10.29	Yes	***** No *****	Yes
2686	6/24/98	18	1	66	951.3	9.3	3.7	14.4	8.47	Yes	Yes	Yes
2687	6/24/98	19	1	50	835	7.5	3.7	14.4	6.83			
2688	6/24/98	20	1	50	836.4	7.5	3.7	14.4	6.83			
2689	6/24/98	21	0.5	36	649	10.2	3.2	15.3	10.74			
2690	6/28/98	14	1	91	1131	19.5	3.3	15.1	19.92	Yes	***** No *****	***** No *****
2691	6/28/98	15	1	126	1428.4	14.8	4.1	13.7	12.17	Yes	***** No *****	Yes
2692	6/28/98	16	1	126	1425.7	14.6	4	13.9	12.30	Yes	***** No *****	Yes
2693	6/28/98	17	1	126	1426.6	14.3	4	13.9	12.05	Yes	***** No *****	Yes
2694	6/28/98	18	1	126	1431.8	14.4	4.1	13.7	11.84	Yes	***** No *****	Yes
2695	6/28/98	19	1	127	1435.5	14.6	4	13.9	12.30	Yes	***** No *****	Yes
2696	6/28/98	20	1	128	1438.6	15	4.1	13.7	12.33	Yes	***** No *****	Yes
2697	6/28/98	21	0.75	98	1166.2	14.5	3.7	14.4	13.21	Yes	***** No *****	Yes

Number of data points above 60 MW and above 9 and 15 ppm, respectively = **519** **66**


Kennedy Generating Station
Jacksonville, Florida
ST JOHNS R
ST JOHNS RIVER
JACKSONVILLE
ARLINGTON
Floral Bluff
Eggleston He
JACKSONVILLE UNIVERSITY
Talleyrand
MATHEWS BRIDGE
Exchange Club Park
Tollgate
Long Branch Sch
Kooker Park
Edwards Park
Library
Love Sch
Sewage Disposal
Reservoirs
MUNICIPAL TERMINAL
US RES
CEMETERY
Brown Sch
Gilbert Jr High Sch
Boys Home
Oakland Sch
INTERCHANGE
Ball Park
Gator Bowl
Coliseum
Fairfield Sch
Deer Creek
EXPRESSWAY
SEABOARD COAST LINE
ST JOHNS RIVER TERMINAL
Drive-in Theater
School of the Resurrection
Waterworks
St Lukes Ch
Justina Road Sch
Driggs
Biglow
Light
Floral
Tidal Flat
RIVER FOREST
MACY
Friendship Ch
School No 46
LONE STAR
FLORAL
Island
Bank
Court

PG7241FA with DLN2.6 Combustors
Estimated Emissions



prepared by GEPS, 12/7/98

GE Industrial & Power Systems
Gas Turbine

Unit Operation/Turbine (Gas)

(Applicability MS7001FA, 9001FA)

I. REFERENCE DATA AND PRECAUTIONS

A. Operator Responsibility

It is essential that the turbine operators be familiar with the information contained in the following operation text, the Control Specification drawings (consult the Control System Settings drawing for the index of Control Specification drawings), the Piping Schematic drawings including the Device Summary (consult the Control System Settings Drawing for the index by model list and drawing number of applicable schematics), the SPEEDTRONIC® control sequence program and the SPEEDTRONIC® Mark V Users' Manual (GEH–5979). The operator must also be aware of the power plant devices which are tied into the gas turbine mechanically and electrically and could affect normal operation. No starts should be attempted whether on a new turbine or a newly overhauled turbine until the following conditions have been met:

1. Requirements listed under CHECKS PRIOR TO OPERATION have been met.
2. Control systems have been functionally checked for proper operation before restarting.
3. All GENERAL OPERATING PRECAUTIONS have been noted.

It is extremely important that gas turbine operators establish proper operating practices. We emphasize adherence to the following:

1. Respond to Annunciator Indicators — Investigate and correct the cause of the abnormal condition. This is particularly true for the protection systems, such as low oil pressure, overtemperature, vibration, overspeed etc.
2. Check of Control Systems — After any type of control maintenance is completed, whether repair or replacement of parts, functionally check control systems for proper operation. This should be done prior to restart of the turbine. It should not be assumed that reassembly, "as taken apart" is adequate without the functional test.
3. Monitor Exhaust Temperature During All Phases of Startup — The operator is alerted to the following:

CAUTION

Overtemperature can damage the turbine hot gas path parts.

Monitor exhaust temperature for proper control upon first startup and after any turbine maintenance is performed. Trip the turbine if the exhaust temperature exceeds the normal trip level, or increases at an unusual rate. A particularly critical period for overtemperature damage to occur is during the startup phase before the turbine reaches governing speed. At this time air flow is low and the turbine is unable to accelerate away from excess fuel.

B. General Operating Precautions

1. Temperature Limits

Refer to the Control Specifications for actual exhaust temperature control settings. It is important to define a "baseline value" of exhaust temperature spread with which to compare future data. This baseline data is established during steady state operation after each of the following conditions:

a. Initial startup of unit

b. Before and after a planned shut-down

c. Before and after planned maintenance

An important point regarding the evaluation of exhaust temperature spreads is not necessarily the magnitude of the spread, but the change in spread over a period of time. The accurate recording and plotting of exhaust temperatures daily can indicate a developing problem. Consult Control Specification-Settings Drawings for maximum allowable temperature spreads and wheelspace temperature operating limits.

The wheelspace thermocouples, identified together with their nomenclature, are on the Device Summary. A bad thermocouple will cause a "High Wheelspace Differential Temperature" alarm. The faulty thermocouple should be replaced at the earliest convenience.

When the average temperature in any wheelspace is higher then the temperature limit set forth in the table, it is an indication of trouble. High wheelspace temperature may be caused by any of the following faults:

1. Restriction in cooling air lines
2. Wear of turbine seals
3. Excessive distortion of the turbine stator
4. Improper positioning of thermocouple
5. Malfunctioning combustion system
6. Leakage in external piping
7. Excessive distortion of exhaust inner diffuser

Check wheelspace temperatures very closely on initial startup. If consistently high, and a check of the external cooling air circuits reveals nothing, it is permissible to increase the size of the cooling air orifices slightly. Consult with a General Electric Company field representative to obtain recommendations as to the size that an orifice should be increased. After a turbine overhaul, all

orifices should be changed back to their original size, assuming that all turbine clearances are returned to normal and all leakage paths are corrected.

CAUTION

> Wheelspace temperatures are read on the <I> CRT. Temperatures in excess of the maximum are potentially harmful to turbine hot-gas-path parts over a prolonged period of time. Excessive temperatures are annunciated but will not cause the turbine to trip. High wheelspace temperature readings must be reported to the General Electric technical representative as soon as possible.

2. Pressure Limits

Refer to the Device Summary for actual pressure switch settings. Lube oil pressure in the bearing feed header is a nominal value of 25 psig. The turbine will trip at 8 psig. Pressure variations between these values will result from entrapped particulate matter within the lube oil filtering system.

3. Vibration Limits

The maximum overall vibration velocity of the gas turbine should never exceed 1.0 inch (2.54 cm) per second in either the vertical or horizontal direction. Corrective action should be initiated when the vibration levels exceed 0.5 inch (1.27 cm) per second as indicated on the SPEEDTRONIC® <I> CRT.

If doubt exists regarding the accuracy of the reading or if more accurate and specific vibration readings are desired a vibration check is recommended using vibration test equipment.

4. Load Limit

The maximum load capability of the gas turbine is given in the control specification. For the upper limits of generator capability, refer to the Reactive Capability Curve following the GENERATOR AND ACCESSORIES tab.

5. Overloading of Gas Turbine, Facts Involved and Policy

It is General Electric practice to design gas turbines with margins of safety to meet the contract commitments and to secure long life and trouble-free operation.

So that maximum trouble-free operation can be secured, General Electric designs these machines with more than ample margins on turbine bucket thermal and dynamic stresses, compressor and turbine wheel stresses, generator ventilation, coolers, etc. As a result, these machines are designed somewhat better than is strictly necessary, because of the importance of reliability of these turbines to our customers and to the electrical industry.

It cannot be said, therefore, that these machines cannot be safely operated beyond the load limits. Such operation, however, always encroaches upon the design margins of the machines with a consequent

reduction in reliability and increased maintenance. Accordingly, any malfunction that occurs as a result of operation beyond contract limits cannot be the responsibility of the General Electric Company.

The fact that a generator operates at temperature rises below the 185F (85C) for the rotor and 140F (60C) for the stator permitted by the AIEE Standards does not mean that it can be properly run with full safety up to these values by overloading beyond the nameplate rating. These standards were primarily set up for the protection of insulation from thermal deterioration on small machines. The imbedded temperature detectors of the stator register a lower temperature than the copper because of the temperature drop through the insulation from the copper to the outside of the insulation, where the temperature detectors are located. There are also conditions of conductor expansion, insulation stress, etc., which impose limitations. These factors have been anticipated in the "Vee" curves and reactive capability curves which indicate recommended values consistent with good operating practice. The "Vee" curves and reactive capability curves form part of the operating instructions for the generator and it is considered unwise to exceed the values given.

The gas turbines are mechanically designed so that (within prescribed limits), advantage can be taken of the increased capability over nameplate rating, which is available at lower ambient temperatures (because of increased air density), without exceeding the maximum allowable turbine inlet temperature.

The load limit of the gas turbine–generator must not be exceeded, even when the ambient temperature is lower than that at which the load limit of the gas turbine is reached. Under these conditions, the gas turbine will operate at this load with a lower turbine inlet temperature and the design stresses on the load coupling and turbine shaft will not be exceeded.

If the turbine is overloaded so that the turbine exhaust temperature schedule is not followed for reasons of malfunctioning or improper setting of the exhaust temperature control system, the maximum allowable turbine inlet temperature or the maximum allowable exhaust temperature, or both, will be exceeded and will result in a corresponding increase in maintenance and, in extreme cases, might result in failure of the turbine parts.

The exhaust temperature control system senses the turbine exhaust temperature and introduces proper bias to limit the fuel flow so that neither the maximum allowable turbine inlet temperature nor the maximum allowable turbine exhaust temperature is exceeded.

6. Fire Protection System Operating Precautions

The fire protection system, when actuated, will cause several functions to occur in addition to actuating the media discharge system. The turbine will trip, an audible alarm will sound, and the alarm message will be displayed on the <I> CRT. The ventilation openings in the compartments will be closed by a pressure-operated latch and the damper in the turbine shell cooling discharge will be actuated.

The annunciator audible alarm may be silenced by clicking on the alarm SILENCE target. The alarm message can be cleared from the ALARM list on the <I> CRT after the ACKNOWLEDGE target and the ALARM RESET target are actuated, but only after the situation causing the alarm has been corrected.

The fire protection system *must be replenished and reset* before it can automatically react to another fire. Reset must be made after each activation of the fire protection system which includes an initial discharge followed by an extended discharge period of the fire protection media.

Fire protection system reset is accomplished by resetting the pressure switch located on the fire protection system.

Ventilation dampers, automatically closed by a signal received from the fire protection system, must be reopened manually in all compartments before restarting the turbine.

CAUTION

Failure to reopen compartment ventilation dampers will severely shorten the service life of major accessory equipment. Failure to reopen the load coupling compartment dampers will materially reduce the performance of the generator.

7. Combustion System Operating Precautions

WARNING

Sudden emission of black smoke may indicate a possibility of outer casing failure or other serious combustion problems. In such an event:

a. Immediately shut down the turbine.

b. Allow no personnel inside the turbine compartment until turbine is shut down.

c. Caution all personnel against standing in front of access door openings into pressurized compartments.

d. Perform a complete combustion system inspection.

To reduce the possibility of combustion outer casing failure, the operator should adhere to the following:

a. During operation, exhaust temperatures are monitored by the SPEEDTRONIC® control system. The temperature spread is compared to allowable spreads with alarms and/or protective trips resulting if the allowable spread limits are exceeded.

b. After a trip from 75% load or above, observe the exhaust on startup for black or abnormal smoke and scan the exhaust thermocouples for unusually high spreads. Record temperature spread during a normal startup to obtain base line signature for comparison. Excessive tripping should be investigated and eliminated.

c. Adhere to recommended inspection intervals on combustion liners, transition pieces and fuel nozzles.

Operating a turbine with non-operational exhaust thermocouples increases the risk of turbine overfiring and prevents diagnosis of combustion problems by use of temperature differential readings.

To prevent the above described malfunctions the operator should keep the number of non-operational exhaust thermocouples to a maximum of two but no more than *one* of any three adjacent thermocouples.

CAUTION

> Operation of the gas turbine with a single faulty thermocouple should not be neglected, as even one faulty thermocouple will increase the risk of an invalid "combustion alarm" and/or "Trip". The unit should not be shut down just for replacement of a single faulty thermocouple. However, every effort should be made to replace the faulty thermocouples when the machine is down for any reason.

Adherence to the above criteria and early preventive maintenance should reduce distortions of the control and protection functions and the number of unnecessary turbine trips.

8. Cooldown/Shutdown Precautions

CAUTION

> In the event of an emergency shutdown in which internal damage of any rotating equipment is suspected, do not turn the rotor after shutdown. Maintain lube oil pump operation, since lack of circulating lube oil following a hot shutdown will result in rising bearing temperatures which can result in damaged bearing surfaces. If the malfunction that caused the shutdown can be quickly repaired, or if a check reveals no internal damage affecting the rotating parts, reinstate the cooldown cycle.

If there is an emergency shutdown and the turbine is not turned with the rotor turning device, the following factors should be noted:

a. Within 20 minutes, maximum, following turbine shutdown, the gas turbine may be started without cooldown rotation. Use the normal starting procedure.

b. Between 20 minutes and 48 hours after shutdown a restart should not be attempted unless the gas turbine rotor has been turned from one to two hours.

c. If the unit has been shut down and not turned at all, it must be shut down for approximately 48 hours before it can be restarted without danger of shaft bow.

CAUTION

Where the gas turbine has not been on rotor turning operation after shutdown and a restart is attempted, as under conditions (1) and (2) above, the operator should maintain a constant check on vibration velocity as the unit is brought up to its rated speed. If the vibration velocity exceeds one inch per second at any speed, the unit should be shut down and the shaft rotated for at least one hour before a second starting attempt is made. If seizure occurs during the turning operation of the gas turbine, the turbine should be shut down and remain idle for at least 30 hours, or until the rotor is free. The turbine may be rotated at any time during the 30-hour period if it is free; however, audible checks should be made for rubs.

Note: The vibration velocity must be measured at points near the gas turbine bearing caps.

II. PREPARATIONS FOR NORMAL LOAD OPERATION

A. Standby Power Requirements

Standby AC power insures the immediate startup capability of particular turbine equipment and related control systems when the start signal is given. Functions identified by asterisk are also necessary for unit environmental protection and should not be turned off except for maintenance work on that particular function. Standby AC power is required for:

1. Lube oil heaters, which when used in conjunction with the lube oil pumps, heat and circulate turbine lube oil at low ambient temperatures to maintain proper oil viscosity.
2. *Control panel heating.
3. *Generator heating.
4. Lube oil pumps. Auxiliary pump should be run at periodic intervals to prevent rust formation in the lube oil system.
5. Fuel oil heaters, where used. These heaters used in conjunction with the fuel oil pumps, heat and circulate fuel oil at low ambient temperatures to maintain proper fuel oil viscosity.
6. Compartment heating.
7. *Operation of control compartment air conditioner during periods of high ambient temperature to maintain electrical equipment insulation within design temperature limits.
8. *Battery charging (where applicable).

B. Checks Prior to Operation

The following checks are to be made before attempting to operate a new turbine or an overhauled turbine. It is assumed that the turbine has been assembled correctly, is in alignment and that calibration of the

SPEEDTRONIC® system has been performed per the Control Specifications. A standby inspection of the turbine should be performed with the lube oil pump operating and emphasis on the following areas:

1. Check that all piping and turbine connections are securely fastened and that all blinds have been removed. Most tube fittings incorporate a stop collar which insures proper torquing of the fittings at initial fitting make up and at reassembly. These collars fit between the body of the fitting and the nut and contact in tightening of the fitting. The stop collar is similar to a washer and can be rotated freely on unassembled fittings. During initial assembly of a fitting with a stop collar, tighten the nut until it bottoms on the collar. The fitting has to be sufficiently tightened until the collar cannot be rotated by hand. This is the inspection for a proper fitting assembly. For each remake of the fitting, the nut should again be tightened until the collar cannot be rotated.
2. Inlet and exhaust plenums and associated ducting are clean and rid of all foreign objects. All access doors are secure.
3. Where fuel, air or lube oil filters have been replaced check that all covers are intact and tight.
4. Verify that the lube oil tank is within the operating level and if the tank has been drained that it has been refilled with the recommended quality and quantity of lube oil. If lube oil flushing has been conducted verify that all filters have been replaced and any blinds if used, removed.
5. Check operation of auxiliary and emergency equipment, such as lube oil pumps, water pumps, fuel forwarding pumps, etc. Check for obvious leakage, abnormal vibration (maximum 3 mils), noise or overheating.
6. Check lube oil piping for obvious leakage. Also using provided oil flow sights, check visually that oil is flowing from the bearing drains. The turbine should not be started unless flow is visible at each flow sight.
7. Check condition of all thermocouples and/or resistance temperature detectors (RTDs) on the <I> CRT. Reading should be approximately ambient temperature.
8. Check spark plugs for proper arcing.

WARNING

Do not test spark plugs where explosive atmosphere is present.

If the arc occurs anywhere other than directly across the gap at the tips of the electrodes, or if by blowing on the arc it can be moved from this point, the plug should be cleaned and the tip clearance adjusted. If necessary, the plug should be replaced. Verify the retracting piston for free operation.

9. Devices requiring manual lubrication are to be properly serviced.
10. Determine that the cooling water system has been properly flushed and filled with the recommended coolant. Any fine powdery rust, which might form in the piping during short time exposure to atmosphere, can be tolerated. If there is evidence of a scaly rust, the cooling system should be power flushed until all scale is removed. If it is necessary to use a chemical cleaner, most automobile cooling system cleaners are acceptable and will not damage the carbon and rubber parts of the pump mechanical seals or rubber parts in the piping.

Refer to "Cooling Water Recommendations for Combustion Gas Turbine Closed Cooling Systems" included under tab titled Fluid Specifications. Note the following regarding antifreeze.

CAUTION

> Do not change from one type antifreeze to another without first flushing the cooling system very thoroughly. Inhibitors used may not be compatible and can cause formation of gums, in addition to destroying effectiveness as an inhibitor. Consult the antifreeze vendor for specific recommendations.

Following the water system refill ensure that water system piping, primarily pumps and flexible couplings, do not leak. It is wise not to add any corrosion inhibitors until after the water system is found to be leak free.

11. The Load Commutator Inverter (LCI) should be calibrated and tested as per GEH–6192.
12. The use of radio transmitting equipment in the vicinity of open control panels is not recommended. Prohibiting such use will assure that no extraneous signals are introduced into the control system that might influence the normal operation of the equipment.
13. Check the Cooling and Sealing Air Piping against the assembly drawing and piping schematic, to ensure that all orifice plates are of designated size and in designated positions.
14. At this time all annunciated ground faults should be cleared. It is recommended that units not be operated when a ground fault is indicated. Immediate action should be taken to locate all grounds and correct the problems.

C. Checks During Start Up and Initial Operation

The following is a list of important checks to be made on a new or newly overhauled turbine with the OPERATION SELECTOR switch in various modes. The Control Specifications — Control Systems Adjustments should be reviewed prior to operating the turbine.

CAUTION

> Where an electric motor is used as the starting means refer to the Control Specifications for maximum operating time.

When a unit has been overhauled those parts or components that have been removed and taken apart for inspection/repair should be critically monitored during unit startup and operation. This inspection should include: leakage check, vibration, unusual noise, overheating, lubrication.

1. Crank

a. Listen for rubbing noises in the turbine compartment especially in the load tunnel area. A soundscope or some other listening type device is suggested. Shutdown and investigate if unusual noise occurs.

b. Check for unusual vibration.

c. Inspect for water system leakage.

2. Fire

* * * WARNING * * *

Due to the complexity of gas turbine fuel systems, it is imperative for everyone to exercise extreme caution in and near any turbine compartment, fuel handling system, or any other enclosures or areas containing fuel piping or fuel system components.

Do not enter the turbine compartment unless absolutely necessary. When it is necessary, exercise caution when opening and entering the compartment. Be aware of the possibility of fuel leaks, and be prepared to shut down the turbine and take action if a leak is discovered.

At any time, if/when entering the turbine compartment or when in the vicinity of the fuel handling system or other locations with fuel piping, fuel system components, or fuel system connections, while the turbine is operating, implement the following:

Conduct an environmental evaluation of the turbine compartment, fuel handling system, or specific area. Pay particular attention to all locations where fuel piping/components/connections exist.

Follow applicable procedures for leak testing. If fuel leaks are discovered, exit the area quickly, shut the turbine down, and take appropriate actions to eliminate the leak(s).

Require personnel entering the turbine comparrtment to be fitted with the appropriate personal protective equipment, i.e., hard hat, safety glasses, hearing protection, harness/manline (optional depending on space constraints), heat resistant/flame retardant coveralls and gloves.

Establish an attendant to maintain visual contact with personnel inside the turbine compartment and radio communications with the control room operator.

During the first start-up after a disassembly, visually check all connections for fuel leaks. Preferably check the fittings during the warm-up period when pressures are low. Visually inspect the fittings again at full speed, no load, and at full load. Do not attempt to correct leakage problems by tightening fittings and/or bolting while lines are fully pressurized. Note area in question and, depending on severity of leak, repair at next shutdown, or if required shut unit down immediately. Attempts to correct leakage problem on pressurized lines could lead to sudden and complete failure of component and resulting damage to equipment and personnel injury.

a. Bleed fuel oil filters, if appropriate. Then check entire fuel system and the area immediately around the fuel nozzle for leaks. In particular check for leaks at the following points:

Turbine Compartment

(1) Fuel piping/tubing to fuel nozzle

(2) Fuel check valves

(3) Atomizing air manifold and associated piping (when used)

(4) Gas manifold and associated piping (when used)

Accessory Module

(1) Flow divider (when used)

(2) Fuel and water pumps

(3) Filter covers and drains

CAUTION

Elimination of fuel leakage in the turbine compartment is of extreme importance as a fire preventive measure.

b. Monitor FLAME status on the <I> processor to verify all flame detectors are correctly indicating flame.

c. Monitor the turbine control system readings on the <I> processor for unusual exhaust thermocouple temperature, wheelspace temperature, lube oil drain temperature, highest to lowest exhaust temperature spreads and "hot spots" i.e. combustion chamber(s) burning hotter than all the others.

d. Listen for unusual noises and rubbing.

e. Monitor for excessive vibration.

3. Automatic, Remote

On initial startup, permit the gas turbine to operate for a 30 to 60 minute period in a full speed, no load condition. This time period allows for uniform and stabilized heating of the parts and fluids. Tests and checks listed below are to supplement those recorded in Control Specification — Control System Adjustments. Record all data for future comparison and investigation.

a. Continue monitoring for unusual rubbing noises and shutdown immediately if noise persists.

b. Monitor lube oil tank, header and bearing drain temperatures continually during the heating period. Refer to the Schematic Piping Diagram — Summary Sheets for temperature guidelines. Adjust VTRs if required.

c. At this time a thorough vibration check is recommended, using vibration test equipment such as IRD equipment (IRD Mechanalysis, Inc.) or equivalent with filtered or unfiltered readings. It is suggested that horizontal, vertical and axial data be recorded for the:

(1) all accessible bearing covers on the turbine

(2) turbine forward compressor casing

(3) turbine support legs

(4) bearing covers on the load equipment

d. Check wheelspace, exhaust and control thermocouples for proper indication on the <I> CRT. Record these values for future reference.

e. Flame detector operation should be tested per the Control Specification — Control System Adjustments.

f. Utilize all planned shutdowns in testing the Electronic and Mechanical Overspeed Trip System per the Control Specifications — Control System Adjustments. Refer to Special Operations section of this text.

g. Monitor <I> CRT display data for proper operation.

III. OPERATING PROCEDURES

A. General

The following instructions pertain to the operation of a model series 7001FA or 9001FA gas turbine unit designed for generator drive application. These instructions are based on use of Mark V SPEEDTRONIC® turbine control panels.

Functional description of the <I> CRT Main Display follows; however, panel installation, calibration, and maintenance are not included.

Operational information includes startup and shutdown sequencing in the AUTO mode of operation. The most common causes of alarm messages can be found in the concluding section.

It is not intended to cover initial turbine operation herein; rather, it will be assumed that initial startup, calibration and checkouts have been completed. The turbine is in the cooldown or standby mode ready for normal operation with AC and DC power available for all pumps, motors, heaters, and controls and all annunciator drops are cleared.

Refer to the Control Specifications (Control and Protection Systems) in this volume, and the previously furnished Control Sequence Program (CSP) for additional operating sequence information and related diagrams.

B. Start-Up

1. General

Operation of a single turbine/generator unit may be accomplished either locally or remotely.

The following description lists operator, control system and machine actions or events in starting the gas turbine.

Reference the section "Description of Panels and Terms — Turbine Control Panel" for description of turbine panel devices. The following assumes that the unit is off of cooldown, and in a ready to start condition.

2. Starting Procedure

a. Using the cursor positioning device, select "MAIN" display from the DEMAND DISPLAY menu.

(1) The display will indicate speed, temperature, various conditions etc. Three lines displayed on the <I> CRT will read:

SHUTDOWN STATUS
OFF COOLDOWN
OFF

b. Select "AUTO" and "EXECUTE"

(1) The <I> CRT display will change to:

STARTUP STATUS
READY TO START
AUTO

c. Select "START" and "EXECUTE"

(1) Unit auxiliaries will be started including a motor driven lube oil pump used to establish lube oil pressure. The <I> CRT message SEQ IN PROGRESS will appear.

(2) When permissives are satisfied, the master protective logic (L4) will be satisfied. The CRT display will change to:

STARTUP STATUS
STARTING
AUTO;
START

(3) The turbine shaft will begin to rotate on turning gear. The zero speed signal "14HR" will be displayed. When the unit reaches approximately 6 rpm, the starting device will be energized and accelerate the unit. The <I> CRT display will change to START–UP STATUS/CRANKING.

(4) When the unit reaches approximately 15% speed, the minimum speed signal "14HM" will be displayed on the <I> CRT. (For machines with cooling water fan motors receiving power from the generator terminals via the UCAT transformer, field flashing will be initiated to build up generator voltage to power the fans; otherwise, field flashing to build up generator voltage will occur at operating speed.)

(5) If the unit configuration requires purging of the gas path prior to ignition, the starting device will crank the gas turbine at purge speed for a period of time determined by the setting of the purge timer. See Control Specifications-Settings Drawing for purge timer settings.

(6) FSR will be set to firing value. (FSR, Fuel Stroke Reference, is the electrical signal that determines the amount of fuel delivered to the turbine combustion system.) Ignition sequence is initiated. The <I> CRT display will change to START UP STATUS/FIRING.

(7) When flame is established, the <I> CRT display will indicate flame in those combustors equipped with flame detectors.

(8) FSR is set back to warm-up value, and the <I> CRT display will indicate STARTUP STATUS/ WARMING UP. If the flame goes out during the 60 second firing period, FSR will be reset to firing value. (At the end of the ignition period, if flame has not been established, the unit will remain at firing speed. Refer to operation 8 in the Special Operations section for specific operating instructions for DLN 2.0 and DLN 2.6 configured machines.) At this time the operator may shut the unit down or attempt to fire again. To fire again select CRANK on the Main Display. The purge timer and firing timer are reinitialized. The purge timer will begin to time. Reselecting AUTO will cause the ignition sequence to repeat itself after the purge timer has timed out. If the unit is being operated remotely and multiple starts capability exists (REMOTE having previously been selected on the Main Display), and no fire has been established at the end of the ignition period, the unit will be purged of unburned fuel. At the end of the purge period ignition will be attempted again. If flame is not established at this time, the starting sequence will be terminated and the unit will shutdown.

At the end of the warmup period, with flame established, FSR will begin increasing. The <I> CRT will indicate STARTUP STATUS/ACCELERATING and the turbine will increase in speed. At approximately 50% speed, the accelerating speed signal "14HA" will be displayed on the <I> CRT.

(9) The turbine will continue to accelerate. When it reaches 85–90% speed, the starting device will disengage and shutdown. The <I> CRT will indicate the change in status from STARTUP CONTROL to SPEED CONTROL at approximately 60% speed.

(10) When the turbine reaches operating speed, the operating speed signal "14HS" will be displayed on the <I> CRT. Field flashing is terminated. If the synchronizing selector switch (43S) on the generator control panel is in the OFF position and REMOTE is not selected on the <I> CRT, as the turbine reaches operating speed, <I> CRT will now read:

RUN STATUS
FULL SPEED NO LOAD
AUTO; START

If the synchronizing selector switch on the generator panel is in the AUTO position or REMOTE is selected on the <I> CRT automatic synchronizing is initiated. The <I> CRT will read SYNCHRONIZING.

The turbine speed is matched to the system (to less than 1/3 Hz difference) and when the proper phase relationship is achieved the generator breaker will close. The machine will load to Spinning Reserve unless a load control point BASE, PEAK or PRESELECTED LOAD has been selected.

The <I> CRT will display SPINNING RESERVE, once the unit has reached this load point.

C. Synchronizing

When a gas turbine-driven synchronous generator is connected into a power transmission system, the phase angle of the generator going on-line must correspond to the phase angle of the existing line voltage at the moment of its introduction into the system. This is called synchronizing.

CAUTION

> Before initiating synchronization procedures, be sure that all synchronization equipment is functioning properly, and that the phase sequence of the incoming unit corresponds to the existing line phase sequence and the potential transformers are connected correctly to proper phases. Initial synchronization and checkout after performing maintenance to synchronizing equipment should be performed with the breaker racked out.

Note: Synchronizing cannot take place unless AUTO or REMOTE has been selected on the <I> CRT Main Display and the turbine has reached full speed.

Generator synchronization can be accomplished either automatically or manually. Manual synchronization is accomplished by the following procedure:

1. Place the synchronizing selector switch on the generator panel (43S) in the MANUAL position.
2. Select AUTO on the <I> CRT Main Display.
3. Select START and EXECUTE on the <I> CRT Main Display. This will start the turbine and accelerate it to full speed as previously described. At this point the CRT will indicate RUN STATUS, FULL SPEED NO LOAD.
4. Compare the generator voltage with the line voltage. (These voltmeters are located on the generator control panel.)
5. Make any necessary voltage adjustment by operating the RAISE- LOWER (90R4) switch on the generator panel until the generator voltage equals the line voltage.
6. Compare the generator and line frequency on the synchroscope (located on the generator control panel). If the pointer is rotating counterclockwise, the generator frequency is lower than the line frequency and should be raised by increasing the turbine-generator speed. The brightness of the synchronizing lights will change with the rotation of the synchroscope. When the lights are their dullest the synchroscope will be at the 12 o'clock position. The lights should not be used to synchronize but only to verify proper operation of the synchroscope.
7. Adjust the speed until the synchroscope rotates clockwise at approximately five seconds per revolution or slower.
8. The generator circuit breaker "close" signal should be given when it reaches a point approximately one minute before the 12 o'clock position. This allows for a time lag for the breaker contacts to close after receiving the close signal.

Automatic synchronization is accomplished by the following steps:

1. Place the synchronizing selector switch (43S) in the AUTO position.
2. Select AUTO on the <I> CRT Main Display.
3. Select START on the <I> CRT Main Display.

This procedure will start the turbine, and upon attainment of "complete sequence", match generator voltage to line voltage (if equipped with optional voltage matching), synchronize the generator to the line frequency, and load the generator to the preselected value. A "breaker closed" indicator will actuate when the generator circuit breaker has closed placing the synchronized unit on-line.

Once the generator has been connected to the power system, the turbine fuel flow may be increased to pick up load, and the generator excitation may be adjusted to obtain the desired KVAR value.

WARNING

Failure to synchronize properly may result in equipment damage and/or failure, or the creation of circumstances which could result in the automatic removal of generating capacity from the power system.

In those cases where out-of-phase breaker closures are not so serious as to cause immediate equipment failure or system disruption, cumulative damage may result to the on-coming generator. Repeated occurrences of out-of-phase breaker closures can eventually result in generator failure because of the stresses created at the time of closure.

Out-of-phase breaker closure of a magnitude sufficient to cause either immediate or cumulative equipment damage mentioned above will usually result in annunciator drops to notify the operator of the problem. The following alarms have been displayed at various occurrences of known generator breaker malclosures:

1. High vibration trip
2. Loss of excitation
3. Various AC undervoltage drops

Out-of-phase breaker closure will result in abnormal generator noise and vibration at the time of closure. If there is reason to suspect such breaker malclosure, the equipment should be immediately inspected to determine the cause of the malclosure and for any damage to the generator.

Refer to the "Control and Protection" section of this volume for additional information on the synchronizing system.

D. Normal Load Operation

1. Manual Loading

Manual loading is accomplished by clicking on the SPEED SP RAISE/SPEED SP LOWER targets on the <I> CRT Main Display.

Manual loading can also be accomplished by means of the governor control switch (70R4/CS) on the generator control panel. Holding the switch to the right will increase the load; holding it to the left will decrease the load.

Manual loading beyond the selected temperature control point BASE or PEAK is not possible. The manual loading rate is shown in the Control Specification-Settings Drawing.

Note: When manually loading with the governor control switch (70R4/CS) for load changes greater than 25% of full load, the operator should not change more than 25% of full load in one minute.

2. Automatic Loading

On startup if no load point is selected, the unit will load to the SPINNING RESERVE load point. The SPINNING RESERVE load point is slightly greater than no load, typically 8% of base rating.

An intermediate load point, PRE-SELECTED load, and temperature control load points BASE and PEAK can be selected anytime after a start signal has been given. The selection will be displayed on the <I> CRT. The unit will load to the selected load point. PRESELECTED LOAD is a load point greater than SPINNING RESERVE and less than BASE, typically 50%. The auto loading rate is shown in Control Specification-Settings Drawing.

E. Remote Operation

To transfer turbine control from the control compartment to remotely located equipment, select REMOTE on the <I> CRT Main Display. The turbine may then be started, automatically synchronized, and loaded by the remote equipment.

If manual synchronization is to be performed at the remote location, the synchronizing selector switch (43S) mounted on the generator control panel must be placed in the OFF/REMOTE position.

F. Shutdown and Cooldown

1. Normal Shutdown

Normal shutdown is initiated by selecting STOP on the <I> CRT Main Display. The shutdown procedure will follow automatically through generator unloading, turbine speed reduction, fuel shutoff at part speed and initiation of the cooldown sequence as the unit comes to rest.

2. Emergency Shutdown

Emergency shutdown is initiated by depressing the EMERGENCY STOP pushbutton. Cooldown operation after emergency shutdown is also automatic provided the permissives for this operation are met.

3. Cooldown

Immediately following a shutdown, after the turbine has been in the fired mode, the rotor is turned to provide uniform cooling. Uniform cooling of the turbine rotor prevents rotor bowing, resultant rubbing and imbalance, and related damage that might otherwise occur when subsequent starts are at-

tempted without cooldown. The turbine can be started and loaded at any time during the cooldown cycle.

The cooldown cycle may be accelerated using the starting device; in which case it will be operated at cranking speed.

A rotor turning device is provided for cooldown rotation. A description of rotor turning operation and servicing can be found in the Starting System tab.

The minimum time required for turbine cooldown depends mainly on the turbine ambient temperature. Other factors, such as wind direction and velocity in outdoor installations and air drafts in indoor installations, can have an affect on the time required for cooldown. The cooldown times recommended in the following paragraphs are the result of General Electric Company operating experience in both factory and field testing of General Electric gas turbines. The purchaser may find that these times can be modified as experience is gained in operation of the gas turbine under his particular site conditions.

Cooldown times should not be accelerated by opening up the turbine compartment doors or the lagging panels since uneven cooling of the outer casings may result in excessive stress.

The unit must be on rotor turning operation immediately following a shutdown for at least 24 hours to ensure minimum protection against rubs and unbalance on a subsequent starting attempt. The General Electric Company, however, recommends that the rotor turning operation continue for 48 hours after shutdown to ensure uniform rotor cooling.

G. Special Operations

1. Fuel Transfer (Gas-Distillate Option)

Fuel transfer is initiated using the Fuel Mixture Display on the <I> CRT. When transferring from one fuel to the other, there is a thirty second delay before the transfer begins. For the gas-to-distillate transfer, the delay allows for filling the liquid fuel lines. For the distillate-to-gas transfer, the delay allows time for the speed ratio valve (and gas control valve) to modulate the inter volume gas pressure before the transfer begins. Once started, fuel transfer takes approximately thirty seconds. The transfer can be stopped at any fuel mixture proportion within limits as specified in the Control Specification-Settings Drawing by setting the FUEL MIX SETPOINT and then selecting MIX. Fuel transfer should be initiated prior to ignition or after the unit reaches operating speed.

2. Automatic Fuel Transfer On Low Gas Pressure (Gas-Distillate Option)

In the event of low fuel gas pressure the turbine will transfer to liquid fuel. The transfer will occur with no delay for line filling. To return to gas fuel operation after an automatic transfer, manually reselect gas fuel.

3. Testing the Emergency DC Lube Pump

The DC emergency pump may be tested using the test pushbutton on the motor starter.

4. Overspeed Trip Checks

Overspeed trip system testing should be performed on an annual basis on peaking and intermittently used gas turbines. On continuously operated units, the test should be performed at each scheduled shutdown and after each major overhaul. All units should be tested after an extended shutdown period of two or more months unless otherwise specified in the Control Specifications-Adjustments Drawing.

Note: The turbine should be operated for at least 30 minutes at rated speed before checking the overspeed settings.

Turbine speed is controlled by the turbine speed reference signal TNR. The maximum speed called for by TNR is limited by the high speed stop control constant. This value is nominally set at 107% of rated speed. It will be necessary to select the overspeed test function, which will reprogram the 107% setpoint to 113%, in order to allow the speed to increase above the electrical overspeed trip setting. With the high speed stop constant adjusted to be higher than the electrical overspeed trip speed, raise unit speed gradually by using the SPEED SP RAISE target on the <I> Main Display and observe speed at which the unit trips against the value tabulated in the Control Specifications — Setting drawing. Once the unit trips, the speed setpoint is returned to the 107% maximum value.

CAUTION

1. Do not exceed the maximum search speed as defined in the Control Specifications.
2. Return all constants to their normal value after coastdown of unit.

5. Steam Injection Operation (Optional)

Before operating the steam injection system for the first time following an overhaul or periods of extended shutdown, it is important that the following checks be made:

a. Steam supply is within design parameters

b. Instrument air supply is at required pressure

c. Steam line orifice size is correct

a. Pre-Operation Checks

Prior to operation, check for the following conditions:

a. <I> CRT controls are in non-select positions (Steam Injection OFF)

b. Manual stop valve is open

c. All hand valves in line of flow are open

d. All valves to temperature or pressure gauges are open

e. Steam supply pressure and temperature are in operating range

b. Startup

The automatic control system, in conjunction with logic circuits of the microcomputer of the SPEEDTRONIC® control system, operates the steam injection system control valving and assures that the proper amount of steam injection is provided to the turbine combustion system during operation.

To initiate steam injection the operator must first select the Steam Injection Overview Display on the <I> CRT. Selecting the STM INJ ON target initiates the steam injection control. At this point the automatic steam control circuits will take over, initiate the drain and stop valve sequences and control the system. When steam conditions are correct, the steam control valve releases steam into the combustion system at the proper steam-to-fuel flow ratio.

The startup and operating sequence of the steam injection system is described and explained in the Steam Injection control system text of the Control and Protection Tab.

c. Trouble Shooting

The purpose of the system is to provide steam to the turbine combustion system at the desired pressure, temperature and flow. If this does not happen, the following problems may be the cause:

(1) Steam supply exhausted

(2) Insufficient supply pressure

(3) Control valve closed

(4) Stop valve closed

The following should be checked:

(1) Adequate steam supply

(2) Check steam supply system

(3) Check control valve actuator and drain valve operation

(4) Check that instrument air supply pressure is sufficient and/or check solenoid control valve operation.

Alarm and shutdown conditions of the steam injection system are detected by a protection program built into Control Sequence Program. Alarm and trip indications are displayed on the <I> CRT. An alarm condition is initiated by high or low pressure levels and by high or low temperatures. See Control Specifications for alarm and trip point values.

The computer program is designed to trip the steam stop valve and prevent steam flow if steam temperature becomes too high or too low. It can trip the system on temperature or pressure to protect against loss of superheat and carry over of condensate. Steam at too high a pressure can cause damage to valve stem packing and system seals. A steam injection trip only shuts down the steam injection system. It does not trip the turbine.

6. DLNx II SYSTEM OPERATION

a. General

The Dry Low Nox II control system regulates the distribution of fuel delivered to multi–nozzle combustors located around the gas turbine. This system stages the fuel through multiple modes of operation to attain the low emissions mode of **Premix**. DLN–2 has only one burning zone but multiple nozzles and manifolds.

b. Gas Fuel Operation

There are three basic modes for fuel distribution to the combustor:

(1) Primary

Fuel to primary manifold only

(2) Lean–Lean

Fuel to primary and tertiary manifolds

(3) Premix

In this mode, fuel is in both the secondary and tertiary manifolds. This is the low emission mode.

c. Valves

There are four main valves in DLN–2:

Primary Gas Control Valve (GCVP)

Secondary Gas Control Valve (GCVS)

Quaternary Gas Control Valve (GCVQ)

Premix Splitter Valve (PMSV)

The PMSV is used downstream of the secondary gas control valve. This valve controls the flow between 4 secondary nozzles and 1 tertiary nozzle (The tertiary nozzle is not used during Primary mode).

d. Startup and Load Sequence

The gas turbine will startup with fuel going to primary manifold only and will accelerate to 81% corrected speed. At this point fuel flow will be initiated into the tertiary manifold and Lean–Lean will be established. As the unit is loaded to approximately 60% load (with no Bleed Heat), or 40% load (with Bleed Heat) a transfer to Premix will be performed. When transferring to Premix, the primary gas control valve will close, the secondary gas control valve will open,and the Premix splitter valve will modulate to control the flow between the tertiary and secondary nozzles. Once the Primary control valve is closed, the Primary Purge System wil open to purge the primary nozzles.

The sequence of events on an unload is as follows:

(1) Premix to Transfer Mode

(2) Premix Transfer to Lean–Lean

(3) Fired shutdown in Lean–Lean

The mode selection is performed automatically in the control system when the turbine is at the proper operating conditions.

These conditions must be met before startup; The following valves must be in the closed position:

Stop/Speed Ratio

Primary Control Valve (GCVP)

Secondary Control Valve (GCVS)

Quaternary Control Valve (GCVQ)

The Premix Splitter Valve (PMSV) should be at 100% split (no secondary flow).

Bleed Heat Valve closed (If applicable)

e. Inlet Guide Vane Operation (IGV)

The DLN–2 combustor emission performance is sensitive to changes in fuel to air ratio. The DLNx combustor was designed according to the airflow regulation scheme used with IGV Temperature Control. The IGV's should remain at a fixed minimum value from full speed no load until the turbine incrases load while on the exhaust temperature contro curve. The IGV's open from their minimum value as the turbine increases load while on the exhaust temperature control curve until they reach a maximum at Base Load.

IGV Temperature Control is defaulted to be "on", but the operator should always check this during startup. The only exception to this rule is when temperature matching is selected (see Temperature Matching below), or simple cycle IGV control is selected. Simple Cycle IGV control can be selected between breaker closer and 8 MW, or at Full open IGV's.

f. Inlet Heating

Operation of the gas turbine with reduced minimum IGV settings can be used to extend the Premix operating region to lower loads. Reducing the minimum IGV angle allows the combustor to operate near a constant firing temperature that is high enough to support Premix operation while maintaining a sufficient fuel to air ratio.

Inlet heating through the use of recirculated compressor discharge airflow is necessary when operating with reduced IGV angles in order to protect the turbine compressor. Inlet heating protects the turbine compressor from stall by relieving discharge pressure and by increasing the inlet air stream temperature. Also, inlet heating prevents ice formation due to increased pressure drop across the reduced IGV angle.

The inlet heating system regulates the compressor discharge bleed flow through a control vlave and into a manifold located in the compressor inlet air stream. The control valve varies the inlet air flow as a function of the IGV angle, compressor operating and ambient temperature.

g. Temperature Matching

Temperature matching is used when the gas turbine exhaust temperature is to be controlled to bring on a steam turbine. The operator must select temperature matching "on". Once selected, the turbine has to be loaded/unloaded to the matching window. Once the unit is in the matching window, the operator can enable matching with temperature matching on the Gas Turbine Exhaust temperature can be increased using the targets on the Temperature Matching Control Screen.

h. DLNx II Display Messages

The following display messages will appear on the control panel CRT in order to inform the operator of the current combustion mode of operation:

Primary Mode

Lean–Lean Mode

Secondary Prefill

Piloted Premix Mode

Premix Transfer Mode

Premix Steady State

Tertiary only FSNL Mode

7. Water Washing System Operation (Optional)

a. General

Water washing should be scheduled during a normal shutdown, if possible. This will allow enough time for the internal machine temperature to drop to the required levels for the washing. The time required to cool the machine can be shortened by maintaining the unit at crank speed. During this cooling of the turbine, the wash water is to be heated to the proper level.

b. Mandatory Precautions

Before water washing of the compressor begins, the turbine blading temperature must be low enough so that the water does not cause thermal shock.

CAUTION

The differential temperature between the wash water and the interstage wheelspace temperature must not be greater than 120°F (48.9°C) to prevent thermal shock to the hot gas parts. For wash water of 180°F (82.2°C), the maximum wheelspace temperature must be no greater than 300°F (148.9°C) as measured by the digital thermocouple readout system on the turbine control panel.

To reduce this difference, the wash water may be heated and the turbine kept on crank until the wheelspace temperatures drop to an acceptable level. The wheelspace temperatures are read in the control room on the <I> CRT.

CAUTION

If, during operation, there has been an increase in exhaust temperature spread above the normal 15°F to 30°F (8.3°C to 16.6°C), the thermocouples in the exhaust plenum should be examined. If they are coated with ash, the ash should be removed.Radiation shields should also be checked.

If they are not radially oriented relative to the turbine, they should be repositioned per the appropriate drawing. If the thermocouples are coated with ash, or if the radiation shields are not properly oriented, a correct temperature reading will not be obtained.

If neither of the above conditions exists and there is no other explanation for the temperature spread, consult the General Electric Installation and Service Engineering representative.

WARNING

The water wash operation involves water under high pressure. Caution must be exercised to ensure the proper positioning of all valves during this operation. Since the water may also be hot, necessary precautions should be taken in handling valves, pipes, and potentially hot surfaces.

Note: **Before water washing the compressor, inspect the inlet plenum and gas turbine bellmouth for large accumulations of atmospheric contaminants which could be washed into the compressor. These deposits can be removed by washing with a garden hose.**

c. Water Wash Procedures

Refer to cleaning publication included in this section for details on procedure.

8. Unit Operation After Failure to Fire on Liquid Fuel (DLN 2.0 or DLN 2.6)

The following only applies to units with DLN 2.0 or DLN 2.6 combustion systems. After every failure to fire on oil, a STOP command should be given and the unit allowed to decelerate to 2% speed and operate there for at least 2 minutes before being restarted on gas or liquid fuel. Currently, this must be done manually. This operation allows excess liquid fuel to drain from liners.

IV. DESCRIPTION OF PANELS AND TERMS

A. Turbine Control Panel (TCP)

The turbine control panel contains the hardware and software required to operate the turbine. A front elevation view of the panel can be seen in the Hardware Description.

EMERGENCY STOP (5E) — This red pushbutton is located on the front of the TCP. Operation of this pushbutton immediately shuts off turbine fuel.

BACKUP OPERATOR INTERFACE (BOI) — This interactive display is mounted on the front of the TCP. All operator commands can be issued from this module. In addition, alarm management can be performed and turbine parameters can be monitored from the <BOI>.

B. <I> CRT

The <I> CRT is a personal computer that directly interfaces to the turbine control panel. This is the primary operator station. All operator commands can be issued from the <I> CRT. Alarm management can be performed and turbine parameters can be monitored. With the proper password, editing can also be accomplished.

1. Main Display

Operator selector targets and master control selector targets can be actuated from the main display by using the cursor positioning device (CPD). Operator selector targets include:

OFF — Inhibits a start signal.

CRANK — With crank selected, a start signal will bring the machine to purge speed.

FIRE — With FIRE selected, a START signal will bring the machine to minimum speed and establish flame in the combustors. Selecting FIRE while the machine is on CRANK will initiate the firing sequence and establish flame in the combustors.

AUTO — With AUTO selected, a START signal will bring the machine to operating speed. Changing selections from FIRE to AUTO will allow the machine to accelerate to operating speed.

REMOTE — With REMOTE selected, control for the unit is transferred to the remote control equipment.

Master control selector targets include:

START — A START selection will cause the unit to start. With AUTO selected, the unit will load to the SPINNING RESERVE load point.

FAST START - A FAST START selection will cause the unit to start. With AUTO selected, the unit will load to the PRESELECTED load point. The machine will load at the manual loading rate.

STOP - A STOP selection will cause the unit to initiate a normal shutdown.

All operator selector switches and master control selector targets are green and are located on the right side of the display. All green targets are the AUTO/EXECUTE type, which means that the target must be selected with the CPD and then, within three seconds, the EXECUTE target at the bottom of the display must also be selected in order to actuate that command.

2. **Load Control Display**

Load selector targets can be actuated from the load control display by using the cursor positioning device (CPD). Load selector targets include:

PRESEL - Select the preselected load point.

BASE - Select base temperature control load point.

*PEAK - Select peak temperature control load point.

3. ***Fuel Mixture Display**

Fuel selector targets are used to select the desired fuel by using the cursor positioning device (CPD). Fuel selector targets include:

GAS SELECT - 100% gas fuel operation.

DIST SELECT - 100% distillate fuel operation.

MIX SELECT - Selecting MIX while on 100% single fuel will cause the machine to transfer to mixed fuel operation at a preset mixture (not applicable on DLN units).

4. ***Isochronous Setpoint Display**

Governor selector targets are used to select the desired type of speed control by using the cursor positioning device (CPD). Governor selector targets include:

DROOP SELECT - Used to select droop speed control.

ISOCH SELECT - Used to select isochronous speed control.

5. ***Inlet Guide Vane Control Display**

   The inlet guide vane (IGV) temperature control targets are IGV TEMP CNTL ON and IGV TEMP CNTL OFF. The IGV AUTO target selects normal operation of the IGVs. The IGV MANUAL target allows the maximum IGV angle to be manually set by the operator (not normally used while on–line).

6. **Alarm Display**

   This screen displays the current un–reset alarms, the time when each alarm occurred, the alarm drop number and a word description of the alarm. An "*" indicates that the alarm has not been acknowledged. The "*" disappears after the alarm has been acknowledged. For more information, see the Mark V Users' Manual (GEH–5979).

7. **Auxiliary Display**

   COOLDOWN ON and COOLDOWN OFF can be selected from this display.

8. **Manual Reset Target**

   Selecting the manual reset target resets the Master Reset Lockout function. This target must be selected so that the unit can be restarted following a trip.

C. Definition of Terms

SPINNING RESERVE - The minimum load control point based on generator output. The spinning reserve magnitude in MWs can be found in the control specifications (5–10% of rating is a typical value).

PRESELECTED LOAD - A load control point based on generator output. The preselected load point is adjustable within a range designated in the Control Specification. The preseelected load point is normally set below the base load point (50–60% of rating is a typical value).

BASE LOAD - This is the normal maximum loading for continuous turbine operation as determined by turbine exhaust temperature levels.

PEAK LOAD (Optional) - This is the maximum allowable output permitted for relatively long–duration, emergency power requirement situations consistent with acceptable turbine parts life. Peak loading duration is based on turbine exhaust temperature levels.

D. Generator Control Panel (Typical)

SYNCHRONIZING LAMPS — Rough indication of the speed and phase relationship between the generator and the bus.

FREQUENCY METER — Indicates generator frequency.

INCOMING VOLTMETER — Indicates generator voltage.

RUN VOLTMETER — Indicates bus voltage.

SYNCHROSCOPE — Indicates the phase relationship between the generator and bus voltage.

GENERATOR AMMETER — Indicates generator phase current. The phase current to be read is selected on the three position ammeter selector switch.

GENERATOR WATTMETER — Indicates the generator output in megawatts.

GENERATOR VARMETER — Indicates the generator reactive output in megavars.

GENERATOR TEMPERATURE METER — (Traditionally included on the Generator Control Panel, but actually displayed in Mark V SPEEDTRONIC® systems on the <I> CRT.) Reads the generator Resistance Temperature Detector (RTD) selected by the temperature meter selector switch.

EXCITER VOLTMETER — Indicates generator field voltage (if used).

GENERATOR FIELD AMMETER — Indicates generator field amperes (if used).

AMMETER SELECTOR SWITCH — See Generator Ammeter (above).

SYNCHRONIZING SELECTOR SWITCH (43S/CS) — Three position switch used to select the synchronizing mode.

Manual — Selects manual synchronizing mode. In this position the generator frequency and voltage, bus voltage, and phase relationship will be displayed to facilitate manual synchronizing.

Off/Remote — Used when the unit is being controlled from the remote control equipment.

Auto — Used for local automatic synchronizing.

VOLTMETER SWITCH (VS) — Used to select the phase of the bus voltage to be displayed on the run voltmeter.

TEMPERATURE METER SELECTOR SWITCH — Traditionally included on the Generator Control Panel, but actually displayed in Mark V SPEEDTRONIC® systems on the <I> CRT.

VOLTAGE/VAR CONTROL SWITCH (90R4/CS) — Controls generator voltage when the unit is off the line, and controls voltage/vars when the machine is on the line. (Increase — Right; Decrease — Left; spring return to normal.)

GENERATOR BREAKER CONTROL SWITCH (52G/CS) — Used to open or close the generator breaker. The indicator lights above the switch indicate Open (Green) and Closed (Red).

Note: Using this switch, the generator breaker should be closed only when proper synchronizing techniques are used or when the system onto which the generator is being brought is not energized.

GENERATOR DIFFERENTIAL LOCK-OUT SWITCH (86G) — Manual reset lockout switch which operates in the event of a generator fault.

GOVERNOR RAISE/LOWER CONTROL SWITCH (70R4/CS) — Used to control turbine speed when the generator is off the line (i.e. for manual synchronizing); generator load when the generator is on the line; and frequency when the generator is running isolated and on DROOP speed control.

TRANSFORMER DIFFERENTIAL LOCK-OUT SWITCH (86T) — Manual reset lockout switch which operates in the event of a transformer fault.

WATTHOUR METER — Measures the watthour output of the generator.

E. Motor Control Center

The turbine is provided with a motor control center for the control of the electrical auxiliaries. The motor control center includes AC and DC distribution systems.

Motor controllers are used for auxiliaries such as motors and heaters. Each motor controller normally consists of a breaker, control power transformer, control circuit, power contactor, selector switch and indicator lights. The selector switch is normally left in AUTO. Each motor control center is also provided with AC and DC distribution panel boards with circuit breakers.

F. Supervisory Remote Equipment

Supervisory equipment is normally functionally the same as the equipment described in the cable connected master panel. However, it may differ somewhat in metering and indications. Refer to the supervisory manufacturer's instruction manual for details.

G. Annunciator System

Alarms are displayed on the <I> CRT when the ALARM Display mode is selected. Before clearing an alarm, action should be taken to determine the cause and perform the necessary corrective action. The following is a list of annunciator messages along with suggested operator action.

Note: The alarm messages can be categorized as either "trip" or "alarm". The "trip" messages contain the word TRIP in the message. The "alarm" messages do not indicate TRIP. For those alarms associated with permissive to start and trip logics latched up through the MASTER RESET function, it will be necessary to call up the <I> CRT Display with the Master Reset target in order to unlatch and clear these alarms.

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Department of Environmental Protection

Lawton Chiles
Governor

Virginia B. Wetherell
Secretary

November 25, 1998

CERTIFIED MAIL -RETURN RECEIPT REQUESTED

Mr. Walter P. Bussels
Managing Director & Chief Executive Officer
Jacksonville Electric Authority
21 West Church Street
Jacksonville, Fl 32202-3139

Re: Jacksonville Electric Authority
Kennedy Generating Station
File No. 0310047-002-AC

Dear Mr. Bussels:

The Department received your application for the construction/installation of a 170 MW GE PG7241 FA simple cycle combustion turbine at the Kennedy Generating Plant on October 30, 1998. Based on a technical review, the application is incomplete. Pursuant to Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297, F.A.C., please submit the following information, including all assumptions, reference materials and calculations:

1. Pursuant to Rule 62-212.400 (2)(e), F.A.C., please recalculate the net emission increases (sum of all 5 year contemporaneous source-wide creditable increases and decreases in the actual emissions of the facility) for all affected PSD pollutants listed in Table 62-212.400-2, F.A.C., to determine PSD applicability.
2. Please provide technical information that will explain the simple cycle vs the combined cycle mechanism of fine tuning, etc., in relation to the NO_X emission rate. What is the lowest NOx rate GE guarantees for this type of turbine operating in the simple cycle.
3. Illustrate the emissions performance of the DLN-2.6 combustor employed in this application. Submit the NO_X and CO graph figures (for oil and gas) that will show the GE DLN 2.6 system performance (load at a given temperature vs turbine configuration). Attached is an example of the characteristics of the DLN 2.0 that we wish to have updated for the DLN 2.6.
4. Please explain why emissions of NO_X are estimated to be 15 ppm. GE guaranteed a limit of 9 ppm at the City of Tallahassee Combined Cycle Project where similar turbine will be used.
5. If possible provide an 8 X 11' photo or drawing of this site.

6. Describe procedures used to startup and shutdown of this unit to minimize excess emissions.

7. Does this facility comply with the Jacksonville air pollution control regulations?

We will resume processing the application after the requested information is received. If you have any questions regarding this matter, please call Teresa Heron (Review Engineer) at (850)921-9529.

Sincerely,

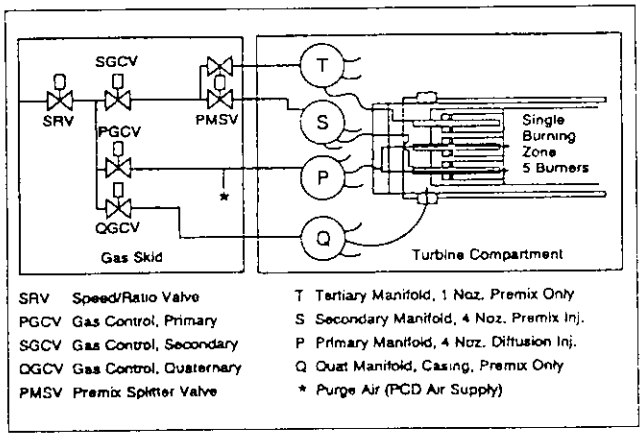
11/25

A. A. Linero, P.E. Administrator
New Source Review Section

AAL/th

cc: Anthony L. Compaan, PE
Gregg Worley, EPA
Chris Kirts, DEPNED
James L. Manning, RESD

mode. Diffusion, piloted premix, and premix flame are established by changing the distribution of fuel flow in the combustor. The gas fuel system shown in Figure 18 consists of the gas fuel stop/ratio valve, primary gas control valve, secondary gas control valve, premix splitter valve, and quaternary gas control valve. The stop/ratio valve is designed to maintain a predetermined pressure at the control valve inlet. The primary, secondary, and quaternary gas control valves regulate the desired gas fuel flow delivered to the turbine in response to the fuel command from the SPEEDTRONIC^{TM} controls. The premix splitter valve controls the fuel flow split between the secondary and tertiary fuel system.

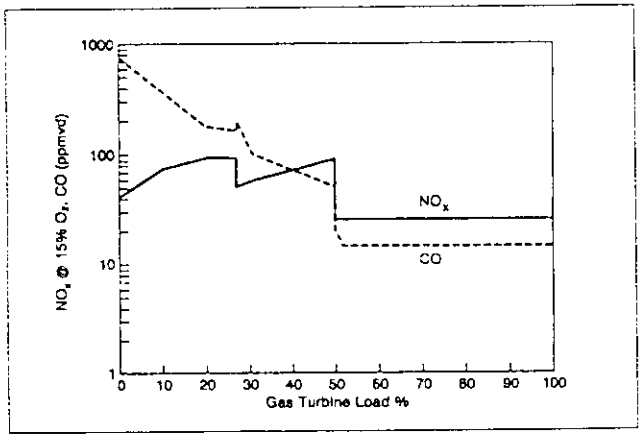


GT224553

Figure 18. DLN-2 gas fuel system

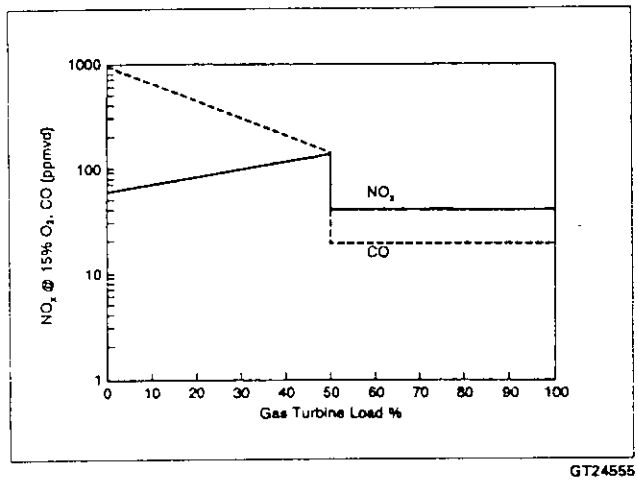
DLN-2 Emissions Performance

Figures 19 and 20 show the emissions performance for a DLN-2 equipped 7FA/9FA for gas fuel and for oil fuel with water injection.



GT24554

Figure 19. Emissions performance for DLN-2 equipped 7FA/9FA for gas fuel



GT24555

Figure 20. Emissions performance for DLN-2 equipped 7FA/9FA for oil fuel with water injection

DLN-2 Experience

The first DLN-2 systems were placed in service at Florida Power and Light's Martin Station with commissioning beginning in September, 1993, and the first two (of four) units entering commercial service in February 1994. During commissioning, quaternary fuel was added and other combustor modifications were made to control dynamic pressure oscillations in the combustor. All four FPL units are currently in commercial service, and are achieving the emissions goals of less than 25 ppm NO_X and 15 ppm CO. They have accumulated nearly 15,000 hours of premixed operation. Five additional units are being commissioned and will enter commercial service in 1994.

SUMMARY

GE's Dry Low NO_X development program is focused on the development of systems capable of the extremely low NO_X levels required to meet today's stringent regulations and to prepare for more stringent requirements in the future. New unit production needs, as well as the requirement for existing machines, are being addressed. GE DLN systems are currently in operation on more than sixty machines and have accumulated nearly 200,000 hours in service. As of this writing, over 200 DLN systems have been either put into service, shipped, or placed on order. GE is the only manufacturer with 2350 F (1288 C) class machines operating below 25ppmvd.

GE Energy Services

Marvin V. Sindel Jr.
Sales Manager

GE Energy Services Sales
General Electric International, Inc.
10 Van Dyck Rd. Jacksonville, FL. 32218
Tel: 904-757-2620, Dial Comm: 8-765-2620
Fax: 904-757-2652
Email: marvin.sindel@ps.ge.com

12/8/98

Subject: GE Frame 7FA Gas Turbine NOx Guarantee for JEA - Kennedy

Mr. Jim Connolly, P.E.
JEA
21 West Church Street
Jacksonville, FL. 32202

Dear Jim,

Pursuant to your question on the NOx emission guarantee for the GE Frame 7FA units that JEA has purchased, the following information is offered:

1. The GE guarantee for the units purchased is 15 ppm NOx. GE will guarantee this level only for the "new and clean" test performed immediately after the installation of the unit is complete. This guarantee is similar to GE guaranteeing the performance of the unit at the "new and clean" condition.

2. The unit will operate at the 15 ppm level only for load conditions above 50% load. Should JEA use the units in their peaking mode for load control and operate the unit below this load point, the NOx level will exceed the 15 ppm .

3. The current NOx guarantee is for 15 ppm. However, with some additional modifications, GE is able to offer an improved guarantee of 9 ppm NOx. GE is working on providing an optional price to JEA to change the contractual guarantee to 9 ppm NOx.

I hope this answers your questions concerning the GE units contractual guarantee concerning NOx emissions. Should you have any further questions regarding the GE units, please contact me at your convenience.

Respectfully,

Marvin Sindel
Sales Manager

cc: J. Grassman - GE Schenectady

Kennedy CT Project
Rec'd 12/8/98 RCT
cc: J. Connolly
E. Berg
M. Bareta
B. Gianazza
RCT

JEA
Environmental Services Group
21 West Church Street - Tower 8th Floor
Jacksonville, Florida 32202-3139

FAX

Date: 12/15/98

No. of Pages (Including Cover Sheet) 2

To: Al Linero

Phone:
Fax Phone:
CC:

From: Bert Gianazza

Phone: (904) 665-
Fax Phone: (904) 665-7376

See Comments Below

Comments: ☐ Urgent ☐ For Your Review ☐ Reply ASAP ☐ Please Comment

Fold at line over top of envelope to the right of the return address

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "*Return Receipt Requested*" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Walter P. Bussels
JEA
21 W. Church St.
Jacksonville, Fl
32202-3139

4a. Article Number
Z 333 612 559

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
12.1.98

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X D. [illegible]

PS Form **3811**, December 1994 102595-97-B-0179 Domestic Return Receipt

Is your RETURN ADDRESS completed on the reverse side?

Thank you for using Return Receipt Service.

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US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Walter Bussels	
Street & Number JEA	
Post Office, State & ZIP Code Jacksonville FL	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 11-25-98	
0310047-002 AC	

PS Form **3800**, April 1995