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Grays Harbor
A Duke Energy Company

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ENERGY FACILITY SITE
EVALUATION COUNCIL

GOCT-04-004
February 26, 2004

Mr. Mike Mills, Compliance Manager
Energy Facility Site Evaluation Council
925 Plum Street SE, Bldg. 4
Post Office Box 43172
Olympia, Washington 98504-3172

SUBJECT: **SUPPLEMENTAL INFORMATION REGARDING THE REQUEST FOR EXTENSION AND MODIFICATION OF THE NOTICE OF CONSTRUCTION/PREVENTION OF SIGNIFICANT DETERIORATION (NOC/PSD) PERMIT TO CONSTRUCT SATSOP COMBUSTION TURBINE PROJECT NO. EFSEC/2001-01 AMENDMENT 1**

REFERENCES:
a) Letter dated January 19, 2004, Andrew H. McNeil and Laura Schinnell to Allen Fiksdal, Request for Extension and Modification of the Notice of Construction/Prevention of Significant Deterioration (NOC/PSD) Permit to Construct Satsop Combustion Turbine Project No. EFSEC/2001-01 Amendment 1
b) Letter dated January 28, 2004, Mike Mills to Andy McNeil and Laura Schinnell, Request to Extend and Amend the Notice of Construction/Prevention of Significant Deterioration Approval No. EFSEC/2001-01, Amendment 1

Dear Mr. Mills:

On behalf of Duke Energy Grays Harbor, LLC and Energy Northwest (hereafter referred to as Duke Energy), we are writing to respond to your January 28th letter (Reference b) requesting additional information.

The following information is being submitted per your request:

1. <u>Supporting Cost Calculations for the proposed BACT determinations</u>

Detailed cost calculations are enclosed for all BACT determinations, as described in detail below.

2. Cost Analysis for NO_x BACT at 2.5 ppm and 2.0 ppm

As you are aware, Duke Energy accepted the 2.5 ppm short term and 2.0 ppm 24-hour NO_x emissions limits found in the current permit in light of concerns about regional visibility. Duke remains committed to complying with the previously established limits, but wants to make clear that those limits are not based on a cost-effectiveness BACT determination. In fact, the BACT analysis submitted in April 2001 did not include a cost-effectiveness analysis.

Our January 19, 2004 modification request provided a cost-effectiveness analysis demonstrating that a 3.0 ppm NO_x limit with a 10 ppm NH_3 slip is BACT. A copy of those cost calculations is provided as Attachment 1 to this letter.

At your request, we have also prepared a cost-effectiveness analysis for 2.5 ppm and 2.0 ppm NO_x limits. The revised cost analysis for the 2.5 ppm and 2.0 ppm NO_x limits also takes into account the 5.0 ppm NH_3 limit.

It is important to keep in mind that the Grays Harbor facility is partially constructed. As a result, the case-by-case BACT analysis must take into account any retrofitting or additional operating costs that would be required to meet a level of emission control beyond that provided by the original design.

Initially, the Grays Harbor SCR was designed to achieve a 2.5 ppm NO_x emissions limit with a 10.0 ppm NH_3 slip. If that original system were operated in order to achieve a 2.0 ppm 24-hour NO_x limit with a 5.0 ppm NH_3 slip, the operational costs would increase by approximately $510,100 per year. This would be an estimated incremental cost of $12,750 per ton of NO_x removed. This incremental cost was calculated based on the increased operating cost divided by the additional NO_x removed (40 tons). These cost calculations are provided as Attachment 2.

Prior to construction, the Grays Harbor SCR catalyst design was changed to achieve a 2.5 ppm NO_x emissions limit with a 5.0 PPM NH_3 slip. In order to operate this system at a 2.0 ppm 24-hour NO_x limit with a 5.0 ppm NH_3 slip, the operational costs would increase by approximately $233,000 per year, with an estimated incremental cost of $5,800 per ton of NO_x removed. The incremental cost was calculated based on the increased operating cost divided by the additional NO_x removed (40 tons). These cost calculations are provided as Attachment 3.

3. Details on CO BACT Analysis

As explained in our Request for Extension and Modification dated January 19, 2004 we have reevaluated BACT for CO control in light of recent data indicating that emissions from GE 7FA turbines, without any post-combustion control, are much lower than previously believed. The

previous BACT analysis assumed that emissions, without post-combustion control, would be 22.6 ppm, making the use of catalytic oxidation technology to reduce emissions to 2 ppm appear to be cost-effective. However, recent data indicates that turbine emissions are much lower than previously assumed.

Duke has compiled CO emissions data (Attachment 4) from our Duke Energy Washington, LLC, facility located in Beverly Ohio (PSD Permit # 0684000212). The data that were collected by the Continuous Emissions Monitors (CEMs) are subject to the QA/QC requirements of 40 CFR 60 Appendix F. During normal operations, the emissions were consistently less than 3.0 ppm. The data clearly demonstrate that the turbines with duct burners can achieve a 6.0 ppm emissions limit during normal operations without a CO catalyst.

However, operating data for a GE 7FA with duct burners is limited. During the almost 400 turbine operating hours at the Washington Energy Facility, the duct burners operated over 50% of the time (280 hours of duct burner operation). Although the majority of the data is below 1.5 ppm @ 15% O_2, it should be acknowledged that this data is from a recently constructed facility. As the equipment ages, an increase in CO emissions is to be expected.

The 6.0 ppm BACT determination and the 4.0 ppm proposed emissions limit are intended to accommodate slight changes in emissions as a result of normal equipment aging and maintenance activity. Duke Energy will design the turbines to accommodate a CO catalyst in the event that the facility experiences difficulty achieving the 4.0 ppm CO emissions limit.

The cost calculations supporting the revised CO catalyst BACT analysis are provided in Attachment 5. These cost calculations are based on a CO emissions rate of 6.0 ppm.

4. <u>Details on VOC BACT Analysis</u>

Duke Energy has attached summary copies (Attachment 6) of emissions testing conducted at the Washington Energy Facility for VOC emissions. The attached Washington data is representative of VOC emissions testing at other Duke Energy facilities. Duke Energy can supply additional test data if needed.

Thank you for your time and consideration and we look forward to meeting with you on March 11, 2004 to discuss the revised BACT and supporting information so that a timely resolution may be reached. Please contact Mr. Craig Bressan at (704) 382-6507 or Mr. Andy McNeil at (360) 482-4345 if you have any questions or require additional information.

Respectfully submitted,

Andrew H McNeil by Laura Schinnell

Duke Energy Grays Harbor, LLC
By Andrew H. McNeil, Project Director

Laura Schinnell

Energy Northwest
By Laura Schinnell, Project Scientist

cc: Mr. Alan Newman, P.E. – Department of Ecology

Enclosures:
- Attachment 1, Cost Analysis for 3.0 ppm NOx Limit with a 10 ppm NH_3 Slip
- Attachment 2, Cost Analysis, Facility Designed for 2.5 ppm NOx Limit with a 10 ppm NH_3 Slip, Operated at 2.0 ppm NOx Limit and 5 ppm NH_3 Slip
- Attachment 3, Cost Analysis for Facility Designed for 2.5 ppm NOx Limit with a 5 ppm NH_3 Slip, Operated at 2.0 ppm NOx Limit with a 5 ppm NH_3 Slip
- Attachment 4, CO Emissions Data from Duke Energy Washington, LLC
- Attachment 5, Cost Analysis for 6.0 ppm CO Emissions Rate
- Attachment 6, Summary Copies of Emissions Testing for VOC Emissions

Attachment 1

Cost Analysis for 3.0 ppm NOx Limit with a 10 ppm NH_3 Slip

Attachment 1

Cost Analysis for 3.0 ppm NOx Limit with a 10 ppm NH_3 Slip Selective Catalytic Reduction (SCR) Cost Estimates

Capital Costs per Turbine

	Items	Value	Basis
Purchased Equipment	Equipment costs	$ 2,037,250	Vendor Quote = A
	Instruments	$ 203,700	0.10*A
	Sales tax	$ 142,600	0.07*A
	Freight	$ 101,900	0.05*A
	Total Equipment costs	$2,485,450	B = 1.22*A
Direct Installation Cost	Foundations and Supports	$ 198,800	0.08*B
	Handling and Erecting	$ 348,000	0.14*B
	Electrical	$ 99,400	0.04*B
	Piping	$ 49,700	0.01*B
	Insulation	$ 24,900	0.01*B
	Panting	$ 24,900	0.01*B
	Total installation costs	$ 745,700	0.30*B
Total Direct Costs		$ 3,231,200	
Indirect costs (installation)	Engineering	$248,500	0.10*B
	Construction/field expense	$124,300	0.05*B
	Contractor fees	$248,500	0.10*B
	Start-up	$49,700	0.02*B
	Performance tests	$24,900	0.01*B
	Contingencies	$61,120	0.03*B
	Total construction	$ 770,490	0.31*B
Total Capital Investment Costs		$4,001,690	

Attachment 1

Operating Costs per Turbine

Item	Value	Basis	Source
Electricity	3.0	Pressure Drop	Vendor
Pressure Drop (in. WC)	180,000		
Power Output of Turbine (kW)	0.3%	0.1% per I in.	Vendor
Power Loss Due to Pressure drop (kW)	540		
Unit Cost ($/kWh)	$0.045		Estimate
Cost ($/yr) (based on 4,000 hours)	$97,200		
Operating Labor	$90,090		OAQPS
Supervisory Labor	$13,510		OAQPS
Maintenance			
Labor	0.5	½ hr per shift	OAQPS
Analyzer labor	0.04		
Catalyst replacement labor	0.1	40 hr./yr	
Unit cost($/hr)	$35.00		
Labor Costs ($/yr)	$25,620		
Material Costs ($/yr)	$21,960		OAQPS
Total Costs ($/yr)	$47,580		
Ammonia Requirement			
Ton/yr	44		Vendor
Unit cost	$315		Peoples Gas
Total Cost	$13,930		
Process Air			
Requirement (scf/lb NH3)	350		Vendor
Requirement (Mscf/yr)	69,643		Vendor
Unit Cost ($/Mscf)	$0.20	Peters Timmerhaus	Standard
Total Cost ($/yr)	$13,930		
Catalyst Replacement			
Catalyst Costs	$384,130	Catalyst	Vendor
Annual Cost ($/yr) (3 year life)	$146,370		OAQPS
Indirect Annual Costs			
Overhead	$86,916		OAQPS
Administrative	$88,458		OAQPS
Property Tax	$44,229		OAQPS
Insurance	$44,229		OAQPS
Capital Recovery	$576,191		OAQPS
Total Indirect ($/yr)	$795,794		OAQPS
Total Annualized Cost ($/yr)	$1,218,404		

OAQPS – Office of Air Quality Planning and Standards

Attachment 2

Cost Analysis
Facility Designed for 2.5 ppm NOx Limit with a 10 ppm NH_3 Slip
Operated at 2.0 ppm NOx Limit with a 5 ppm NH_3 Slip

Attachment 2

Selective Catalytic Reduction (SCR) Cost Estimates
Facility Design 2.5 ppm NO_x 10.0 ppm NH_3 slip
2.0 ppm NO_x 5.0 ppm NH_3 slip

Capital Costs per Turbine

	Items	Value	Basis
Purchased Equipment	Equipment costs	$ 2,296,620	Vendor Quote = A
	Instruments	$ 229,662	0.10*A
	Sales tax	$ 160,763	0.07*A
	Freight	$ 114,831	0.05*A
	Total Equipment costs	$2,801,876	B = 1.22*A
Direct Installation Cost	Foundations and Supports	$ 224,150	0.08*B
	Handling and Erecting	$ 392,263	0.14*B
	Electrical	$ 112,075	0.04*B
	Piping	$ 56,036	0.02*B
	Insulation	$ 28,018	0.01*B
	Panting	$ 28,018	0.01*B
	Total installation costs	$ 840,563	0.30*B
Total Direct Costs		$ 3,642,440	
Indirect costs (installation)	Engineering	$280,188	0.10*B
	Construction/field expense	$140,094	0.05*B
	Contractor fees	$280,188	0.10*B
	Start-up	$56,038	0.02*B
	Performance tests	$28,019	0.01*B
	Contingencies	$84,056	0.03*B
	Total construction	$ 868,582	0.31*B
Total Capital Investment Costs		$4,511,022	

Attachment 2

Operating Costs per Turbine

Item	Value	Basis	Source
Electricity	3.8	Pressure Drop	Vendor
Pressure Drop (in. WC)	180,000		
Power Output of Turbine (kW)	0.38%	0.1% per I in.	Vendor
Power Loss Due to Pressure drop (kW)	684		
Unit Cost ($/kWh)	$0.045		Estimate
Cost ($/yr) (based on 4,000 hours)	$123,120		
Operating Labor	$90,090		OAQPS
Supervisory Labor	$13,510		OAQPS
Maintenance			
Labor	0.5	½ hr per shift	OAQPS
Analyzer labor	0.04		
Catalyst replacement labor	0.1	40 hr./yr	
Unit cost($/hr)	$35.00		
Labor Costs ($/yr)	$25,620		
Material Costs ($/yr)	$21,960		OAQPS
Total Costs ($/yr)	$47,580		
Ammonia Requirement			
Ton/yr	59		Vendor
Unit cost	$315		Peoples Gas
Total Cost	$18,585		
Process Air			
Requirement (scf/lb NH3)	350		Vendor
Requirement (Mscf/yr)	69,643		Vendor
Unit Cost ($/Mscf)	$0.20	Peters Timmerhaus	Standard
Total Cost ($/yr)	$18,525		
Catalyst Replacement			
Catalyst Costs	$643,500	Catalyst	Vendor
Annual Cost ($/yr) (3 year life)	$245,200		OAQPS
Indirect Annual Costs			
Overhead	$86,916		OAQPS
Administrative	$90,220		OAQPS
Property Tax	$45,110		OAQPS
Insurance	$45,110		OAQPS
Capital Recovery	$627,500		OAQPS
Total Indirect ($/yr)	$894,856		OAQPS
Total Annualized Cost ($/yr)	$1,451,466		

OAQPS – Office of Air Quality Planning and Standards

Attachment 3

Cost Analysis
Facility Designed for 2.5 ppm NOx Limit with a 5 ppm NH_3 Slip
Operated at 2.0 ppm NOx Limit with a 5 ppm NH_3 Slip

Attachment 3

Selective Catalytic Reduction (SCR) Cost Estimates
Facility Design 2.5 ppm NO_x 5.0 ppm NH_3 slip
2.0 ppm NO_x 5.0 ppm NH_3 slip*

Capital Costs per Turbine

	Items	Value	Basis
Purchased Equipment	Equipment costs	$ 2,296,620	Vendor Quote = A
	Instruments	$ 229,662	0.10*A
	Sales tax	$ 160,763	0.07*A
	Freight	$ 114,831	0.05*A
	Total Equipment costs	$2,801,876	B = 1.22*A
Direct Installation Cost	Foundations and Supports	$ 224,150	0.08*B
	Handling and Erecting	$ 392,263	0.14*B
	Electrical	$ 112,075	0.04*B
	Piping	$ 56,036	0.02*B
	Insulation	$ 28,018	0.01*B
	Panting	$ 28,018	0.01*B
	Total installation costs	$ 840,563	0.30*B
Total Direct Costs		$ 3,642,440	
Indirect costs (installation)	Engineering	$280,188	0.10*B
	Construction/field expense	$140,094	0.05*B
	Contractor fees	$280,188	0.10*B
	Start-up	$56,038	0.02*B
	Performance tests	$28,019	0.01*B
	Contingencies	$84,056	0.03*B
	Total construction	$ 868,582	0.31*B
Total Capital Investment Costs		$4,511,022	

Attachment 3

Operating Costs per Turbine

Item	Value	Basis	Source
Electricity	3.8	Pressure Drop	Vendor
Pressure Drop (in. WC)	180,000		
Power Output of Turbine (kW)	0.38%	0.1% per I in.	Vendor
Power Loss Due to Pressure drop (kW)	684		
Unit Cost ($/kWh)	$0.045		Estimate
Cost ($/yr) (based on 4,000 hours)	$123,120		
Operating Labor	$90,090		OAQPS
Supervisory Labor	$13,510		OAQPS
Maintenance			
Labor	0.5	½ hr per shift	OAQPS
Analyzer labor	0.04		
Catalyst replacement labor	0.1	40 hr./yr	
Unit cost($/hr)	$35.00		
Labor Costs ($/yr)	$25,620		
Material Costs ($/yr)	$21,960		OAQPS
Total Costs ($/yr)	$47,580		
Ammonia Requirement			
Ton/yr	59		Vendor
Unit cost	$315		Peoples Gas
Total Cost	$18,585		
Process Air			
Requirement (scf/lb NH3)	350		Vendor
Requirement (Mscf/yr)	69,643		Vendor
Unit Cost ($/Mscf)	$0.20	Peters Timmerhaus	Standard
Total Cost ($/yr)	$18,525		
Catalyst Replacement			
Catalyst Costs	$643,500	Catalyst	Vendor
Annual Cost ($/yr) (3 year life)	$522,230		OAQPS
Indirect Annual Costs			
Overhead	$86,916		OAQPS
Administrative	$90,220		OAQPS
Property Tax	$45,110		OAQPS
Insurance	$45,110		OAQPS
Capital Recovery	$627,500		OAQPS
Total Indirect ($/yr)	$894,856		OAQPS
Total Annualized Cost ($/yr)	$1,728,500		

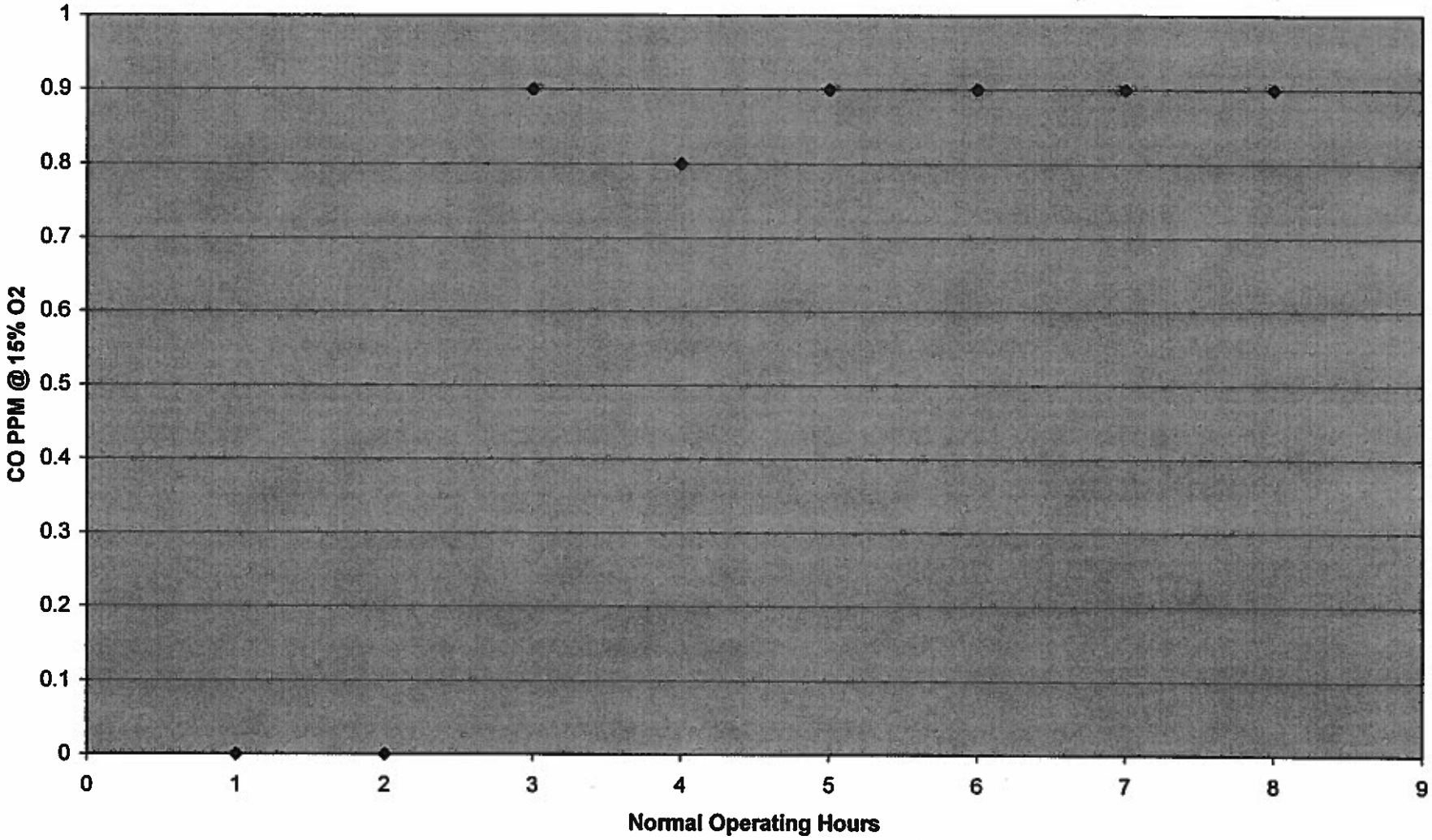
OAQPS – Office of Air Quality Planning and Standards

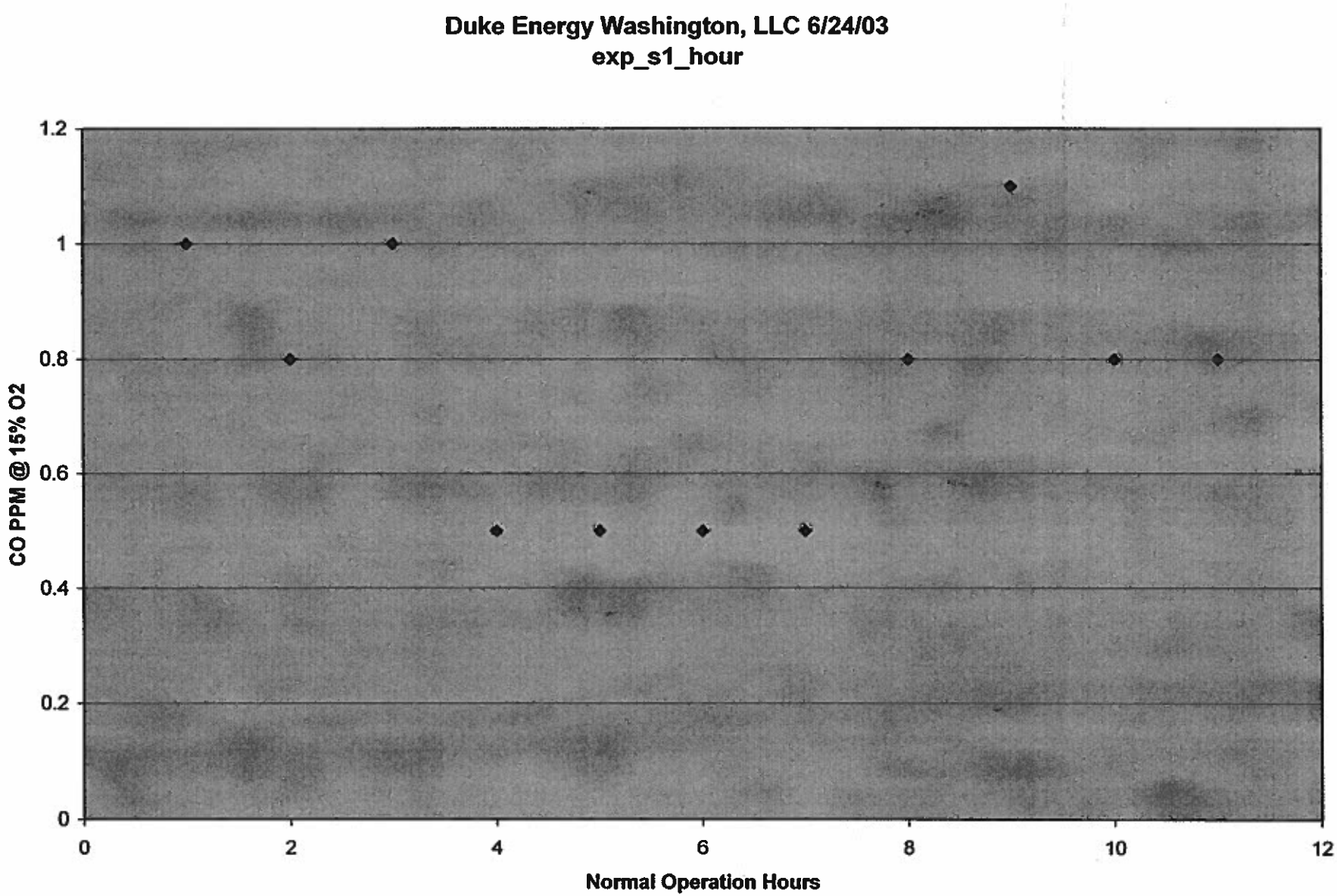
* Cost estimates based on a system that was designed to operate at 2.5 ppm NOx and 10 ppm NH_3, but operated at 2.0 ppm NO_x and 5.0 ppm NH_3. Estimates based on vendor modeling.

Attachment 4

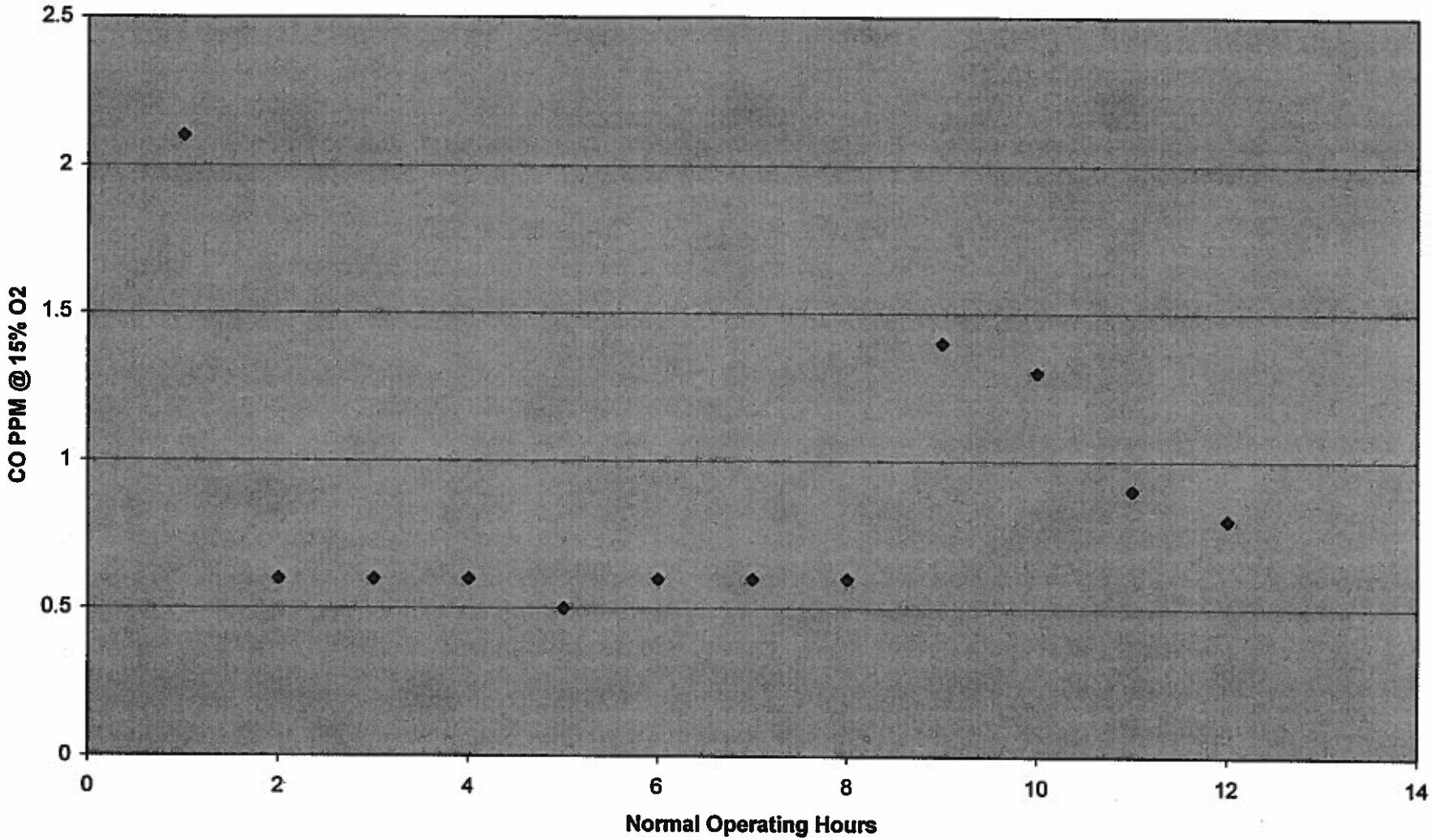
CO Emissions Data from Duke Energy Washington, LLC

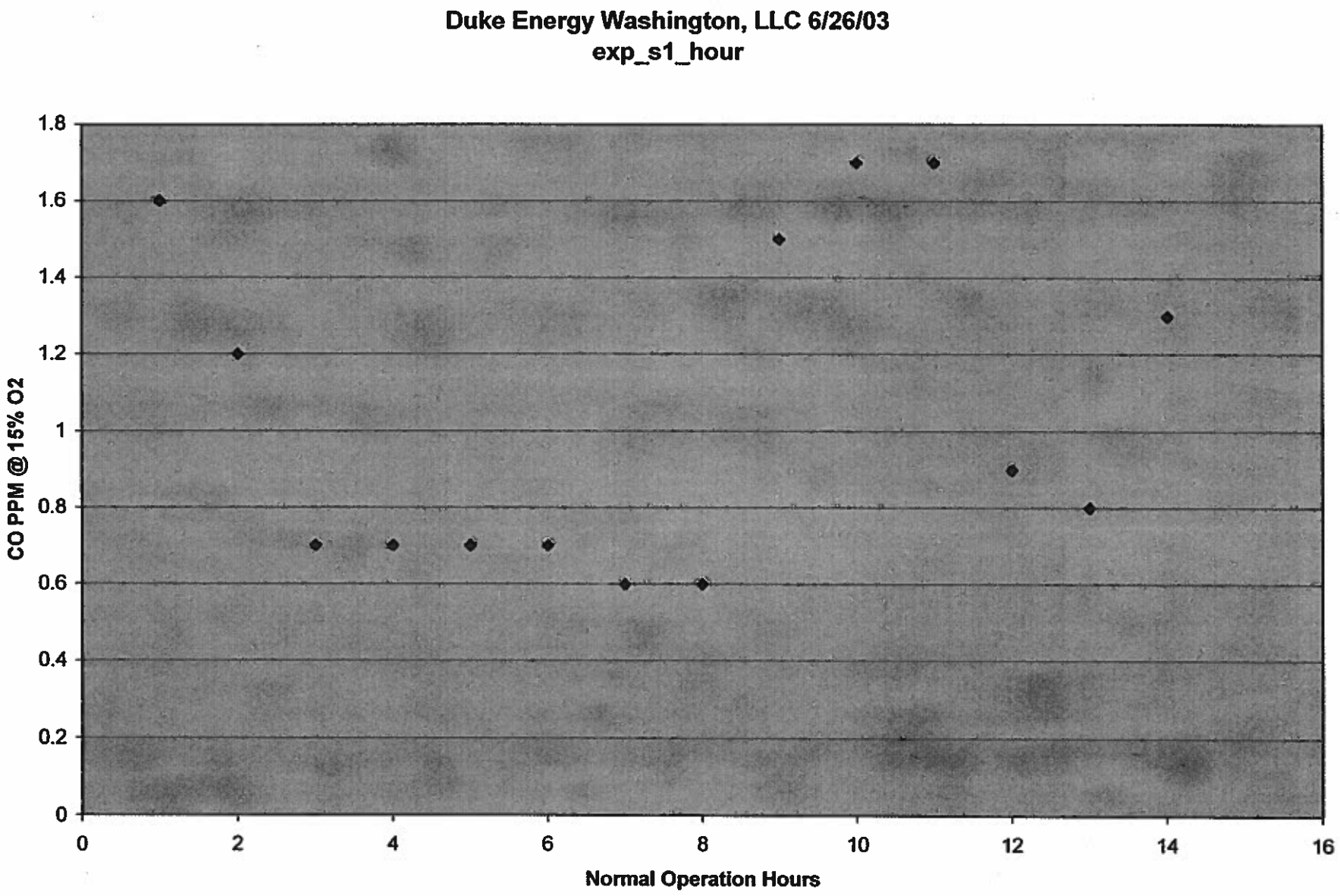
Duke Energy Washington LLC 6/23/03
exp_s1_hour




Duke Energy Washington, LLC 6/24/03
exp_s1_hour
CO PPM @ 15% O2
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
Normal Operation Hours

Duke Energy Washington, LLC 6/25/03
exp_s1_hour




Duke Energy Washington, LLC 6/26/03
exp_s1_hour
CO PPM @15% O2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
2
4
6
8
10
12
14
16
Normal Operation Hours

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

TDATETIME	PROCESS_1	T_1_CO_Raw	T_1_CO_Raw_MC	T_1_CO_Cor	T_1_CO_Cor_MC	T_1_Heat_Input	T_1_CO_lb/mmbtu	T_1_CO_lb/mmbtu_MC	T_1_CO_lb/hr	T_1_CO_lb/hr_MC	PROCESS_4	PROCESS_5	CPROCESS_1
06/23/03 06:59:51	3	142	98	0	98	128.8	0.5398	98	69.5	98	5	5	Startup
06/23/03 07:59:47	3	85.2	0	128.6	0	583.1	0.2883	0	168.1	0	5	5	Startup
06/23/03 08:59:47	3	95.9	0	166.4	0	561.7	0.3731	0	209.6	0	5	5	Startup
06/23/03 09:59:47	3	234	0	306.8	0	664.8	0.6879	0	457.3	0	5	5	Startup
06/23/03 10:59:50	3	1.6	0	1.4	0	1231.7	0.0031	0	3.8	0	5	5	Startup
06/23/03 11:59:48	8	0	15	0	15	1520.5	0	15	0	15	5	5	Normal Opera
06/23/03 12:59:50	8	0	15	0	15	1568.9	0	15	0	15	5	5	Normal Opera
06/23/03 13:59:48	8	1	0	0.9	0	1480.2	0.0019	0	2.8	0	5	5	Normal Opera
06/23/03 14:59:47	8	1	0	0.8	0	1651.1	0.0019	0	3.1	0	5	5	Normal Opera
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06/23/03 17:59:47	8	1	0	0.9	0	1370.1	0.0019	0	2.6	0	5	5	Normal Opera
06/23/03 18:59:49	8	1	0	0.9	0	1360.4	0.0019	0	2.6	0	5	5	Normal Opera
06/23/03 19:59:50	4	3.9	0	3.3	0	1320.3	0.0074	0	9.8	0	5	5	Shutdown
06/23/03 20:59:49	4	548.6	13	0	13	23.3	2.5827	13	60.2	13	5	5	Shutdown
06/24/03 07:59:47	3	206.4	13	0	13	69.6	0.9319	13	64.9	13	5	5	Startup
06/24/03 08:59:48	3	290.1	0	327.3	0	717.9	0.7338	0	526.8	0	5	5	Startup
06/24/03 09:59:47	3	1.8	0	1.5	0	1413.4	0.0034	0	4.8	0	5	5	Startup
06/24/03 10:59:48	8	1.2	0	1	0	1557.3	0.0023	0	3.6	0	5	5	Normal Opera
06/24/03 11:59:50	8	1	0	0.8	0	1650	0.0019	0	3.1	0	5	5	Normal Opera
06/24/03 12:59:49	8	1.4	0	1	0	1983.9	0.0023	0	4.6	0	5	5	Normal Opera
06/24/03 13:59:47	8	0.8	0	0.5	0	2225.8	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 14:59:49	8	0.8	0	0.5	0	2229.6	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 15:59:49	8	0.8	0	0.5	0	2226.3	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 16:59:49	8	0.8	0	0.5	0	2225.6	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 17:59:50	8	1.1	0	0.8	0	2100.3	0.0017	0	3.6	0	5	5	Normal Opera
06/24/03 18:59:48	8	1.5	0	1.1	0	1975.1	0.0025	0	4.9	0	5	5	Normal Opera
06/24/03 19:59:49	8	1	0	0.8	0	1240.6	0.0019	0	2.4	0	5	5	Normal Opera
06/24/03 20:59:50	8	1	0	0.8	0	1334.4	0.0019	0	2.5	0	5	5	Normal Opera
06/24/03 21:59:48	4	1.4	0	1.2	0	1206.6	0.0027	0	3.3	0	5	5	Shutdown
06/24/03 22:59:49	4	469	13	0	13	46.6	1.7428	13	81.2	13	5	5	Shutdown
06/25/03 07:59:49	3	221.4	13	0	13	68.4	1.0065	13	68.8	13	5	5	Startup
06/25/03 08:59:48	3	339	0	384.6	0	703.2	0.8624	0	606.4	0	5	5	Startup
06/25/03 09:59:47	3	3.1	0	2.6	0	1416.6	0.0059	0	8.4	0	5	5	Startup
06/25/03 10:59:48	8	2.6	0	2.1	0	1738.2	0.0047	0	8.2	0	5	5	Normal Opera
06/25/03 11:59:50	8	0.9	0	0.6	0	2162.2	0.0014	0	3	0	5	5	Normal Opera
06/25/03 12:59:50	8	0.9	0	0.6	0	2290.6	0.0013	0	3	0	5	5	Normal Opera
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06/25/03 14:59:48	8	0.8	0	0.5	0	2300.3	0.0011	0	2.5	0	5	5	Normal Opera
06/25/03 15:59:48	8	0.9	0	0.6	0	2305	0.0013	0	3	0	5	5	Normal Opera
06/25/03 16:59:49	8	0.9	0	0.6	0	2305	0.0013	0	3	0	5	5	Normal Opera
06/25/03 17:59:47	8	1	0	0.6	0	2281.7	0.0014	0	3.2	0	5	5	Normal Opera
06/25/03 18:59:51	8	1.8	0	1.4	0	1865.7	0.0032	0	6	0	5	5	Normal Opera
06/25/03 19:59:48	8	1.6	0	1.3	0	1865.1	0.0028	0	5.2	0	5	5	Normal Opera
06/25/03 20:59:47	8	1.1	0	0.9	0	1764.5	0.002	0	3.5	0	5	5	Normal Opera
06/25/03 21:59:50	8	1	0	0.8	0	1242.2	0.0019	0	2.4	0	5	5	Normal Opera
06/25/03 22:59:49	4	7.6	0	6.4	0	1195.7	0.0144	0	17.2	0	5	5	Shutdown
06/25/03 23:59:48	4	585.2	13	0	13	20.8	3.0122	13	62.7	13	5	5	Shutdown
06/26/03 06:59:48	3	233.9	13	0	13	80.2	1.0246	13	82.2	13	5	5	Startup
06/26/03 07:59:47	3	330.1	0	369.6	0	709.2	0.8286	0	587.6	0	5	5	Startup
06/26/03 08:59:49	3	1.9	0	1.6	0	1400	0.0036	0	5	0	5	5	Startup
06/26/03 09:59:50	8	1.6	0	1.2	0	1990	0.0026	0	5.2	0	5	5	Normal Opera
06/26/03 10:59:52	8	1.1	0	0.7	0	2264	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 11:59:49	8	1.1	0	0.7	0	2267.9	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 12:59:49	8	1.1	0	0.7	0	2271.4	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 13:59:49	8	1.1	0	0.7	0	2280.2	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 14:59:48	8	1	0	0.6	0	2277.1	0.0014	0	3.2	0	5	5	Normal Opera
06/26/03 15:59:51	8	1	0	0.6	0	2278.5	0.0014	0	3.2	0	5	5	Normal Opera
06/26/03 16:59:50	8	1.9	0	1.5	0	1936.1	0.0033	0	6.4	0	5	5	Normal Opera
06/26/03 17:59:50	8	2.1	0	1.7	0	1647.5	0.0038	0	7	0	5	5	Normal Opera
06/26/03 18:59:49	8	2.1	0	1.7	0	1636.6	0.0038	0	7	0	5	5	Normal Opera
06/26/03 19:59:48	8	1.1	0	0.9	0	1576	0.0021	0	3.3	0	5	5	Normal Opera
06/26/03 20:59:49	8	1	0	0.8	0	1239.9	0.0019	0	2.4	0	5	5	Normal Opera
06/26/03 21:59:51	4	1.5	0	1.3	0	1378.6	0.0028	0	3.9	0	5	5	Shutdown

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS 1	T_1_CO_Raw	T_1_CO_Raw_MG	T_1_CO_Cor	T_1_CO_Cor_MG	T_1_Heat_Input	T_1_CO_lb_mmbtu	T_1_CO_lb_hr	T_1_CO_lb_hr_MG	T_1_CO_lb_hr	T_1_CO_lb_hr_MG	PROCESS 4	PROCESS 5	PROCESS 1
06/26/03 22:59:48	4	471.2	13	0	13	46.5	1.7412	13	81	13	13	5	5	Shutdown
07/03/03 04:59:49	3	185.1	13	0	13	196.9	0.8028	13	158.1	13	13	5	5	Startup
07/03/03 05:59:48	3	536.4	0	830.6	0	579.2	1.8624	0	1078.7	0	0	5	5	Startup
07/03/03 06:59:48	3	454.5	0	576.7	0	646.3	1.293	0	835.7	0	0	5	5	Startup
07/03/03 07:59:48	3	242.3	0	255.3	0	764	0.5724	0	437.3	0	0	5	5	Startup
07/03/03 08:59:50	3	1.4	0	1.2	0	1628.1	0.0026	0	4.2	0	0	5	5	Startup
07/03/03 09:59:49	8	1.3	0	1.1	0	1491.8	0.0025	0	3.7	0	0	5	5	Normal Opera
07/03/03 10:59:47	8	1.1	0	0.9	0	1349	0.0021	0	2.8	0	0	5	5	Normal Opera
07/03/03 11:59:49	8	1.1	0	0.9	0	1656.7	0.0021	0	3.5	0	0	5	5	Normal Opera
07/03/03 12:59:48	8	1.6	0	1.2	0	2011.4	0.0026	0	5.2	0	0	5	5	Normal Opera
07/03/03 13:59:48	8	1.5	0	1.1	0	2010.7	0.0025	0	5	0	0	5	5	Normal Opera
07/03/03 14:59:50	8	0.9	0	0.6	0	2228.9	0.0013	0	2.9	0	0	5	5	Normal Opera
07/03/03 15:59:48	8	1	0	0.6	0	2345.8	0.0014	0	3.3	0	0	5	5	Normal Opera
07/03/03 16:59:47	8	0.9	0	0.6	0	2294.7	0.0013	0	3	0	0	5	5	Normal Opera
07/03/03 17:59:49	8	1	0	0.6	0	2286.7	0.0014	0	3.2	0	0	5	5	Normal Opera
07/03/03 18:59:49	8	1.7	0	1.3	0	1627.9	0.0029	0	5.3	0	0	5	5	Normal Opera
07/03/03 19:59:48	8	1.6	0	1.2	0	1791.6	0.0027	0	4.8	0	0	5	5	Normal Opera
07/03/03 20:59:47	4	1.7	0	1.4	0	1289	0.0032	0	4.1	0	0	5	5	Shutdown
07/03/03 21:59:51	4	488.7	13	0	13	41.7	1.7761	13	74.1	13	13	5	5	Shutdown
07/07/03 07:59:49	3	289.1	0	343.2	0	658.8	0.7695	0	506.9	0	0	5	5	Startup
07/07/03 08:59:49	3	1.7	0	1.4	0	1671.6	0.0032	0	5.3	0	0	5	5	Startup
07/07/03 09:59:50	8	1.7	0	1.3	0	1824.9	0.0029	0	5.3	0	0	5	5	Normal Opera
07/07/03 10:59:48	8	1	0	0.7	0	2058.1	0.0015	0	3.1	0	0	5	5	Normal Opera
07/07/03 11:59:51	8	1	0	0.6	0	2285.7	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 12:59:48	8	1	0	0.6	0	2277.8	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 13:59:48	8	1	0	0.6	0	2280.8	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 14:59:49	8	1	0	0.6	0	2284.5	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 15:59:50	8	1	0	0.6	0	2286.8	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 16:59:47	8	1	0	0.6	0	2268.3	0.0014	0	3.2	0	0	5	5	Normal Opera
07/07/03 17:59:47	8	1	0	0.6	0	2257.2	0.0015	0	3.4	0	0	5	5	Normal Opera
07/07/03 18:59:49	8	0.9	0	0.6	0	2248	0.0013	0	2.9	0	0	5	5	Normal Opera
07/07/03 19:59:48	8	0.9	0	0.6	0	2212	0.0013	0	2.9	0	0	5	5	Normal Opera
07/07/03 20:59:49	8	1.2	0	1	0	1787.5	0.0022	0	3.9	0	0	5	5	Normal Opera
07/07/03 21:59:48	8	1	0	0.8	0	1409.5	0.0019	0	2.7	0	0	5	5	Normal Opera
07/07/03 22:59:48	4	3.8	0	3.2	0	1360.1	0.0071	0	9.7	0	0	5	5	Shutdown
07/07/03 23:59:48	4	650.5	13	0	13	42.3	2.6892	13	113.8	13	13	5	5	Shutdown
07/08/03 05:59:48	3	240.1	13	0	13	80.7	1.0483	13	84.6	13	13	5	5	Startup
07/08/03 06:59:49	3	330.7	0	364	0	727.2	0.8162	0	593.5	0	0	5	5	Startup
07/08/03 07:59:49	3	1.3	0	1.1	0	1504	0.0024	0	3.6	0	0	5	5	Startup
07/08/03 08:59:49	8	1.1	0	0.9	0	1347.2	0.0021	0	2.8	0	0	5	5	Normal Opera
07/08/03 09:59:49	8	1.1	0	0.9	0	1511.4	0.0021	0	3.2	0	0	5	5	Normal Opera
07/08/03 10:59:50	8	1.5	0	1.2	0	1707.4	0.0028	0	4.8	0	0	5	5	Normal Opera
07/08/03 11:59:49	8	1.3	0	0.9	0	2096	0.002	0	4.2	0	0	5	5	Normal Opera
07/08/03 12:59:49	8	1.2	0	0.8	0	2101.4	0.0019	0	4	0	0	5	5	Normal Opera
07/08/03 13:59:49	8	0.9	0	0.6	0	2265.8	0.0013	0	2.9	0	0	5	5	Normal Opera
07/08/03 14:59:52	8	0.9	0	0.6	0	2313.1	0.0013	0	3	0	0	5	5	Normal Opera
07/08/03 15:59:48	8	1	0	0.6	0	2312.5	0.0014	0	3.2	0	0	5	5	Normal Opera
07/08/03 16:59:47	8	1.1	0	0.7	0	2318.5	0.0016	0	3.7	0	0	5	5	Normal Opera
07/08/03 17:59:49	8	1.1	0	0.7	0	2314.9	0.0016	0	3.7	0	0	5	5	Normal Opera
07/08/03 18:59:49	8	1	0	0.6	0	2325.4	0.0014	0	3.3	0	0	5	5	Normal Opera
07/08/03 19:59:49	8	1	0	0.6	0	2291.9	0.0014	0	3.2	0	0	5	5	Normal Opera
07/08/03 20:59:49	8	1.6	0	1.2	0	1837.7	0.0028	0	5.1	0	0	5	5	Normal Opera
07/08/03 21:59:48	8	1	0	0.8	0	1476.7	0.0019	0	2.8	0	0	5	5	Normal Opera
07/08/03 22:59:48	4	387.1	13	0	13	72.6	1.1799	13	85.7	13	13	5	5	Shutdown
07/09/03 08:59:47	3	231.5	13	0	13	125.4	2.0978	13	263	13	13	5	5	Startup
07/09/03 09:59:50	3	285.1	0	307.5	0	748.6	0.6895	0	516.2	0	0	5	5	Startup
07/09/03 10:59:50	3	1.1	0	0.9	0	1513.1	0.0021	0	3.2	0	0	5	5	Startup
07/09/03 11:59:49	8	1	0	0.8	0	1416.3	0.0019	0	2.7	0	0	5	5	Normal Opera
07/09/03 12:59:49	8	1	0	0.8	0	1522.7	0.0019	0	2.9	0	0	5	5	Normal Opera
07/09/03 13:59:49	8	1.1	0	0.9	0	1526.8	0.0021	0	3.2	0	0	5	5	Normal Opera
07/09/03 14:59:48	8	1.4	0	1.2	0	1703.7	0.0026	0	4.4	0	0	5	5	Normal Opera
07/09/03 15:59:47	8	1.1	0	0.9	0	1783.3	0.0019	0	3.4	0	0	5	5	Normal Opera
07/09/03 16:59:47	8	1	0	0.8	0	1663.6	0.0019	0	3.2	0	0	5	5	Normal Opera
07/09/03 17:59:50	8	1	0	0.8	0	1667.1	0.0019	0	3.2	0	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS 1	T_1_CO_RAW	T_1_CO_RAW_MB	T_1_CO_CAL	T_1_CO_CAL_MB	T_1_Heat Input	T_1_CO_lb_HRU	T_1_CO_lb_HRU_MB	T_1_CO_KLN	T_1_CO_lb_KLN	PROCESS 4	PROCESS 5	PROCESS 1
07/09/03 18:59:49	8	1	0	0.8	0	1390.6	0.0019	0	2.6	0	5	5	Normal Opera
07/09/03 19:59:49	8	1	0	0.8	0	1382.2	0.0019	0	2.6	0	5	5	Normal Opera
07/09/03 20:59:48	8	1	0	0.8	0	1379.2	0.0019	0	2.6	0	5	5	Normal Opera
07/09/03 21:59:48	4	1.1	0	0.9	0	1380.2	0.0021	0	2.9	0	5	5	Shutdown
07/09/03 22:59:47	4	442.2	13	0	13	52.7	1.5036	13	79.3	13	5	5	Shutdown
07/15/03 06:59:48	3	241.1	13	0	13	207	0.9464	13	195.9	13	5	5	Startup
07/15/03 07:59:47	3	399.4	0	658.2	0	577.1	1.4759	0	851.7	0	5	5	Startup
07/15/03 08:59:49	3	475.2	0	635.8	0	621.9	1.4255	0	886.5	0	5	5	Startup
07/15/03 09:59:48	3	371.5	0	413.6	0	775.3	0.9273	0	718.9	0	5	5	Startup
07/15/03 10:59:47	8	1.3	0	1.1	0	1552.8	0.0024	0	3.7	0	5	5	Normal Opera
07/15/03 11:59:49	8	1.4	0	1.2	0	1675.3	0.0026	0	4.4	0	5	5	Normal Opera
07/15/03 12:59:49	8	1.5	0	1.1	0	1807.4	0.0026	0	4.7	0	5	5	Normal Opera
07/15/03 13:59:49	8	1.2	0	0.8	0	2085.5	0.0019	0	4	0	5	5	Normal Opera
07/15/03 14:59:49	8	1.3	0	0.9	0	2101.4	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 15:59:49	8	1.3	0	0.9	0	2113.5	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 16:59:47	8	1.2	0	0.8	0	2327	0.0017	0	4	0	5	5	Normal Opera
07/15/03 17:59:50	8	1.2	0	0.7	0	2332	0.0017	0	4	0	5	5	Normal Opera
07/15/03 18:59:50	8	1.3	0	0.9	0	2096.6	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 19:59:50	8	1.1	0	0.9	0	1658.9	0.0021	0	3.5	0	5	5	Normal Opera
07/15/03 20:59:49	8	1.1	0	0.9	0	1614.4	0.0021	0	3.4	0	5	5	Normal Opera
07/15/03 21:59:49	8	1	0	0.8	0	1648.1	0.0019	0	3.1	0	5	5	Normal Opera
07/15/03 22:59:49	4	425.7	13	0	13	91.3	1.3127	13	119.8	13	5	5	Shutdown
07/16/03 07:59:50	3	220.2	13	0	13	121.3	0.9307	13	112.9	13	5	5	Startup
07/16/03 08:59:47	3	297	0	323.3	0	735.8	0.7249	0	533.4	0	5	5	Startup
07/16/03 09:59:47	3	31.1	0	26.9	0	1283.5	0.0602	0	77.3	0	5	5	Startup
07/16/03 10:59:49	8	1.1	0	0.9	0	1334.1	0.0021	0	2.8	0	5	5	Normal Opera
07/16/03 11:59:49	8	1.1	0	0.9	0	1367	0.0021	0	2.9	0	5	5	Normal Opera
07/16/03 12:59:48	8	1	0	0.8	0	1649.7	0.0019	0	3.1	0	5	5	Normal Opera
07/16/03 13:59:47	8	1.1	0	0.9	0	1623.4	0.0021	0	3.4	0	5	5	Normal Opera
07/16/03 14:59:49	8	3.4	0	2.7	0	1882	0.0062	0	11.7	0	5	5	Normal Opera
07/16/03 15:59:50	8	0.9	0	0.6	0	2260.3	0.0013	0	2.9	0	5	5	Normal Opera
07/16/03 16:59:50	8	1	0	0.7	0	2184.7	0.0015	0	3.3	0	5	5	Normal Opera
07/16/03 17:59:50	8	0.9	0	0.6	0	2213.2	0.0013	0	2.9	0	5	5	Normal Opera
07/16/03 18:59:49	8	1	0	0.8	0	1576	0.0019	0	3	0	5	5	Normal Opera
07/16/03 19:59:49	8	1	0	0.8	0	1635.6	0.0019	0	3.1	0	5	5	Normal Opera
07/16/03 20:59:48	8	1	0	0.8	0	1255.7	0.0019	0	2.4	0	5	5	Normal Opera
07/16/03 21:59:47	4	3.1	0	2.6	0	1228.8	0.0059	0	7.2	0	5	5	Shutdown
07/16/03 22:59:51	4	232.6	13	0	13	227	0.9131	13	207.3	13	5	5	Shutdown
07/17/03 08:59:50	3	257.5	13	0	13	71.5	1.0953	13	78.3	13	5	5	Startup
07/17/03 09:59:48	3	258.8	0	283.8	0	740.4	0.6364	0	471.2	0	5	5	Startup
07/17/03 10:59:48	3	1.6	0	1.4	0	1624.4	0.003	0	4.9	0	5	5	Startup
07/17/03 11:59:47	8	1.1	0	0.9	0	1646.6	0.0021	0	3.5	0	5	5	Normal Opera
07/17/03 12:59:48	8	2.7	0	2.2	0	1773.1	0.0049	0	8.7	0	5	5	Normal Opera
07/17/03 13:59:50	8	0.9	0	0.6	0	2226	0.0013	0	2.9	0	5	5	Normal Opera
07/17/03 14:59:47	8	0.8	0	0.5	0	2260.9	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 15:59:52	8	0.8	0	0.5	0	2263.5	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 16:59:48	8	0.8	0	0.5	0	2266	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 17:59:51	8	0.9	0	0.6	0	2262	0.0013	0	2.9	0	5	5	Normal Opera
07/17/03 18:59:48	8	1.5	0	1.1	0	2034.8	0.0025	0	5.1	0	5	5	Normal Opera
07/17/03 19:59:51	8	1	0	0.8	0	1635.4	0.0019	0	3.1	0	5	5	Normal Opera
07/17/03 20:59:50	8	1	0	0.8	0	1322.2	0.0019	0	2.5	0	5	5	Normal Opera
07/17/03 21:59:46	4	2.2	0	1.8	0	1360.5	0.0041	0	5.6	0	5	5	Shutdown
07/17/03 22:59:48	4	507.3	13	0	13	36.6	1.9973	13	73.1	13	5	5	Shutdown
07/21/03 06:59:48	3	224.3	13	0	13	77.2	1.0669	13	83.9	13	5	5	Startup
07/21/03 07:59:47	3	114.9	0	211.2	0	574.6	0.4735	0	272.1	0	5	5	Startup
07/21/03 08:59:50	3	307.4	0	446.7	0	603.6	1.0016	0	604.6	0	5	5	Startup
07/21/03 09:59:49	3	270.9	0	291.7	0	740.1	0.654	0	484	0	5	5	Startup
07/21/03 10:59:49	3	1.4	0	1.2	0	1562.5	0.0026	0	4.1	0	5	5	Startup
07/21/03 11:59:48	8	1.6	0	1.3	0	1656.7	0.003	0	5	0	5	5	Normal Opera
07/21/03 12:59:48	8	1.6	0	1.2	0	1850.1	0.0027	0	5	0	5	5	Normal Opera
07/21/03 13:59:48	8	1.4	0	1	0	2071.1	0.0022	0	4.6	0	5	5	Normal Opera
07/21/03 14:59:47	8	1.1	0	0.7	0	2274.8	0.0016	0	3.6	0	5	5	Normal Opera
07/21/03 15:59:47	8	1.1	0	0.7	0	2284.7	0.0016	0	3.7	0	5	5	Normal Opera
07/21/03 16:59:50	8	1.1	0	0.7	0	2291.7	0.0016	0	3.7	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS_1	T-1_CO_Raw	T-4_CO_Raw_MC	T-1_CO_Cor	T-1_CO_Cor_MC	T-1_Heat_Input	T-1_SO_lb_mBtu	T-1_CO_lb_mBtu_MC	T-1_CO_lb_hr	T-1_CO_lb_hr_MC	PROCESS_4	PROCESS_5	DESCRIPTION_1
07/21/03 17:59:49	8	1.6	0	1.1	0	2075.6	0.0026	0	5.4	0	5	5	Normal Opera
07/21/03 18:59:48	8	1.8	0	1.4	0	1962.1	0.003	0	5.9	0	5	5	Normal Opera
07/21/03 19:59:49	4	11.5	0	9.7	0	1240.9	0.0218	0	27.1	0	5	5	Shutdown
07/21/03 20:59:49	4	574.5	13	0	13	15.8	3.102	13	49	13	5	5	Shutdown
07/22/03 10:59:48	3	239.8	13	0	13	75.5	1.1706	13	88.4	13	5	5	Startup
07/22/03 11:59:50	3	435.3	13	0	13	141.4	1.3299	13	188	13	5	5	Startup
07/25/03 11:59:50	3	243.3	0	291.2	0	595.3	0.6529	0	388.7	0	5	5	Startup
07/25/03 12:59:50	3	2.1	0	1.8	0	1661.5	0.0039	0	6.5	0	5	5	Startup
07/25/03 13:59:49	8	1.9	0	1.5	0	1648.1	0.0033	0	6.1	0	5	5	Normal Opera
07/25/03 14:59:49	8	1.1	0	0.8	0	2167.4	0.0017	0	3.7	0	5	5	Normal Opera
07/25/03 15:59:49	8	0.9	0	0.6	0	2266.5	0.0013	0	2.9	0	5	5	Normal Opera
07/25/03 16:59:47	8	1.2	0	0.8	0	2143.3	0.0018	0	3.9	0	5	5	Normal Opera
07/25/03 17:59:51	8	1	0	0.8	0	1627.4	0.0019	0	3.1	0	5	5	Normal Opera
07/25/03 18:59:50	4	293.7	13	0	13	123.8	0.8232	13	101.9	13	5	5	Shutdown
07/26/03 12:59:51	3	207.8	13	0	13	420.8	0.4883	13	205.5	13	5	5	Startup
07/26/03 13:59:48	3	1.9	0	1.6	0	1359.7	0.0036	0	4.9	0	5	5	Startup
07/26/03 14:59:47	8	1.2	0	1	0	1659.8	0.0023	0	3.8	0	5	5	Normal Opera
07/26/03 15:59:50	8	1.4	0	1	0	1852.5	0.0023	0	4.3	0	5	5	Normal Opera
07/26/03 16:59:47	8	0.8	0	0.5	0	2066.2	0.0012	0	2.5	0	5	5	Normal Opera
07/26/03 17:59:49	8	0.9	0	0.6	0	2021.9	0.0014	0	2.8	0	5	5	Normal Opera
07/26/03 18:59:49	8	1	0	0.8	0	1641.3	0.0019	0	3.1	0	5	5	Normal Opera
07/26/03 19:59:48	8	1.1	0	0.9	0	1614.3	0.0021	0	3.4	0	5	5	Normal Opera
07/26/03 20:59:48	4	352.8	13	0	13	75.4	1.0559	13	79.6	13	5	5	Shutdown
07/28/03 10:59:50	3	261.2	13	0	13	466.5	0.711	13	331.7	13	5	5	Startup
07/28/03 11:59:50	3	1.6	0	1.3	0	1350.8	0.003	0	4.1	0	5	5	Startup
07/28/03 12:59:49	8	1.1	0	0.9	0	1632.3	0.0021	0	3.4	0	5	5	Normal Opera
07/28/03 13:59:49	8	1.2	0	1	0	1481.8	0.0023	0	3.4	0	5	5	Normal Opera
07/28/03 14:59:49	8	1.2	0	1	0	1642.4	0.0022	0	3.6	0	5	5	Normal Opera
07/28/03 15:59:48	8	2.7	0	2.1	0	1818.1	0.0048	0	8.7	0	5	5	Normal Opera
07/28/03 16:59:49	8	2.7	0	2.2	0	1821.5	0.0049	0	8.9	0	5	5	Normal Opera
07/28/03 17:59:51	8	1.1	0	0.9	0	1812.7	0.0021	0	3.4	0	5	5	Normal Opera
07/28/03 18:59:50	4	338.6	13	0	13	98.5	0.9954	13	98	13	5	5	Shutdown
07/30/03 08:59:49	3	207.9	13	0	13	146.7	0.8411	13	123.4	13	5	5	Startup
07/30/03 09:59:51	3	220.9	0	231.5	0	774.9	0.519	0	402.2	0	5	5	Startup
07/30/03 10:59:49	3	1.7	0	1.4	0	1595	0.0032	0	5.1	0	5	5	Startup
07/30/03 11:59:46	8	0.5	0	0.3	0	2315.1	0.0007	0	1.6	0	5	5	Normal Opera
07/30/03 12:59:48	8	0.4	0	0.2	0	2359	0.0006	0	1.4	0	5	5	Normal Opera
07/30/03 13:59:48	8	0.4	0	0.2	0	2363.6	0.0006	0	1.4	0	5	5	Normal Opera
07/30/03 14:59:47	8	0.4	0	0.2	0	2370.2	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 15:59:48	8	0.4	0	0.2	0	2373.7	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 16:59:47	8	0.4	0	0.2	0	2378.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 17:59:47	8	0.4	0	0.2	0	2381.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 18:59:47	8	0.4	0	0.2	0	2382.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 19:59:48	8	0.5	0	0.3	0	2381.4	0.0007	0	1.7	0	5	5	Normal Opera
07/30/03 20:59:48	8	0.7	0	0.5	0	2080.2	0.0011	0	2.3	0	5	5	Normal Opera
07/30/03 21:59:48	4	256.9	13	0	13	158.6	0.64	13	101.5	13	5	5	Shutdown
07/31/03 11:59:49	3	201.7	13	0	13	517	0.5232	13	270.5	13	5	5	Startup
07/31/03 12:59:49	3	1.5	0	1.2	0	1641.5	0.0028	0	4.6	0	5	5	Startup
07/31/03 13:59:47	8	1.1	0	0.8	0	1858.1	0.0018	0	3.3	0	5	5	Normal Opera
07/31/03 14:59:48	8	0.9	0	0.6	0	2047.4	0.0014	0	2.9	0	5	5	Normal Opera
07/31/03 15:59:50	8	0.5	0	0.3	0	2153.7	0.0008	0	1.7	0	5	5	Normal Opera
07/31/03 16:59:50	8	0.5	0	0.3	0	2284.3	0.0007	0	1.6	0	5	5	Normal Opera
07/31/03 17:59:49	8	0.7	0	0.6	0	1897.7	0.0013	0	2.2	0	5	5	Normal Opera
07/31/03 18:59:49	8	0.5	0	0.4	0	1239.7	0.0009	0	1.1	0	5	5	Normal Opera
07/31/03 19:59:49	8	0.8	0	0.5	0	1477.6	0.0011	0	1.6	0	5	5	Normal Opera
07/31/03 20:59:49	4	387.9	13	0	13	63.2	1.2608	13	79.7	13	5	5	Shutdown
08/01/03 06:59:47	3	216.9	13	0	13	111.4	0.8995	13	100.2	13	5	5	Startup
08/01/03 07:59:48	3	234.8	0	243.5	0	763.8	0.5459	0	417	0	5	5	Startup
08/01/03 08:59:48	3	0.8	0	0.7	0	1449.7	0.0015	0	2.2	0	5	5	Startup
08/01/03 09:59:46	8	0.5	0	0.4	0	1676.2	0.0009	0	1.5	0	5	5	Normal Opera
08/01/03 10:59:47	8	0.7	0	0.6	0	1683.3	0.0013	0	2.2	0	5	5	Normal Opera
08/01/03 11:59:47	8	1	0	0.7	0	2079.2	0.0016	0	3.3	0	5	5	Normal Opera
08/01/03 12:59:49	8	0.4	0	0.3	0	2302.3	0.0006	0	1.4	0	5	5	Normal Opera
08/01/03 13:59:48	8	0.4	0	0.3	0	2327.1	0.0006	0	1.4	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

TDATETIME	PROCESS_1	T_1_CO_Raw	T_1_CO_Raw_MC	T_1_CO_Corr	T_1_CO_Corr_MC	T_1_Stack_Volu	T_1_CO_lb_hrs	T_1_CO_lb_hrs_MC	T_1_CO_lb_hr	T_1_CO_lb_hr_MC	PROCESS_4	PROCESS_5	CPROCESS_1
08/01/03 14:59:48	8	0.4	0	0.2	0	2333.6	0.0006	0	1.4	0	5	5	Normal Opera
08/01/03 15:59:48	8	0.5	0	0.3	0	2355.6	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 16:59:48	8	0.5	0	0.3	0	2354.3	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 17:59:46	8	0.5	0	0.3	0	2330.9	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 18:59:46	8	0.7	0	0.5	0	2116.6	0.0011	0	2.3	0	5	5	Normal Opera
08/01/03 19:59:50	8	0.5	0	0.4	0	1601.1	0.0009	0	1.4	0	5	5	Normal Opera
08/01/03 20:59:49	4	2.5	0	2.1	0	1224.2	0.0047	0	5.8	0	5	5	Shutdown
08/01/03 21:59:47	4	254.1	13	0	13	242.8	0.9858	13	239.4	13	5	5	Shutdown
08/04/03 11:59:48	3	222.6	13	0	13	123.8	0.9005	13	111.5	13	5	5	Startup
08/04/03 12:59:48	3	214.3	0	221.8	0	772.8	0.4974	0	384.4	0	5	5	Startup
08/04/03 13:59:50	3	0.7	0	0.6	0	1328.4	0.0013	0	1.7	0	5	5	Startup
08/04/03 14:59:47	8	0.9	0	0.8	0	1629	0.0017	0	2.8	0	5	5	Normal Opera
08/04/03 15:59:47	8	0.9	0	0.6	0	2032.8	0.0014	0	2.8	0	5	5	Normal Opera
08/04/03 16:59:49	8	1	0	0.7	0	2022.6	0.0016	0	3.2	0	5	5	Normal Opera
08/04/03 17:59:48	8	1.1	0	0.8	0	2000.9	0.0018	0	3.6	0	5	5	Normal Opera
08/04/03 18:59:46	8	0.5	0	0.4	0	1601.5	0.0009	0	1.4	0	5	5	Normal Opera
08/04/03 19:59:47	4	0.8	0	0.7	0	1289.6	0.0015	0	1.9	0	5	5	Shutdown
08/04/03 20:59:50	4	206.3	13	0	13	269.4	0.7477	13	201.4	13	5	5	Shutdown
08/07/03 06:59:49	3	278.6	13	0	13	92.7	1.2285	13	113.9	13	5	5	Startup
08/07/03 07:59:48	3	339.8	0	486.6	0	590.2	1.0911	0	644	0	5	5	Startup
08/07/03 08:59:48	3	270.9	0	298.5	0	741.3	0.6649	0	492.9	0	5	5	Startup
08/07/03 09:59:46	3	1.2	0	1	0	1401.1	0.0023	0	3.2	0	5	5	Startup
08/07/03 10:59:49	8	1.3	0	1.1	0	1674.4	0.0024	0	4	0	5	5	Normal Opera
08/07/03 11:59:49	8	1.1	0	0.7	0	2086.7	0.0017	0	3.5	0	5	5	Normal Opera
08/07/03 12:59:49	8	0.8	0	0.5	0	2246.7	0.0012	0	2.7	0	5	5	Normal Opera
08/07/03 13:59:49	8	0.8	0	0.5	0	2248.9	0.0012	0	2.7	0	5	5	Normal Opera
08/07/03 14:59:49	8	0.8	0	0.5	0	2262.5	0.0011	0	2.5	0	5	5	Normal Opera
08/07/03 15:59:48	8	0.7	0	0.4	0	2256.2	0.001	0	2.3	0	5	5	Normal Opera
08/07/03 16:59:50	8	0.7	0	0.4	0	2253	0.001	0	2.3	0	5	5	Normal Opera
08/07/03 17:59:49	8	0.8	0	0.5	0	2255.6	0.0011	0	2.5	0	5	5	Normal Opera
08/07/03 18:59:49	8	0.9	0	0.6	0	2264.1	0.0013	0	2.9	0	5	5	Normal Opera
08/07/03 19:59:52	8	0.9	0	0.6	0	2232.6	0.0013	0	2.9	0	5	5	Normal Opera
08/07/03 20:59:48	8	1.1	0	0.9	0	1818.9	0.002	0	3.2	0	5	5	Normal Opera
08/07/03 21:59:49	4	317.8	13	0	13	94.8	0.8699	13	82.5	13	5	5	Shutdown
08/08/03 10:59:47	3	265.7	13	0	13	460	0.7307	13	336.1	13	5	5	Startup
08/08/03 11:59:52	3	2.2	0	1.8	0	1712.9	0.0039	0	6.7	0	5	5	Startup
08/08/03 12:59:48	8	0.8	0	0.5	0	2331.9	0.0011	0	2.6	0	5	5	Normal Opera
08/08/03 13:59:47	8	0.6	0	0.4	0	2280.8	0.0009	0	2.1	0	5	5	Normal Opera
08/08/03 14:59:47	8	0.7	0	0.4	0	2320.6	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 15:59:47	8	0.7	0	0.4	0	2318.8	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 16:59:47	8	0.7	0	0.4	0	2307.3	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 17:59:49	8	0.8	0	0.5	0	2304.6	0.0011	0	2.5	0	5	5	Normal Opera
08/08/03 18:59:49	8	1	0	0.6	0	2263.6	0.0014	0	3.2	0	5	5	Normal Opera
08/08/03 19:59:48	8	1.1	0	0.9	0	1632.3	0.002	0	3.3	0	5	5	Normal Opera
08/08/03 20:59:48	8	1.1	0	0.9	0	1667.9	0.002	0	3.3	0	5	5	Normal Opera
08/08/03 21:59:48	4	347.8	13	0	13	84.7	1.0247	13	86.8	13	5	5	Shutdown
08/11/03 05:59:47	3	196.6	13	0	13	138.9	0.8698	13	120.8	13	5	5	Startup
08/11/03 06:59:47	3	111.9	0	197.7	0	560.2	0.4432	0	248.3	0	5	5	Startup
08/11/03 07:59:47	3	339.7	0	389.9	0	712.8	0.8743	0	623.2	0	5	5	Startup
08/11/03 08:59:47	3	1.5	0	1.3	0	1473.4	0.0028	0	4.1	0	5	5	Startup
08/11/03 09:59:46	8	1.3	0	1.1	0	1673.3	0.0024	0	4	0	5	5	Normal Opera
08/11/03 10:59:48	8	1.1	0	0.8	0	2083	0.0017	0	3.5	0	5	5	Normal Opera
08/11/03 11:59:49	8	0.8	0	0.5	0	2292.7	0.0011	0	2.5	0	5	5	Normal Opera
08/11/03 12:59:49	8	0.6	0	0.4	0	2294.6	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 13:59:51	8	0.6	0	0.4	0	2295.7	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 14:59:50	8	0.6	0	0.4	0	2295.8	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 15:59:48	8	0.5	0	0.3	0	2278.7	0.0007	0	1.6	0	5	5	Normal Opera
08/11/03 16:59:48	8	0.7	0	0.4	0	2274	0.001	0	2.3	0	5	5	Normal Opera
08/11/03 17:59:48	8	0.9	0	0.6	0	2268.1	0.0013	0	2.9	0	5	5	Normal Opera
08/11/03 18:59:48	8	1	0	0.6	0	2223.4	0.0014	0	3.1	0	5	5	Normal Opera
08/11/03 19:59:48	8	1.1	0	0.9	0	1599.5	0.002	0	3.2	0	5	5	Normal Opera
08/11/03 20:59:48	4	350	13	0	13	76.9	1.0221	13	78.6	13	5	5	Shutdown
08/12/03 10:59:50	3	259.3	0	301.7	0	594.2	0.6766	0	402	0	5	5	Startup
08/12/03 11:59:48	8	1	0	0.8	0	1262.5	0.0019	0	2.4	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS 1	T_1_CO_Raw	T_1_CO_Raw_MC	T_1_CO_Corr	T_1_CO_Corr_MC	T_1_Heat_Input	T_1_CO_lb_mBtu	T_1_CO_lb_mBtu_MC	T_1_CO_lb_hr	T_1_CO_lb_hr_MC	PROCESS 4	PROCESS 5	PROCESS 1
08/12/03 12:59:48	8	0.7	0	0.6	0	1243.8	0.0013	0	1.6	0	5	5	Normal Opera
08/12/03 13:59:47	8	0.7	0	0.6	0	1450.9	0.0013	0	1.9	0	5	5	Normal Opera
08/12/03 14:59:48	8	0.6	0	0.5	0	1600.1	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 15:59:51	8	0.6	0	0.5	0	1597.8	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 16:59:48	8	0.6	0	0.5	0	1597.5	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 17:59:48	8	0.7	0	0.6	0	1453.6	0.0013	0	1.9	0	5	5	Normal Opera
08/12/03 18:59:49	4	1.1	0	0.9	0	1415.6	0.0021	0	3	0	5	5	Shutdown
08/12/03 19:59:49	4	470.6	13	0	13	44.3	1.7341	13	76.8	13	5	5	Shutdown
08/13/03 11:59:49	3	244	0	296.7	0	526.7	0.6697	0	352.7	0	5	5	Startup
08/13/03 12:59:48	3	1.5	0	1.2	0	1637.1	0.0028	0	4.6	0	5	5	Startup
08/13/03 13:59:48	8	1.1	0	0.8	0	2038.7	0.0018	0	3.7	0	5	5	Normal Opera
08/13/03 14:59:48	8	0.7	0	0.5	0	2274.4	0.001	0	2.3	0	5	5	Normal Opera
08/13/03 15:59:48	8	0.6	0	0.4	0	2271.5	0.0009	0	2	0	5	5	Normal Opera
08/13/03 16:59:48	8	0.6	0	0.4	0	2275.7	0.0009	0	2	0	5	5	Normal Opera
08/13/03 17:59:48	8	0.7	0	0.5	0	2243.1	0.001	0	2.2	0	5	5	Normal Opera
08/13/03 18:59:48	8	0.8	0	0.7	0	1617.8	0.0015	0	2.4	0	5	5	Normal Opera
08/13/03 19:59:49	4	2.8	0	2.3	0	1267.4	0.0052	0	6.6	0	5	5	Shutdown
08/13/03 20:59:49	4	546.4	13	0	13	28.1	2.2448	13	58.6	13	5	5	Shutdown
08/14/03 08:59:51	3	246.3	0	297.8	0	526.6	0.6677	0	352.9	0	5	5	Startup
08/14/03 09:59:49	3	1.3	0	1.1	0	1694.6	0.0024	0	4.1	0	5	5	Startup
08/14/03 10:59:50	8	1.2	0	0.9	0	1978.6	0.002	0	4	0	5	5	Normal Opera
08/14/03 11:59:49	8	0.6	0	0.4	0	2275.6	0.0009	0	2	0	5	5	Normal Opera
08/14/03 12:59:49	8	0.7	0	0.5	0	2280.7	0.001	0	2.3	0	5	5	Normal Opera
08/14/03 13:59:48	8	0.6	0	0.4	0	2321.1	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 14:59:48	8	0.6	0	0.4	0	2323.1	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 15:59:48	8	0.6	0	0.4	0	2295.5	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 16:59:48	8	0.6	0	0.4	0	2307	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 17:59:48	8	0.6	0	0.4	0	2323.3	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 18:59:50	8	0.7	0	0.4	0	2286.3	0.001	0	2.3	0	5	5	Normal Opera
08/14/03 19:59:49	8	0.8	0	0.7	0	1612.6	0.0015	0	2.4	0	5	5	Normal Opera
08/14/03 20:59:46	8	0.8	0	0.7	0	1620.8	0.0015	0	2.4	0	5	5	Normal Opera
08/14/03 21:59:47	4	362.2	13	0	13	86.4	1.0624	13	91.8	13	5	5	Shutdown
08/15/03 06:59:47	3	219.2	13	0	13	391.8	0.587	13	230	13	5	5	Startup
08/15/03 07:59:48	3	2.2	0	1.8	0	1300.2	0.0041	0	5.3	0	5	5	Startup
08/15/03 08:59:47	8	0.9	0	0.7	0	1319.1	0.0017	0	2.2	0	5	5	Normal Opera
08/15/03 09:59:49	8	1.1	0	0.9	0	1688.4	0.002	0	3.4	0	5	5	Normal Opera
08/15/03 10:59:48	8	1.3	0	1	0	1984.7	0.0021	0	4.2	0	5	5	Normal Opera
08/15/03 11:59:48	8	0.6	0	0.4	0	2284.5	0.0009	0	2.1	0	5	5	Normal Opera
08/15/03 12:59:47	8	0.8	0	0.5	0	2329.5	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 13:59:47	8	0.7	0	0.4	0	2337	0.001	0	2.3	0	5	5	Normal Opera
08/15/03 14:59:47	8	0.7	0	0.4	0	2354.4	0.001	0	2.4	0	5	5	Normal Opera
08/15/03 15:59:50	8	0.7	0	0.4	0	2361.2	0.001	0	2.4	0	5	5	Normal Opera
08/15/03 16:59:50	8	0.8	0	0.5	0	2354.4	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 17:59:47	8	0.9	0	0.6	0	2360.8	0.0012	0	2.8	0	5	5	Normal Opera
08/15/03 18:59:49	8	0.8	0	0.5	0	2349.1	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 19:59:48	8	0.8	0	0.5	0	2329.4	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 20:59:47	8	1.4	0	1.1	0	1805.9	0.0024	0	4.3	0	5	5	Normal Opera
08/15/03 21:59:50	4	1.9	0	1.6	0	1276.7	0.0035	0	4.5	0	5	5	Shutdown
08/15/03 22:59:50	4	501.8	13	0	13	38.5	1.8805	13	72.4	13	5	5	Shutdown
08/16/03 10:59:47	3	238.7	13	0	13	443.7	0.6484	13	287.7	13	5	5	Startup
08/16/03 11:59:51	3	1.1	0	0.9	0	1645.7	0.002	0	3.3	0	5	5	Startup
08/16/03 12:59:47	8	1.3	0	1	0	1643.5	0.0024	0	3.9	0	5	5	Normal Opera
08/16/03 13:59:49	8	0.6	0	0.4	0	2009.7	0.0009	0	1.8	0	5	5	Normal Opera
08/16/03 14:59:49	8	0.5	0	0.3	0	2033.1	0.0007	0	1.4	0	5	5	Normal Opera
08/16/03 15:59:49	8	0.7	0	0.5	0	1939.4	0.0011	0	2.1	0	5	5	Normal Opera
08/16/03 16:59:51	8	0.7	0	0.5	0	1939	0.0011	0	2.1	0	5	5	Normal Opera
08/16/03 17:59:48	8	0.9	0	0.6	0	1895.9	0.0014	0	2.7	0	5	5	Normal Opera
08/16/03 18:59:50	8	0.8	0	0.7	0	1520	0.0015	0	2.3	0	5	5	Normal Opera
08/16/03 19:59:47	8	0.8	0	0.7	0	1508.5	0.0015	0	2.3	0	5	5	Normal Opera
08/16/03 20:59:49	4	364.2	13	0	13	73.6	1.0876	13	80	13	5	5	Shutdown
08/17/03 11:59:47	3	191.5	13	0	13	499.9	0.5016	13	250.7	13	5	5	Startup
08/17/03 12:59:47	3	1.4	0	1.2	0	1258.4	0.0026	0	3.3	0	5	5	Startup
08/17/03 13:59:47	8	1	0	0.8	0	1654.9	0.0019	0	3.1	0	5	5	Normal Opera
08/17/03 14:59:50	8	1.2	0	0.9	0	1972.4	0.002	0	3.9	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS 1	T_1_CO_Raw	T_1_CO_Raw_MG	T_1_CO_Ppm	T_1_CO_Cor_MG	T_1_Bad_Sgnl	T_1_CO_lb_mbtu	T_1_CO_lb_mbtu_MG	T_1_CO_lb_hr	T_1_CO_lb_hr_MG	PROCESS 4	PROCESS 5	PROCESS 3
06/17/03 15:59:49	8	0.8	0	0.7	0	1588	0.0015	0	2.4	0	5	5	Normal Opera
06/17/03 16:59:49	8	0.8	0	0.7	0	1589.6	0.0015	0	2.4	0	5	5	Normal Opera
06/17/03 17:59:49	8	0.7	0	0.6	0	1589.1	0.0013	0	2.1	0	5	5	Normal Opera
06/17/03 18:59:48	8	0.8	0	0.7	0	1586.8	0.0015	0	2.4	0	5	5	Normal Opera
06/17/03 19:59:48	8	0.8	0	0.7	0	1573.4	0.0015	0	2.4	0	5	5	Normal Opera
06/17/03 20:59:47	4	319.3	13	0	13	90.5	0.9163	13	82.9	13	5	5	Shutdown
06/18/03 07:59:47	3	227.7	0	269.8	0	545.7	0.6049	0	330.1	0	5	5	Startup
06/18/03 08:59:49	3	1.1	0	0.9	0	1266.4	0.0021	0	2.7	0	5	5	Startup
06/18/03 09:59:48	8	1.2	0	1	0	1667.8	0.0023	0	3.8	0	5	5	Normal Opera
06/18/03 10:59:49	8	1.3	0	0.9	0	2075.1	0.0021	0	4.4	0	5	5	Normal Opera
06/18/03 11:59:48	8	0.8	0	0.5	0	2280.4	0.0012	0	2.7	0	5	5	Normal Opera
06/18/03 12:59:49	8	0.8	0	0.5	0	2249.4	0.0012	0	2.7	0	5	5	Normal Opera
06/18/03 13:59:48	8	0.6	0	0.4	0	2249.1	0.0009	0	2	0	5	5	Normal Opera
06/18/03 14:59:50	8	0.6	0	0.4	0	2252.7	0.0009	0	2	0	5	5	Normal Opera
06/18/03 15:59:50	8	0.6	0	0.4	0	2255.1	0.0009	0	2	0	5	5	Normal Opera
06/18/03 16:59:49	8	0.6	0	0.4	0	2307.4	0.0009	0	2.1	0	5	5	Normal Opera
06/18/03 17:59:49	8	0.7	0	0.5	0	2219	0.001	0	2.2	0	5	5	Normal Opera
06/18/03 18:59:48	8	1.3	0	1	0	1815.5	0.0023	0	4.2	0	5	5	Normal Opera
06/18/03 19:59:48	8	1.1	0	0.8	0	1801.9	0.0019	0	3.4	0	5	5	Normal Opera
06/18/03 20:59:51	8	0.9	0	0.8	0	1610.8	0.0017	0	2.7	0	5	5	Normal Opera
06/18/03 21:59:47	4	2.6	0	2.2	0	1221.2	0.0049	0	6	0	5	5	Shutdown
06/18/03 22:59:47	4	511.5	13	0	13	29.6	1.9902	13	58.9	13	5	5	Shutdown
06/19/03 07:59:47	3	224.8	0	264.2	0	544.2	0.5924	0	322.4	0	5	5	Startup
06/19/03 08:59:46	8	1.2	0	1	0	1707.5	0.0022	0	3.8	0	5	5	Normal Opera
06/19/03 09:59:50	8	1.4	0	1	0	2049.8	0.0023	0	4.7	0	5	5	Normal Opera
06/19/03 10:59:49	8	0.9	0	0.6	0	2291.4	0.0013	0	3	0	5	5	Normal Opera
06/19/03 11:59:49	8	0.8	0	0.5	0	2329.6	0.0011	0	2.6	0	5	5	Normal Opera
06/19/03 12:59:48	8	0.8	0	0.5	0	2332.3	0.0011	0	2.6	0	5	5	Normal Opera
06/19/03 13:59:46	8	0.7	0	0.4	0	2334.7	0.001	0	2.3	0	5	5	Normal Opera
06/19/03 14:59:46	8	0.7	0	0.4	0	2239.5	0.001	0	2.2	0	5	5	Normal Opera
06/19/03 15:59:46	8	0.7	0	0.4	0	1276.7	0.001	0	1.3	0	5	5	Normal Opera
06/19/03 16:59:48	8	0.6	0	0.4	0	2308.6	0.0008	0	1.8	0	5	5	Normal Opera
06/19/03 17:59:50	8	0.7	0	0.4	0	2306.4	0.001	0	2.3	0	5	5	Normal Opera
06/19/03 18:59:50	8	0.7	0	0.4	0	2296.8	0.001	0	2.3	0	5	5	Normal Opera
06/19/03 19:59:48	8	1	0	0.7	0	2074.3	0.0016	0	3.3	0	5	5	Normal Opera
06/19/03 20:59:49	8	0.8	0	0.7	0	1585.1	0.0015	0	2.4	0	5	5	Normal Opera
06/19/03 21:59:48	8	0.8	0	0.7	0	1468.4	0.0015	0	2.2	0	5	5	Normal Opera
06/19/03 22:59:49	4	409.4	13	0	13	62.5	1.3439	13	84	13	5	5	Shutdown
06/20/03 08:59:48	3	236.6	13	0	13	497.3	0.6323	13	314.4	13	5	5	Startup
06/20/03 09:59:47	3	1.3	0	1.1	0	1311.7	0.0024	0	3.1	0	5	5	Startup
06/20/03 10:59:48	8	1.3	0	1.1	0	1675.5	0.0024	0	4	0	5	5	Normal Opera
06/20/03 11:59:47	8	1.2	0	0.9	0	2044.9	0.0019	0	3.9	0	5	5	Normal Opera
06/20/03 12:59:47	8	0.7	0	0.4	0	2274.2	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 13:59:47	8	0.7	0	0.4	0	2311.9	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 14:59:50	8	0.7	0	0.4	0	2310	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 15:59:51	8	0.7	0	0.4	0	2306.4	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 16:59:49	8	0.6	0	0.4	0	2307.8	0.0008	0	1.8	0	5	5	Normal Opera
06/20/03 17:59:46	8	0.7	0	0.4	0	2307.7	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 18:59:48	8	0.6	0	0.4	0	2307.4	0.0008	0	1.8	0	5	5	Normal Opera
06/20/03 19:59:49	8	0.7	0	0.4	0	2261.9	0.001	0	2.3	0	5	5	Normal Opera
06/20/03 20:59:47	8	0.8	0	0.7	0	1584.9	0.0015	0	2.4	0	5	5	Normal Opera
06/20/03 21:59:49	8	0.8	0	0.7	0	1559.6	0.0015	0	2.3	0	5	5	Normal Opera
06/20/03 22:59:49	4	374.1	13	0	13	71.3	1.1273	13	80.4	13	5	5	Shutdown
06/21/03 07:59:47	3	266.6	13	0	13	470.1	0.7341	13	345.1	13	5	5	Startup
06/21/03 08:59:49	3	30.2	0	25.2	0	1574.5	0.0565	0	89	0	5	5	Startup
06/21/03 09:59:47	8	1.3	0	0.9	0	2064.7	0.002	0	4.1	0	5	5	Normal Opera
06/21/03 10:59:49	8	0.9	0	0.6	0	2297.2	0.0013	0	3	0	5	5	Normal Opera
06/21/03 11:59:49	8	0.9	0	0.6	0	2326	0.0013	0	3	0	5	5	Normal Opera
06/21/03 12:59:49	8	1	0	0.6	0	2330.5	0.0014	0	3.3	0	5	5	Normal Opera
06/21/03 13:59:51	8	0.8	0	0.5	0	2329.5	0.0011	0	2.6	0	5	5	Normal Opera
06/21/03 14:59:51	8	0.8	0	0.5	0	2329.7	0.0011	0	2.6	0	5	5	Normal Opera
06/21/03 15:59:48	8	0.8	0	0.5	0	2331.1	0.0011	0	2.6	0	5	5	Normal Opera
06/21/03 16:59:49	8	0.8	0	0.5	0	2335.5	0.0011	0	2.6	0	5	5	Normal Opera
06/21/03 17:59:49	8	0.9	0	0.6	0	2337.4	0.0012	0	2.8	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

STDATETIME	PROCESS_1	T_1_CO_Raw	T_1_CO_Raw_MC	T_1_CO_Corr	T_1_CO_Corr_MC	T_1_Real_Input	T_1_CO_lb_hr	T_1_CO_lb_mBtu_MC	T_1_CO_lb_hr	T_1_CO_lb_hr_MC	PROCESS_4	PROCESS_5	OPRPROCESS_1
08/21/03 18:59:52	8	0.9	0	0.6	0	2336.7	0.0012	0	2.8	0	5	5	Normal Opera
08/21/03 19:59:49	8	1	0	0.6	0	2332.4	0.0014	0	3.3	0	5	5	Normal Opera
08/21/03 20:59:48	8	0.9	0	0.6	0	2329	0.0012	0	2.8	0	5	5	Normal Opera
08/21/03 21:59:49	8	1	0	0.6	0	2247.7	0.0014	0	3.1	0	5	5	Normal Opera
08/21/03 22:59:48	8	0.9	0	0.7	0	1561.8	0.0017	0	2.7	0	5	5	Normal Opera
08/21/03 23:59:50	4	384	13	0	13	71.9	1.1519	13	82.8	13	5	5	Shutdown
08/22/03 07:59:50	3	225	13	0	13	497.7	0.5871	13	292.2	13	5	5	Startup
08/22/03 08:59:49	3	1.7	0	1.4	0	1681.1	0.0031	0	5.2	0	5	5	Startup
08/22/03 09:59:49	8	1.3	0	0.9	0	2055	0.002	0	4.1	0	5	5	Normal Opera
08/22/03 10:59:51	8	1.1	0	0.7	0	2268.1	0.0016	0	3.6	0	5	5	Normal Opera
08/22/03 11:59:48	8	1.1	0	0.7	0	2311.1	0.0015	0	3.5	0	5	5	Normal Opera
08/22/03 12:59:48	8	1.1	0	0.7	0	2314.2	0.0015	0	3.5	0	5	5	Normal Opera
08/22/03 13:59:50	8	0.9	0	0.6	0	2311.7	0.0013	0	3	0	5	5	Normal Opera
08/22/03 14:59:47	8	0.8	0	0.5	0	2310.7	0.0011	0	2.5	0	5	5	Normal Opera
08/22/03 15:59:48	8	0.8	0	0.5	0	2312.5	0.0011	0	2.5	0	5	5	Normal Opera
08/22/03 16:59:49	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 17:59:48	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 18:59:48	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 19:59:48	8	1	0	0.6	0	2282.1	0.0014	0	3.2	0	5	5	Normal Opera
08/22/03 20:59:50	8	1	0	0.8	0	1618.8	0.0019	0	3.1	0	5	5	Normal Opera
08/22/03 21:59:47	4	340.1	13	0	13	97	0.9954	13	96.6	13	5	5	Shutdown
08/25/03 08:59:47	3	21.9	0	28.4	0	528.4	0.0637	0	33.7	0	5	5	Startup
08/25/03 09:59:50	3	2	0	1.7	0	1638.4	0.0037	0	6.1	0	5	5	Startup
08/25/03 10:59:49	8	1.5	0	1.1	0	2020.2	0.0024	0	4.8	0	5	5	Normal Opera
08/25/03 11:59:49	8	1	0	0.6	0	2258.9	0.0014	0	3.2	0	5	5	Normal Opera
08/25/03 12:59:51	8	0.6	0	0.4	0	2307.7	0.0008	0	1.8	0	5	5	Normal Opera
08/25/03 13:59:50	8	0.3	0	0.2	0	2308.8	0.0004	0	0.9	0	5	5	Normal Opera
08/25/03 14:59:50	8	0.5	0	0.3	0	2310.3	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 15:59:48	8	0.7	0	0.4	0	2311.5	0.001	0	2.3	0	5	5	Normal Opera
08/25/03 16:59:49	8	0.8	0	0.5	0	2309.4	0.0011	0	2.5	0	5	5	Normal Opera
08/25/03 17:59:49	8	0.8	0	0.5	0	2313.9	0.0011	0	2.5	0	5	5	Normal Opera
08/25/03 18:59:48	8	0.6	0	0.4	0	2310.3	0.0008	0	1.8	0	5	5	Normal Opera
08/25/03 19:59:48	8	0.5	0	0.3	0	2309.2	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 20:59:48	8	0.5	0	0.3	0	2306.5	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 21:59:47	8	0.7	0	0.5	0	2184.5	0.001	0	2.2	0	5	5	Normal Opera
08/25/03 22:59:47	4	3.9	0	3.3	0	1211.9	0.0073	0	8.8	0	5	5	Shutdown
08/25/03 23:59:49	4	558.1	13	0	13	26.4	2.3893	13	63.1	13	5	5	Shutdown
08/26/03 04:59:49	3	212.7	13	0	13	109.9	0.8398	13	92.3	13	5	5	Startup
08/26/03 05:59:48	3	276	0	294.5	0	740.7	0.6602	0	489	0	5	5	Startup
08/26/03 06:59:47	3	1.2	0	1	0	1488.4	0.0022	0	3.3	0	5	5	Startup
08/26/03 07:59:50	8	1.4	0	1.2	0	1671.7	0.0026	0	4.3	0	5	5	Normal Opera
08/26/03 08:59:47	8	1.4	0	1	0	2046.1	0.0022	0	4.5	0	5	5	Normal Opera
08/26/03 09:59:49	8	1.1	0	0.7	0	2266.8	0.0016	0	3.6	0	5	5	Normal Opera
08/26/03 10:59:48	8	1.1	0	0.7	0	2311.4	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 11:59:49	8	0.9	0	0.6	0	2315.1	0.0013	0	3	0	5	5	Normal Opera
08/26/03 12:59:48	8	0.5	0	0.3	0	2318.1	0.0007	0	1.6	0	5	5	Normal Opera
08/26/03 13:59:49	8	0.7	0	0.4	0	2320.3	0.001	0	2.3	0	5	5	Normal Opera
08/26/03 14:59:49	8	1	0	0.6	0	2322.5	0.0014	0	3.3	0	5	5	Normal Opera
08/26/03 15:59:49	8	1.1	0	0.7	0	2324.9	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 16:59:48	8	1.1	0	0.7	0	2325	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 17:59:48	8	0.9	0	0.6	0	2325.4	0.0012	0	2.8	0	5	5	Normal Opera
08/26/03 18:59:51	8	0.8	0	0.5	0	2321.1	0.0011	0	2.6	0	5	5	Normal Opera
08/26/03 19:59:50	8	0.6	0	0.4	0	2320.6	0.0008	0	1.9	0	5	5	Normal Opera
08/26/03 20:59:48	8	0.5	0	0.3	0	2271.4	0.0007	0	1.6	0	5	5	Normal Opera
08/26/03 21:59:49	8	0.5	0	0.4	0	1637.6	0.0009	0	1.5	0	5	5	Normal Opera
08/26/03 22:59:49	4	1.6	0	1.3	0	1518.3	0.003	0	4.5	0	5	5	Shutdown
08/26/03 23:59:48	4	501.9	13	0	13	34.5	1.9528	13	67.4	13	5	5	Shutdown
08/27/03 05:59:48	3	215.7	13	0	13	109.1	0.8889	13	97	13	5	5	Startup
08/27/03 06:59:49	3	246.5	0	250.8	0	774.9	0.5622	0	435.6	0	5	5	Startup
08/27/03 07:59:48	3	1.2	0	1	0	1547.9	0.0022	0	3.4	0	5	5	Startup
08/27/03 08:59:49	8	1.2	0	1	0	1674.1	0.0022	0	3.7	0	5	5	Normal Opera
08/27/03 09:59:48	8	1.2	0	0.8	0	2050.2	0.0019	0	3.9	0	5	5	Normal Opera
08/27/03 10:59:48	8	0.9	0	0.6	0	2249.4	0.0013	0	2.9	0	5	5	Normal Opera
08/27/03 11:59:47	8	0.8	0	0.5	0	2335.5	0.0011	0	2.6	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

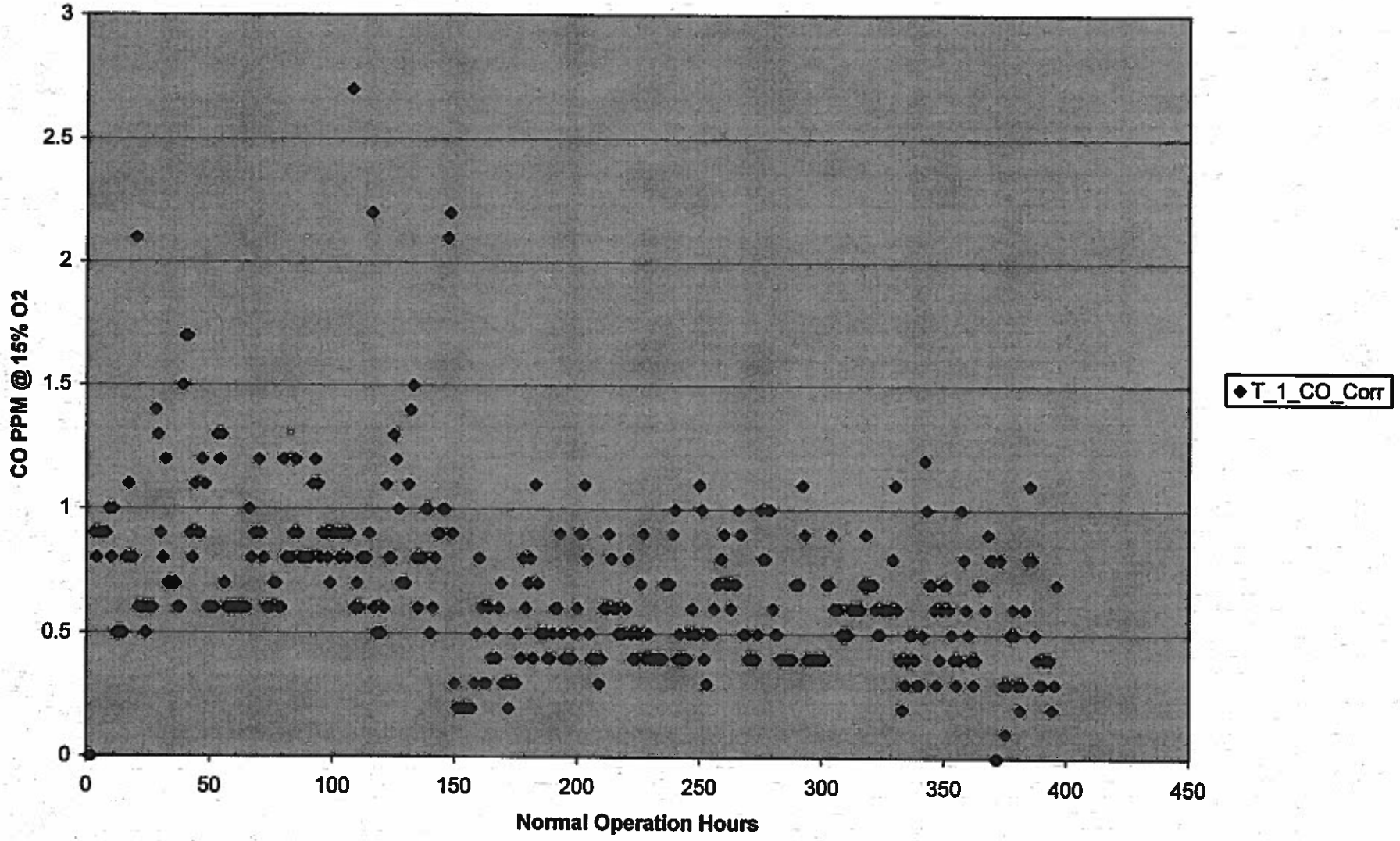
DATETIME	BPROCESS_1	T_1_CO_Raw	T_1_CO_Raw_MC	T_1_CO_Cor	T_1_CO_Cor_MC	T_1_Heat Input	T_1_CO_lb_mBtu	T_1_CO_lb_mBtu_MC	T_1_CO_lb_hr	T_1_CO_lb_hr_MC	BPROCESS_4	BPROCESS_5	BPROCESS_7
08/27/03 12:59:50	8	0.6	0	0.4	0	2334.9	0.0008	0	1.9	0	5	5	Normal Opera
08/27/03 13:59:48	8	0.5	0	0.3	0	2331.7	0.0007	0	1.6	0	5	5	Normal Opera
08/27/03 14:59:48	8	0.6	0	0.4	0	2310.4	0.0008	0	1.8	0	5	5	Normal Opera
08/27/03 15:59:48	8	1.1	0	0.7	0	2311.5	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 16:59:49	8	1.1	0	0.7	0	2314.9	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 17:59:51	8	1.1	0	0.7	0	2316.9	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 18:59:50	8	1	0	0.6	0	2313.8	0.0014	0	3.2	0	5	5	Normal Opera
08/27/03 19:59:50	8	1.4	0	0.9	0	2321.3	0.0019	0	4.4	0	5	5	Normal Opera
08/27/03 20:59:47	8	1.2	0	0.8	0	2216.6	0.0017	0	3.8	0	5	5	Normal Opera
08/27/03 21:59:49	8	1	0	0.8	0	1591.6	0.0019	0	3	0	5	5	Normal Opera
08/27/03 22:59:48	4	408.2	13	0	13	67.1	1.2919	13	86.7	13	5	5	Shutdown
08/28/03 07:59:49	3	204.5	13	0	13	336.4	0.5683	13	191.2	13	5	5	Startup
08/28/03 08:59:48	3	1.4	15	0	15	1259.7	0.0026	15	3.3	15	5	5	Startup
08/28/03 09:59:48	8	0	15	0	15	1249.1	0	15	0	15	5	5	Normal Opera
08/28/03 10:59:49	8	0.9	98	0	98	1640.8	0.0017	98	2.8	98	5	5	Normal Opera
08/28/03 11:59:49	8	1.1	0	0.8	0	2046.8	0.0017	0	3.5	0	5	5	Normal Opera
08/28/03 12:59:49	8	0.5	0	0.3	0	2281.5	0.0007	0	1.6	0	5	5	Normal Opera
08/28/03 13:59:49	8	0.2	0	0.1	0	2278.6	0.0003	0	0.7	0	5	5	Normal Opera
08/28/03 14:59:49	8	0.4	0	0.3	0	2275.7	0.0006	0	1.4	0	5	5	Normal Opera
08/28/03 15:59:48	8	0.8	0	0.5	0	2276.4	0.0011	0	2.5	0	5	5	Normal Opera
08/28/03 16:59:48	8	0.9	0	0.6	0	2245	0.0013	0	2.9	0	5	5	Normal Opera
08/28/03 17:59:47	8	0.8	0	0.5	0	2247.4	0.0011	0	2.5	0	5	5	Normal Opera
08/28/03 18:59:50	8	0.4	0	0.3	0	2247.3	0.0006	0	1.3	0	5	5	Normal Opera
08/28/03 19:59:50	8	0.3	0	0.2	0	2245.6	0.0004	0	0.9	0	5	5	Normal Opera
08/28/03 20:59:48	8	0.5	0	0.3	0	2218.9	0.0007	0	1.6	0	5	5	Normal Opera
08/28/03 21:59:48	8	0.7	0	0.6	0	1610.7	0.0013	0	2.1	0	5	5	Normal Opera
08/28/03 22:59:51	4	371.1	13	0	13	75.6	1.0813	13	81.7	13	5	5	Shutdown
08/29/03 05:59:50	3	279.2	13	0	13	101.3	1.0463	13	106	13	5	5	Startup
08/29/03 06:59:48	3	235.7	0	244.4	0	749.4	0.548	0	410.7	0	5	5	Startup
08/29/03 07:59:47	3	2.4	0	2	0	1440.4	0.0045	0	6.5	0	5	5	Startup
08/29/03 08:59:49	8	1	0	0.8	0	1250.3	0.0019	0	2.4	0	5	5	Normal Opera
08/29/03 09:59:47	8	1.4	0	1.1	0	1663.5	0.0026	0	4.3	0	5	5	Normal Opera
08/29/03 10:59:47	8	1.2	0	0.8	0	2053.1	0.0019	0	3.9	0	5	5	Normal Opera
08/29/03 11:59:49	8	0.8	0	0.5	0	2326.1	0.0011	0	2.6	0	5	5	Normal Opera
08/29/03 12:59:48	8	0.6	0	0.4	0	2339.1	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 13:59:48	8	0.5	0	0.3	0	2338.6	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 14:59:48	8	0.5	0	0.3	0	2340.1	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 15:59:46	8	0.6	0	0.4	0	2338.1	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 16:59:49	8	0.7	0	0.4	0	2336.7	0.001	0	2.3	0	5	5	Normal Opera
08/29/03 17:59:49	8	0.6	0	0.4	0	2335.6	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 18:59:49	8	0.4	0	0.2	0	2323.8	0.0006	0	1.4	0	5	5	Normal Opera
08/29/03 19:59:48	8	0.5	0	0.3	0	2271.3	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 20:59:48	8	0.8	0	0.7	0	1626.3	0.0015	0	2.4	0	5	5	Normal Opera
08/29/03 21:59:48	4	379.5	13	0	13	71.5	1.1462	13	82	13	5	5	Shutdown
09/03/03 10:59:46	3	0	98	0	98	1.5	0	98	0	98	5	5	Startup
09/03/03 11:59:51	3	252.4	98	0	98	699.1	0.5848	98	408.8	98	5	5	Startup
09/03/03 12:59:50	3	2.9	0	2.4	0	1604.2	0.0054	0	8.7	0	5	5	Startup
09/03/03 13:59:47	8	0.7	0	0.6	0	1623.7	0.0013	0	2.1	0	5	5	Normal Opera
09/03/03 14:59:50	8	0.5	0	0.4	0	1620.6	0.0009	0	1.5	0	5	5	Normal Opera
09/03/03 15:59:50	8	0.8	0	0.7	0	1641.1	0.0015	0	2.5	0	5	5	Normal Opera
09/03/03 16:59:50	8	0.5	0	0.3	0	2038.4	0.0007	0	1.4	0	5	5	Normal Opera
09/03/03 17:59:48	8	0.5	0	0.3	0	2000.6	0.0007	0	1.4	0	5	5	Normal Opera
09/03/03 18:59:48	8	0.5	0	0.4	0	1588.1	0.0009	0	1.4	0	5	5	Normal Opera
09/03/03 19:59:48	8	0.6	0	0.5	0	1480.7	0.0011	0	1.6	0	5	5	Normal Opera
09/03/03 20:59:48	4	348.3	13	0	13	96.1	1.0262	13	98.6	13	5	5	Shutdown
09/09/03 10:59:49	3	282	0	361.7	0	574.5	0.811	0	465.9	0	5	5	Startup
09/09/03 11:59:48	3	86.4	0	80.5	0	1169.7	0.1806	0	211.2	0	5	5	Startup
09/09/03 12:59:48	8	0.5	0	0.4	0	1657.6	0.0009	0	1.5	0	5	5	Normal Opera
09/09/03 13:59:48	8	0.5	0	0.4	0	1676.9	0.0009	0	1.5	0	5	5	Normal Opera
09/09/03 14:59:49	8	-0.3	0	-0.2	0	2017.9	0	0	0	0	5	5	Normal Opera
09/09/03 15:59:47	8	0.2	0	0.1	0	2047.3	0.0003	0	0.6	0	5	5	Normal Opera
09/09/03 16:59:50	8	-0.1	0	-0.1	0	2287.8	0	0	0	0	5	5	Normal Opera
09/09/03 17:59:49	8	-0.2	0	-0.1	0	2292.2	0	0	0	0	5	5	Normal Opera
09/09/03 18:59:49	8	-0.2	0	-0.1	0	2295.9	0	0	0	0	5	5	Normal Opera

CO Emissions Data from Duke Energy Washington, LLC

exp_s1_hour

DATETIME	PROCESS 1	T_1_CO_Raw	T_1_CO_Raw_MG	T_1_CO_Cor	T_1_CO_Cor_MG	T_1_Heat_Input	T_1_CO_lb_MBtu	T_1_CO_lb_MBtu_MG	T_1_CO_lb_hr	T_1_CO_lb_hr_MG	PROCESS 4	PROCESS 5	CPROCESS 1
09/09/03 19:59:48	8	0	0	0	0	2239.2	0	0	0	0	5	5	Normal Opera
09/09/03 20:59:48	4	0.5	0	0.4	0	1605	0.0009	0	1.4	0	5	5	Shutdown
09/09/03 21:59:47	4	431.3	13	0	13	51.9	1.482	13	76.9	13	5	5	Shutdown
09/10/03 09:59:48	3	259.3	0	316.1	0	569.2	0.7087	0	417.6	0	5	5	Startup
09/10/03 10:59:48	3	0.5	0	0.4	0	1233.2	0.0009	0	1.1	0	5	5	Startup
09/10/03 11:59:47	8	0.7	0	0.6	0	1653.1	0.0013	0	2.1	0	5	5	Normal Opera
09/10/03 12:59:48	8	0.6	0	0.4	0	2059	0.0009	0	1.9	0	5	5	Normal Opera
09/10/03 13:59:48	8	-0.1	0	-0.1	0	2162.9	0	0	0	0	5	5	Normal Opera
09/10/03 14:59:47	8	-0.4	0	-0.3	0	2263.3	0	0	0	0	5	5	Normal Opera
09/10/03 15:59:49	8	-0.1	0	-0.1	0	2054.7	0	0	0	0	5	5	Normal Opera
09/10/03 16:59:49	8	-0.3	0	-0.2	0	2247.2	0	0	0	0	5	5	Normal Opera
09/10/03 17:59:48	8	-0.4	0	-0.3	0	2278.6	0	0	0	0	5	5	Normal Opera
09/10/03 18:59:48	8	-0.1	0	-0.1	0	2267.6	0	0	0	0	5	5	Normal Opera
09/10/03 19:59:47	8	0.7	0	0.5	0	1919.9	0.0012	0	2.3	0	5	5	Normal Opera
09/10/03 20:59:47	8	0.4	0	0.3	0	1582	0.0007	0	1.1	0	5	5	Normal Opera
09/10/03 21:59:47	4	408.3	13	0	13	62.4	1.3503	13	84.3	13	5	5	Shutdown
09/11/03 07:59:49	3	167	13	0	13	179	0.6947	13	124.4	13	5	5	Startup
09/11/03 08:59:48	3	386.3	0	450.4	0	708.9	1.0099	0	715.9	0	5	5	Startup
09/11/03 09:59:48	3	0.5	0	0.4	0	1412.3	0.0009	0	1.3	0	5	5	Startup
09/11/03 10:59:47	8	0.4	0	0.3	0	1242.5	0.0008	0	1	0	5	5	Normal Opera
09/11/03 11:59:47	8	0.8	0	0.7	0	1655	0.0015	0	2.5	0	5	5	Normal Opera
09/11/03 12:59:50	8	0.9	0	0.7	0	2017	0.0015	0	3	0	5	5	Normal Opera
09/11/03 13:59:47	8	0	0	0	0	2230.8	0	0	0	0	5	5	Normal Opera
09/11/03 14:59:49	8	-0.3	0	-0.2	0	2243.5	0	0	0	0	5	5	Normal Opera
09/11/03 15:59:49	8	-0.3	0	-0.2	0	2286.5	0	0	0	0	5	5	Normal Opera
09/11/03 16:59:49	8	-0.2	0	-0.1	0	2286.2	0	0	0	0	5	5	Normal Opera
09/11/03 17:59:51	8	-0.1	0	-0.1	0	2288.2	0	0	0	0	5	5	Normal Opera
09/11/03 18:59:48	8	-0.1	0	-0.1	0	2281.5	0	0	0	0	5	5	Normal Opera
09/11/03 19:59:50	8	0.4	0	0.3	0	2022	0.0006	0	1.2	0	5	5	Normal Opera
09/11/03 20:59:47	8	0.2	0	0.2	0	1608.6	0.0004	0	0.6	0	5	5	Normal Opera
09/11/03 21:59:48	4	350.9	13	0	13	81.5	1.0696	13	87.2	13	5	5	Shutdown
09/12/03 09:59:49	3	231.6	13	0	13	416.5	0.6603	13	275	13	5	5	Startup
09/12/03 10:59:47	3	0.8	0	0.7	0	1658.6	0.0015	0	2.5	0	5	5	Startup
09/12/03 11:59:48	8	0.5	0	0.4	0	1660.9	0.001	0	1.7	0	5	5	Normal Opera
09/12/03 12:59:49	8	0.5	0	0.4	0	1658.8	0.001	0	1.7	0	5	5	Normal Opera
09/12/03 13:59:49	8	0.1	0	0.1	0	1656.8	0.0002	0	0.3	0	5	5	Normal Opera
09/12/03 14:59:49	8	-0.2	0	-0.2	0	1657.6	0	0	0	0	5	5	Normal Opera
09/12/03 15:59:48	8	-0.2	0	-0.2	0	1627.6	0	0	0	0	5	5	Normal Opera
09/12/03 16:59:48	4	328.7	13	0	13	71.7	1.016	13	72.8	13	5	5	Shutdown
09/15/03 10:59:48	3	191.5	13	0	13	106.5	0.8416	13	89.6	13	5	5	Startup
09/15/03 11:59:48	3	398	0	581.2	0	567.5	1.3032	0	739.6	0	5	5	Startup
09/15/03 12:59:48	3	232.9	0	255.4	0	711.7	0.5727	0	407.6	0	5	5	Startup
09/15/03 13:59:50	3	0.8	0	0.7	0	1444.8	0.0015	0	2.2	0	5	5	Startup
09/15/03 14:59:50	8	0.7	0	0.6	0	1348.1	0.0013	0	1.8	0	5	5	Normal Opera
09/15/03 15:59:49	8	0.3	0	0.3	0	1337.4	0.0006	0	0.8	0	5	5	Normal Opera
09/15/03 16:59:47	8	0.1	0	0.1	0	1336.7	0.0002	0	0.3	0	5	5	Normal Opera
09/15/03 17:59:51	8	0.1	0	0.1	0	1336.5	0.0002	0	0.3	0	5	5	Normal Opera
09/15/03 18:59:50	8	0.2	0	0.2	0	1338.2	0.0004	0	0.5	0	5	5	Normal Opera
09/15/03 19:59:47	4	30	0	25.6	0	1274.5	0.0574	0	73.2	0	5	5	Shutdown
09/15/03 20:59:49	4	413.7	13	0	13	5.2	3.0574	13	15.9	13	5	5	Shutdown

Duke Energy Washington LLC 2003 Trend Data



Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

TIDATETIME	PROCESS_T	T_1_CO_RAW	T_1_CO_RAW_MC	T_1_CO_COR	T_1_CO_COR_MC	T_1_HeatInput	T_1_CO_lb_mBtu	T_1_CO_lb_mBtu_MC	T_1_CO_lb_hr	T_1_CO_lb_hr_MC	PROCESS_4	PROCESS_5	CPROCESS_1
06/23/03 11:59:48	8	0	15	0	15	1520.5	0	15	0	15	5	5	Normal Opera
06/23/03 12:59:50	8	0	15	0	15	1568.9	0	15	0	15	5	5	Normal Opera
06/23/03 13:59:48	8	1	0	0.9	0	1480.2	0.0019	0	2.8	0	5	5	Normal Opera
06/23/03 14:59:47	8	1	0	0.8	0	1651.1	0.0019	0	3.1	0	5	5	Normal Opera
06/23/03 15:59:47	8	1	0	0.9	0	1438	0.0019	0	2.7	0	5	5	Normal Opera
06/23/03 16:59:49	8	1	0	0.9	0	1368.7	0.0019	0	2.6	0	5	5	Normal Opera
06/23/03 17:59:47	8	1	0	0.9	0	1370.1	0.0019	0	2.6	0	5	5	Normal Opera
06/23/03 18:59:49	8	1	0	0.9	0	1360.4	0.0019	0	2.6	0	5	5	Normal Opera
06/24/03 10:59:48	8	1.2	0	1	0	1557.3	0.0023	0	3.6	0	5	5	Normal Opera
06/24/03 11:59:50	8	1	0	0.8	0	1650	0.0019	0	3.1	0	5	5	Normal Opera
06/24/03 12:59:49	8	1.4	0	1	0	1983.9	0.0023	0	4.6	0	5	5	Normal Opera
06/24/03 13:59:47	8	0.8	0	0.5	0	2225.8	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 14:59:49	8	0.8	0	0.5	0	2229.8	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 15:59:49	8	0.8	0	0.5	0	2228.3	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 16:59:49	8	0.8	0	0.5	0	2225.6	0.0012	0	2.7	0	5	5	Normal Opera
06/24/03 17:59:50	8	1.1	0	0.8	0	2100.3	0.0017	0	3.6	0	5	5	Normal Opera
06/24/03 18:59:48	8	1.5	0	1.1	0	1975.1	0.0025	0	4.9	0	5	5	Normal Opera
06/24/03 19:59:49	8	1	0	0.8	0	1240.6	0.0019	0	2.4	0	5	5	Normal Opera
06/24/03 20:59:50	8	1	0	0.8	0	1334.4	0.0019	0	2.5	0	5	5	Normal Opera
06/25/03 10:59:48	8	2.6	0	2.1	0	1738.2	0.0047	0	8.2	0	5	5	Normal Opera
06/25/03 11:59:50	8	0.9	0	0.6	0	2152.2	0.0014	0	3	0	5	5	Normal Opera
06/25/03 12:59:50	8	0.9	0	0.6	0	2290.6	0.0013	0	3	0	5	5	Normal Opera
06/25/03 13:59:47	8	0.9	0	0.6	0	2295.9	0.0013	0	3	0	5	5	Normal Opera
06/25/03 14:59:48	8	0.8	0	0.5	0	2300.3	0.0011	0	2.5	0	5	5	Normal Opera
06/25/03 15:59:48	8	0.9	0	0.6	0	2305	0.0013	0	3	0	5	5	Normal Opera
06/25/03 16:59:49	8	0.9	0	0.6	0	2305	0.0013	0	3	0	5	5	Normal Opera
06/25/03 17:59:47	8	1	0	0.6	0	2281.7	0.0014	0	3.2	0	5	5	Normal Opera
06/25/03 18:59:51	8	1.8	0	1.4	0	1865.7	0.0032	0	6	0	5	5	Normal Opera
06/25/03 19:59:48	8	1.6	0	1.3	0	1865.1	0.0028	0	5.2	0	5	5	Normal Opera
06/25/03 20:59:47	8	1.1	0	0.9	0	1764.5	0.002	0	3.5	0	5	5	Normal Opera
06/25/03 21:59:50	8	1	0	0.8	0	1242.2	0.0019	0	2.4	0	5	5	Normal Opera
06/26/03 09:59:50	8	1.6	0	1.2	0	1990	0.0026	0	5.2	0	5	5	Normal Opera
06/26/03 10:59:52	8	1.1	0	0.7	0	2264	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 11:59:49	8	1.1	0	0.7	0	2267.9	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 12:59:49	8	1.1	0	0.7	0	2271.4	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 13:59:49	8	1.1	0	0.7	0	2280.2	0.0016	0	3.6	0	5	5	Normal Opera
06/26/03 14:59:48	8	1	0	0.6	0	2277.1	0.0014	0	3.2	0	5	5	Normal Opera
06/26/03 15:59:51	8	1	0	0.6	0	2278.5	0.0014	0	3.2	0	5	5	Normal Opera
06/26/03 16:59:50	8	1.9	0	1.5	0	1936.1	0.0033	0	6.4	0	5	5	Normal Opera
06/26/03 17:59:50	8	2.1	0	1.7	0	1847.5	0.0038	0	7	0	5	5	Normal Opera
06/26/03 18:59:49	8	2.1	0	1.7	0	1836.6	0.0038	0	7	0	5	5	Normal Opera
06/26/03 19:59:48	8	1.1	0	0.9	0	1576	0.0021	0	3.3	0	5	5	Normal Opera
06/26/03 20:59:49	8	1	0	0.8	0	1239.9	0.0019	0	2.4	0	5	5	Normal Opera
07/03/03 09:59:49	8	1.3	0	1.1	0	1491.8	0.0025	0	3.7	0	5	5	Normal Opera
07/03/03 10:59:47	8	1.1	0	0.9	0	1349	0.0021	0	2.8	0	5	5	Normal Opera
07/03/03 11:59:49	8	1.1	0	0.9	0	1656.7	0.0021	0	3.5	0	5	5	Normal Opera
07/03/03 12:59:48	8	1.6	0	1.2	0	2011.4	0.0026	0	5.2	0	5	5	Normal Opera
07/03/03 13:59:48	8	1.5	0	1.1	0	2010.7	0.0025	0	5	0	5	5	Normal Opera
07/03/03 14:59:50	8	0.9	0	0.6	0	2228.9	0.0013	0	2.9	0	5	5	Normal Opera
07/03/03 15:59:48	8	1	0	0.6	0	2345.8	0.0014	0	3.3	0	5	5	Normal Opera
07/03/03 16:59:47	8	0.9	0	0.6	0	2294.7	0.0013	0	3	0	5	5	Normal Opera
07/03/03 17:59:49	8	1	0	0.6	0	2286.7	0.0014	0	3.2	0	5	5	Normal Opera
07/03/03 18:59:49	8	1.7	0	1.3	0	1827.9	0.0029	0	5.3	0	5	5	Normal Opera
07/03/03 19:59:48	8	1.6	0	1.2	0	1791.6	0.0027	0	4.8	0	5	5	Normal Opera
07/07/03 09:59:50	8	1.7	0	1.3	0	1824.9	0.0029	0	5.3	0	5	5	Normal Opera
07/07/03 10:59:48	8	1	0	0.7	0	2058.1	0.0015	0	3.1	0	5	5	Normal Opera
07/07/03 11:59:51	8	1	0	0.6	0	2285.7	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 12:59:48	8	1	0	0.6	0	2277.8	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 13:59:48	8	1	0	0.6	0	2280.8	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 14:59:49	8	1	0	0.6	0	2284.5	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 15:59:50	8	1	0	0.6	0	2286.8	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 16:59:47	8	1	0	0.6	0	2268.3	0.0014	0	3.2	0	5	5	Normal Opera
07/07/03 17:59:47	8	1	0	0.6	0	2257.2	0.0015	0	3.4	0	5	5	Normal Opera
07/07/03 18:59:49	8	0.9	0	0.6	0	2248	0.0013	0	2.9	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

TDATETIME	PROCESS_1	T_1_90 Rev	T_1_90 Rev_MC	T_1_90 Dsr	T_1_90 Dsr_MC	T_1_90 Hsi_Input	T_1_90 lb Hsu	T_1_90 lb Hsu_MC	T_1_90 lb N	T_1_90 lb N_MC	PROCESS_4	PROCESS_5	PROCESS_1
07/07/03 19:59:48	8	0.9	0	0.6	0	2212	0.0013	0	2.9	0	5	5	Normal Opera
07/07/03 20:59:49	8	1.2	0	1	0	1787.5	0.0022	0	3.9	0	5	5	Normal Opera
07/07/03 21:59:48	8	1	0	0.8	0	1409.5	0.0019	0	2.7	0	5	5	Normal Opera
07/08/03 08:59:49	8	1.1	0	0.9	0	1347.2	0.0021	0	2.8	0	5	5	Normal Opera
07/08/03 09:59:49	8	1.1	0	0.9	0	1511.4	0.0021	0	3.2	0	5	5	Normal Opera
07/08/03 10:59:50	8	1.5	0	1.2	0	1707.4	0.0026	0	4.8	0	5	5	Normal Opera
07/08/03 11:59:49	8	1.3	0	0.9	0	2096	0.002	0	4.2	0	5	5	Normal Opera
07/08/03 12:59:49	8	1.2	0	0.8	0	2101.4	0.0019	0	4	0	5	5	Normal Opera
07/08/03 13:59:49	8	0.9	0	0.6	0	2265.8	0.0013	0	2.9	0	5	5	Normal Opera
07/08/03 14:59:52	8	0.9	0	0.6	0	2313.1	0.0013	0	3	0	5	5	Normal Opera
07/08/03 15:59:48	8	1	0	0.6	0	2312.5	0.0014	0	3.2	0	5	5	Normal Opera
07/08/03 16:59:47	8	1.1	0	0.7	0	2318.5	0.0016	0	3.7	0	5	5	Normal Opera
07/08/03 17:59:49	8	1.1	0	0.7	0	2314.9	0.0016	0	3.7	0	5	5	Normal Opera
07/08/03 18:59:49	8	1	0	0.6	0	2325.4	0.0014	0	3.3	0	5	5	Normal Opera
07/08/03 19:59:49	8	1	0	0.6	0	2291.9	0.0014	0	3.2	0	5	5	Normal Opera
07/08/03 20:59:49	8	1.6	0	1.2	0	1837.7	0.0026	0	5.1	0	5	5	Normal Opera
07/08/03 21:59:48	8	1	0	0.8	0	1476.7	0.0019	0	2.8	0	5	5	Normal Opera
07/09/03 11:59:49	8	1	0	0.8	0	1416.3	0.0019	0	2.7	0	5	5	Normal Opera
07/09/03 12:59:49	8	1	0	0.8	0	1522.7	0.0019	0	2.9	0	5	5	Normal Opera
07/09/03 13:59:49	8	1.1	0	0.9	0	1526.8	0.0021	0	3.2	0	5	5	Normal Opera
07/09/03 14:59:48	8	1.4	0	1.2	0	1703.7	0.0026	0	4.4	0	5	5	Normal Opera
07/09/03 15:59:47	8	1.1	0	0.9	0	1783.3	0.0019	0	3.4	0	5	5	Normal Opera
07/09/03 16:59:47	8	1	0	0.8	0	1663.6	0.0019	0	3.2	0	5	5	Normal Opera
07/09/03 17:59:50	8	1	0	0.8	0	1667.1	0.0019	0	3.2	0	5	5	Normal Opera
07/09/03 18:59:49	8	1	0	0.8	0	1390.6	0.0019	0	2.6	0	5	5	Normal Opera
07/09/03 19:59:49	8	1	0	0.8	0	1382.2	0.0019	0	2.6	0	5	5	Normal Opera
07/09/03 20:59:48	8	1	0	0.8	0	1379.2	0.0019	0	2.6	0	5	5	Normal Opera
07/15/03 10:59:47	8	1.3	0	1.1	0	1552.8	0.0024	0	3.7	0	5	5	Normal Opera
07/15/03 11:59:49	8	1.4	0	1.2	0	1675.3	0.0026	0	4.4	0	5	5	Normal Opera
07/15/03 12:59:49	8	1.5	0	1.1	0	1807.4	0.0026	0	4.7	0	5	5	Normal Opera
07/15/03 13:59:49	8	1.2	0	0.8	0	2065.5	0.0019	0	4	0	5	5	Normal Opera
07/15/03 14:59:49	8	1.3	0	0.9	0	2101.4	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 15:59:49	8	1.3	0	0.9	0	2113.5	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 16:59:47	8	1.2	0	0.8	0	2327	0.0017	0	4	0	5	5	Normal Opera
07/15/03 17:59:50	8	1.2	0	0.7	0	2332	0.0017	0	4	0	5	5	Normal Opera
07/15/03 18:59:50	8	1.3	0	0.9	0	2096.6	0.002	0	4.2	0	5	5	Normal Opera
07/15/03 19:59:50	8	1.1	0	0.9	0	1658.9	0.0021	0	3.5	0	5	5	Normal Opera
07/15/03 20:59:49	8	1.1	0	0.9	0	1614.4	0.0021	0	3.4	0	5	5	Normal Opera
07/15/03 21:59:49	8	1	0	0.8	0	1648.1	0.0019	0	3.1	0	5	5	Normal Opera
07/16/03 10:59:49	8	1.1	0	0.9	0	1334.1	0.0021	0	2.8	0	5	5	Normal Opera
07/16/03 11:59:49	8	1.1	0	0.9	0	1367	0.0021	0	2.9	0	5	5	Normal Opera
07/16/03 12:59:48	8	1	0	0.8	0	1649.7	0.0019	0	3.1	0	5	5	Normal Opera
07/16/03 13:59:47	8	1.1	0	0.9	0	1623.4	0.0021	0	3.4	0	5	5	Normal Opera
07/16/03 14:59:49	8	3.4	0	2.7	0	1882	0.0062	0	11.7	0	5	5	Normal Opera
07/16/03 15:59:50	8	0.9	0	0.6	0	2260.3	0.0013	0	2.9	0	5	5	Normal Opera
07/16/03 16:59:50	8	1	0	0.7	0	2184.7	0.0015	0	3.3	0	5	5	Normal Opera
07/16/03 17:59:50	8	0.9	0	0.6	0	2213.2	0.0013	0	2.9	0	5	5	Normal Opera
07/16/03 18:59:49	8	1	0	0.8	0	1576	0.0019	0	3	0	5	5	Normal Opera
07/16/03 19:59:49	8	1	0	0.8	0	1635.6	0.0019	0	3.1	0	5	5	Normal Opera
07/16/03 20:59:48	8	1	0	0.8	0	1255.7	0.0019	0	2.4	0	5	5	Normal Opera
07/17/03 11:59:47	8	1.1	0	0.9	0	1646.6	0.0021	0	3.5	0	5	5	Normal Opera
07/17/03 12:59:48	8	2.7	0	2.2	0	1773.1	0.0049	0	8.7	0	5	5	Normal Opera
07/17/03 13:59:50	8	0.9	0	0.6	0	2226	0.0013	0	2.9	0	5	5	Normal Opera
07/17/03 14:59:47	8	0.8	0	0.5	0	2260.9	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 15:59:52	8	0.8	0	0.5	0	2263.5	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 16:59:48	8	0.8	0	0.5	0	2266	0.0012	0	2.7	0	5	5	Normal Opera
07/17/03 17:59:51	8	0.9	0	0.6	0	2262	0.0013	0	2.9	0	5	5	Normal Opera
07/17/03 18:59:48	8	1.5	0	1.1	0	2034.6	0.0025	0	5.1	0	5	5	Normal Opera
07/17/03 19:59:51	8	1	0	0.8	0	1635.4	0.0019	0	3.1	0	5	5	Normal Opera
07/17/03 20:59:50	8	1	0	0.8	0	1322.2	0.0019	0	2.5	0	5	5	Normal Opera
07/21/03 11:59:48	8	1.6	0	1.3	0	1656.7	0.003	0	5	0	5	5	Normal Opera
07/21/03 12:59:48	8	1.6	0	1.2	0	1850.1	0.0027	0	5	0	5	5	Normal Opera
07/21/03 13:59:48	8	1.4	0	1	0	2071.1	0.0022	0	4.6	0	5	5	Normal Opera
07/21/03 14:59:47	8	1.1	0	0.7	0	2274.8	0.0016	0	3.6	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

DATETIME	PROCESS_3	T-1 CO Raw	T-1 CO Raw MC	T-1 CO Corr	T-1 CO Corr MC	T-1 Heat Input	T-1 CO lb/mBtu	T-1 CO lb/mBtu MC	T-1 CO lb/hr	T-1 CO lb/hr MC	PROCESS_4	PROCESS_5	CPROCESS_1
07/21/03 15:59:47	8	1.1	0	0.7	0	2284.7	0.0016	0	3.7	0	5	5	Normal Opera
07/21/03 16:59:50	8	1.1	0	0.7	0	2291.7	0.0016	0	3.7	0	5	5	Normal Opera
07/21/03 17:59:49	8	1.6	0	1.1	0	2075.6	0.0026	0	5.4	0	5	5	Normal Opera
07/21/03 18:59:48	8	1.8	0	1.4	0	1962.1	0.003	0	5.9	0	5	5	Normal Opera
07/25/03 13:59:49	8	1.9	0	1.5	0	1848.1	0.0033	0	6.1	0	5	5	Normal Opera
07/25/03 14:59:49	8	1.1	0	0.8	0	2167.4	0.0017	0	3.7	0	5	5	Normal Opera
07/25/03 15:59:49	8	0.9	0	0.6	0	2266.5	0.0013	0	2.9	0	5	5	Normal Opera
07/25/03 16:59:47	8	1.2	0	0.8	0	2143.3	0.0018	0	3.9	0	5	5	Normal Opera
07/25/03 17:59:51	8	1	0	0.8	0	1627.4	0.0019	0	3.1	0	5	5	Normal Opera
07/26/03 14:59:47	8	1.2	0	1	0	1659.8	0.0023	0	3.8	0	5	5	Normal Opera
07/26/03 15:59:50	8	1.4	0	1	0	1852.5	0.0023	0	4.3	0	5	5	Normal Opera
07/26/03 16:59:47	8	0.8	0	0.5	0	2066.2	0.0012	0	2.5	0	5	5	Normal Opera
07/26/03 17:59:49	8	0.9	0	0.8	0	2021.9	0.0014	0	2.8	0	5	5	Normal Opera
07/26/03 18:59:49	8	1	0	0.8	0	1641.3	0.0019	0	3.1	0	5	5	Normal Opera
07/26/03 19:59:48	8	1.1	0	0.9	0	1614.3	0.0021	0	3.4	0	5	5	Normal Opera
07/28/03 12:59:49	8	1.1	0	0.9	0	1632.3	0.0021	0	3.4	0	5	5	Normal Opera
07/28/03 13:59:49	8	1.2	0	1	0	1481.8	0.0023	0	3.4	0	5	5	Normal Opera
07/28/03 14:59:49	8	1.2	0	1	0	1642.4	0.0022	0	3.6	0	5	5	Normal Opera
07/28/03 15:59:48	8	2.7	0	2.1	0	1818.1	0.0048	0	8.7	0	5	5	Normal Opera
07/28/03 16:59:49	8	2.7	0	2.2	0	1821.5	0.0049	0	8.9	0	5	5	Normal Opera
07/28/03 17:59:51	8	1.1	0	0.9	0	1612.7	0.0021	0	3.4	0	5	5	Normal Opera
07/30/03 11:59:48	8	0.5	0	0.3	0	2315.1	0.0007	0	1.8	0	5	5	Normal Opera
07/30/03 12:59:48	8	0.4	0	0.2	0	2359	0.0006	0	1.4	0	5	5	Normal Opera
07/30/03 13:59:48	8	0.4	0	0.2	0	2363.6	0.0006	0	1.4	0	5	5	Normal Opera
07/30/03 14:59:47	8	0.4	0	0.2	0	2370.2	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 15:59:48	8	0.4	0	0.2	0	2373.7	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 16:59:47	8	0.4	0	0.2	0	2378.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 17:59:47	8	0.4	0	0.2	0	2381.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 18:59:47	8	0.4	0	0.2	0	2382.3	0.0005	0	1.2	0	5	5	Normal Opera
07/30/03 19:59:48	8	0.5	0	0.3	0	2381.4	0.0007	0	1.7	0	5	5	Normal Opera
07/30/03 20:59:48	8	0.7	0	0.5	0	2080.2	0.0011	0	2.3	0	5	5	Normal Opera
07/31/03 13:59:47	8	1.1	0	0.8	0	1858.1	0.0018	0	3.3	0	5	5	Normal Opera
07/31/03 14:59:48	8	0.9	0	0.6	0	2047.4	0.0014	0	2.9	0	5	5	Normal Opera
07/31/03 15:59:50	8	0.5	0	0.3	0	2153.7	0.0008	0	1.7	0	5	5	Normal Opera
07/31/03 16:59:50	8	0.5	0	0.3	0	2284.3	0.0007	0	1.6	0	5	5	Normal Opera
07/31/03 17:59:49	8	0.7	0	0.6	0	1697.7	0.0013	0	2.2	0	5	5	Normal Opera
07/31/03 18:59:49	8	0.5	0	0.4	0	1238.7	0.0009	0	1.1	0	5	5	Normal Opera
07/31/03 19:59:49	8	0.6	0	0.5	0	1477.6	0.0011	0	1.6	0	5	5	Normal Opera
08/01/03 09:59:46	8	0.5	0	0.4	0	1676.2	0.0009	0	1.5	0	5	5	Normal Opera
08/01/03 10:59:47	8	0.7	0	0.6	0	1683.3	0.0013	0	2.2	0	5	5	Normal Opera
08/01/03 11:59:47	8	1	0	0.7	0	2079.2	0.0016	0	3.3	0	5	5	Normal Opera
08/01/03 12:59:49	8	0.4	0	0.3	0	2302.3	0.0006	0	1.4	0	5	5	Normal Opera
08/01/03 13:59:48	8	0.4	0	0.3	0	2327.1	0.0006	0	1.4	0	5	5	Normal Opera
08/01/03 14:59:48	8	0.4	0	0.2	0	2333.6	0.0006	0	1.4	0	5	5	Normal Opera
08/01/03 15:59:48	8	0.5	0	0.3	0	2355.6	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 16:59:48	8	0.5	0	0.3	0	2354.3	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 17:59:46	8	0.5	0	0.3	0	2330.9	0.0007	0	1.6	0	5	5	Normal Opera
08/01/03 18:59:46	8	0.7	0	0.5	0	2116.6	0.0011	0	2.3	0	5	5	Normal Opera
08/01/03 19:59:50	8	0.5	0	0.4	0	1601.1	0.0009	0	1.4	0	5	5	Normal Opera
08/04/03 14:59:47	8	0.9	0	0.8	0	1629	0.0017	0	2.8	0	5	5	Normal Opera
08/04/03 15:59:47	8	0.9	0	0.6	0	2032.8	0.0014	0	2.8	0	5	5	Normal Opera
08/04/03 16:59:49	8	1	0	0.7	0	2022.6	0.0016	0	3.2	0	5	5	Normal Opera
08/04/03 17:59:48	8	1.1	0	0.8	0	2000.9	0.0018	0	3.6	0	5	5	Normal Opera
08/04/03 18:59:46	8	0.5	0	0.4	0	1601.5	0.0009	0	1.4	0	5	5	Normal Opera
08/07/03 10:59:49	8	1.3	0	1.1	0	1674.4	0.0024	0	4	0	5	5	Normal Opera
08/07/03 11:59:49	8	1.1	0	0.7	0	2066.7	0.0017	0	3.5	0	5	5	Normal Opera
08/07/03 12:59:49	8	0.8	0	0.5	0	2246.7	0.0012	0	2.7	0	5	5	Normal Opera
08/07/03 13:59:49	8	0.8	0	0.5	0	2248.9	0.0012	0	2.7	0	5	5	Normal Opera
08/07/03 14:59:49	8	0.8	0	0.5	0	2262.5	0.0011	0	2.5	0	5	5	Normal Opera
08/07/03 15:59:48	8	0.7	0	0.4	0	2256.2	0.001	0	2.3	0	5	5	Normal Opera
08/07/03 16:59:50	8	0.7	0	0.4	0	2253	0.001	0	2.3	0	5	5	Normal Opera
08/07/03 17:59:49	8	0.8	0	0.5	0	2255.6	0.0011	0	2.5	0	5	5	Normal Opera
08/07/03 18:59:49	8	0.9	0	0.6	0	2264.1	0.0013	0	2.9	0	5	5	Normal Opera
08/07/03 19:59:52	8	0.9	0	0.6	0	2232.6	0.0013	0	2.9	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

DATE/TIME	PROCESS A	T-1 CO Raw	T-1 CO Raw MC	T-1 CO Corr	T-1 CO Corr MC	T-1 Heat Input	T-1 CO lb/mBtu	T-1 CO lb/mBtu MC	T-1 CO lb/hr	T-1 CO lb/hr MC	PROCESS A	PROCESS A	PROCESS A
08/07/03 20:59:48	8	1.1	0	0.9	0	1618.9	0.002	0	3.2	0	5	5	Normal Opera
08/08/03 12:59:48	8	0.8	0	0.5	0	2331.9	0.0011	0	2.6	0	5	5	Normal Opera
08/08/03 13:59:47	8	0.6	0	0.4	0	2280.8	0.0009	0	2.1	0	5	5	Normal Opera
08/08/03 14:59:47	8	0.7	0	0.4	0	2320.8	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 15:59:47	8	0.7	0	0.4	0	2318.8	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 16:59:47	8	0.7	0	0.4	0	2307.3	0.001	0	2.3	0	5	5	Normal Opera
08/08/03 17:59:49	8	0.8	0	0.5	0	2304.6	0.0011	0	2.5	0	5	5	Normal Opera
08/08/03 18:59:49	8	1	0	0.6	0	2263.6	0.0014	0	3.2	0	5	5	Normal Opera
08/08/03 19:59:48	8	1.1	0	0.9	0	1632.3	0.002	0	3.3	0	5	5	Normal Opera
08/08/03 20:59:48	8	1.1	0	0.9	0	1667.9	0.002	0	3.3	0	5	5	Normal Opera
08/11/03 09:59:48	8	1.3	0	1.1	0	1673.3	0.0024	0	4	0	5	5	Normal Opera
08/11/03 10:59:48	8	1.1	0	0.8	0	2063	0.0017	0	3.5	0	5	5	Normal Opera
08/11/03 11:59:49	8	0.8	0	0.5	0	2292.7	0.0011	0	2.5	0	5	5	Normal Opera
08/11/03 12:59:49	8	0.6	0	0.4	0	2294.6	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 13:59:51	8	0.6	0	0.4	0	2295.7	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 14:59:50	8	0.6	0	0.4	0	2295.8	0.0009	0	2.1	0	5	5	Normal Opera
08/11/03 15:59:48	8	0.5	0	0.3	0	2278.7	0.0007	0	1.6	0	5	5	Normal Opera
08/11/03 16:59:48	8	0.7	0	0.4	0	2274	0.001	0	2.3	0	5	5	Normal Opera
08/11/03 17:59:48	8	0.9	0	0.6	0	2268.1	0.0013	0	2.9	0	5	5	Normal Opera
08/11/03 18:59:48	8	1	0	0.6	0	2223.4	0.0014	0	3.1	0	5	5	Normal Opera
08/11/03 19:59:48	8	1.1	0	0.9	0	1599.5	0.002	0	3.2	0	5	5	Normal Opera
08/12/03 11:59:48	8	1	0	0.8	0	1262.5	0.0019	0	2.4	0	5	5	Normal Opera
08/12/03 12:59:48	8	0.7	0	0.6	0	1243.8	0.0013	0	1.6	0	5	5	Normal Opera
08/12/03 13:59:47	8	0.7	0	0.6	0	1450.9	0.0013	0	1.9	0	5	5	Normal Opera
08/12/03 14:59:48	8	0.6	0	0.5	0	1600.1	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 15:59:51	8	0.6	0	0.5	0	1597.8	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 16:59:48	8	0.6	0	0.5	0	1597.5	0.0011	0	1.8	0	5	5	Normal Opera
08/12/03 17:59:48	8	0.7	0	0.6	0	1453.6	0.0013	0	1.9	0	5	5	Normal Opera
08/13/03 13:59:48	8	1.1	0	0.8	0	2038.7	0.0018	0	3.7	0	5	5	Normal Opera
08/13/03 14:59:48	8	0.7	0	0.5	0	2274.4	0.001	0	2.3	0	5	5	Normal Opera
08/13/03 15:59:48	8	0.6	0	0.4	0	2271.5	0.0009	0	2	0	5	5	Normal Opera
08/13/03 16:59:48	8	0.6	0	0.4	0	2275.7	0.0009	0	2	0	5	5	Normal Opera
08/13/03 17:59:48	8	0.7	0	0.5	0	2243.1	0.001	0	2.2	0	5	5	Normal Opera
08/13/03 18:59:48	8	0.8	0	0.7	0	1617.8	0.0015	0	2.4	0	5	5	Normal Opera
08/14/03 10:59:50	8	1.2	0	0.9	0	1978.6	0.002	0	4	0	5	5	Normal Opera
08/14/03 11:59:49	8	0.6	0	0.4	0	2275.6	0.0009	0	2	0	5	5	Normal Opera
08/14/03 12:59:49	8	0.7	0	0.5	0	2280.7	0.001	0	2.3	0	5	5	Normal Opera
08/14/03 13:59:48	8	0.6	0	0.4	0	2321.1	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 14:59:48	8	0.6	0	0.4	0	2323.1	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 15:59:48	8	0.6	0	0.4	0	2295.5	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 16:59:48	8	0.6	0	0.4	0	2307	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 17:59:48	8	0.6	0	0.4	0	2323.3	0.0009	0	2.1	0	5	5	Normal Opera
08/14/03 18:59:50	8	0.7	0	0.4	0	2286.3	0.001	0	2.3	0	5	5	Normal Opera
08/14/03 19:59:49	8	0.8	0	0.7	0	1612.6	0.0015	0	2.4	0	5	5	Normal Opera
08/14/03 20:59:46	8	0.8	0	0.7	0	1620.8	0.0015	0	2.4	0	5	5	Normal Opera
08/15/03 08:59:47	8	0.9	0	0.7	0	1319.1	0.0017	0	2.2	0	5	5	Normal Opera
08/15/03 09:59:49	8	1.1	0	0.9	0	1688.4	0.002	0	3.4	0	5	5	Normal Opera
08/15/03 10:59:48	8	1.3	0	1	0	1984.7	0.0021	0	4.2	0	5	5	Normal Opera
08/15/03 11:59:48	8	0.6	0	0.4	0	2284.5	0.0009	0	2.1	0	5	5	Normal Opera
08/15/03 12:59:47	8	0.8	0	0.5	0	2329.5	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 13:59:47	8	0.7	0	0.4	0	2337	0.001	0	2.3	0	5	5	Normal Opera
08/15/03 14:59:47	8	0.7	0	0.4	0	2354.4	0.001	0	2.4	0	5	5	Normal Opera
08/15/03 15:59:50	8	0.7	0	0.4	0	2361.2	0.001	0	2.4	0	5	5	Normal Opera
08/15/03 16:59:50	8	0.8	0	0.5	0	2354.4	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 17:59:47	8	0.9	0	0.6	0	2360.8	0.0012	0	2.8	0	5	5	Normal Opera
08/15/03 18:59:49	8	0.8	0	0.5	0	2349.1	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 19:59:48	8	0.8	0	0.5	0	2329.4	0.0011	0	2.6	0	5	5	Normal Opera
08/15/03 20:59:47	8	1.4	0	1.1	0	1805.9	0.0024	0	4.3	0	5	5	Normal Opera
08/16/03 12:59:47	8	1.3	0	1	0	1643.5	0.0024	0	3.9	0	5	5	Normal Opera
08/16/03 13:59:49	8	0.6	0	0.4	0	2009.7	0.0009	0	1.8	0	5	5	Normal Opera
08/16/03 14:59:49	8	0.5	0	0.3	0	2033.1	0.0007	0	1.4	0	5	5	Normal Opera
08/16/03 15:59:49	8	0.7	0	0.5	0	1939.4	0.0011	0	2.1	0	5	5	Normal Opera
08/16/03 16:59:51	8	0.7	0	0.5	0	1939	0.0011	0	2.1	0	5	5	Normal Opera
08/16/03 17:59:48	8	0.9	0	0.6	0	1895.9	0.0014	0	2.7	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

DATETIME	PROCESS 1	T-1 CO Raw	T-1 CO Raw MC	T-1 CO Corr	T-1 CO Corr MC	T-1 Heat Input	T-1 CO lb mBtu	T-1 CO lb mBtu MC	T-1 CO lb/hr	T-1 CO lb/hr MC	PROCESS 4	PROCESS 5	CPROCESS 6
08/16/03 18:59:50	8	0.8	0	0.7	0	1520	0.0015	0	2.3	0	5	5	Normal Opera
08/16/03 19:59:47	8	0.8	0	0.7	0	1508.5	0.0015	0	2.3	0	5	5	Normal Opera
08/17/03 13:59:47	8	1	0	0.8	0	1654.9	0.0019	0	3.1	0	5	5	Normal Opera
08/17/03 14:59:50	8	1.2	0	0.9	0	1972.4	0.002	0	3.9	0	5	5	Normal Opera
08/17/03 15:59:49	8	0.8	0	0.7	0	1588	0.0015	0	2.4	0	5	5	Normal Opera
08/17/03 16:59:49	8	0.8	0	0.7	0	1589.6	0.0015	0	2.4	0	5	5	Normal Opera
08/17/03 17:59:49	8	0.7	0	0.6	0	1589.1	0.0013	0	2.1	0	5	5	Normal Opera
08/17/03 18:59:48	8	0.8	0	0.7	0	1588.8	0.0015	0	2.4	0	5	5	Normal Opera
08/17/03 19:59:48	8	0.8	0	0.7	0	1573.4	0.0015	0	2.4	0	5	5	Normal Opera
08/18/03 09:59:48	8	1.2	0	1	0	1667.8	0.0023	0	3.8	0	5	5	Normal Opera
08/18/03 10:59:49	8	1.3	0	0.9	0	2075.1	0.0021	0	4.4	0	5	5	Normal Opera
08/18/03 11:59:48	8	0.8	0	0.5	0	2280.4	0.0012	0	2.7	0	5	5	Normal Opera
08/18/03 12:59:49	8	0.8	0	0.5	0	2249.4	0.0012	0	2.7	0	5	5	Normal Opera
08/18/03 13:59:48	8	0.6	0	0.4	0	2249.1	0.0009	0	2	0	5	5	Normal Opera
08/18/03 14:59:50	8	0.6	0	0.4	0	2252.7	0.0009	0	2	0	5	5	Normal Opera
08/18/03 15:59:50	8	0.6	0	0.4	0	2255.1	0.0009	0	2	0	5	5	Normal Opera
08/18/03 16:59:49	8	0.6	0	0.4	0	2307.4	0.0009	0	2.1	0	5	5	Normal Opera
08/18/03 17:59:49	8	0.7	0	0.5	0	2219	0.001	0	2.2	0	5	5	Normal Opera
08/18/03 18:59:48	8	1.3	0	1	0	1815.5	0.0023	0	4.2	0	5	5	Normal Opera
08/18/03 19:59:48	8	1.1	0	0.8	0	1801.9	0.0019	0	3.4	0	5	5	Normal Opera
08/18/03 20:59:51	8	0.9	0	0.8	0	1610.8	0.0017	0	2.7	0	5	5	Normal Opera
08/19/03 08:59:46	8	1.2	0	1	0	1707.5	0.0022	0	3.8	0	5	5	Normal Opera
08/19/03 09:59:50	8	1.4	0	1	0	2049.8	0.0023	0	4.7	0	5	5	Normal Opera
08/19/03 10:59:49	8	0.9	0	0.6	0	2291.4	0.0013	0	3	0	5	5	Normal Opera
08/19/03 11:59:49	8	0.8	0	0.5	0	2329.6	0.0011	0	2.6	0	5	5	Normal Opera
08/19/03 12:59:48	8	0.8	0	0.5	0	2332.3	0.0011	0	2.6	0	5	5	Normal Opera
08/19/03 13:59:48	8	0.7	0	0.4	0	2334.7	0.001	0	2.3	0	5	5	Normal Opera
08/19/03 14:59:48	8	0.7	0	0.4	0	2239.5	0.001	0	2.2	0	5	5	Normal Opera
08/19/03 15:59:46	8	0.7	0	0.4	0	1276.7	0.001	0	1.3	0	5	5	Normal Opera
08/19/03 16:59:48	8	0.6	0	0.4	0	2308.6	0.0008	0	1.8	0	5	5	Normal Opera
08/19/03 17:59:50	8	0.7	0	0.4	0	2308.4	0.001	0	2.3	0	5	5	Normal Opera
08/19/03 18:59:50	8	0.7	0	0.4	0	2296.8	0.001	0	2.3	0	5	5	Normal Opera
08/19/03 19:59:48	8	1	0	0.7	0	2074.3	0.0016	0	3.3	0	5	5	Normal Opera
08/19/03 20:59:49	8	0.8	0	0.7	0	1595.1	0.0015	0	2.4	0	5	5	Normal Opera
08/19/03 21:59:48	8	0.8	0	0.7	0	1468.4	0.0015	0	2.2	0	5	5	Normal Opera
08/20/03 10:59:48	8	1.3	0	1.1	0	1675.5	0.0024	0	4	0	5	5	Normal Opera
08/20/03 11:59:47	8	1.2	0	0.9	0	2044.9	0.0019	0	3.9	0	5	5	Normal Opera
08/20/03 12:59:47	8	0.7	0	0.4	0	2274.2	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 13:59:47	8	0.7	0	0.4	0	2311.9	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 14:59:50	8	0.7	0	0.4	0	2310	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 15:59:51	8	0.7	0	0.4	0	2308.4	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 16:59:49	8	0.6	0	0.4	0	2307.8	0.0008	0	1.8	0	5	5	Normal Opera
08/20/03 17:59:46	8	0.7	0	0.4	0	2307.7	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 18:59:48	8	0.6	0	0.4	0	2307.4	0.0008	0	1.8	0	5	5	Normal Opera
08/20/03 19:59:49	8	0.7	0	0.4	0	2261.9	0.001	0	2.3	0	5	5	Normal Opera
08/20/03 20:59:47	8	0.8	0	0.7	0	1584.9	0.0015	0	2.4	0	5	5	Normal Opera
08/20/03 21:59:49	8	0.8	0	0.7	0	1559.6	0.0015	0	2.3	0	5	5	Normal Opera
08/21/03 09:59:47	8	1.3	0	0.9	0	2064.7	0.002	0	4.1	0	5	5	Normal Opera
08/21/03 10:59:49	8	0.9	0	0.6	0	2297.2	0.0013	0	3	0	5	5	Normal Opera
08/21/03 11:59:49	8	0.9	0	0.6	0	2326	0.0013	0	3	0	5	5	Normal Opera
08/21/03 12:59:49	8	1	0	0.6	0	2330.5	0.0014	0	3.3	0	5	5	Normal Opera
08/21/03 13:59:51	8	0.8	0	0.5	0	2329.5	0.0011	0	2.6	0	5	5	Normal Opera
08/21/03 14:59:51	8	0.8	0	0.5	0	2329.7	0.0011	0	2.6	0	5	5	Normal Opera
08/21/03 15:59:48	8	0.8	0	0.5	0	2331.1	0.0011	0	2.6	0	5	5	Normal Opera
08/21/03 16:59:49	8	0.8	0	0.5	0	2335.5	0.0011	0	2.6	0	5	5	Normal Opera
08/21/03 17:59:49	8	0.9	0	0.6	0	2337.4	0.0012	0	2.8	0	5	5	Normal Opera
08/21/03 18:59:52	8	0.9	0	0.6	0	2336.7	0.0012	0	2.8	0	5	5	Normal Opera
08/21/03 19:59:49	8	1	0	0.6	0	2332.4	0.0014	0	3.3	0	5	5	Normal Opera
08/21/03 20:59:48	8	0.9	0	0.6	0	2329	0.0012	0	2.8	0	5	5	Normal Opera
08/21/03 21:59:49	8	1	0	0.6	0	2247.7	0.0014	0	3.1	0	5	5	Normal Opera
08/21/03 22:59:48	8	0.9	0	0.7	0	1561.8	0.0017	0	2.7	0	5	5	Normal Opera
08/22/03 09:59:49	8	1.3	0	0.9	0	2055	0.002	0	4.1	0	5	5	Normal Opera
08/22/03 10:59:51	8	1.1	0	0.7	0	2268.1	0.0016	0	3.6	0	5	5	Normal Opera
08/22/03 11:59:48	8	1.1	0	0.7	0	2311.1	0.0015	0	3.5	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

TDATETIME	PROCESS_1	T_1_CO_Raw	T_1_CO_Raw_MA	T_1_CO_Cor	T_1_CO_Cor_MA	T_1_Stat_Input	T_1_CO_lb_mbtu	T_1_CO_lb_mbtu_MA	T_1_CO_lb_hr	T_1_CO_lb_hr_MA	PROCESS_4	PROCESS_5	PROCESS_7
08/22/03 12:59:48	8	1.1	0	0.7	0	2314.2	0.0015	0	3.5	0	5	5	Normal Opera
08/22/03 13:59:50	8	0.9	0	0.6	0	2311.7	0.0013	0	3	0	5	5	Normal Opera
08/22/03 14:59:47	8	0.8	0	0.5	0	2310.7	0.0011	0	2.5	0	5	5	Normal Opera
08/22/03 15:59:48	8	0.8	0	0.5	0	2312.5	0.0011	0	2.5	0	5	5	Normal Opera
08/22/03 16:59:49	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 17:59:48	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 18:59:48	8	0.9	0	0.6	0	2315.3	0.0012	0	2.8	0	5	5	Normal Opera
08/22/03 19:59:48	8	1	0	0.6	0	2282.1	0.0014	0	3.2	0	5	5	Normal Opera
08/22/03 20:59:50	8	1	0	0.8	0	1618.8	0.0019	0	3.1	0	5	5	Normal Opera
08/25/03 10:59:49	8	1.5	0	1.1	0	2020.2	0.0024	0	4.8	0	5	5	Normal Opera
08/25/03 11:59:49	8	1	0	0.6	0	2258.9	0.0014	0	3.2	0	5	5	Normal Opera
08/25/03 12:59:51	8	0.6	0	0.4	0	2307.7	0.0008	0	1.8	0	5	5	Normal Opera
08/25/03 13:59:50	8	0.3	0	0.2	0	2308.8	0.0004	0	0.9	0	5	5	Normal Opera
08/25/03 14:59:50	8	0.5	0	0.3	0	2310.3	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 15:59:48	8	0.7	0	0.4	0	2311.5	0.001	0	2.3	0	5	5	Normal Opera
08/25/03 16:59:49	8	0.8	0	0.5	0	2309.4	0.0011	0	2.5	0	5	5	Normal Opera
08/25/03 17:59:49	8	0.8	0	0.5	0	2313.9	0.0011	0	2.5	0	5	5	Normal Opera
08/25/03 18:59:48	8	0.6	0	0.4	0	2310.3	0.0008	0	1.8	0	5	5	Normal Opera
08/25/03 19:59:48	8	0.5	0	0.3	0	2309.2	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 20:59:48	8	0.5	0	0.3	0	2306.5	0.0007	0	1.6	0	5	5	Normal Opera
08/25/03 21:59:47	8	0.7	0	0.5	0	2184.5	0.001	0	2.2	0	5	5	Normal Opera
08/26/03 07:59:50	8	1.4	0	1.2	0	1671.7	0.0026	0	4.3	0	5	5	Normal Opera
08/26/03 08:59:47	8	1.4	0	1	0	2046.1	0.0022	0	4.5	0	5	5	Normal Opera
08/26/03 09:59:49	8	1.1	0	0.7	0	2266.8	0.0016	0	3.6	0	5	5	Normal Opera
08/26/03 10:59:48	8	1.1	0	0.7	0	2311.4	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 11:59:49	8	0.9	0	0.6	0	2315.1	0.0013	0	3	0	5	5	Normal Opera
08/26/03 12:59:48	8	0.5	0	0.3	0	2318.1	0.0007	0	1.6	0	5	5	Normal Opera
08/26/03 13:59:49	8	0.7	0	0.4	0	2320.3	0.001	0	2.3	0	5	5	Normal Opera
08/26/03 14:59:49	8	1	0	0.6	0	2322.5	0.0014	0	3.3	0	5	5	Normal Opera
08/26/03 15:59:49	8	1.1	0	0.7	0	2324.9	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 16:59:48	8	1.1	0	0.7	0	2325	0.0015	0	3.5	0	5	5	Normal Opera
08/26/03 17:59:48	8	0.9	0	0.6	0	2325.4	0.0012	0	2.8	0	5	5	Normal Opera
08/26/03 18:59:51	8	0.8	0	0.5	0	2321.1	0.0011	0	2.6	0	5	5	Normal Opera
08/26/03 19:59:50	8	0.6	0	0.4	0	2320.6	0.0008	0	1.9	0	5	5	Normal Opera
08/26/03 20:59:48	8	0.5	0	0.3	0	2271.4	0.0007	0	1.6	0	5	5	Normal Opera
08/26/03 21:59:49	8	0.5	0	0.4	0	1637.6	0.0009	0	1.5	0	5	5	Normal Opera
08/27/03 08:59:49	8	1.2	0	1	0	1674.1	0.0022	0	3.7	0	5	5	Normal Opera
08/27/03 09:59:48	8	1.2	0	0.8	0	2050.2	0.0019	0	3.9	0	5	5	Normal Opera
08/27/03 10:59:48	8	0.9	0	0.6	0	2249.4	0.0013	0	2.9	0	5	5	Normal Opera
08/27/03 11:59:47	8	0.8	0	0.5	0	2335.5	0.0011	0	2.6	0	5	5	Normal Opera
08/27/03 12:59:50	8	0.6	0	0.4	0	2334.9	0.0008	0	1.9	0	5	5	Normal Opera
08/27/03 13:59:48	8	0.5	0	0.3	0	2331.7	0.0007	0	1.6	0	5	5	Normal Opera
08/27/03 14:59:48	8	0.6	0	0.4	0	2310.4	0.0008	0	1.8	0	5	5	Normal Opera
08/27/03 15:59:48	8	1.1	0	0.7	0	2311.5	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 16:59:49	8	1.1	0	0.7	0	2314.9	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 17:59:51	8	1.1	0	0.7	0	2318.9	0.0015	0	3.5	0	5	5	Normal Opera
08/27/03 18:59:50	8	1	0	0.6	0	2313.8	0.0014	0	3.2	0	5	5	Normal Opera
08/27/03 19:59:50	8	1.4	0	0.9	0	2321.3	0.0019	0	4.4	0	5	5	Normal Opera
08/27/03 20:59:47	8	1.2	0	0.8	0	2216.6	0.0017	0	3.8	0	5	5	Normal Opera
08/27/03 21:59:49	8	1	0	0.8	0	1591.6	0.0019	0	3	0	5	5	Normal Opera
08/28/03 09:59:48	8	0	15	0	15	1249.1	0	15	0	15	5	5	Normal Opera
08/28/03 10:59:49	8	0.9	98	0	98	1640.8	0.0017	98	2.8	98	5	5	Normal Opera
08/28/03 11:59:49	8	1.1	0	0.8	0	2046.8	0.0017	0	3.5	0	5	5	Normal Opera
08/28/03 12:59:49	8	0.5	0	0.3	0	2281.5	0.0007	0	1.6	0	5	5	Normal Opera
08/28/03 13:59:49	8	0.2	0	0.1	0	2278.6	0.0003	0	0.7	0	5	5	Normal Opera
08/28/03 14:59:49	8	0.4	0	0.3	0	2275.7	0.0006	0	1.4	0	5	5	Normal Opera
08/28/03 15:59:48	8	0.8	0	0.5	0	2276.4	0.0011	0	2.5	0	5	5	Normal Opera
08/28/03 16:59:48	8	0.9	0	0.6	0	2245	0.0013	0	2.9	0	5	5	Normal Opera
08/28/03 17:59:47	8	0.8	0	0.5	0	2247.4	0.0011	0	2.5	0	5	5	Normal Opera
08/28/03 18:59:50	8	0.4	0	0.3	0	2247.3	0.0006	0	1.3	0	5	5	Normal Opera
08/28/03 19:59:50	8	0.3	0	0.2	0	2245.6	0.0004	0	0.9	0	5	5	Normal Opera
08/28/03 20:59:48	8	0.5	0	0.3	0	2218.9	0.0007	0	1.6	0	5	5	Normal Opera
08/28/03 21:59:48	8	0.7	0	0.6	0	1610.7	0.0013	0	2.1	0	5	5	Normal Opera
08/29/03 08:59:49	8	1	0	0.8	0	1250.3	0.0019	0	2.4	0	5	5	Normal Opera

Duke Energy Washington, LLC 2003 Trend Data

exp_s1_hour

DATETIME	PROCESS 1	T 1 CO Raw	T 1 CO Raw MC	T 1 CO Corr	T 1 CO Corr MC	T 1 Heat Input	T 1 CO lb/mBtu	T 1 CO lb/mBtu MC	T 1 CO lb/hr	T 1 CO lb/hr MC	PROCESS 4	PROCESS 5	PROCESS 1
08/29/03 09:59:47	8	1.4	0	1.1	0	1663.5	0.0026	0	4.3	0	5	5	Normal Opera
08/29/03 10:59:47	8	1.2	0	0.8	0	2053.1	0.0019	0	3.9	0	5	5	Normal Opera
08/29/03 11:59:49	8	0.8	0	0.5	0	2326.1	0.0011	0	2.6	0	5	5	Normal Opera
08/29/03 12:59:48	8	0.6	0	0.4	0	2339.1	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 13:59:48	8	0.5	0	0.3	0	2338.6	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 14:59:48	8	0.5	0	0.3	0	2340.1	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 15:59:48	8	0.6	0	0.4	0	2338.1	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 16:59:49	8	0.7	0	0.4	0	2336.7	0.001	0	2.3	0	5	5	Normal Opera
08/29/03 17:59:49	8	0.6	0	0.4	0	2335.6	0.0008	0	1.9	0	5	5	Normal Opera
08/29/03 18:59:49	8	0.4	0	0.2	0	2323.6	0.0006	0	1.4	0	5	5	Normal Opera
08/29/03 19:59:48	8	0.5	0	0.3	0	2271.3	0.0007	0	1.6	0	5	5	Normal Opera
08/29/03 20:59:48	8	0.6	0	0.7	0	1626.3	0.0015	0	2.4	0	5	5	Normal Opera

Attachment 5

Cost Analysis for 6.0 ppm CO Emissions Rate

Attachment 5

Cost Analysis for 6.0 ppm CO Emissions Rate
Carbon Monoxide Catalyst

Capital Costs per Turbine

	Items	Value	Basis
Purchased Equipment	Equipment costs	$ 1,241,875	Vendor Quote = A
	Instruments	$ 124,200	0.10*A
	Sales tax	$ 86,900	0.07*A
	Freight	$ 62,100	0.05*A
	Total Equipment costs	$1,515,075	B = 1.22*A
Direct Installation Cost	Foundations and Supports	$ 121,000	0.08*B
	Handling and Erecting	$ 212,100	0.14*B
	Electrical	$ 60,600	0.04*B
	Piping	$ 30,300	0.01*B
	Insulation	$ 15,200	0.01*B
	Panting	$ 15,200	0.01*B
	Total installation costs	$ 454,600	0.30*B
Total Direct Costs		$ 1,969,700	
Indirect costs (installation)	Engineering	$151,500	0.10*B
	Construction/field expense	$75,800	0.05*B
	Contractor fees	$151,500	0.10*B
	Start-up	$30,000	0.02*B
	Performance tests	$15,200	0.01*B
	Contingencies	$45,500	0.03*B
	Total construction	$ 469,800	0.31*B
Total Capital Investment Costs		$2,439,500	

Attachment 5

Operating Costs per Turbine

Item	Value	Basis	Source
Electricity	3.0	Pressure Drop	Vendor
Pressure Drop (in. WC)	180,000		
Power Output of Turbine (kW)	0.3%	0.1% per I in.	Vendor
Power Loss Due to Pressure drop (kW)	540		
Unit Cost ($/kWh)	$0.045		Estimate
Cost ($/yr) (based on 4,000 hours)	$97,200		
Operating Labor	$19,110		OAQPS
Supervisory Labor	$2,870		OAQPS
Maintenance			
Labor	0.5	½ hr per shift	OAQPS
Analyzer labor	0.0		
Catalyst replacement labor	0.1	40 hr./yr	
Unit cost($/hr)	$35.00		
Labor Costs ($/yr)	$24,230		
Material Costs ($/yr)	$24,230		OAQPS
Total Costs ($/yr)	$48,460		
Catalyst Replacement			
Catalyst Costs	$359,000	Catalyst	Vendor
Annual Cost ($/yr) (3 year life)	$139,800		OAQPS
Indirect Annual Costs			
Overhead	$42,260		OAQPS
Administrative	$48,790		OAQPS
Property Tax	$24,400		OAQPS
Insurance	$24,400		OAQPS
Capital Recovery	$296,220		OAQPS
Total Indirect ($/yr)	$414,070		OAQPS
Total Annualized Cost ($/yr)	$634,030		

OAQPS – Office of Air Quality Planning and Standards

Attachment 6

Summary Copies of Emissions Testing for VOC Emissions

Summary copies of emissions testing for VOC emissions

GE ENERGY SERVICES

GE Mostardi Platt
888 Industrial Drive
Elmhurst, Illinois 60126
Ph: 630-530-6600, Fax: 630-630-6630

PARTICULATE AND GASEOUS EMISSIONS COMPLIANCE TEST

Performed At
Duke EnergyWashington County, LLC
Washington Energy Facility
Units 1 and 2
Beverly, Ohio

Test Dates
July 10 through 12, 2002

Report No.
GE Mostardi Platt Report 20020410B

Report Submittal Date
August 9, 2002

Post-it® Fax Note 7671	Date 2/5/04	# of pages ▶ 2
To Craig Breeson	From Pat McCabe	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

Summary copies of emissions testing for VOC emissions

GE ENERGY SERVICES

2.0 SUMMARY OF RESULTS

Complete test results are given on pages 9 through 18. The following table summarizes the test results.

Table 1: Baseload-Firing Pipeline Natural Gas

Parameter	Units	Unit 1			Unit 2		
		CT and DB	CT Only	DB Only[1]	CT and DB	CT Only	DB Only[1]
NO_X	ppmvd @ 15% O_2	2.76	2.85	0.0	2.78	2.86	0.0
	lbs/10^6 Btu	0.0101	0.0104	0.0	0.0102	0.0105	0.0
	lbs/hr[2]	23.42	18.55	4.87	24.28	19.10	5.18
CO	ppmvd@ 15% O_2	0.28	0.17	0.11	0.15	0.44	0.0
	lbs/10^6 Btu	0.0006	0.0004	0.0002	0.0003	0.0010	0.0
	lbs/hr[2]	1.43	0.66	0.77	0.81	1.78	0.0
Formaldehyde	ppmvd	<0.11	<0.06	0.05	<0.07	<0.08	0.0
	lbs/10^6 Btu	<0.000169	<0.000113	<0.000056	<0.000106	<0.000151	0.0
	lbs/hr[2]	<0.39	<0.20	0.19	<0.26	<0.28	0.0
VOC (as CH_4)	ppmvd@ 15% O_2	0.11	0.62	0.0	0.14	0.47	0.0
	lbs/10^6 Btu	0.0001	0.0008	0.0	0.0002	0.0006	0.0
	lbs/hr[2]	0.33	1.41	0.0	0.43	1.08	0.0
Particulate	lbs/hr[2]	1.723	2.444	0.0	3.449	2.066	1.383
	lbs/10^6 Btu	0.0007	0.0013	0.0	0.0015	0.0011	0.0004
Opacity	%	0.0	0.0	0.0	0.0	0.0	0.0
Total Sulfur	gr/100cf as H_2S	0.03	0.03	N/A	0.03	0.03	N/A

[1]Determined by subtracting average emissions with the duct burners off from the average emissions with duct burners on.
[2]Determined using volumetric air flow data collected in conjunction with each test.

Summary copies of emissions testing for VOC emissions

Table 3

Executive Summary of Results - Hanging Rock Energy Center

40 CFR 60, SUBPART GG				P003		P004	
	Component	Limit	Units	Result	Percent of Allowable	Result	Percent of Allowable
	NOx	114.5	ppmvd @ ISO-day conditions	2.9	2.5%		
	NOx	110	ppmvd @ ISO-day conditions			3.2	2.9%
40 CFR 60, SUBPART Da							
		Limit	Units	Result	Percent of Allowable	Result	Percent of Allowable
	NOx	1.60	lbs/MW-hr	0.093	5.8%	0.087	5.4%
	SO2*	0.8	lbs/MMBtu	0.0151	1.9%	0.002	0.3%
	PM	0.03	lbs/MMBtu	0.001	3.3%	0.001	3.3%
	VE	20	%	0	0.0%	0	0.0%
OEPA PERMIT No. 07-00503							
		Limit	Units	Result	Percent of Allowable	Result	Percent of Allowable
Turbine Only	NOx	3	ppmvd @ 15% O2	2.6	86.7%	2.5	83.3%
	CO	9	ppmvd	0.2	2.2%	0.3	3.3%
	VE	10	%	0	0.0%	0	0.0%
	NOx	21.1	lbs/hr	16.7	79.1%	14.9	70.6%
	CO	25.7	lbs/hr	0.7	2.7%	1.1	4.3%
	HCHO	0.214	lbs/hr	0.03	14.0%	0.04	18.7%
	NH3	37.8	lbs/hr	0.12	0.3%	0.11	0.3%
	VOC	3.2	lbs/hr	0.21	6.6%	0.19	5.9%
	PM	23.3	lbs/hr	1.3	5.6%	5.9	25.3%
	SO2*	11.0	lbs/hr	3.4	30.9%	4.44	40.4%
Turbine plus Duct Burners	NOx	3	ppmvd @ 15% O2	3	100.0%	2.9	96.7%
	CO	9	ppmvd @ 15%-O2	0.1	1.1%	0.1	1.1%
	VE	10	%	0	0.0%	0	0.0%
	NOx	0.08	lbs/MMBtu	0.011	13.8%	0.011	13.8%
	CO	0.08	lbs/MMBtu	0.0002	0.3%	0.0002	0.3%
	SO2*	0.8	lbs/MMBtu	0.0019	0.2%	0.0020	0.3%
	VOC	0.016	lbs/MMBtu	0.0001	0.6%	0.0001	0.6%
	PM	0.03	lbs/MMBtu	0.001	3.3%	0.001	3.3%
	NOx	27.8	lbs/hr	22.8	82.1%	24.34	87.6%
	CO	50.3	lbs/hr	0.4	0.8%	0.5	1.0%
	VOC	3.2	lbs/hr	0.19	5.9%	0.31	9.7%
	HCHO	0.258	lbs/hr	0.05	19.4%	0.03	11.6%
	NH3	37.8	lbs/hr	0.63	1.7%	0.22	0.6%
	PM	15	lbs/hr	2.8	18.7%	2.95	19.7%
	SO2*	23.3	lbs/hr	4.07	17.5%	4.44	19.1%

* Sulfur is determined from fuel analyses, assumes all sulfur oxidized to SO2