OGDEN PROJECTS, INC.

WATERGATE TOWER
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EMERYVILLE CALIFORNIA 94608
(415) 420-1756

AN OGDEN COMPANY

A-89-08
II-I-216

Environmental Engineering Department

ENVIRONMENTAL TEST REPORT

PREPARED FOR:	Ogden Martin Systems of Babylon, Inc. 128 Gleam Street West Babylon, NY 11704
REGARDING:	Babylon Resource Recovery Facility Units 1 and 2
REGULATORY AGENCY:	New York State Department of Environmental Conservation
PURPOSE:	Determination of Compliance with Permitted Emission Limitations
TEST DATES:	January 31 through February 9, 1989
ASSOCIATED REPORTS:	OPI Report No. 162

PREPARED BY:

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STATE OF CALIFORNIA

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TABLE OF CONTENTS

Continued...

TABLE OF CONTENTS (Continued)

A. INTRODUCTION

Ogden Projects, Inc. (OPI) performed a series of emission tests on Units 1 and 2 at the Babylon Resource Recovery Facility from January 31 through February 9, 1989. The test program was required by Air Permit to Construct Incinerators A472000381400003R and A472000381400004R. Located in West Babylon, NY this waste-to-energy facility is owned and operated by Ogden Martin Systems of Babylon, Inc (OMSB).

Two municipal solid waste (MSW)-fired units of Martin GmbH Stoker Combustion System design, each with a capacity of 375 tons-per-day (TPD), were tested for various gaseous and solid air pollutant emissions at the air pollution control system outlet of each unit. Testing for hydrogen chloride and sulfur dioxide was also performed at the inlet to the air pollution control system for each unit to determine control efficiency.

As indicated in the Source Test Plan (OPI Report No. 162), the test program was conducted for the following parameters:

Parameter	Method	Unit(s)
Particulate, HCl	U.S. EPA Method 5	1 & 2
HCl	U.S. EPA Modified Method 6	1 & 2
SO_2	U.S. EPA Method 6C	1 & 2
NO_x	U.S. EPA Method 7E	1 & 2
CO	U.S. EPA Method 10	1 & 2
As, Cd, Cr, Pb, Hg, Ni	U.S. EPA Method 12/101A	2
Dioxins/Furans	SW-846 0010	1
PAHs, PCBs	SW-846 0010	1
Be	U.S. EPA Method 104	2

Variations from the Source Test Plan are reported in Section J(5).

Emission tests were conducted by Messrs. Henry P. Von Dem Fange, Eric M. Selya, and Christian Colline, all of OPI. Mr. Henry Von Dem Fange supervised the test program. Messrs. Sideris Caramintzos, Gary Zimmerman, and Dick Forgea, of New York State Department of Environmental Conservation (NYSDEC), along with Messrs. John Donovan, Jim Meyer, and Ms. Estell Kahn of Suffolk County Department of Health, observed the testing.

Analyses for metals was conducted by Brown and Caldwell Laboratories, a California certified hazardous waste laboratory.

Analyses for dioxins, furans, PAHs, and PCBs were conducted by Triangle Laboratories, Inc. of Research Triangle Park, NC.

Analyses for TSP and HCl were performed by OPI in its Emeryville, CA laboratory.

B. SUMMARY OF RESULTS

B. 1. Schedule of Activities

Date	Time	Unit	Location* I=Inlet O=Outlet	Method	Run	Parameter
01/31/89	1348-1603	2	O	U.S. EPA 12/101A	2**	As, Cd, Cr, Pb, Hg, Ni, (Sb, Co, Cu, Mn, Se, V, Zn)***
01/31/89	1610-1824	2	O	U.S. EPA 12/101A	3	As, Cd, Cr, Pb, Hg, Ni, (Sb, Co, Cu, Mn, Se, V, Zn)***
02/01/89	0900-1212	2	O	U.S. EPA 104	1	Be
02/01/89	1013-1223	2	O	U.S. EPA 12/101A	4	As, Cd, Cr, Pb, Hg, Ni, (Sb, Co, Cu, Mn, Se, V, Zn)***
02/01/89	1424-1735	2	O	U.S. EPA 104	2	Be
02/02/89	0830-1229	1	O	SW-846 0010	1	Dioxin, Furan, PAH, PCB
02/02/89	0913-1250	2	O	U.S. EPA 104	3	Be
02/02/89	1618-1923	1	O	SW-846 0010	2	Dioxin, Furan, PAH, PCB
02/03/89	0856-1207	1	O	SW-846 0010	3	Dioxin, Furan, PAH, PCB
02/07/89	1345-1445	1	O	U.S. EPA 6C, 7E, 3A, 10	1	NO_x, SO_2, CO_2, CO
02/07/89	1345-1445	1	I	U.S. EPA 6C, 3A	1	SO_2, CO_2
02/07/89	1345-1450	1	I	U.S. EPA Modified 6	1	HCl
02/07/89	1349-1455	1	O	U.S. EPA 5	1	Particulate, HCl
02/07/89	1540-1640	1	O	U.S. EPA 6C, 7E, 3A, 10	2	NO_x, SO_2, CO_2, CO
02/07/89	1540-1640	1	I	U.S. EPA 6C, 3A	2	SO_2, CO_2
02/07/89	1540-1659	1	I	U.S. EPA Modified 6	2	HCl
02/07/89	1542-1654	1	O	U.S. EPA 5	2	Particulate, HCl

Continued...

*Inlet refers to exhaust gas sampled after exiting the economizer outlet and before entering any air pollution control devices. Outlet refers to exhaust gas sampled after exiting the baghouse and is commonly referred to as "main stack."

**U.S. EPA Method 12/101A Run 1 was discarded because it did not pass the leak rate check at the end of the test.

***Metals listed in parentheses are required for Health Risk Assessment.

B. 1. Schedule of Activities (Continued)

Date	Time	Unit	Location* I=Inlet O=Outlet	Method	Run**	Parameter
02/08/89	0845-0945	1	O	U.S. EPA 6C, 7E, 3A, 10	3	NO_x, SO_2, CO_2, CO
02/08/89	0845-0945	1	I	U.S. EPA 6C, 3A	3	SO_2, CO_2
02/08/89	0845-0953	1	O	U.S. EPA 5	3	Particulate, HCl
02/08/89	0845-0955	1	I	U.S. EPA Modified 6	3	HCl
02/08/89	1149-1254	2	O	U.S. EPA 5	1	Particulate, HCl
02/08/89	1150-1250	2	O	U.S. EPA 6C, 7E, 3A, 10	1	NO_x, SO_2, CO_2, CO
02/08/89	1150-1250	2	I	U.S. EPA 6C, 3A	1	SO_2, CO_2
02/08/89	1151-1250	2	I	U.S. EPA Modified 6	1	HCl
02/08/89	1340-1440	2	O	U.S. EPA 6C, 7E, 3A, 10	2	NO_x, SO_2, CO_2, CO
02/08/89	1340-1440	2	I	U.S. EPA 6C, 3A	2	SO_2, CO_2
02/08/89	1340-1450	2	I	U.S. EPA Modified 6	2	HCl
02/08/89	1341-1445	2	O	U.S. EPA 5	2	Particulate, HCl
02/08/89	1530-1630	2	O	U.S. EPA 6C, 7E, 3A, 10	3	NO_x, SO_2, CO_2, CO
02/08/89	1530-1630	2	I	U.S. EPA 6C, 3A	3	SO_2, CO_2
02/08/89	1530-1635	2	O	U.S. EPA 5	3	Particulate, HCl
02/08/89	1530-1635	2	I	U.S. EPA Modified 6	3	HCl
02/09/89	0930-1030	1	O	U.S. EPA 6C, 7E, 3A, 10	1R	NO_x, SO_2, CO_2, CO
02/09/89	0930-1030	1	I	U.S. EPA 6C, 3A	1R	SO_2, CO_2
02/09/89	0930-1036	1	O	U.S. EPA 5	1R	Particulate, HCl
02/09/89	0935-1035	1	I	U.S. EPA Modified 6	1R	HCl
02/09/89	1140-1245	1	I	U.S. EPA Modified 6	2R	HCl
02/09/89	1144-1249	1	O	U.S. EPA 5	2R	Particulate, HCl
02/09/89	1200-1300	1	O	U.S. EPA 6C, 7E, 3A, 10	2R	NO_x, SO_2, CO_2, CO
02/09/89	1200-1300	1	I	U.S. EPA 6C, 3A	2R	SO_2, CO_2
02/09/89	1401-1503	1	I	U.S. EPA Modified 6	3R	HCl
02/09/89	1403-1508	1	O	U.S. EPA 5	3R	Particulate, HCl
02/09/89	1405-1505	1	O	U.S. EPA 6C, 7E, 3A, 10	3R	NO_x, SO_2, CO_2, CO
02/09/89	1405-1505	1	I	U.S. EPA 6C, 3A	3R	SO_2, CO_2

*See footnote, p. 3.

**"R" after run number indicates testing done at 70% of full load.

B. 2. Summary of Emission Test Results

Pollutant	Emission Concentration @ 12% CO_2 ppm_{dv}	Emission Concentration @ 12% CO_2 $\mu g/Nm^3$	Mass Emission Rates lbs/yr	lbs/hr	g/s
Unit 1 (Full Load)					
TSP (gr/dscf)	0.0017		3.8E+03	0.43	5.4E-02
CO	15	---	1.7E+04	1.9	0.24
SO_2	36	---	9.1E+04	10.4	1.3
NO_x	331	---	6.0E+05	68.4	8.6
HCl	20	---	3.1E+04	3.5	0.44
lbs NO_x per ton MSW: 4.24					
CO/CO_2 Ratio: 99.987					
SO_2 Removal Efficiency: 76%					
HCl Removal Efficiency: 97%					
Unit 1 (Reduced Load)					
TSP (gr/dscf)	0.0029		4.4E+03	0.50	---
CO	9	---	6.1E+03	0.7	---
SO_2	16	---	2.6E+04	3.0	---
NO_x	281	---	3.4E+05	38.5	---
HCl	24	---	2.4E+04	2.7	---
lbs NO_x per ton MSW: 3.59					
CO/CO_2 Ratio: 99.993					
SO_2 Removal Efficiency: 94%					
HCl Removal Efficiency: 97%					
Unit 2 (Full Load)					
TSP (gr/dscf)	0.0012		3.0E+03	0.34	4.3E-02
CO	13	---	1.6E+04	1.8	1.2E-02
SO_2	21	---	5.7E+04	6.5	0.82
NO_x	287	---	5.6E+05	64.3	8.1
HCl	48	---	8.0E+04	9.1	1.1
lbs NO_x per ton MSW: 3.95					
CO/CO_2 Ratio: 99.989					
SO_2 Removal Efficiency: 85%					
HCl Removal Efficiency: 95%					
Arsenic (As)	---	<1.5	<1.4E-00	<1.6E-04	<2.0E-05
Beryllium (Be)	---	<0.87	<8.0E-01	<1.0E-04	<1.3E-05
Cadmium (Cd)	---	<0.75	<7.0E-01	<8.0E-05	<1.0E-05
Chromium (Cr)	---	<1.5	<1.4E-00	<1.6E-04	<2.0E-05
Lead (Pb)	---	1.5	1.5E-00	1.7E-04	2.1E-05
Mercury (Hg)	---	470	4.5E+02	5.1E-02	6.4E-03
Nickel (Ni)	---	<3.7	<3.5E-00	<4.0E-04	<5.0E-05

Babylon Resourcce Recovery Facility, Unit 1

*Average Toxic Equivalent Emissions By
NYS DOH (EADON ET AL), (ng/Nm3 @ 12 % CO2)

COMPOUND	Multiplying factor	*Average	*Toxic Equivalent
2378 TCDD	1.00	0.000	0.000
Other TCDD	0.01	0.617	0.006
12378 PCDD	1.00	0.063	0.063
Other PCDD	0.01	1.614	0.016
123478 HxCDD	0.03	0.022	0.001
123678 HxCDD	0.03	0.287	0.009
123789 HxCDD	0.03	0.309	0.009
Other HxCDD	0.0003	2.876	0.001
1234678 HpCDD	0.001	2.133	0.002
Other HpCDD	0.00001	3.226	0.000
OCDD	0.00	1.349	0.000
TOTAL PCDD			0.107
2378 TCDF	0.33	0.832	0.275
Other TCDF	0.003	2.951	0.009
12378 PCDF	0.33	0.087	0.029
23478 PCDF	0.33	0.241	0.080
Other PCDF	0.003	2.705	0.008
123478 HxCDF	0.01	0.275	0.003
123678 HxCDF	0.01	0.241	0.002
234678 HxCDF	0.01	0.404	0.004
123789 HxCDF	0.01	0.000	0.000
Other HxCDF	0.0001	1.224	0.000
1234678 HpCDF	0.001	1.062	0.001
1234789 HpCDF	0.001	0.047	0.000
Other HpCDF	0.00001	0.601	0.000
OCDF	0.00	0.207	0.000
TOTAL PCDF			0.410
Total Toxic Equivalent (2,3,7,8-TCDD Equivalents)			0.517

* Minimum detection limits of non-detectable congeners are considered as zeroes in calculating averages and toxic equivalencies.

Babylon Resource Recovery Facility, Unit 1

Average Toxic Equivalent Emissions By
NYS DOH (EADON ET AL), (ng/Nm3 @ 12 % CO2)

COMPOUND	Multiplying factor	Average	Toxic Equivalent
2378 TCDD	1.00	<0.027	<0.027
Other TCDD	0.01	0.590	0.006
12378 PCDD	1.00	<0.072	<0.072
Other PCDD	0.01	1.605	0.016
123478 HxCDD	0.03	<0.059	<0.002
123678 HxCDD	0.03	0.287	0.009
123789 HxCDD	0.03	0.309	0.009
Other HxCDD	0.0003	2.839	0.001
1234678 HpCDD	0.001	2.133	0.002
Other HpCDD	0.00001	3.226	0.000
OCDD	0.00	<2.123	0.000
TOTAL PCDD			<0.144
2378 TCDF	0.33	0.832	0.275
Other TCDF	0.003	2.951	0.009
12378 PCDF	0.33	<0.159	<0.053
23478 PCDF	0.33	<0.315	<0.104
Other PCDF	0.003	2.558	0.008
123478 HxCDF	0.01	<0.521	<0.005
123678 HxCDF	0.01	0.241	0.002
234678 HxCDF	0.01	0.404	0.004
123789 HxCDF	0.01	<0.034	0.000
Other HxCDF	0.0001	0.944	0.000
1234678 HpCDF	0.001	1.062	0.001
1234789 HpCDF	0.001	<0.140	0.000
Other HpCDF	0.00001	0.507	0.000
OCDF	0.00	<0.505	0.000
TOTAL PCDF			<0.461
Total Toxic Equivalent (2,3,7,8-TCDD Equivalents)			<0.605

In calculating averages and toxic equivalencies, minimum detection limits of non-detectable congeners are used.

Babylon Resource Recovery Facility, Unit 1

*Average Toxic Equivalent Emissions By EPA Scenario (ng/Nm3 at 12 % CO2)

COMPOUND	Multiplying factor	*Average	*Toxic equivalent
2378 TCDD	1.00000	0.000	0.000
Other TCDD	0.01000	0.617	0.006
12378 PCDD	0.50000	0.063	0.031
Other PCDD	0.00500	1.614	0.008
123478 HxCDD	0.04000	0.022	0.001
123678 HxCDD	0.04000	0.287	0.011
123789 HxCDD	0.04000	0.309	0.012
Other HxCDD	0.00040	2.876	0.001
1234678 HpCDD	0.00100	2.133	0.002
Other HpCDD	0.00001	3.226	0.000
OCDD	0.00000	1.349	0.000
TOTAL PCDD		12.496	0.074
2378 TCDF	0.10000	0.832	0.083
Other TCDF	0.00100	2.951	0.003
12378 PCDF	0.10000	0.087	0.009
23478 PCDF	0.10000	0.241	0.024
Other PCDF	0.00100	2.705	0.003
123478 HxCDF	0.01000	0.275	0.003
123678 HxCDF	0.01000	0.241	0.002
234678 HxCDF	0.01000	0.404	0.004
123789 HxCDF	0.01000	0.000	0.000
Other HxCDF	0.00010	1.224	0.000
1234678 HpCDF	0.00100	1.062	0.001
1234789 HpCDF	0.00100	0.047	0.000
Other HpCDF	0.00100	0.601	0.001
OCDF	0.00000	0.207	0.000
TOTAL PCDF			0.133
Total Toxic Equivalent (2,3,7,8-TCDD Equivalents)			0.206

* Minimum detection limits of non-detectable congeners are considered as zeroes in calculating averages and toxic equivalencies.

Babylon Resource Recovery Facility, Unit 1

Average Toxic Equivalent Emissions By
EPA Scenario (ng/Nm3 at 12 % CO2)

COMPOUND	Multiplying factor	Average	Toxic equivalent
2378 TCDD	1.00000	<0.027	<0.027
Other TCDD	0.01000	0.590	0.006
12378 PCDD	0.50000	<0.072	<0.036
Other PCDD	0.00500	1.605	0.008
123478 HxCDD	0.04000	<0.059	<0.002
123678 HxCDD	0.04000	0.287	0.011
123789 HxCDD	0.04000	0.309	0.012
Other HxCDD	0.00040	2.839	0.001
1234678 HpCDD	0.00100	2.133	0.002
Other HpCDD	0.00001	3.226	0.000
OCDD	0.00000	<2.123	0.000
TOTAL PCDD		13.269	<0.106
2378 TCDF	0.10000	0.832	0.083
Other TCDF	0.00100	2.951	0.003
12378 PCDF	0.10000	<0.159	<0.016
23478 PCDF	0.10000	< 0.315	<0.032
Other PCDF	0.00100	2.558	0.003
123478 HxCDF	0.01000	< 0.521	<0.005
123678 HxCDF	0.01000	0.241	0.002
234678 HxCDF	0.01000	0.404	0.004
123789 HxCDF	0.01000	< 0.034	0.000
Other HxCDF	0.00010	0.944	0.000
1234678 HpCDF	0.00100	1.062	0.001
1234789 HpCDF	0.00100	< 0.140	0.000
Other HpCDF	0.00100	0.507	0.001
OCDF	0.00000	< 0.505	0.000
TOTAL PCDF			<0.150
Total Toxic Equivalent (2,3,7,8-TCDD Equivalents)			<0.256

In calculating averages and toxic equivalencies, minimum detection limits of non-detectable congeners are used.

B. 4. Summary of PAH and PCB Emissions

PAH	Average Emissions (Unit 1, Runs 1-3)		
	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Napthalene	<1.17E-00	<1.19E-04	<1.50E-05
2-Methylnapthalene	<2.60E-01	<2.67E-05	<3.36E-06
2-Chloronaphthalene	<2.46E-01	<2.52E-05	<3.18E-06
Acenapthylene	<1.69E-01	<1.80E-05	<2.19E-06
Acenaphthene	<2.50E-01	<2.57E-05	<3.23E-06
Fluorene	<2.58E-01	<2.65E-05	<3.35E-06
Phenanthrene	<1.99E-01	<2.05E-05	<2.58E-06
Anthracene	<2.27E-01	<2.33E-05	<2.93E-06
Fluoranthene	<2.28E-01	<2.34E-05	<2.95E-06
Pyrene	<2.39E-01	<2.46E-05	<3.10E-06
Benzo (a) anthracene	<3.14E-01	<3.24E-05	<4.08E-06
Chrysene	<2.74E-01	<2.82E-05	<3.55E-06
Benzo (b) fluoranthene	<3.89E-01	<4.00E-05	<5.03E-06
Benzo (k) fluoranthene	<3.21E-01	<3.29E-05	<4.15E-06
Benzo (a) pyrene	<4.42E-01	<4.54E-05	<5.71E-06
Indeno (1,2,3-CD) pyrene	<8.57E-01	<8.77E-05	<1.11E-05
Dibenz (a,h) anthracene	<9.75E-01	<1.00E-04	<1.26E-05
Benzo (g,h,i) perylene	<8.07E-01	<8.26E-05	<1.04E-05
Total	<7.63E-00	<7.82E-04	<9.84E-05

Continued...

B. 4. Summary of PAH and PCB Emissions (Continued)

PCB	Average Emissions (Unit 1, Runs 1-3)		
	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Total Mono PCB	<9.91E-03	<1.02E-06	<1.2E-07
Total Di PCB	<9.50E-03	<9.75E-07	<1.23E-07
Total Tri PCB	<1.06E-00	<1.08E-04	<1.36E-05
Total Tetra PCB	<3.91E-02	<4.02E-06	<5.07E-07
Total Penta PCB	<1.81E-02	<1.86E-06	<2.35E-07
Total Hexa PCB	<2.15E-02	<2.22E-06	<2.79E-07
Total Hepta PCB	<1.63E-02	<1.67E-06	<2.11E-07
Total Octa PCB	<2.13E-02	<2.20E-06	<2.76E-07
Total Nona PCB	<2.01E-02	<2.07E-06	<2.61E-07
Total Deca PCB	<2.01E-02	<2.07E-06	<2.61E-07
Total PCB	<1.24E-00	<1.27E-04	<1.06E-05

B. 5. Additional Metals Emissions Presented for Health Risk Assessment: Sb, Co, Cu, Mn, Se, V, Zn

	Average Emissions Unit 1		
	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Antimony (Sb)	<7.5	<8.0E-04	<1.0E-04
Cobalt (Co)	<3.7	<4.0E-04	<5.0E-05
Copper (Cu)	<1.5	<1.6E-04	<2.0E-05
Manganese (Mn)	<0.12	<1.3E-05	<1.6E-06
Selenium (Se)	<0.75	<8.0E-05	<1.0E-05
Vanadium (V)	<15	<1.6E-03	<2.0E-04
Zinc (Zn)	18	1.8E-03	2.3E-04

C. TOTAL SUSPENDED PARTICULATE

C. 1. Unit 1 Results: TSP

Run	gr/dscf @ 12% CO_2	lbs/hr
1	0.0016	0.44
2	0.0022	0.55
3	0.0012	0.31
Average	0.0017	0.43

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
UNIT: Unit 1

PARTICULATE RESULTS

Unit 1, Run 1

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	5.8	0.0013	0.0011	0.0016	0.44

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1349	1455	10.4	9.2	15.7	70.70	41000

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
UNIT: Unit 1

PARTICULATE RESULTS

Unit 1, Run 2

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	6.9	0.0015	0.0013	0.0022	0.55

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1542	1654	11.2	8.4	13.3	69.30	41600

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 1

PARTICULATE RESULTS

Unit 1, Run 3

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	4.0	0.0009	0.0007	0.0012	0.31

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
845	953	11.2	8.4	14.8	71.10	41400

FACILITY: Babylon Resource Recovery
DATE: 02-07-89,02-08-89
UNIT: Unit 1

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-07-89	02-07-89	02-08-89
	FROM:	1349	1542	845
	TO:	1455	1654	953
Vm (dry gas sampled, dcf)		69.36	68.10	68.79
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.15	30.15	30.23
P static (stack pressure, " H2O)		-1.00	-1.00	-1.00
Delta H (differential meter press, " H2O)		4.6	4.5	4.6
Tm (meter temperature, R`)		536	537	530
Vol H2O mls		279.8	225.2	261.6
Vm(std), dscf @ 68' F		70.7	69.3	71.1
Vm(std),Nm3 @ 32' F		1.87	1.83	1.88
Bws-H2O vapor		0.157	0.133	0.148
MF-moisture factor		0.843	0.867	0.853
% CO2		9.2	8.4	8.4
% O2		10.4	11.2	11.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.89	29.79	29.79
Ms-MW stk gas,wet		28.02	28.23	28.05
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.96	0.95	0.96
T stack, R'		761	761	766
Stack area,ft2		17.72	17.72	17.72
Vs-fps		65.6	64.7	65.8
Qstd-dscfm		41000	41600	41400
Qstd-Nm3/sec at 32'F		18.0	18.3	18.2
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		99	96	99

C. 2. Unit 2 Results: TSP

Run	gr/dscf @ 12% CO_2	lbs/hr
1	0.0013	0.36
2	0.0008	0.24
3	0.0016	0.43
Average	0.0012	0.34

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2

PARTICULATE RESULTS

Unit 2, Run 1

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	4.7	0.0010	0.0008	0.0013	0.36

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1149	1254	10.1	9.5	14.3	73.00	42700

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2

PARTICULATE RESULTS

Unit 2, Run 2

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	3.1	0.0007	0.0006	0.0008	0.24

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1341	1445	10.1	9.5	15.1	73.00	42400

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2

PARTICULATE RESULTS

Unit 2, Run 3

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	6.0	0.0013	0.0011	0.0016	0.43

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1530	1635	10.1	9.5	15.1	72.40	39500

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-08-89	02-08-89	02-08-89
	FROM:	1149	1341	1530
	TO:	1254	1445	1635
Vm (dry gas sampled, dcf)		70.77	71.71	70.73
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.23	30.23	30.23
P static (stack pressure, " H2O)		-1.00	-1.00	-1.00
Delta H (differential meter press, " H2O)		4.6	5.0	5.0
Tm (meter temperature, R`)		531	539	536
Vol H2O mls		258.5	276.5	272.8
Vm(std), dscf @ 68' F		73.0	73.0	72.4
Vm(std),Nm3 @ 32' F		1.93	1.93	1.91
Bws-H2O vapor		0.143	0.151	0.151
MF-moisture factor		0.857	0.849	0.849
% CO2		9.5	9.5	9.5
% O2		10.1	10.1	10.1
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.92	29.92	29.92
Ms-MW stk gas,wet		28.22	28.12	28.12
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.99	0.99	0.92
T stack, R'		764	763	761
Stack area,ft2		17.72	17.72	17.72
Vs-fps		67.3	67.4	62.6
Qstd-dscfm		42700	42400	39500
Qstd-Nm3/sec at 32'F		18.8	18.6	17.4
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		98	99	105

C. 3. Unit 1 Results (Reduced Load): TSP

Run	gr/dscf @ 12% CO_2	lbs/hr
1	0.0022	0.37
2	0.0036	0.63
3	0.0029	0.50
Average	0.0029	0.50

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load

PARTICULATE RESULTS

Unit 1, Run 1

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	4.7	0.0015	0.0013	0.0022	0.37

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
930	1036	11.1	8.5	13.9	46.80	27700

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load

PARTICULATE RESULTS

Unit 1, Run 2

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	8.1	0.0026	0.0022	0.0036	0.63

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1144	1249	11.0	8.6	13.2	48.60	28500

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load

PARTICULATE RESULTS

Unit 1, Run 3

SAMPLE	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Front-half:	6.4	0.0020	0.0017	0.0029	0.50

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1403	1508	11.2	8.4	13.7	49.00	28800

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-09-89	02-09-89	02-09-89
	FROM:	930	1144	1403
	TO:	1036	1249	1508
Vm (dry gas sampled, dcf)		43.89	45.95	46.43
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.18	30.18	30.18
P static (stack pressure, " H2O)		-0.60	-0.60	-0.60
Delta H (differential meter press, " H2O)		2.0	1.9	1.9
Tm (meter temperature, R`)		510	514	515
Vol H2O mls		161.0	157.3	164.7
Vm(std), dscf @ 68' F		46.8	48.6	49.0
Vm(std),Nm3 @ 32' F		1.23	1.28	1.29
Bws-H2O vapor		0.139	0.132	0.137
MF-moisture factor		0.861	0.868	0.863
% CO2		8.5	8.6	8.4
% O2		11.1	11.0	11.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.80	29.82	29.79
Ms-MW stk gas,wet		28.16	28.26	28.18
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.62	0.64	0.65
T stack, R'		737	738	739
Stack area,ft2		17.72	17.72	17.72
Vs-fps		41.9	42.9	43.6
Qstd-dscfm		27700	28500	28800
Qstd-Nm3/sec at 32'F		12.2	12.5	12.7
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		97	98	98

D. CONTINUOUS EMISSION MONITORING

D. 1. Unit 1 Results: SO_2, NO_x, and CO

Parameter	Uncontrolled Emissions ppm_{dv} @ 12% CO_2	Controlled Emissions ppm_{dv} @ 12% CO_2	Controlled Emissions lbs/hr	Controlled Emissions lbs/ton MSW	Removal Efficiency %
SO_2					
Run 1	94	35	11.0	---	63
Run 2	241	40	10.4	---	83
Run 3	179	34	9.9	---	81
Average	171	36	10.4	---	76
NO_x					
Run 1	---	331	74.3	4.60	---
Run 2	---	366	69.1	4.38	---
Run 3	---	295	61.7	3.74	---
Average	---	331	68.4	4.24	---
CO					
Run 1	---	15	2.1	---	---
Run 2	---	16	1.8	---	---
Run 3	---	14	1.8	---	---
Average	---	15	1.9	---	---

FACILITY:BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
01:45 PM	-	01:55 PM	10.9	103	113
01:55 PM	-	02:05 PM	10.6	83	94
02:05 PM	-	02:15 PM	11.0	92	101
02:15 PM	-	02:25 PM	10.9	83	91
02:25 PM	-	02:35 PM	10.8	73	81
02:35 PM	-	02:45 PM	11.1	79	85
Averages;			10.9	85	94

	CO2;%	SO2;ppm
ZERO DRIFT	0	13
CALIB. DRIFT	0	1
CAL GAS value	9.63	55
FULL SCALE RANGE	15	200

dscfm = 41000 U.S.EPA Method 5 Run 1

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	10.9	85	94	34.7

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	64	28
FINAL zero	0	6.5
FINAL span	64	35

FACILITY:BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
03:40 PM	-	03:50 PM	10.6	207	234
03:50 PM	-	04:00 PM	10.6	202	228
04:00 PM	-	04:10 PM	10.3	186	217
04:10 PM	-	04:20 PM	10.5	223	256
04:20 PM	-	04:30 PM	10.5	212	244
04:30 PM	-	04:40 PM	10.5	233	268
Averages;			10.5	210	241

	CO2;%	SO2;ppm
ZERO DRIFT	0	13
CALIB. DRIFT	-0.2	0
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 41600 U.S.EPA Method 5 Run 2

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	10.5	210	241	87.1

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0.5
INITAL span	64.5	11
FINAL zero	0	3
FINAL span	63	11

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 1 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL BEGIN	- END	CONCENTRATIONS CO2;%	SO2;ppm	CORRECTED to 12 % CO2 SO2;ppm
08:45 AM	- 08:55 AM	10.2	***	***
08:55 AM	- 09:05 AM	10.4	***	***
09:05 AM	- 09:15 AM	10.2	***	***
09:15 AM	- 09:25 AM	10.4	160	185
09:25 AM	- 09:35 AM	10.2	140	164
09:35 AM	- 09:45 AM	9.9	155	187
Averages;		10.2	152	179

	CO2;%	SO2;ppm
ZERO DRIFT	0	13
CALIB. DRIFT	-0.2	5
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 41400 U.S.EPA Method 5 Run 3

	Concentration %CO2	SO2,ppm	@12%CO2	Mass Emissions lbs/hr
SO2 Emission Summary:	10.2	152	179	62.7

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	61	11
FINAL zero	0	2.5
FINAL span	60	14.5

*** equipment malfunction

FACILITY: BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Outlet (contolled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
01:45 PM	-	01:55 PM	9.3	27	35
01:55 PM	-	02:05 PM	9.1	29	38
02:05 PM	-	02:15 PM	9.3	24	31
02:15 PM	-	02:25 PM	9.1	19	26
02:25 PM	-	02:35 PM	9.1	27	35
02:35 PM	-	02:45 PM	9.1	34	45
Averages;			9.2	27	35

	CO2;%	SO2;ppm
ZERO DRIFT	0	2
CALIB. DRIFT	1.3	10
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 41000 U.S.EPA Method 5 Run 1

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	9.2	27	35	11.0

DRIFT VALUES

	CO2	SO2
INITAL zero	0	-0.5
INITAL span	67	9.5
FINAL zero	0	0
FINAL span	76	11

FACILITY: BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Outlet (contolled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
03:40 PM	-	03:50 PM	7.5	26	41
03:50 PM	-	04:00 PM	7.7	33	52
04:00 PM	-	04:10 PM	7.5	26	41
04:10 PM	-	04:20 PM	7.7	31	48
04:20 PM	-	04:30 PM	7.6	26	40
04:30 PM	-	04:40 PM	7.5	10	16
Averages;			7.6	25	40

	CO2;%	SO2;ppm
ZERO DRIFT	0	-3
CALIB. DRIFT	-0.1	0
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 41600 U.S.EPA Method 5 Run 2

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	7.6	25	40	10.4

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	73	9.5
FINAL zero	0	-0.5
FINAL span	72	9

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 1 Outlet (contolled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
08:45 AM	-	08:55 AM	8.2	12	18
08:55 AM	-	09:05 AM	8.5	29	41
09:05 AM	-	09:15 AM	8.4	29	42
09:15 AM	-	09:25 AM	8.8	22	30
09:25 AM	-	09:35 AM	8.2	22	32
09:35 AM	-	09:45 AM	8.5	32	44
Averages;			8.4	24	34

	CO2;%	SO2;ppm
ZERO DRIFT	0	0
CALIB. DRIFT	-0.1	0
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 41400 U.S.EPA Method 5 Run 3

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	8.4	24	34	9.9

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	77	9.5
FINAL zero	0	0
FINAL span	76.5	9.5

FACILITY: BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
01:45 PM	-	01:55 PM	9.3	269	13	348	16
01:55 PM	-	02:05 PM	9.1	269	10	353	13
02:05 PM	-	02:15 PM	9.3	269	13	348	16
02:15 PM	-	02:25 PM	9.1	238	10	313	13
02:25 PM	-	02:35 PM	9.1	238	13	313	16
02:35 PM	-	02:45 PM	9.1	238	13	313	16
Averages;			9.2	253	12	331	15

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	1.3	5	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 41000 U.S.EPA Method 5 Run 1

	Concentration		Mass Emission
	%CO2	NOx,ppm @12%CO2	lbs/hr
NOx Emission Summary:	9.2	253 331	74.3

	Concentration		Mass Emission
	%CO2	CO,ppm @12%CO2	lbs/hr
CO Emission Summary:	9.2	12 15	2.1

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	0	0	0
INITAL span	67	27	10
FINAL zero	0	0	0
FINAL span	76	27.5	10

FACILITY: BABYLON
DATE: 2-7-89
UNIT: UNIT 1 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
03:40 PM	-	03:50 PM	7.5	238	10	379	16
03:50 PM	-	04:00 PM	7.7	249	10	388	16
04:00 PM	-	04:10 PM	7.5	243	13	391	20
04:10 PM	-	04:20 PM	7.7	223	10	348	16
04:20 PM	-	04:30 PM	7.6	223	8	352	12
04:30 PM	-	04:40 PM	7.5	213	13	339	20
Averages;			7.6	232	10	366	16

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	-0.1	-5	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 41600 U.S.EPA Method 5 Run 2

	Concentration		Mass Emission
	%CO2	NOx,ppm @12%CO2	lbs/hr
NOx Emission Summary:	7.6	232 366	69.1

	Concentration		Mass Emission
	%CO2	CO,ppm @12%CO2	lbs/hr
CO Emission Summary:	7.6	10 16	1.8

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	0	0	0
INITAL span	73	27.5	10
FINAL zero	0	0	0
FINAL span	72	27	10

FACILITY:BABYLON
DATE: 2-8-89
UNIT: UNIT 1 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #3

TIME INTERVAL		CONCENTRATIONS			CORRECTED to 12 % O2	
BEGIN	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
08:45 AM	08:55 AM	8.2	238	15	347	22
08:55 AM	09:05 AM	8.5	253	10	356	14
09:05 AM	09:15 AM	8.4	238	8	341	11
09:15 AM	09:25 AM	8.8	186	5	253	7
09:25 AM	09:35 AM	8.2	155	10	226	15
09:35 AM	09:45 AM	8.5	176	10	247	14
Averages;		8.4	208	10	295	14

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	-0.1	-10	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 41400 U.S.EPA Method 5 Run 3

	Concentration			Mass Emission
	%CO2	NOx,ppm	@12%CO2	lbs/hr
NOx Emission Summary:	8.4	208	295	61.7

	Concentration			Mass Emission
	%CO2	CO,ppm	@12%CO2	lbs/hr
CO Emission Summary:	8.4	10	14	1.8

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	0	0	0
INITAL span	77	28.5	10
FINAL zero	0	0	0
FINAL span	76.5	27.5	10

Combustion Index: Unit 1

$$CI = \frac{CO_2 \times 100}{CO_2 + CO}$$

Run	% CO_2	ppm_{dv} CO_2	ppm_{dv} CO	CI
1	9.2	92,000	12	99.987
2	7.6	76,000	10	99.987
3	8.4	84,000	10	99.988
Average	8.4	84,000	11	99.987

Babylon Resource Recovery Facility

Unit 1

Run	Steam Pres. psig	Steam Temp. °F	Steam Heat Value Btu/lb	Steam Flow lbs/hr	Steam Heat Flow MBtu/hr	MSW Heat Content MBtu/hr	MSW tons/hr
1	640	658	1318	88000	116	168	16.16
2	640	650	1317	86000	113	164	15.78
3	640	672	1331	89000	119	172	16.51
Avg	640	660	1322	87700	116	168	16.15

$$\text{Boiler Efficiency} = .69 = \frac{\text{Btu Steam}}{\text{Btu MSW}}$$

HHV = 5200 Btu/lb MSW

Run	NO_x lbs/hr	MSW tons/hr	NO_x lbs/ton MSW
1	74.3	16.16	4.60
2	69.1	15.78	4.38
3	61.7	16.51	3.74
Avg	68.4	16.15	3.74

D. 2. Unit 2 Results: SO_2, NO_x, and CO

Parameter	Uncontrolled Emissions ppm_{dv} @ 12% CO_2	Controlled Emissions ppm_{dv} @ 12% CO_2	Controlled Emissions lbs/hr	Controlled Emissions lbs/ton MSW	Removal Efficiency %
SO_2					
Run 1	126	23	7.2	---	82
Run 2	121	16	5.1	---	87
Run 3	163	24	7.1	---	85
Average	137	21	6.5	---	85
NO_x					
Run 1	---	305	70.0	4.48	---
Run 2	---	270	61.7	3.95	---
Run 3	---	287	61.1	3.91	---
Average	---	287	64.3	4.11	---
CO					
Run 1	---	13	1.9	---	---
Run 2	---	14	2.0	---	---
Run 3	---	12	1.5	---	---
Average	---	13	1.8	---	---

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
11:50 AM	-	12:00 PM	10.2	125	147
12:00 PM	-	12:10 PM	9.7	125	154
12:10 PM	-	12:20 PM	10.3	115	133
12:20 PM	-	12:30 PM	10.0	110	132
12:30 PM	-	12:40 PM	10.2	85	100
12:40 PM	-	12:50 PM	10.2	75	88
Averages;			10.1	106	126

	CO2;%	SO2;ppm
ZERO DRIFT	-0.1	0
CALIB. DRIFT	0.4	-13
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 42700 U.S.EPA Method 5 Run 1

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	10.1	106	126	45.1

DRIFT VALUES

	CO2	SO2
INITAL zero	1	0
INITAL span	61.5	11
FINAL zero	0.5	0
FINAL span	64	8.5

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
01:40 PM	-	01:50 PM	9.8	***	***
01:50 PM	-	02:00 PM	9.6	***	***
02:00 PM	-	02:10 PM	9.6	70	87
02:10 PM	-	02:20 PM	9.6	70	87
02:20 PM	-	02:30 PM	9.8	105	129
02:30 PM	-	02:40 PM	10.0	150	180
Averages;			9.7	99	121

	CO2;%	SO2;ppm
ZERO DRIFT	0	18
CALIB. DRIFT	-0.2	0
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 42400 U.S.EPA Method 5 Run 2

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	9.7	99	121	41.8

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	64	11
FINAL zero	0	3.5
FINAL span	63	11

*** equipment malfunction

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Inlet (uncontrolled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
03:30 PM	-	03:40 PM	10.6	95	108
03:40 PM	-	03:50 PM	9.9	75	90
03:50 PM	-	04:00 PM	10.7	135	152
04:00 PM	-	04:10 PM	9.9	***	***
04:10 PM	-	04:20 PM	10.4	250	288
04:20 PM	-	04:30 PM	9.7	145	179
Averages;			10.2	140	163

	CO2;%	SO2;ppm
ZERO DRIFT	0	8
CALIB. DRIFT	0.3	13
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 39500 U.S.EPA Method 5 Run 3

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	10.2	140	163.4041	55.1

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	64	11
FINAL zero	0	1.5
FINAL span	66	15

*** equipment malfunction

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
11:50 AM	-	12:00 PM	9.0	15	20
12:00 PM	-	12:10 PM	9.3	23	30
12:10 PM	-	12:20 PM	9.0	15	20
12:20 PM	-	12:30 PM	8.9	20	27
12:30 PM	-	12:40 PM	8.8	15	21
12:40 PM	-	12:50 PM	9.0	13	17
Averages;			9	17	23

	CO2;%	SO2;ppm
ZERO DRIFT	0	0
CALIB. DRIFT	0.2	-3
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 42700 U.S.EPA Method 5 Run 1

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	9	17	23	7.2

DRIFT VALUES

	CO2	SO2
INITAL zero	-0.5	0
INITAL span	68	9.5
FINAL zero	-0.5	0
FINAL span	68.5	9

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
01:40 PM	-	01:50 PM	9.1	11	14
01:50 PM	-	02:00 PM	8.8	13	18
02:00 PM	-	02:10 PM	8.8	11	15
02:10 PM	-	02:20 PM	9.2	13	18
02:20 PM	-	02:30 PM	9.1	13	18
02:30 PM	-	02:40 PM	9.2	8	11
Averages;			9	12	16

	CO2;%	SO2;ppm
ZERO DRIFT	0.1	-3
CALIB. DRIFT	0	0
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 42400 U.S.EPA Method 5 Run 2

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	9	12	16	5.1

DRIFT VALUES

	CO2	SO2
INITAL zero	-0.5	0
INITAL span	68.5	9
FINAL zero	0	-0.5
FINAL span	68	8.5

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
03:30 PM	-	03:40 PM	9.1	5	7
03:40 PM	-	03:50 PM	9.1	5	7
03:50 PM	-	04:00 PM	9.1	13	17
04:00 PM	-	04:10 PM	9.1	23	30
04:10 PM	-	04:20 PM	8.8	36	48
04:20 PM	-	04:30 PM	9.0	26	34
Averages;			9.1	18	24

	CO2;%	SO2;ppm
ZERO DRIFT	0	3
CALIB. DRIFT	0	5
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 39500 U.S.EPA Method 5 Run 3

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	9.1	18	24	7.1

DRIFT VALUES

	CO2	SO2
INITAL zero	0	-0.5
INITAL span	68	8.5
FINAL zero	0	0
FINAL span	68	9

FACILITY:BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
11:50 AM	-	12:00 PM	9.0	244	10	325	13
12:00 PM	-	12:10 PM	9.3	252	8	326	10
12:10 PM	-	12:20 PM	9.0	221	10	295	13
12:20 PM	-	12:30 PM	8.9	221	10	298	13
12:30 PM	-	12:40 PM	8.8	221	10	300	14
12:40 PM	-	12:50 PM	9.0	213	10	284	13
Averages;			9	229	10	305	13

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	0.2	-13	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 42700 U.S.EPA Method 5 Run 1

	Concentration			Mass Emission
	%CO2	NOx,ppm	@12%CO2	lbs/hr
NOx Emission Summary:	9	229	305	70.0

	Concentration			Mass Emission
	%CO2	CO,ppm	@12%CO2	lbs/hr
CO Emission Summary:	9	10	13	1.9

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	-0.5	0	0
INITAL span	68	31.5	10
FINAL zero	-0.5	0	0
FINAL span	68.5	30	10

FACILITY: BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
01:40 PM	-	01:50 PM	9.1	214	10	283	13
01:50 PM	-	02:00 PM	8.8	200	13	273	17
02:00 PM	-	02:10 PM	8.8	219	10	299	14
02:10 PM	-	02:20 PM	9.2	195	13	254	16
02:20 PM	-	02:30 PM	9.1	195	13	258	17
02:30 PM	-	02:40 PM	9.2	195	8	254	10
Averages;			9	203	11	270	14

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0.1	0	0
CALIB. DRIFT	0	0	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 42400 U.S.EPA Method 5 Run 2

	Concentration		Mass Emission
	%CO2	NOx,ppm @12%CO2	lbs/hr
NOx Emission Summary:	9	203 270	61.7

	Concentration		Mass Emission
	%CO2	CO,ppm @12%CO2	lbs/hr
CO Emission Summary:	9	11 14	2.0

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	-0.5	0	0
INITAL span	68.5	30	10
FINAL zero	0	0	0
FINAL span	68	30	10

FACILITY:BABYLON
DATE: 2-8-89
UNIT: UNIT 2 Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % O2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
03:30 PM	-	03:40 PM	9.1	190	8	250	10
03:40 PM	-	03:50 PM	9.1	204	10	267	13
03:50 PM	-	04:00 PM	9.1	221	8	291	10
04:00 PM	-	04:10 PM	9.1	239	10	316	13
04:10 PM	-	04:20 PM	8.8	230	8	312	10
04:20 PM	-	04:30 PM	9.0	213	10	284	13
Averages;			9.1	216	9	287	12

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	0	0	3
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 39500 U.S.EPA Method 5 Run 3

	Concentration			Mass Emission
	%CO2	NOx,ppm	@12%CO2	lbs/hr
NOx Emission Summary:	9.1	216	287	61.1

	Concentration			Mass Emission
	%CO2	CO,ppm	@12%CO2	lbs/hr
CO Emission Summary:	9.1	9	12	1.55

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	0	0	0
INITAL span	68	30	10
FINAL zero	0	0	0
FINAL span	68	30	10.5

Combustion Index: Unit 2

$$CI = \frac{CO_2 \times 100}{CO_2 + CO}$$

Run	% CO_2	ppm_{dv} CO_2	ppm_{dv} CO	CI
1	9.0	90,000	10	99.987
2	9.0	90,000	11	99.988
3	9.1	91,000	9	99.998
Average	9.0	90,300	10	99.989

Babylon Resource Recovery Facility

Unit 2

Run	Steam Pres. psig	Steam Temp. °F	Steam Heat Value Btu/lb	Steam Flow lbs/hr	Steam Heat Flow MBtu/hr	MSW Heat Content MBtu/hr	MSW tons/hr
1	633	701	1348	86000	116	168	16.15
2	640	702	1347	88000	119	172	16.52
3	640	700	1347	87000	117	170	16.33
Avg	638	701	1347	87000	117	170	16.33

$$\text{Boiler Efficiency} = .69 = \frac{\text{Btu Steam}}{\text{Btu MSW}}$$

HHV = 5200 Btu/lb MSW

Run	NO_x lbs/hr	MSW tons/hr	NO_x lbs/ton MSW
1	70.6	16.15	4.37
2	61.7	16.52	3.73
3	61.1	16.33	3.74
Avg	64.3	16.33	3.95

D. 3. Unit 1 Results (Reduced Load): SO_2, NO_x, and CO

Parameter	Uncontrolled Emissions	Controlled Emissions			Removal Efficiency
	ppm_{dv} @ 12% CO_2	ppm_{dv} @ 12% CO_2	lbs/hr	lbs/ton MSW	%
SO_2					
Run 1	184	12	2.2	---	93
Run 2	143	6	1.1	---	96
Run 3	227	30	5.7	---	87
Average	185	16	3.0	---	92
NO_x					
Run 1	---	294	39.3	3.63	---
Run 2	---	247	34.9	3.27	---
Run 3	---	301	41.2	3.86	---
Average	---	281	38.5	3.59	---
CO					
Run 1	---	12	1.0	---	---
Run 2	---	7	0.6	---	---
Run 3	---	8	0.6	---	---
Average	---	9	0.7	---	---

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 Inlet reduced load (uncontrolled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
09:30 AM	-	09:40 AM	10.4	165	191
09:40 AM	-	09:50 AM	9.0	160	212
09:50 AM	-	10:00 AM	8.9	***	***
10:00 AM	-	10:10 AM	8.9	***	***
10:10 AM	-	10:20 AM	7.8	118	181
10:20 AM	-	10:30 AM	8.2	105	153
Averages;			8.9	137	184

	CO2;%	SO2;ppm
ZERO DRIFT	0	-8
CALIB. DRIFT	-0.1	-3
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 27700 U.S.EPA Method 5RL Run 1

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	8.9	137	184	37.8

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0.5
INITAL span	64	11
FINAL zero	0	-1
FINAL span	63.5	10

*** equipment malfunction

FACILITY: BABYLON
DATE: 2-9-89
UNIT: UNIT 1 Inlet reduced load (uncontrolled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
12:00 PM	-	12:10 PM	11.6	150	155
12:10 PM	-	12:20 PM	10.8	145	162
12:20 PM	-	12:30 PM	10.9	115	127
12:30 PM	-	12:40 PM	11.1	120	129
12:40 PM	-	12:50 PM	11.3	135	144
12:50 PM	-	01:00 PM	11.1	133	143
Averages;			11.1	133	143

	CO2;%	SO2;ppm
ZERO DRIFT	0	10
CALIB. DRIFT	1.1	-3
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 28500 U.S.EPA Method 5RL Run 2

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	11.1	133	143	37.8

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	64	11
FINAL zero	0	2
FINAL span	71	12.5

FACILITY:BABYLON
DATE: 2-8-89
UNIT: UNIT 1 Inlet reduced load (uncontrolled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
02:05 PM	-	02:15 PM	11.0	210	229
02:15 PM	-	02:25 PM	10.8	196	219
02:25 PM	-	02:35 PM	10.6	207	234
02:35 PM	-	02:45 PM	11.1	***	***
02:45 PM	-	02:55 PM	11.3	***	***
02:55 PM	-	03:05 PM	11.3	***	***
Averages;			11	204	227

	CO2;%	SO2;ppm
ZERO DRIFT	0.1	0
CALIB. DRIFT	-0.5	0
CAL GAS value	9.63	55
FULL SCALE RANGE	15	500

dscfm = 28800 U.S.EPA Method 5RL Run 3

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	11	204	227	58.6

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0.5
INITAL span	71	11.5
FINAL zero	0.5	0.5
FINAL span	67.5	11.5

*** equipment malfunction

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

SO2/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
09:30 AM	-	09:40 AM	8.1	5	8
09:40 AM	-	09:50 AM	8.2	10	15
09:50 AM	-	10:00 AM	8.1	10	15
10:00 AM	-	10:10 AM	8.1	10	15
10:10 AM	-	10:20 AM	8.1	8	11
10:20 AM	-	10:30 AM	8.0	5	8
Averages;			8.1	8	12

	CO2;%	SO2;ppm
ZERO DRIFT	-0.1	0
CALIB. DRIFT	0	-3
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 27700 U.S.EPA Method 5 Run 1RL

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	8.1	8	12	2.2

DRIFT VALUES

	CO2	SO2
INITAL zero	0	0
INITAL span	67	9.5
FINAL zero	-1	0
FINAL span	67	9

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

SO2/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
12:00 PM	-	12:10 PM	8.4	3	4
12:10 PM	-	12:20 PM	8.3	0	0
12:20 PM	-	12:30 PM	8.1	3	4
12:30 PM	-	12:40 PM	8.5	3	4
12:40 PM	-	12:50 PM	8.3	5	7
12:50 PM	-	01:00 PM	8.3	10	15
Averages;			8.3	4	6

	CO2;%	SO2;ppm
ZERO DRIFT	0	0
CALIB. DRIFT	0	3
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 28500 U.S.EPA Method 5 Run 2RL

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	8.3	4	6	1.1

DRIFT VALUES

	CO2	SO2
INITAL zero	-1	0
INITAL span	67	9.5
FINAL zero	-1	0
FINAL span	65	10

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

SO2/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS		CORRECTED to 12 % CO2
BEGIN	-	END	CO2;%	SO2;ppm	SO2;ppm
02:05 PM	-	02:15 PM	8.1	28	42
02:15 PM	-	02:25 PM	7.9	20	31
02:25 PM	-	02:35 PM	7.9	15	23
02:35 PM	-	02:45 PM	7.9	15	23
02:45 PM	-	02:55 PM	***	***	***
02:55 PM	-	03:05 PM	***	***	***
Averages;			8	20	30

	CO2;%	SO2;ppm
ZERO DRIFT	0	2
CALIB. DRIFT	0.5	0
CAL GAS value	10.02	48.5
FULL SCALE RANGE	15	500

dscfm = 28800 U.S.EPA Method 5 Run 3RL

	Concentration			Mass Emissions
	%CO2	SO2,ppm	@12%CO2	lbs/hr
SO2 Emission Summary:	8	20	30	5.7

DRIFT VALUES

	CO2	SO2
INITAL zero	-1	0
INITAL span	65	10
FINAL zero	-1	0.5
FINAL span	66	10.5

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #1

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
09:30 AM	-	09:40 AM	8.1	196	5	291	7
09:40 AM	-	09:50 AM	8.2	191	10	278	15
09:50 AM	-	10:00 AM	8.1	191	10	284	15
10:00 AM	-	10:10 AM	8.1	201	10	298	15
10:10 AM	-	10:20 AM	8.1	210	8	313	11
10:20 AM	-	10:30 AM	8.0	201	5	301	7
Averages;			8.1	198	8	294	12

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	-0.1	0	0
CALIB. DRIFT	0	-15	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 27700 U.S.EPA Method 5 Run 1RL

	Concentration			Mass Emission
	%CO2	NOx,ppm	@12%CO2	lbs/hr
NOx Emission Summary:	8.1	198	294	39.3

	Concentration			Mass Emission
	%CO2	CO,ppm	@12%CO2	lbs/hr
CO Emission Summary:	8.1	8	12	1.0

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	0	0.5	0
INITAL span	67	29	10
FINAL zero	-1	0.5	0
FINAL span	67	28.5	10

FACILITY: BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #2

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % CO2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
12:00 PM	-	12:10 PM	8.4	194	5	278	7
12:10 PM	-	12:20 PM	8.3	184	5	268	7
12:20 PM	-	12:30 PM	8.1	164	5	243	7
12:30 PM	-	12:40 PM	8.5	144	5	205	7
12:40 PM	-	12:50 PM	8.3	154	5	223	7
12:50 PM	-	01:00 PM	8.3	184	5	268	7
Averages;			8.3	171	5	247	7

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	0	-15	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 28500 U.S.EPA Method 5 Run 2RL

	Concentration			Mass Emission
	%CO2	NOx,ppm	@12%CO2	lbs/hr
NOx Emission Summary:	8.3	171	247	34.9

	Concentration			Mass Emission
	%CO2	CO,ppm	@12%CO2	lbs/hr
CO Emission Summary:	8.3	5	7	0.6

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	-1	0.5	0
INITAL span	67	28.5	10
FINAL zero	-1	0.5	0
FINAL span	65	28	10

FACILITY:BABYLON
DATE: 2-9-89
UNIT: UNIT 1 reduced load Outlet (controlled emissions)

NOx/CO/CO2 DATA

RUN #3

TIME INTERVAL			CONCENTRATIONS			CORRECTED to 12 % O2	
BEGIN	-	END	CO2;%	NOx;ppm	CO;ppm	NOx;ppm	CO;ppm
02:05 PM	-	02:15 PM	8.1	196	5	291	7
02:15 PM	-	02:25 PM	7.9	191	5	289	8
02:25 PM	-	02:35 PM	7.9	206	5	311	8
02:35 PM	-	02:45 PM	7.9	206	5	311	8
02:45 PM	-	02:55 PM	***	***	***	***	***
02:55 PM	-	03:05 PM	***	***	***	***	***
Averages;			8	200	5	301	8

	CO2;%	NOx;ppm	CO;ppm
ZERO DRIFT	0	0	0
CALIB. DRIFT	0.5	-15	0
CAL GAS value	10.02	279	50
FULL SCALE RANGE	15	1000	500

dscfm = 28800 U.S.EPA Method 5 Run 3RL

	Concentration		Mass Emission
	%CO2	NOx,ppm @12%CO2	lbs/hr
NOx Emission Summary:	8	200 301	41.2

	Concentration		Mass Emission
	%CO2	CO,ppm @12%CO2	lbs/hr
CO Emission Summary:	8	5 7.5	0.63

DRIFT CORRECTIONS	CO2	NOx	CO
INITAL zero	-1	0.5	0
INITAL span	65	28	10
FINAL zero	-1	0.5	0
FINAL span	66	27.5	10

Combustion Index: Unit 1 (Reduced Load)

$$CI = \frac{CO_2 \times 100}{CO_2 + CO}$$

Run	% CO_2	ppm_{dv} CO_2	ppm_{dv} CO	CI
1	8.1	81,000	8	99.990
2	8.3	83,000	5	99.994
3	8.0	80,000	5	99.994
Average	8.1	81,300	6	99.993

Babylon Resource Recovery Facility

Unit 1 Reduced Load

Run	Steam Pres. psig	Steam Temp. °F	Steam Heat Value Btu/lb	Steam Flow lbs/hr	Steam Heat Flow MBtu/hr	MSW Heat Content MBtu/hr	MSW tons/hr
1	634	612	1297	60000	79	113	10.84
2	640	618	1276	60000	77	111	10.67
3	640	620	1277	60000	77	111	10.67
Avg	638	617	1283	60000	77	111	10.73

$$\text{Boiler Efficiency} = .69 = \frac{\text{Btu Steam}}{\text{Btu MSW}}$$

HHV = 5200 Btu/lb MSW

Run	NO_x lbs/hr	MSW tons/hr	NO_x lbs/ton MSW
1	39.3	10.84	3.63
2	34.9	10.67	3.27
3	41.2	10.67	3.86
Avg	38.5	10.73	3.59

E. HYDROGEN CHLORIDE

E. 1. Unit 1 Results: HCl

Run	Uncontrolled Emissions	Controlled Emissions		Removal Efficiency %
	ppm_{dv} @ 12% CO_2	ppm_{dv} @ 12% CO_2	lbs/hr	
1	549	20	3.7	96
2	754	19	3.2	97
3	766	22	3.7	97
Average	690	20	3.5	97

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
TEST UNIT 1 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 1, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	47.8	26	33	20	3.7

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1349	1455	10.4	9.2	15.7	1.87	18.0

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
TEST UNIT 1 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 1, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	40.5	22	32	19	3.2

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1542	1654	11.2	8.4	13.3	1.83	18.3

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 1 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 1, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	48.1	26	37	22	3.7

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
845	953	11.2	8.4	14.8	1.88	18.2

FACILITY: Babylon Resource Recovery
DATE: 02-07-89,02-08-89
UNIT: Unit 1 Outlet (controlled emissions)

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-07-89	02-07-89	02-08-89
	FROM:	1349	1542	845
	TO:	1455	1654	953
Vm (dry gas sampled, dcf)		69.36	68.10	68.79
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.15	30.15	30.23
P static (stack pressure, " H2O)		-1.00	-1.00	-1.00
Delta H (differential meter press, " H2O)		4.6	4.5	4.6
Tm (meter temperature, R`)		536	537	530
Vol H2O mls		279.8	225.2	261.6
Vm(std), dscf @ 68' F		70.7	69.3	71.1
Vm(std),Nm3 @ 32' F		1.87	1.83	1.88
Bws-H2O vapor		0.157	0.133	0.148
MF-moisture factor		0.843	0.867	0.853
% CO2		9.2	8.4	8.4
% O2		10.4	11.2	11.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.89	29.79	29.79
Ms-MW stk gas,wet		28.02	28.23	28.05
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.96	0.95	0.96
T stack, R'		761	761	766
Stack area,ft2		17.72	17.72	17.72
Vs-fps		65.6	64.7	65.8
Qstd-dscfm		41000	41600	41400
Qstd-Nm3/sec at 32'F		18.0	18.3	18.2
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		99	96	99

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
TEST UNIT 1 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 1, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	105.6	812	894	549

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1345	1450	8.8	10.9	12.7	0.13

FACILITY: Babylon Resource Recovery
DATE: 02-07-89
TEST UNIT 1 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 1, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	217.1	1086	1229	754

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1540	1659	9.1	10.6	13.7	0.20

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 1 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 1, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	212.1	1061	1248	766

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
845	955	9.5	10.2	13.0	0.20

FACILITY: Babylon Resource Recovery
DATE: 02-07-89,02-08-89
UNIT: Unit 1 Inlet (uncontrolled emissions)

METHOD: U.S EPA Method 6 @ 68' F	RUN #	1	2	3
	DATE:	02-07-89	02-07-89	02-08-89
	FROM:	1345	1540	845
	TO:	1450	1659	955
Vm (dry gas sampled, dcf)		4.46	6.94	6.99
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.15	30.15	30.23
Delta H (differential meter press, " H2O)		2.0	2.0	2.0
Tm (meter temperature, R`)		500	501	509
Vol H2O mls		15.0	25.5	23.8
Vm(std), dscf @ 68' F		4.9	7.6	7.5
Vm(std),Nm3 @ 32' F		0.13	0.20	0.20
Bws-H2O vapor		0.127	0.137	0.130
MF-moisture factor		0.873	0.863	0.870
% CO2		10.9	10.6	10.2
% O2		8.8	9.1	9.5
% N2		80.3	80.3	80.3
Md-MW stk gas,dry		30.10	30.06	30.01
Ms-MW stk gas,wet		28.57	28.41	28.45

E. 2. Unit 2 Results: HCl

Run	Uncontrolled Emissions	Controlled Emissions		Removal Efficiency %
	ppm_{dv} @ 12% CO_2	ppm_{dv} @ 12% CO_2	lbs/hr	
1	858	60	11.5	93
2	1113	46	8.8	96
3	983	39	6.9	96
Average	985	48	9.1	95

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 2, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	148.8	77	97	60	11.5

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1149	1254	10.1	9.5	14.3	1.93	18.8

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 2, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	115.0	60	75	46	8.8

ADDITIONAL DATA:

TIME start	finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1341	1445	10.1	9.5	15.1	1.93	18.6

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Outlet (controlled emissions)

Hydrogen Chloride Results

Unit 2, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	95.3	50	63	39	6.9

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1530	1635	10.1	9.5	15.1	1.91	17.4

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2 Outlet (controlled emissions)

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-08-89	02-08-89	02-08-89
	FROM:	1149	1341	1530
	TO:	1254	1445	1635
Vm (dry gas sampled, dcf)		70.77	71.71	70.73
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.23	30.23	30.23
P static (stack pressure, " H2O)		-1.00	-1.00	-1.00
Delta H (differential meter press, " H2O)		4.6	5.0	5.0
Tm (meter temperature, R`)		531	539	536
Vol H2O mls		258.5	276.5	272.8
Vm(std), dscf @ 68' F		73.0	73.0	72.4
Vm(std),Nm3 @ 32' F		1.93	1.93	1.91
Bws-H2O vapor		0.143	0.151	0.151
MF-moisture factor		0.857	0.849	0.849
% CO2		9.5	9.5	9.5
% O2		10.1	10.1	10.1
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.92	29.92	29.92
Ms-MW stk gas,wet		28.22	28.12	28.12
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.99	0.99	0.92
T stack, R'		764	763	761
Stack area,ft2		17.72	17.72	17.72
Vs-fps		67.3	67.4	62.6
Qstd-dscfm		42700	42400	39500
Qstd-Nm3/sec at 32'F		18.8	18.6	17.4
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		98	99	105

FACILITY:Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 2, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	323.0	1154	1398	858

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1151	1256	9.8	9.9	12.6	0.28

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 2, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	473.9	1481	1813	1113

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1340	1450	9.9	9.8	12.3	0.32

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
TEST UNIT 2 Inlet (uncontrolled emissions)

Hydrogen Chloride Results

Unit 2, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	400.2	1334	1601	983

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1530	1635	9.7	10.0	12.6	0.30

FACILITY: Babylon Resource Recovery
DATE: 02-08-89
UNIT: Unit 2 Inlet (uncontrolled emissions)

METHOD: U.S EPA Method 6 @ 68' F	RUN #	1	2	3
	DATE:	02-08-89	02-08-89	02-08-89
	FROM:	1151	1340	1530
	TO:	1256	1450	1635
Vm (dry gas sampled, dcf)		10.03	11.34	10.63
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.23	30.23	30.23
Delta H (differential meter press, " H2O)		2.0	2.0	2.0
Tm (meter temperature, R)		511	510	511
Vol H2O mls		32.9	36.3	34.7
Vm(std), dscf @ 68' F		10.7	12.2	11.4
Vm(std),Nm3 @ 32' F		0.28	0.32	0.30
Bws-H2O vapor		0.126	0.123	0.126
MF-moisture factor		0.874	0.877	0.875
% CO2		9.9	9.8	10.0
% O2		9.8	9.9	9.7
% N2		80.3	80.3	80.3
Md-MW stk gas,dry		29.98	29.96	29.99
Ms-MW stk gas,wet		28.47	28.49	28.49

E. 3. Unit 1 Results (Reduced Load): HCl

Run	Uncontrolled Emissions	Controlled Emissions		Removal Efficiency %
	ppm_{dv} @ 12% CO_2	ppm_{dv} @ 12% CO_2	lbs/hr	
1	840	26	2.9	97
2	680	21	2.4	97
3	692	25	2.9	96
Average	737	24	2.7	97

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Outlet (controlled)

Hydrogen Chloride Results

Unit 1, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	36.8	30	42	26	2.9

ADDITIONAL DATA:

TIME start	finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
930	1036	11.1	8.5	13.9	1.23	12.2

FACILITY:Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Outlet (controlled)

Hydrogen Chloride Results

Unit 1, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	31.3	24	34	21	2.4

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1144	1249	11.0	8.6	13.2	1.28	12.5

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Outlet (controlled)

Hydrogen Chloride Results

Unit 1, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2	lbs/hr
Impinger Catch Analysis	37.1	29	41	25	2.9

ADDITIONAL DATA:

TIME start	finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1403	1508	11.2	8.4	13.7	1.29	12.7

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load, Outlet (controlled emissions)

METHOD: U.S EPA Method 5/ HCl @ 68' F	RUN #	1	2	3
	DATE:	02-09-89	02-09-89	02-09-89
	FROM:	930	1144	1403
	TO:	1036	1249	1508
Vm (dry gas sampled, dcf)		43.89	45.95	46.43
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.18	30.18	30.18
P static (stack pressure, " H2O)		-0.60	-0.60	-0.60
Delta H (differential meter press, " H2O)		2.0	1.9	1.9
Tm (meter temperature, R`)		510	514	515
Vol H2O mls		161.0	157.3	164.7
Vm(std), dscf @ 68' F		46.8	48.6	49.0
Vm(std),Nm3 @ 32' F		1.23	1.28	1.29
Bws-H2O vapor		0.139	0.132	0.137
MF-moisture factor		0.861	0.868	0.863
% CO2		8.5	8.6	8.4
% O2		11.1	11.0	11.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.80	29.82	29.79
Ms-MW stk gas,wet		28.16	28.26	28.18
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.62	0.64	0.65
T stack, R'		737	738	739
Stack area,ft2		17.72	17.72	17.72
Vs-fps		41.9	42.9	43.6
Qstd-dscfm		27700	28500	28800
Qstd-Nm3/sec at 32'F		12.2	12.5	12.7
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		60	60	60
% Isokinetic		97	98	98

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load-Economizer Outlet

Hydrogen Chloride Results

Unit 1, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	162.3	1014	1368	840

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
935	1035	10.8	8.9	12.0	0.16

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Inlet (uncontrolled)

Hydrogen Chloride Results

Unit 1, Run 1

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	162.3	1014	1368	840

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
935	1035	10.8	8.9	12.0	0.16

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Inlet (uncontrolled)

Hydrogen Chloride Results

Unit 1, Run 2

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	288.0	960	1108	680

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1140	1240	9.3	10.4	11.2	0.30

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
TEST UNIT 1, Reduced Load, Inlet (uncontrolled)

Hydrogen Chloride Results

Unit 1, Run 3

SAMPLE	net mg	mg/Nm3	mg/Nm3@ 12% CO2	ppm @ 12% CO2
Impinger Catch Analysis	227.3	1033	1127	692

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3
1401	1503	8.7	11.0	12.6	0.22

FACILITY: Babylon Resource Recovery
DATE: 02-09-89
UNIT: Unit 1, Reduced Load, Inlet (uncontrolled emissions)

METHOD: U.S EPA Method 6 @ 68' F	RUN #	1	2	3
	DATE:	02-09-89	02-09-89	02-09-89
	FROM:	935	1140	1401
	TO:	1035	1240	1503
Vm (dry gas sampled, dcf)		5.50	10.30	7.52
Y (meter calib. factor)		1.02	1.02	1.02
P bar (Barometric pressure, in. Hg)		30.01	30.01	30.01
Delta H (differential meter press, " H2O)		2.0	2.0	2.0
Tm (meter temperature, R˚)		484	491	492
Vol H2O mls		17.8	30.4	25.3
Vm(std), dscf @ 68' F		6.2	11.4	8.3
Vm(std),Nm3 @ 32' F		0.16	0.30	0.22
Bws-H2O vapor		0.120	0.112	0.126
MF-moisture factor		0.880	0.888	0.874
% CO2		8.9	10.4	11.0
% O2		10.8	9.3	8.7
% N2		80.3	80.3	80.3
Md-MW stk gas,dry		29.86	30.04	30.11
Ms-MW stk gas,wet		28.44	28.70	28.59

F. METALS

F. 1. Metals per Source Test Plan: As, Cd, Cr, Pb, Hg, Ni

Parameter	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Arsenic (As)	<1.5	<1.6E-04	<2.0E-05
Cadmium (Cd)	<7.5	<8.0E-05	<1.0E-05
Chromium (Cr)	<1.5	<1.6E-04	<2.0E-05
Lead (Pb)	1.5	1.7E-04	2.1E-05
Mercury (Hg)	470	5.1E-02	6.4E-03
Nickel (Ni)	<3.7	<4.0E-04	<5.0E-05

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 2: Metals Results per Source Test Plan

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Arsenic (As)	<4.0E-03	<1.9E-03	<1.8E-04
Cadmium (Cd)	<2.0E-03	<9.5E-04	<9.2E-05
Chromium (Cr)	<4.0E-03	<1.9E-03	<1.8E-04
Lead (Pb)	1.8E-03	8.5E-04	8.1E-05
Mercury (Hg)	1.2E-00	5.7E-01	5.4E-02
Nickel (Ni)	<1.0E-02	<4.7E-03	<4.5E-04

Additional Data:

Time	%O_2	%CO_2	%H_2O	Nm^3	Nm^3/s
1348-1603	9.7	9.9	18.3	2.56	14.6

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 3: Metals Results per Source Test Plan

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Arsenic (As)	<4.0E-03	<1.3E-03	<1.5E-04
Cadmium (Cd)	<2.0E-03	<6.5E-04	<7.4E-05
Chromium (Cr)	<4.0E-03	<1.3E-03	<1.5E-04
Lead (Pb)	8.1E-03	2.6E-03	3.0E-04
Mercury (Hg)	2.0E-00	6.5E-01	7.4E-02
Nickel (Ni)	<1.0E-02	<3.2E-03	<3.7E-04

Additional Data:

Time	$\%O_2$	$\%CO_2$	$\%H_2O$	Nm^3	Nm^3/s
1610-1824	9.7	9.9	17.7	3.73	17.3

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 4: Metals Results per Source Test Plan

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Arsenic (As)	<4.0E-03	<1.3E-03	<1.5E-04
Cadmium (Cd)	<2.0E-03	<6.5E-04	<7.6E-05
Chromium (Cr)	<4.0E-03	<1.3E-03	<1.5E-04
Lead (Pb)	3.5E-03	1.1E-03	1.3E-04
Mercury (Hg)	6.3E-01	2.0E-01	2.4E-02
Nickel (Ni)	<1.0E-02	<3.2E-03	<3.8E-04

Additional Data:

Time	$\%O_2$	$\%CO_2$	$\%H_2O$	Nm^3	Nm^3/s
1013-1223	10.1	9.5	16.1	3.9	18.6

FACILITY: Babylon Resource Recovery
DATE: 01-31-89,02-01-89
UNIT: Unit 2

METHOD: U.S EPA Method 12/101A @ 68' F	RUN #	2	3	4
	DATE:	01-31-89	01-31-89	02-01-89
	FROM:	1348	1610	1013
	TO:	1603	1824	1223
Vm (dry gas sampled, dcf)		98.91	145.54	151.93
Y (meter calib. factor)		1.02	1.01	1.02
P bar (Barometric pressure, in. Hg)		29.80	29.80	29.76
P static (stack pressure, " H2O)		-1.00	-1.00	-0.85
Delta H (differential meter press, " H2O)		2.2	3.6	4.3
Tm (meter temperature, R`)		548	551	554
Vol H2O mls		462.3	646.6	604.6
Vm(std), dscf @ 68' F		97.0	141.5	147.9
Vm(std),Nm3 @ 32' F		2.56	3.73	3.90
Bws-H2O vapor		0.183	0.177	0.161
MF-moisture factor		0.817	0.823	0.839
% CO2		9.9	9.9	9.5
% O2		9.7	9.7	10.1
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.97	29.97	29.92
Ms-MW stk gas,wet		27.78	27.85	28.00
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.81	0.95	1.01
T stack, R'		764	764	763
Stack area,ft2		17.72	17.72	17.72
Vs-fps		55.9	65.6	68.9
Qstd-dscfm		33300	39400	42200
Qstd-Nm3/sec at 32'F		14.6	17.3	18.6
Area noz,ft2		4.04E-04	5.14E-04	5.14E-04
Sample time		120	120	120
% Isokinetic		106	103	101

F. 2. Metals per Source Test Plan: Be

	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Beryllium (Be)			
Run 1	<0.87	<1.0E-04	<1.3E-05
Run 2	<0.84	<1.0E-04	<1.3E-05
Run 3	<0.89	<1.0E-04	<1.3E-05
Average	<0.87	<1.0E-04	<1.3E-05

FACILITY: Babylon Resource Recovery
DATE: 02-01-89
TEST Unit 2

Beryllium Results

Unit 2, Run 1

SAMPLE	net mg	mg/Nm3	mg/m3 wet	mg/Nm3@ 12% CO2	lbs/hr
Front and Back Half	<4.00E-03	<7.0E-04	<5.8E-04	<8.7E-04	<1.0E-04

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
900	1212	10.0	9.6	16.0	5.75	18.4

FACILITY: Babylon Resource Recovery
DATE: 02-01-89
TEST Unit 2

Beryllium Results

Unit 2, Run 2

SAMPLE	net mg	mg/Nm3	mg/m3 wet	mg/Nm3@ 12% CO2	lbs/hr
Front and Back Half	<4.00E-03	<6.6E-04	<5.5E-04	<8.4E-04	<1.0E-04

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
1424	1735	10.2	9.4	16.3	6.09	19.5

FACILITY: Babylon Resource Recovery
DATE: 02-02-89
TEST Unit 2

Beryllium Results

Unit 2, Run 3

SAMPLE	net mg	mg/Nm3	mg/m3 wet	mg/Nm3@ 12% CO2	lbs/hr
Front and Back Half	< 4.00E-03	<7.0E-04	<5.9E-04	<8.9E-04	<1.0E-04

ADDITIONAL DATA:

TIME start	TIME finish	%O2	%CO2	%H2O	Nm3	Nm3/sec
913	1250	10.2	9.4	15.1	5.75	18.6

FACILITY: Babylon Resource Recovery
DATE: 02-01-89,02-02-89
UNIT: Unit 2

METHOD: U.S EPA Method 104 @ 68' F	RUN #	1	2	3
	DATE:	02-01-89	02-01-89	02-02-89
	FROM:	900	1424	913
	TO:	1212	1735	1250
Vm (dry gas sampled, dcf)		223.59	242.60	222.84
Y (meter calib. factor)		1.01	1.02	1.02
P bar (Barometric pressure, in. Hg)		29.76	29.76	30.01
P static (stack pressure, " H2O)		-0.66	-1.00	-0.80
Delta H (differential meter press, " H2O)		5.8	6.4	3.8
Tm (meter temperature, R`)		552	570	555
Vol H2O mls		879.1	953.6	822.5
Vm(std), dscf @ 68' F		217.9	230.7	218.1
Vm(std),Nm3 @ 32' F		5.75	6.09	5.75
Bws-H2O vapor		0.160	0.163	0.151
MF-moisture factor		0.840	0.837	0.849
% CO2		9.6	9.4	9.4
% O2		10.0	10.2	10.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.94	29.91	29.91
Ms-MW stk gas,wet		28.03	27.97	28.11
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		1.00	1.07	0.99
T stack, R'		764	774	762
Stack area,ft2		17.72	17.72	17.72
Vs-fps		68.2	73.8	67.7
Qstd-dscfm		41800	44400	42400
Qstd-Nm3/sec at 32'F		18.4	19.5	18.6
Area noz,ft2		5.14E-04	5.14E-04	5.14E-04
Sample time		180	180	180
% Isokinetic		100	99	99

F. 3. Additional Metals for Health Risk Assessment: Sb, Co, Cu, Mn, Se, V, Zn

	Average Emissions		
	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Antimony (Sb)	<7.5	<8.0E-04	<1.0E-04
Cobalt (Co)	<3.7	<4.0E-04	<5.0E-05
Copper (Cu)	<1.5	<1.6E-04	<2.0E-05
Manganese (Mn)	<0.12	<1.3E-05	<1.6E-06
Selenium (Se)	<0.75	<8.0E-05	<1.0E-05
Vanadium (V)	<15	<1.6E-03	<2.0E-04
Zinc (Zn)	18	1.8E-03	2.3E-04

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 2: Additional Metals Results for Health Risk Assessment

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Antimony (Sb)	<2.0E-02	<9.5E-02	<9.1E-04
Cobalt (Co)	<1.0E-02	<4.7E-03	<4.5E-04
Copper (Cu)	<4.0E-03	<1.9E-03	<1.8E-04
Manganese (Mn)	<3.0E-04	<1.4E-04	<1.4E-05
Selenium (Se)	<2.0E-03	<9.5E-04	<9.1E-05
Vanadium (V)	<4.0E-02	<1.9E-02	<1.8E-03
Zinc (Zn)	4.3E-03	4.7E-04	5.9E-05

Additional Data:

Time	%O_2	%CO_2	%H_2O	Nm^3	Nm^3/s
1348-1603	9.7	9.9	18.3	2.56	14.6

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 3: Additional Metals Results for Health Risk Assessment

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Antimony (Sb)	<2.0E-02	<6.5E-03	<7.4E-04
Cobalt (Co)	<1.0E-02	<3.2E-03	<3.7E.04
Copper (Cu)	<4.0E-03	<1.3E-03	<1.5E-04
Manganese (Mn)	<4.0E-04	<1.3E-04	<1.5E-05
Selenium (Se)	<2.0E-03	<6.5E-04	<7.4E-05
Vanadium (V)	<4.0E-02	<1.3E-02	<1.5E-03
Zinc (Zn)	8.0E-03	2.6E-03	2.9E-04

Additional Data:

Time	%O_2	%CO_2	%H_2O	Nm^3	Nm^3/s
1610-1824	9.7	9.9	17.7	3.73	17.3

Babylon Resource Recovery Facility
Date: 02/01/89
Unit: 2

Run 4: Additional Metals Results for Health Risk Assessment

Parameter	mg collected	mg/Nm^3 @ 12% CO_2	lbs/hr
Antimony (Sb)	<2.0E-02	<6.5E-03	<7.6E-04
Cobalt (Co)	<1.0E-02	<3.2E-03	<3.8E-04
Copper (Cu)	<4.0E-03	<1.3E-03	<1.5E-04
Manganese (Mn)	<3.0E-04	<9.7E-05	<1.1E-05
Selenium (Se)	<2.0E-03	<6.5E-04	<7.6E-05
Vanadium (V)	<4.0E-02	<1.3E-02	<1.5E-03
Zinc (Zn)	2.0E-02	6.5E-03	7.6E-04

Additional Data:

Time	%O_2	%CO_2	%H_2O	Nm^3	Nm^3/s
1013-1223	10.1	9.5	16.1	3.90	18.6

FACILITY:Babylon Resource Recovery
DATE: 01-31-89,02-01-89
UNIT: Unit 2

METHOD: U.S EPA Method 12/101A @ 68' F	RUN #	2	3	4
	DATE:	01-31-89	01-31-89	02-01-89
	FROM:	1348	1610	1013
	TO:	1603	1824	1223
Vm (dry gas sampled, dcf)		98.91	145.54	151.93
Y (meter calib. factor)		1.02	1.01	1.02
P bar (Barometric pressure, in. Hg)		29.80	29.80	29.76
P static (stack pressure, " H2O)		-1.00	-1.00	-0.85
Delta H (differential meter press, " H2O)		2.2	3.6	4.3
Tm (meter temperature, R`)		548	551	554
Vol H2O mls		462.3	646.6	604.6
Vm(std), dscf @ 68' F		97.0	141.5	147.9
Vm(std),Nm3 @ 32' F		2.56	3.73	3.90
Bws-H2O vapor		0.183	0.177	0.161
MF-moisture factor		0.817	0.823	0.839
% CO2		9.9	9.9	9.5
% O2		9.7	9.7	10.1
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.97	29.97	29.92
Ms-MW stk gas,wet		27.78	27.85	28.00
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.81	0.95	1.01
T stack, R'		764	764	763
Stack area,ft2		17.72	17.72	17.72
Vs-fps		55.9	65.6	68.9
Qstd-dscfm		33300	39400	42200
Qstd-Nm3/sec at 32'F		14.6	17.3	18.6
Area noz,ft2		4.04E-04	5.14E-04	5.14E-04
Sample time		120	120	120
% Isokinetic		106	103	101

G. DIOXINS AND FURANS

*AVERAGE CONCENTRATIONS OF PCDD AND PCDF IN THE FLUE GAS
Babylon Resource Recovery, Unit 1

	ng/Nm3 AT 12 % CO2			
COMPOUND	RUN 1	RUN 2	RUN 3	*AVERAGE
2378 TCDD	0.000	0.000	0.000	0.000
TOTAL TCDD	0.600	0.700	0.551	0.617
12378 PCDD	0.000	0.092	0.096	0.063
TOTAL PCDD	0.337	2.816	1.878	1.677
123478 HxCDD	0.000	0.066	0.000	0.022
123678 HxCDD	0.147	0.340	0.372	0.287
123789 HxCDD	0.170	0.360	0.396	0.309
TOTAL HxCDD	1.780	4.339	4.362	3.494
1234678 HpCDD	1.315	1.985	3.099	2.133
TOTAL HpCDD	3.458	5.268	7.350	5.359
TOTAL OCDD	2.029	2.017	0.000	1.349
TOTAL PCDD	8.205	15.141	14.140	12.496
2378 TCDF	0.503	0.952	1.042	0.832
TOTAL TCDF	2.359	4.735	4.256	3.783
12378 PCDF	0.073	0.187	0.000	0.087
23478 PCDF	0.000	0.321	0.402	0.241
TOTAL PCDF	1.347	4.011	3.740	3.033
123478 HxCDF	0.000	0.000	0.824	0.275
123678 HxCDF	0.107	0.257	0.359	0.241
234678 HxCDF	0.215	0.346	0.650	0.404
123789 HxCDF	0.000	0.000	0.000	0.000
TOTAL HxCDF	0.571	1.984	3.875	2.143
1234678 HpCDF	0.575	1.042	1.570	1.062
1234789 HpCDF	0.000	0.140	0.000	0.047
TOTAL HpCDF	0.932	1.745	2.453	1.710
TOTAL OCDF	0.000	0.000	0.621	0.207
TOTAL PCDF	5.209	12.476	14.944	10.876
TOTAL PCDD & PCDF	13.41	27.62	29.08	23.37

* Minimum detection limits of non-detectable congeners are considered as zeroes in calculating averages and toxic equivalencies.

FACILITY: Babylon Resource Recovery, Unit 1
DATE: 02-02-89
TIME: 830-1229
RUN: 1

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	17.7	1.5	8.7	10.9		
COMPOUND	ng Col.		ng/NM3 @12% CO2		ng/s	lbs/hr
2378 TCDD	0		0.000		0.000	0.00E+00
TOTAL TCDD	0.653		0.600		7.705	6.12E-08
12378 PCDD	0		0.000		0.000	0.00E+00
TOTAL PCDD	0.366		0.337		4.319	3.43E-08
123478 HxCDD	0		0.000		0.000	0.00E+00
123678 HxCDD	0.16		0.147		1.888	1.50E-08
123789 HxCDD	0.185		0.170		2.183	1.73E-08
TOTAL HxCDD	1.936		1.780		22.845	1.81E-07
1234678 HpCDD	1.43		1.315		16.874	1.34E-07
TOTAL HpCDD	3.761		3.458		44.380	3.52E-07
TOTAL OCDD	2.207		2.029		26.043	2.07E-07
TOTAL PCDD	8.923		8.205		105.291	8.36E-07
2378 TCDF	0.547		0.503		6.455	5.12E-08
TOTAL TCDF	2.565		2.359		30.267	2.40E-07
12378 PCDF	0.079		0.073		0.932	7.40E-09
23478 PCDF	0		0.000		0.000	0.00E+00
TOTAL PCDF	1.465		1.347		17.287	1.37E-07
123478 HxCDF	0		0.000		0.000	0.00E+00
123678 HxCDF	0.116		0.107		1.369	1.09E-08
234678 HxCDF	0.234		0.215		2.761	2.19E-08
123789 HxCDF	0		0.000		0.000	0.00E+00
TOTAL HxCDF	0.621		0.571		7.328	5.82E-08
1234678 HpCDF	0.625		0.575		7.375	5.85E-08
1234789 HpCDF	0		0.000		0.000	0.00E+00
TOTAL HpCDF	1.014		0.932		11.965	9.50E-08
TOTAL OCDF	0		0.000		0.000	0.00E+00
TOTAL PCDF	5.665		5.209		66.847	5.31E-07
TOTAL PCDD & PCDF			13.414		172.138	1.37E-06

FACILITY: Babylon Resource Recovery, Unit 1
DATE: 02-02-89
TIME: 1618-1923
RUN: 2

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	17.9	4.34	8.7	10.9		
COMPOUND	ng Col.		ng/NM3 @12% CO2		ng/s	lbs/hr
2378 TCDD	0		0.000		0.000	0.00E+00
TOTAL TCDD	2.201		0.700		9.078	7.20E-08
12378 PCDD	0.291		0.092		1.200	9.53E-09
TOTAL PCDD	8.862		2.816		36.551	2.90E-07
123478 HxCDD	0.209		0.066		0.862	6.84E-09
123678 HxCDD	1.071		0.340		4.417	3.51E-08
123789 HxCDD	1.132		0.360		4.669	3.71E-08
TOTAL HxCDD	13.654		4.339		56.315	4.47E-07
1234678 HpCDD	6.247		1.985		25.765	2.04E-07
TOTAL HpCDD	16.577		5.268		68.371	5.43E-07
TOTAL OCDD	6.348		2.017		26.182	2.08E-07
TOTAL PCDD	47.642		15.141		196.496	1.56E-06
2378 TCDF	2.995		0.952		12.353	9.80E-08
TOTAL TCDF	14.9		4.735		61.454	4.88E-07
12378 PCDF	0.589		0.187		2.429	1.93E-08
23478 PCDF	1.01		0.321		4.166	3.31E-08
TOTAL PCDF	12.622		4.011		52.058	4.13E-07
123478 HxCDF	0		0.000		0.000	0.00E+00
123678 HxCDF	0.809		0.257		3.337	2.65E-08
234678 HxCDF	1.089		0.346		4.491	3.56E-08
123789 HxCDF	0		0.000		0.000	0.00E+00
TOTAL HxCDF	6.242		1.984		25.745	2.04E-07
1234678 HpCDF	3.28		1.042		13.528	1.07E-07
1234789 HpCDF	0.439		0.140		1.811	1.44E-08
TOTAL HpCDF	5.492		1.745		22.651	1.80E-07
TOTAL OCDF	0		0.000		0.000	0.00E+00
TOTAL PCDF	39.256		12.476		161.908	1.28E-06
TOTAL PCDD & PCDF			27.617		358.404	2.84E-06

FACILITY:Babylon Resource Recovery, Unit 1
DATE: 02-03-89
TIME: 856-1207
RUN: 3

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	18.9	4.65	8.4	11.2		
COMPOUND	ng Col.		ng/NM3 @12% CO2		ng/s	lbs/hr
2378 TCDD	0		0.000		0.000	0.00E+00
TOTAL TCDD	1.793		0.551		7.288	5.78E-08
12378 PCDD	0.311		0.096		1.264	1.00E-08
TOTAL PCDD	6.112		1.878		24.842	1.97E-07
123478 HxCDD	0		0.000		0.000	0.00E+00
123678 HxCDD	1.212		0.372		4.926	3.91E-08
123789 HxCDD	1.289		0.396		5.239	4.16E-08
TOTAL HxCDD	14.198		4.362		57.708	4.58E-07
1234678 HpCDD	10.086		3.099		40.995	3.25E-07
TOTAL HpCDD	23.924		7.350		97.239	7.72E-07
TOTAL OCDD	0		0.000		0.000	0.00E+00
TOTAL PCDD	46.027		14.140		187.077	1.48E-06
2378 TCDF	3.393		1.042		13.791	1.09E-07
TOTAL TCDF	13.852		4.256		56.302	4.47E-07
12378 PCDF	0		0.000		0.000	0.00E+00
23478 PCDF	1.308		0.402		5.316	4.22E-08
TOTAL PCDF	12.173		3.740		49.477	3.93E-07
123478 HxCDF	2.681		0.824		10.897	8.65E-08
123678 HxCDF	1.17		0.359		4.755	3.77E-08
234678 HxCDF	2.115		0.650		8.596	6.82E-08
123789 HxCDF	0		0.000		0.000	0.00E+00
TOTAL HxCDF	12.614		3.875		51.270	4.07E-07
1234678 HpCDF	5.11		1.570		20.770	1.65E-07
1234789 HpCDF	0		0.000		0.000	0.00E+00
TOTAL HpCDF	7.984		2.453		32.451	2.58E-07
TOTAL OCDF	2.02		0.621		8.210	6.52E-08
TOTAL PCDF	48.643		14.944		197.710	1.57E-06
TOTAL PCDD & PCDF			29.084		384.788	3.05E-06

AVERAGE CONCENTRATIONS OF PCDD AND PCDF IN THE FLUE GAS
Babylon Resource Recovery, Unit 1

	ng/Nm3 AT 12 % CO2			
COMPOUND	RUN 1	RUN 2	RUN 3	AVERAGE
2378 TCDD	<0.026	<0.032	<0.024	<0.027
TOTAL TCDD	0.600	0.700	0.551	0.617
12378 PCDD	<0.028	0.092	0.096	<0.072
TOTAL PCDD	0.337	2.816	1.878	1.677
123478 HxCDD	<0.037	0.066	<0.075	<0.059
123678 HxCDD	0.147	0.340	0.372	0.287
123789 HxCDD	0.170	0.360	0.396	0.309
TOTAL HxCDD	1.780	4.339	4.362	3.494
1234678 HpCDD	1.315	1.985	3.099	2.133
TOTAL HpCDD	3.458	5.268	7.350	5.359
TOTAL OCDD	2.029	2.017	< 2.321	<2.123
TOTAL PCDD	8.205	15.141	16.461	13.269
2378 TCDF	0.503	0.952	1.042	0.832
TOTAL TCDF	2.359	4.735	4.256	3.783
12378 PCDF	0.073	0.187	<0.218	<0.159
23478 PCDF	<0.223	0.321	0.402	<0.315
TOTAL PCDF	1.347	4.011	3.740	3.033
123478 HxCDF	<0.247	<0.491	0.824	<0.521
123678 HxCDF	0.107	0.257	0.359	0.241
234678 HxCDF	0.215	0.346	0.650	0.404
123789 HxCDF	<0.044	<0.024	<0.035	<0.034
TOTAL HxCDF	0.571	1.984	3.875	2.143
1234678 HpCDF	0.575	1.042	1.570	1.062
1234789 HpCDF	<0.106	0.140	<0.176	<0.140
TOTAL HpCDF	0.932	1.745	2.453	1.710
TOTAL OCDF	< 0.290	< 0.605	0.621	<0.505
TOTAL PCDF	5.499	13.082	14.944	11.175
TOTAL PCDD & PCDF	13.70	28.22	31.41	24.44

In calculating averages and toxic equivalencies, minimum detection limits of non-detectable congeners are used.

FACILITY: Babylon Resource Recovery, Unit 1
DATE: 02-02-89
TIME: 830-1229
RUN: 1

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	17.7	1.5	8.7	10.9		
COMPOUND	ng Col.		ng/NM3 @12% CO2		ng/s	lbs/hr
2378 TCDD	<0.028		<0.026		<0.330	<2.62E-09
TOTAL TCDD	0.653		0.600		7.705	6.12E-08
12378 PCDD	< 0.03		<0.028		<0.354	<2.81E-09
TOTAL PCDD	0.366		0.337		4.319	3.43E-08
123478 HxCDD	< 0.04		<0.037		<0.472	<3.75E-09
123678 HxCDD	0.16		0.147		1.888	1.50E-08
123789 HxCDD	0.185		0.170		2.183	1.73E-08
TOTAL HxCDD	1.936		1.780		22.845	1.81E-07
1234678 HpCDD	1.43		1.315		16.874	1.34E-07
TOTAL HpCDD	3.761		3.458		44.380	3.52E-07
TOTAL OCDD	2.207		2.029		26.043	2.07E-07
TOTAL PCDD	8.923		8.205		105.291	8.36E-07
2378 TCDF	0.547		0.503		6.455	5.12E-08
TOTAL TCDF	2.565		2.359		30.267	2.40E-07
12378 PCDF	0.079		0.073		0.932	7.40E-09
23478 PCDF	<0.242		<0.223		<2.856	<2.27E-08
TOTAL PCDF	1.465		1.347		17.287	1.37E-07
123478 HxCDF	<0.269		<0.247		<3.174	<2.52E-08
123678 HxCDF	0.116		0.107		1.369	1.09E-08
234678 HxCDF	0.234		0.215		2.761	2.19E-08
123789 HxCDF	<0.048		<0.044		<0.566	<4.50E-09
TOTAL HxCDF	0.621		0.571		7.328	5.82E-08
1234678 HpCDF	0.625		0.575		7.375	5.85E-08
1234789 HpCDF	< 0.115		<0.106		<1.357	<1.08E-08
TOTAL HpCDF	1.014		0.932		11.965	9.50E-08
TOTAL OCDF	< 0.315		<0.290		<3.717	<2.95E-08
TOTAL PCDF	5.98		5.499		70.564	5.60E-07
TOTAL PCDD & PCDF			13.704		175.855	1.40E-06

FACILITY: Babylon Resource Recovery, Unit 1
DATE: 02-02-89
TIME: 1618-1923
RUN: 2

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	17.9	4.34	8.7	10.9		
COMPOUND	ng Col.		ng/NM3 @12% CO2		ng/s	lbs/hr
2378 TCDD	< 0.1		<0.032		<0.412	<3.27E-09
TOTAL TCDD	2.201		0.700		9.078	7.20E-08
12378 PCDD	0.291		0.092		1.200	9.53E-09
TOTAL PCDD	8.862		2.816		36.551	2.90E-07
123478 HxCDD	0.209		0.066		0.862	6.84E-09
123678 HxCDD	1.071		0.340		4.417	3.51E-08
123789 HxCDD	1.132		0.360		4.669	3.71E-08
TOTAL HxCDD	13.654		4.339		56.315	4.47E-07
1234678 HpCDD	6.247		1.985		25.765	2.04E-07
TOTAL HpCDD	16.577		5.268		68.371	5.43E-07
TOTAL OCDD	6.348		2.017		26.182	2.08E-07
TOTAL PCDD	47.642		15.141		196.496	1.56E-06
2378 TCDF	2.995		0.952		12.353	9.80E-08
TOTAL TCDF	14.9		4.735		61.454	4.88E-07
12378 PCDF	0.589		0.187		2.429	1.93E-08
23478 PCDF	1.01		0.321		4.166	3.31E-08
TOTAL PCDF	12.622		4.011		52.058	4.13E-07
123478 HxCDF	<1.544		<0.491		<6.368	<5.05E-08
123678 HxCDF	0.809		0.257		3.337	2.65E-08
234678 HxCDF	1.089		0.346		4.491	3.56E-08
123789 HxCDF	<0.075		<0.024		<0.309	<2.46E-09
TOTAL HxCDF	6.242		1.984		25.745	2.04E-07
1234678 HpCDF	3.28		1.042		13.528	1.07E-07
1234789 HpCDF	0.439		0.140		1.811	1.44E-08
TOTAL HpCDF	5.492		1.745		22.651	1.80E-07
TOTAL OCDF	<1.905		<0.605		<7.857	<6.24E-08
TOTAL PCDF	41.161		13.082		169.765	1.35E-06
TOTAL PCDD & PCDF			28.223		366.261	2.91E-06

FACILITY: Babylon Resource Recovery, Unit 1
DATE: 02-03-89
TIME: 856-1207
RUN: 3

	@ 0' C		DRY			
	STACK NM3/S	METER NM3	%CO2	%O2		
	18.9	4.65	8.4	11.2		
COMPOUND	ng Col.	ng/NM3 @12% CO2			ng/s	lbs/hr
2378 TCDD	<0.077	<0.024			<0.313	<2.48E-09
TOTAL TCDD	1.793	0.551			7.288	5.78E-08
12378 PCDD	0.311	0.096			1.264	1.00E-08
TOTAL PCDD	6.112	1.878			24.842	1.97E-07
123478 HxCDD	<0.244	<0.075			<0.992	<7.87E-09
123678 HxCDD	1.212	0.372			4.926	3.91E-08
123789 HxCDD	1.289	0.396			5.239	4.16E-08
TOTAL HxCDD	14.198	4.362			57.708	4.58E-07
1234678 HpCDD	10.086	3.099			40.995	3.25E-07
TOTAL HpCDD	23.924	7.350			97.239	7.72E-07
TOTAL OCDD	<7.554	<2.321			<30.703	<2.44E-07
TOTAL PCDD	53.581	16.461			217.781	1.73E-06
2378 TCDF	3.393	1.042			13.791	1.09E-07
TOTAL TCDF	13.852	4.256			56.302	4.47E-07
12378 PCDF	<0.709	<0.218			<2.882	<2.29E-08
23478 PCDF	1.308	0.402			5.316	4.22E-08
TOTAL PCDF	12.173	3.740			49.477	3.93E-07
123478 HxCDF	2.681	0.824			10.897	8.65E-08
123678 HxCDF	1.17	0.359			4.755	3.77E-08
234678 HxCDF	2.115	0.650			8.596	6.82E-08
123789 HxCDF	<0.113	<0.035			<0.459	<3.65E-09
TOTAL HxCDF	12.614	3.875			51.270	4.07E-07
1234678 HpCDF	5.11	1.570			20.770	1.65E-07
1234789 HpCDF	<0.573	<0.176			<2.329	<1.85E-08
TOTAL HpCDF	7.984	2.453			32.451	2.58E-07
TOTAL OCDF	2.02	0.621			8.210	6.52E-08
TOTAL PCDF	48.643	14.944			197.710	1.57E-06
TOTAL PCDD & PCDF		31.405			415.491	3.30E-06

FACILITY: Babylon Resource Recovery
DATE: 02-02-89,02-03-89
UNIT: Unit 1

METHOD: SW-846 Method 0010 @ 68' F	RUN #	1	2	3
	DATE:	02-02-89	02-02-89	02-03-89
	FROM:	830	1618	856
	TO:	1229	1923	1207
Vm (dry gas sampled, dcf)		57.39	168.36	177.22
Y (meter calib. factor)		1.01	1.01	1.01
P bar (Barometric pressure, in. Hg)		30.01	30.01	30.05
P static (stack pressure, " H2O)		-0.60	-0.60	-1.00
Delta H (differential meter press, " H2O)		0.3	3.4	3.3
Tm (meter temperature, R`)		540	552	543
Vol H2O mls		216.8	625.0	720.2
Vm(std), dscf @ 68' F		56.9	164.5	176.2
Vm(std),Nm3 @ 32' F		1.50	4.34	4.65
Bws-H2O vapor		0.152	0.152	0.161
MF-moisture factor		0.848	0.848	0.839
% CO2		8.7	8.7	8.4
% O2		10.9	10.9	11.2
% N2		80.4	80.4	80.4
Md-MW stk gas,dry		29.83	29.83	29.79
Ms-MW stk gas,wet		28.03	28.04	27.89
Cp-pitot tube		0.84	0.84	0.84
Avg sq rt ^p		0.94	0.95	1.02
T stack, R'		762	759	771
Stack area,ft2		17.72	17.72	17.72
Vs-fps		64.2	64.8	70.1
Qstd-dscfm		40200	40700	42900
Qstd-Nm3/sec at 32'F		17.7	17.9	18.9
Area noz,ft2		1.42E-04	4.08E-04	4.08E-04
Sample time		180	180	180
% Isokinetic		98	97	99

H. PAH AND PCB

H. 1. Summary of Emissions: PAH

Average PAH Emissions	$\mu g/Nm^3$ @ 12% CO_2	lb/hr	g/s
Napthalene	<1.17E-00	<1.19E-04	<1.50E-05
2-Methylnapthalene	<2.60E-01	<2.67E-05	<3.36E-06
2-Chloronaphthalene	<2.46E-01	<2.52E-05	<3.18E-06
Acenapthylene	<1.69E-01	<1.80E-05	<2.19E-06
Acenaphthene	<2.50E-01	<2.57E-05	<3.23E-06
Fluorene	<2.58E-01	<2.65E-05	<3.35E-06
Phenanthrene	<1.99E-01	<2.05E-05	<2.58E-06
Anthracene	<2.27E-01	<2.33E-05	<2.93E-06
Fluoranthene	<2.28E-01	<2.34E-05	<2.95E-06
Pyrene	<2.39E-01	<2.46E-05	<3.10E-06
Benzo (a) anthracene	<3.14E-01	<3.24E-05	<4.08E-06
Chrysene	<2.74E-01	<2.82E-05	<3.55E-06
Benzo (b) fluoranthene	<3.89E-01	<4.00E-05	<5.03E-06
Benzo (k) fluoranthene	<3.21E-01	<3.29E-05	<4.15E-06
Benzo (a) pyrene	<4.42E-01	<4.54E-05	<5.71E-06
Indeno (1,2,3-CD) pyrene	<8.57E-01	<8.77E-05	<1.11E-05
Dibenz (a,h) anthracene	<9.75E-01	<1.00E-04	<1.26E-05
Benzo (g,h,i) perylene	<8.07E-01	<8.26E-05	<1.04E-05
Total	<7.63E-01	<7.82E-04	<9.84E-05

Babylon Resource Recovery
Date: 02/02/89
Unit: 1
Time: 0830-1229

@ 0°C		Dry	
Stack Nm^3/s	Meter Nm^3	% CO_2	% O_2
17.7	1.50	8.7	10.9

Run 1: PAH

PAH	µg detected	µg/Nm^3 @ 12% CO_2	lbs/hr	g/s
Napthalene	<2.336	<2.15E-00	<2.19E-04	<2.76E-05
2-Methylnapthalene	<0.385	<3.55E-01	<3.61E-05	<4.55E-06
2-Chloronaphthalene	<0.465	<4.28E-01	<4.35E-05	<5.49E-06
Acenapthylene	<0.320	<2.94E-01	<3.00E-05	<3.78E-06
Acenaphthene	<0.473	<4.35E-01	<4.43E-05	<5.58E-06
Fluorene	<0.487	<4.48E-01	<4.56E-05	<5.75E-06
Phenanthrene	<0.384	<3.53E-01	<3.60E-05	<4.53E-06
Anthracene	<0.435	<4.00E-01	<4.07E-05	<5.13E-06
Fluoranthene	<0.438	<4.03E-01	<4.10E-05	<5.17E-06
Pyrene	<0.422	<3.88E-01	<3.95E-05	<4.98E-06
Benzo (a) anthracene	<0.555	<5.10E-01	<5.20E-05	<6.55E-06
Chrysene	<0.483	<4.44E-01	<4.52E-05	<5.70E-06
Benzo (b) fluoranthene	<0.755	<6.94E-01	<7.07E-05	<8.91E-06
Benzo (k) fluoranthene	<0.622	<5.72E-01	<5.83E-05	<7.34E-06
Benzo (a) pyrene	<0.858	<7.89E-01	<8.04E-05	<1.01E-05
Indeno (1,2,3-CD) pyrene	<1.660	<1.53E-00	<1.55E-04	<1.96E-05
Dibenz (a,h) anthracene	<1.891	<1.74E-00	<1.77E-04	<2.23E-05
Benzo (g,h,i) perylene	<1.563	<1.44E-00	<1.46E-04	<1.84E-05
Total	<14.533	<1.34E+01	<1.36E-03	<1.71E-04

Babylon Resource Recovery
Date: 02/02/89
Unit: 1
Time: 1618-1923

@ 0 °C		Dry	
Stack Nm^3/s	Meter Nm^3	% CO_2	% O_2
17.9	4.34	8.7	10.9

Run 2: PAH

PAH	μ detected	μg/Nm^3 @ 12% CO_2	lbs/hr	g/s
Napthalene	<3.879	<1.23E-00	<1.27E-04	<1.60E-05
2-Methylnapthalene	<0.760	<2.42E-01	<2.49E-05	<3.13E-06
2-Chloronaphthalene	<0.465	<1.48E-01	<1.52E-05	<1.92E-06
Acenapthylene	<0.319	<1.01E-01	<1.04E-05	<1.32E-06
Acenaphthene	<0.473	<1.50E-01	<1.55E-05	<1.95E-06
Fluorene	<0.487	<1.55E-01	<1.59E-05	<2.01E-06
Phenanthrene	<0.384	<1.22E-01	<1.26E-05	<1.58E-06
Anthracene	<0.446	<1.42E-01	<1.46E-05	<1.84E-06
Fluoranthene	<0.449	<1.43E-01	<1.47E-05	<1.85E-06
Pyrene	<0.410	<1.30E-01	<1.34E-05	<1.69E-06
Benzo (a) anthracene	<0.539	<1.71E-01	<1.76E-05	<2.22E-06
Chrysene	<0.470	<1.49E-01	<1.54E-05	<1.94E-06
Benzo (b) fluoranthene	<0.880	<2.80E-01	<2.88E-05	<3.63E-06
Benzo (k) fluoranthene	<0.725	<2.30E-01	<2.37E-05	<2.99E-06
Benzo (a) pyrene	<1.000	<3.18E-01	<3.27E-05	<4.12E-06
Indeno (1,2,3-CD) pyrene	<1.936	<6.15E-01	<6.34E-05	<7.98E-06
Dibenz (a,h) anthracene	<2.205	<7.01E-01	<7.22E-05	<9.09E-06
Benzo (g,h,i) perylene	<1.822	<5.79E-01	<5.96E-05	<7.51E-06
Total	<17.649	<5.61E-00	<5.78E-04	<7.28E-05

Babylon Resource Recovery
Date: 02/03/89
Unit: 1
Time: 0856-1207

@ 0 °C		Dry	
Stack Nm^3/s	Meter Nm^3	$\%CO_2$	$\%O_2$
18.9	4.65	8.4	11.2

Run 3: PAH

PAH	μ detected	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Napthalene	<0.377	<1.16E-01	<1.22E-05	<1.53E-06
2-Methylnapthalene	<0.594	<1.82E-01	<1.92E-05	<2.41E-06
2-Chloronaphthalene	<0.525	<1.61E-01	<1.69E-05	<2.13E-06
Acenapthylene	<0.361	<1.11E-01	<1.37E-05	<1.47E-06
Acenaphthene	<0.534	<1.64E-01	<1.72E-05	<2.17E-06
Fluorene	<0.560	<1.72E-01	<1.81E-05	<2.28E-06
Phenanthrene	<0.398	<1.22E-01	<1.28E-05	<1.62E-06
Anthracene	<0.450	<1.38E-01	<1.45E-05	<1.83E-06
Fluoranthene	<0.453	<1.39E-01	<1.46E-05	<1.84E-06
Pyrene	<0.649	<1.99E-01	<2.09E-05	<2.64E-06
Benzo (a) anthracene	<0.854	<2.62E-01	<2.75E-05	<3.47E-06
Chrysene	<0.743	<2.28E-01	<2.40E-05	<3.02E-06
Benzo (b) fluoranthene	<0.631	<1.94E-01	<2.04E-05	<2.56E-06
Benzo (k) fluoranthene	<0.520	<1.60E-01	<1.68E-05	<2.11E-06
Benzo (a) pyrene	<0.717	<2.20E-01	<2.31E-05	<2.91E-06
Indeno (1,2,3-CD) pyrene	<1.386	<4.26E-01	<4.47E-05	<5.63E-06
Dibenz (a,h) anthracene	<1.579	<4.85E-01	<5.09E-05	<6.42E-06
Benzo (g,h,i) perylene	<1.305	<4.01E-01	<4.21E-05	<5.30E-06
Total	<12.636	<3.88E-00	<4.08E-04	<5.14E-05

H. 2. Summary of Emissions: PCB

	Average Emissions (Unit 1, Runs 1-3)		
	$\mu g/Nm^3$ @ 12% CO_2	lbs/hr	g/s
Total Mono PCB	<9.91E-03	<1.02E-06	<1.2E-07
Total Di PCB	<9.50E-03	<9.75E-07	<1.23E-07
Total Tri PCB	<1.06E-00	<1.08E-04	<1.36E-05
Total Tetra PCB	<3.91E-02	<4.02E-06	<5.07E-07
Total Penta PCB	<1.81E-02	<1.86E-06	<2.35E-07
Total Hexa PCB	<2.15E-02	<2.22E-06	<2.79E-07
Total Hepta PCB	<1.63E-02	<1.67E-06	<2.11E-07
Total Octa PCB	<2.13E-02	<2.20E-06	<2.76E-07
Total Nona PCB	<2.01E-02	<2.07E-06	<2.61E-07
Total Deca PCB	<2.01E-02	<2.07E-06	<2.61E-07
Total PCB	<1.24E-00	<1.27E-04	<1.06E-05

Babylon Resource Recovery Facility
Date: 02/02/89
Unit: 1
Time: 0830-1229

@ 0°C		Dry	
Stack Nm^3/s	Meter Nm^3	$\%CO_2$	$\%O_2$
17.7	1.50	8.7	10.9

Run 1: PCB

Parameter	µg detected	µg/Nm^3 @ 12% CO_2	lbs/hr	g/s
Total Mono PCB	<0.018	<1.66E-02	<1.69E-06	<2.12E-07
Total Di PCB	<0.018	<1.66E-02	<1.69E-06	<2.12E-07
Total Tri PCB	<2.105	<1.94E-00	<1.97E-04	<2.48E-05
Total Tetra PCB	<0.064	<5.89E-02	<5.99E-06	<7.55E-07
Total Penta PCB	<0.033	<3.03E-02	<3.09E-06	<3.89E-07
Total Hexa PCB	<0.037	<3.40E-02	<3.47E-06	<4.36E-07
Total Hepta PCB	<0.028	<2.57E-02	<2.62E-06	<3.30E-07
Total Octa PCB	<0.037	<3.40E-02	<3.47E-06	<4.36E-07
Total Nona PCB	<0.035	<3.22E-02	<3.28E-06	<4.13E-07
Total Deca PCB	<0.035	<3.22E-02	<3.28E-06	<4.13E-07
Total PCB	<2.411	<2.22E-00	<2.26E-04	<2.84E-05

Babylon Resource Recovery Facility
Date: 02/02/89
Unit: 1
Time: 1618-1923

@ 0°C		Dry	
Stack Nm^3/s	Meter Nm^3	$\%CO_2$	$\%O_2$
17.9	4.34	8.7	10.9

Run 2: PCB

Parameter	µg detected	µg/Nm^3 @ 12% CO_2	lbs/hr	g/s
Total Mono PCB	<0.022	<6.99E-03	<7.20E-07	<9.07E-08
Total Di PCB	<0.020	<6.36E-03	<6.55E-07	<8.25E-08
Total Tri PCB	<3.187	<1.01E-00	<1.04E-04	<1.31E-05
Total Tetra PCB	<0.102	<3.24E-02	<3.34E-06	<4.21E-07
Total Penta PCB	<0.040	<1.27E-02	<1.31E-06	<1.65E-07
Total Hexa PCB	<0.050	<1.59E-02	<1.64E-06	<2.06E-07
Total Hepta PCB	<0.037	<1.18E-02	<1.21E-06	<1.53E-07
Total Octa PCB	<0.048	<1.53E-02	<1.57E-06	<1.98E-07
Total Nona PCB	<0.045	<1.43E-02	<1.47E-06	<1.86E-07
Total Deca PCB	<0.045	<1.43E-02	<1.47E-06	<1.86E-07
Total PCB	<3.641	<1.16E-00	<1.19E-04	<1.50E-05

Babylon Resource Recovery Facility
Date: 02/03/89
Unit: 1
Time: 0856-1207

@ 0°C		Dry	
Stack Nm^3/s	Meter Nm^3	$\%CO_2$	$\%O_2$
18.9	4.65	8.4	11.2

Run 3: PCB

Parameter	µg detected	µg/Nm^3 @ 12% CO_2	lbs/hr	g/s
Total Mono PCB	<0.020	<6.14E-03	<6.45E-07	<8.13E-08
Total Di PCB	<0.018	<5.53E-03	<5.81E-07	<7.32E-08
Total Tri PCB	<0.714	<2.19E-01	<2.30E-05	<2.90E-06
Total Tetra PCB	<0.085	<2.61E-02	<2.74E-06	<3.45E-07
Total Penta PCB	<0.037	<1.14E-02	<1.19E-06	<1.50E-07
Total Hexa PCB	<0.048	<1.47E-02	<1.55E-06	<1.95E-07
Total Hepta PCB	<0.037	<1.14E-02	<1.19E-06	<1.50E-07
Total Octa PCB	<0.048	<1.47E-02	<1.55E-06	<1.95E-07
Total Nona PCB	<0.045	<1.38E-02	<1.45E-06	<1.83E-07
Total Deca PCB	<0.045	<1.38E-02	<1.45E-06	<1.83E-07
Total PCB	<1.097	<3.37E-01	<3.54E-05	<4.46E-06

X. OPERATIONAL DATA DURING EMISSION TESTING

I. 1. Steam and Temperature Data During Test Programs

Date	Time	Unit	Location: I=Inlet O=Outlet	Method	Run	Steam Flow 1000 lbs/hr	Steam Temp. °F	Steam Pres. psig	Temp. Top Of 1st Pass °F
01/31/89	1348-1603	2	O	U.S. EPA 12/101A	2	88	676	610	1600
01/31/89	1610-1824	2	O	U.S. EPA 12/101A	3	87	679	605	1590
02/01/89	0900-1212	2	O	U.S. EPA 104	1	86	682	604	1595
02/01/89	1013-1223	2	O	U.S. EPA 12/101A	4	86	681	603	1590
02/01/89	1424-1735	2	O	U.S. EPA 104	2	85	682	603	1555
02/02/89	0830-1229	1	O	SW-846 0010	1	86	649	600	1470
02/02/89	0913-1250	2	O	U.S. EPA 104	3	86	696	600	1560
02/02/89	1618-1923	1	O	SW-846 0010	2	87	658	600	1490
02/03/89	0856-1207	1	O	SW-846 0010	3	86	674	620	1490
02/07/89	1345-1445	1	O	U.S. EPA 6C, 7E, 3A, 10	1	88	658	640	1500
02/07/89	1345-1445	1	I	U.S. EPA 6C, 3A	1	88	658	640	1500
02/07/89	1345-1450	1	I	U.S. EPA Modified 6	1	88	658	640	1500
02/07/89	1349-1455	1	O	U.S. EPA 5	1	88	658	640	1500
02/07/89	1540-1640	1	O	U.S. EPA 6C, 7E, 3A, 10	2	86	650	640	1500
02/07/89	1540-1640	1	I	U.S. EPA 6C, 3A	2	86	650	640	1500
02/07/89	1540-1659	1	I	U.S. EPA Modified 6	2	86	650	640	1500
02/07/89	1542-1654	1	O	U.S. EPA 5	2	86	650	640	1500
02/08/89	0845-0945	1	O	U.S. EPA 6C, 7E, 3A, 10	3	89	672	640	1525
02/08/89	0845-0945	1	I	U.S. EPA 6C, 3A	3	89	672	640	1525
02/08/89	0845-0953	1	O	U.S. EPA 5	3	89	672	640	1525
02/08/89	0845-0955	1	I	U.S. EPA Modified 6	3	89	672	640	1525
02/08/89	1149-1254	2	O	U.S. EPA 5	1	86	701	633	1510
02/08/89	1150-1250	2	O	U.S. EPA 6C, 7E, 3A, 10	1	86	701	633	1510
02/08/89	1150-1250	2	I	U.S. EPA 6C, 3A	1	86	701	633	1510
02/08/89	1151-1250	2	I	U.S. EPA Modified 6	1	86	701	633	1510
02/08/89	1340-1440	2	O	U.S. EPA 6C, 7E, 3A, 10	2	88	702	640	1535
02/08/89	1340-1440	2	I	U.S. EPA 6C, 3A	2	88	702	640	1535
02/08/89	1340-1450	2	I	U.S. EPA Modified 6	2	88	702	640	1535
02/08/89	1341-1445	2	O	U.S. EPA 5	2	88	702	640	1535
02/08/89	1530-1630	2	O	U.S. EPA 6C, 7E, 3A, 10	3	87	700	640	1550
02/08/89	1530-1635	2	I	U.S. EPA Modified 6	3	87	700	640	1550
02/08/89	1530-1635	2	O	U.S. EPA 5	3	87	700	640	1550

Continued...

I. 1. Steam and Temperature Data During Test Program (continued)

Date	Time	Unit	Location: I=Inlet O=Outlet	Method	Run*	Steam Flow 1000 lbs/hr	Steam Temp. °F	Steam Pres. psig	Temp.** Top Of 1st Pass °F
02/09/89	0930-1030	1	O	U.S. EPA 6C, 7E, 3A, 10	1R	60	612	634	1415
02/09/89	0930-1030	1	I	U.S. EPA 6C, 3A	1R	60	612	634	1415
02/09/89	0930-1036	1	O	U.S. EPA 5	1R	60	612	634	1415
02/09/89	0935-1035	1	I	U.S. EPA Modified 6	1R	60	612	634	1415
02/09/89	1140-1245	1	I	U.S. EPA Modified 6	2R	60	618	640	1450
02/09/89	1144-1249	1	O	U.S. EPA 5	2R	60	618	640	1450
02/09/89	1200-1300	1	O	U.S. EPA 6C, 7E, 3A, 10	2R	60	618	640	1450
02/09/89	1200-1300	1	I	U.S. EPA 6C, 3A	2R	60	618	640	1450
02/09/89	1401-1503	1	I	U.S. EPA Modified 6	3R	60	620	640	1415
02/09/89	1403-1508	1	O	U.S. EPA 5	3R	60	620	640	1415
02/09/89	1405-1505	1	O	U.S. EPA 6C, 7E, 3A, 10	3R	60	620	640	1415
02/09/89	1405-1505	1	I	U.S. EPA 6C, 3A	3R	60	620	640	1415

* "R" after run number indicates testing done at 70% of full load

** Temperature measurements taken with an unshielded thermocouple, i.e., temperature values reported here are lower than actual temperature.

I. 2. Acid Gas Control Data During Test Program

Date	Time	Unit	Location: I=Inlet O=Outlet	Method	Run	Economizer Outlet °F	Spray Dryer Outlet Temp. °F	Baghouse Outlet Temp. °F	Lime Slurry Feed Rate lbs/hr
01/31/89	1348-1603	2	O	U.S. EPA 12/101A	2	494	317	307	538
01/31/89	1610-1824	2	O	U.S. EPA 12/101A	3	498	316	307	527
02/01/89	0900-1212	2	O	U.S. EPA 104	1	493	318	307	596
02/01/89	1013-1223	2	O	U.S. EPA 12/101A	4	493	319	306	708
02/01/89	1424-1735	2	O	U.S. EPA 104	2	494	326	315	467
02/02/89	0830-1229	1	O	SW-846 0010	1	441	315	308	322
02/02/89	0913-1250	2	O	U.S. EPA 104	3	435	312	302	538
02/02/89	1618-1923	1	O	SW-846 0010	2	458	313	303	315
02/03/89	0856-1207	1	O	SW-846 0010	3	478	322	312	204
02/07/89	1345-1445	1	O	U.S. EPA 6C, 7E, 3A, 10	1	449	317	305	414
02/07/89	1345-1445	1	I	U.S. EPA 6C, 3A	1	449	317	305	414
02/07/89	1345-1450	1	I	U.S. EPA Modified 6	1	449	317	305	414
02/07/89	1349-1455	1	O	U.S. EPA 5	1	449	317	305	414
02/07/89	1540-1640	1	O	U.S. EPA 6C, 7E, 3A, 10	2	448	318	304	508
02/07/89	1540-1640	1	I	U.S. EPA 6C, 3A	2	448	318	304	508
02/07/89	1540-1659	1	I	U.S. EPA Modified 6	2	448	318	304	508
02/07/89	1542-1654	1	O	U.S. EPA 5	2	448	318	304	508
02/08/89	0845-0945	1	O	U.S. EPA 6C, 7E, 3A, 10	3	466	314	307	465
02/08/89	0845-0945	1	I	U.S. EPA 6C, 3A	3	466	314	307	465
02/08/89	0845-0953	1	O	U.S. EPA 5	3	466	314	307	465
02/08/89	0845-0955	1	I	U.S. EPA Modified 6	3	466	314	307	465
02/08/89	1149-1254	2	O	U.S. EPA 5	1	460	316	308	283
02/08/89	1150-1250	2	O	U.S. EPA 6C, 7E, 3A, 10	1	460	316	308	283
02/08/89	1150-1250	2	I	U.S. EPA 6C, 3A	1	460	316	308	283
02/08/89	1151-1250	2	I	U.S. EPA Modified 6	1	460	316	308	283
02/08/89	1340-1440	2	O	U.S. EPA 6C, 7E, 3A, 10	2	465	318	308	359
02/08/89	1340-1440	2	I	U.S. EPA 6C, 3A	2	465	318	308	359
02/08/89	1340-1450	2	I	U.S. EPA Modified 6	2	465	318	308	359
02/08/89	1341-1445	2	O	U.S. EPA 5	2	465	318	308	359
02/08/89	1530-1630	2	O	U.S. EPA 6C, 7E, 3A, 10	3	369	314	305	507
02/08/89	1530-1630	2	I	U.S. EPA 6C, 3A	3	369	314	305	507
02/08/89	1530-1635	2	O	U.S. EPA 5	3	369	314	305	507
02/08/89	1530-1635	2	I	U.S. EPA Modified 6	3	369	314	305	507

Continued...

I. 2. Acid Gas Control Data During Test Program (continued)

Date	Time	Unit	Location: I=Inlet O=Outlet	Method	Run*	Economizer Outlet °F	Spray Dryer Outlet Temp. °F	Baghouse Outlet Temp. °F	Lime Slurry Feed Rate lbs/hr
02/09/89	0930-1030	1	O	U.S. EPA 6C, 7E, 3A, 10	1R	395	301	283	153
02/09/89	0930-1030	1	I	U.S. EPA 6C, 3A	1R	395	301	283	153
02/09/89	0930-1036	1	O	U.S. EPA 5	1R	395	301	283	153
02/09/89	0935-1035	1	I	U.S. EPA Modified 6	1R	395	301	283	153
02/09/89	1140-1245	1	I	U.S. EPA Modified 6	2R	417	305	290	185
02/09/89	1144-1249	1	O	U.S. EPA 5	2R	417	305	290	185
02/09/89	1200-1300	1	O	U.S. EPA 6C, 7E, 3A, 10	2R	417	305	290	185
02/09/89	1200-1300	1	I	U.S. EPA 6C, 3A	2R	417	305	290	185
02/09/89	1401-1503	1	I	U.S. EPA Modified 6	3R	406	302	284	211
02/09/89	1403-1508	1	O	U.S. EPA 5	3R	406	302	284	211
02/09/89	1405-1505	1	O	U.S. EPA 6C, 7E, 3A, 10	3R	406	302	284	211
02/09/89	1405-1505	1	I	U.S. EPA 6C, 3A	3R	406	302	284	211

* "R" after run number indicates testing done at 70% of full load

J. METHODOLOGY

J. 1. References

Parameter	Test Method	Reference
CO_2	U.S. EPA Method 3A	40CFR60, App. A, 1987.
TSP/HCl	U.S. EPA Method 5	40CFR60, App. A, 1987.
HCl	U.S. EPA Mod. Method 6	40CFR60, App. A, 1987.
SO_2	U.S. EPA Method 6C	40CFR60, App. A, 1987.
NO_x	U.S. EPA Method 7E	40CFR60, App. A, 1987.
CO	U.S. EPA Method 10	40CFR60, App. A, 1987.
Heavy Metals	U.S. EPA Method 12/101A	40CFR60, App. A, 1987.
Be	U.S. EPA Method 104	40CFR60, App. B, 1987.
Dioxin/Furan, PAH, PCB	U.S. EPA Method 0010	SW-846, Test Methods for Evaluating Solid Waste, 1986.

Calculations - Particulate Emissions

Compound:	Total Suspended Particulate
Analysis:	Gravimetric
Analysis Parameter:	(x)mg
Meter Volume (VmSTD):	(y)dscf at 68°F, 29.92 "Hg
Standard Reported Concentration:	grains/dscf at 12% CO_2

$$\text{grains/dscf @ 12\% } CO_2 = \frac{(x)\text{mg}}{(y)\text{dscf}} * \frac{12\%\ CO_2}{(i)\%\ CO_2} * \frac{\text{gram}}{1000\ \text{mg}} * \frac{15.432\ \text{grains}}{\text{gram}}$$

$$\text{lbs/hr} = \frac{(x)\text{mg}}{(y)\text{dscf}} * \frac{(z)\text{dscf}}{\text{min}} * \frac{60\ \text{min}}{\text{hr}} * \frac{\text{gram}}{1000\ \text{mg}} * \frac{\text{lb}}{453.6\ \text{grams}}$$

(z) dscf is calculated from U.S. EPA Method 5 test.

(i) % CO_2 is measured during U.S. EPA Method 5 test.

Calculations - Hydrogen Chloride Emissions

Compound:	Hydrogen Chloride (HCl)
Analysis:	Standard Titration
Analysis Parameter:	(x)mg
Meter Volume (VmSTD):	Nm^3 @ 0°C and 760mm Hg
Standard Reported Concentration:	mg/Nm^3 @ 12% CO_2 and ppmdv @ 12% CO_2

$$\boxed{(Y)Nm^3 \text{ @ } 0°C \text{ (VmSTD)}} = (y)\text{dscf @ } 68°F * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}}$$

$$\boxed{(Z)Nm^3/\text{sec @ } 0°C} = \frac{(z)\text{dscf @ } 68°F}{\text{min}} * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}} * \frac{\text{min}}{60 \text{ sec}}$$

$$\boxed{(X)mg/Nm^3 \text{ @ } 12\% \ CO_2} = \frac{(x)mg}{(Y)Nm^3 \text{ @ } 0°C} * \frac{12\% \ CO_2}{(i)\% \ CO_2}$$

$$\boxed{\text{ppmdv @ } 12\% \ CO_2} = \frac{(X)mg \text{ @ } 12\% \ CO_2}{Nm^3} * \frac{M^3}{35.314 \text{ dscf}} * \frac{0.7916 \text{ dscf @ } 0°C}{\text{mole (gm)}} * \frac{\text{gram}}{1000 \text{ mg}} * \frac{1}{mw} * \frac{10^6 \ \mu \text{ mole}}{\text{mole}}$$

Where HCl molecular weight = 36.5 grams/mole

$$\boxed{\text{lbs/hr}} = \frac{(x)mg}{(Y)Nm^3 \text{ @ } 0°C} * \frac{(Z)Nm^3 \text{ @ } 0°C}{\text{sec}} * \frac{3600 \text{ sec}}{\text{hr}} * \frac{\text{grams}}{1000 \text{ mg}} * \frac{\text{lb}}{453.6 \text{ grams}}$$

(y) dscf @ 68°F is calculated from U.S. EPA Method 5 test.

(z)dscf/min is calculated from U.S. EPA Method 5 test.

(i)% CO_2 is measured during U.S. EPA Method 5 test.

Calculations - Sulfur Dioxide Emissions

Compound:	Sulfur Dioxide (SO_2)
Analysis:	Pulsed Fluorescent Analyzer
Analysis Parameter:	(x)ppmdv
Standard Reported Concentration:	ppmdv @ 12% CO_2

$$\text{ppmdv @ 12\% } CO_2 = (x)\text{ppmdv} * \frac{12\%\ CO_2}{(i)\%\ CO_2}$$

$$\text{lbs/hr} = (x)\text{ppmdv} * \frac{(z)\text{dscf @ 68°F}}{\text{min}} * \text{molecular weight} * 1.557 \times 10^{-7} \text{ @ 68°F}$$

Where SO_2 molecular weight = 64 grams/mole

(z) dscf is calculated using U.S. EPA Methodology.

(i) % CO_2 is measured during U.S. EPA Method 6C test.

Calculations - Oxides of Nitrogen Emissions

Compound:	Oxides of Nitrogen as (NO_2)
Analysis:	Chemiluminescent Analyzer
Analysis Parameter:	(x)ppmdv
Standard Reported Concentration:	ppmdv @ 12% CO_2

$$\boxed{\text{ppmdv @ 12\% } CO_2} = (x)\text{ppmdv} * \frac{12\%\ CO_2}{(i)\%\ CO_2}$$

$$\boxed{\text{lbs/hr}} = (x)\text{ppmdv} * \frac{(z)\text{dscf @ 68°F}}{\text{min}} * \text{molecular weight} * 1.557 \times 10^{-7} \text{ @ 68°F}$$

Where NO_x molecular weight = 46 grams/mole

(z) dscf is calculated using U.S. EPA Methodology.

(i) % CO_2 is measured during U.S. EPA Method 7 test.

Calculations - Carbon Monoxide Emissions

Compound:	Carbon Monoxide (CO)
Analysis:	Gas Filter Correlation
Analysis Parameter:	(x)ppmdv
Standard Reported Concentration:	ppmdv @ 12% CO_2

$$\text{ppmdv @ 12\% } CO_2 = (x)\text{ppmdv} * \frac{12\ \%\ CO_2}{(i)\ \%\ CO_2}$$

$$\text{lbs/hr} = (x)\text{ppmdv} * \frac{(z)\text{dscf @ 68°F}}{\text{min}} * \text{molecular weight} * 1.557 \times 10^{-7} \text{ @ 68°F}$$

Where CO molecular weight = 28 grams/mole

(z) dscf/min is calculated using U.S. EPA Methodology.

(i) % CO_2 is measured during U.S. EPA Method 10 test.

Calculations - Beryllium Emissions

Compound:	Be
Analysis:	Atomic Absorption Spectroscopy
Analysis Parameter:	(x)
Meter Volume (VmSTD):	(Y)Nm^3 @ 0°C and 760mm Hg
Standard Reported Concentration:	mg/Nm^3 @ 12% CO_2

$$\boxed{(Y)Nm^3 \text{ @ } 0°C \text{ (VmSTD)}} = (y)\text{dscf @ } 68°F * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}}$$

$$\boxed{(Z)Nm^3/\text{sec @ } 0°C} = \frac{(z)\text{dscf @ } 68°F}{\text{min}} * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}} * \frac{\text{min}}{60 \text{ sec}}$$

$$\boxed{\text{mg/Nm}^3 \text{ @ 12\% } CO_2} = \frac{(x)\text{mg}}{(Y)Nm^3 \text{ @ } 0°C} * \frac{12\% \ CO_2}{(i)\% \ CO_2}$$

$$\boxed{\text{lbs/hr}} = \frac{(x)\text{mg}}{(Y)Nm^3 \text{ @ } 0°C} * \frac{(Z)Nm^3 \text{ @ } 0°C}{\text{sec}} * \frac{3600 \text{ sec}}{\text{hr}} * \frac{\text{grams}}{1000 \text{ mg}} * \frac{\text{lb}}{453.6 \text{ grams}}$$

(y)dscf @ 68°F is calculated from U.S. EPA Method 104 test.
(z)dscf/min is calculated from U.S. EPA Method 104 test.
(i)% CO_2 is measured during U.S. EPA Method 104 test.

Calculations - Metals Emissions

Compound:	As, Cd, Cr, Hg, Ni
Analysis:	Atomic Absorption Spectroscopy
Analysis Parameter:	(x)mg
Meter Volume (VmSTD):	(Y)Nm^3 @ 0°C and 760mm Hg, or (Y)dscf @ 68°F and 29.92" Hg
Standard Reported Concentration:	mg/Nm^3 @ 12% CO_2, or gr/dscf @ 12% CO_2

$$\boxed{(Y)Nm^3 \text{ @ } 0°C \text{ (VmSTD)}} = (y)\text{dscf @ } 68°F * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}}$$

$$\boxed{(Z)Nm^3/\text{sec @ } 0°C} = \frac{(z)\text{dscf @ } 68°F}{\text{min}} * \frac{492°R}{528°R} * \frac{M^3}{35.314 \text{ dscf}} * \frac{\text{min}}{60 \text{ sec}}$$

$$\boxed{mg/Nm^3 \text{ @ } 12\% \ CO_2} = \frac{(x)\text{mg}}{(Y)Nm^3 \text{ @ } 0°C} * \frac{12\% \ CO_2}{(i)\% \ CO_2}$$

$$\boxed{\text{lbs/hr}} = \frac{(x)\text{mg}}{(Y)Nm^3 \text{ @ } 0°C} * \frac{(Z)Nm^3 \text{ @ } 0°C}{\text{sec}} * \frac{3600 \text{ sec}}{\text{hr}} * \frac{\text{grams}}{1000 \text{ mg}} * \frac{\text{lb}}{453.6 \text{ grams}}$$

$$\boxed{\text{gr/dscf @ } 12\% \ CO_2} = \frac{(x)\text{mg}}{(Y)\text{dscf @ } 68°C} * \frac{12\% \ CO_2}{(i)\% \ CO_2} * \frac{0.0154 \text{ gr}}{\text{mg}}$$

(y)dscf @ 68°F is calculated from U.S. EPA Method 12 test.

(z)dscf/min is calculated from U.S. EPA Method 12 test.

(i)% CO_2 is measured during U.S. EPA Method 12 test.

Calculations - Dioxin Emissions

Compound:	PCDD and PCDF isomers
Analysis:	GC, MS
Analysis Parameter:	(x)ng
Meter Volume (VmSTD):	Nm^3 @ 0°C and 760mm Hg
Standard Reported Concentration:	ng/Nm^3 @ 12% CO_2

$$\boxed{(Y)Nm^3 \text{ @ } 0°C \text{ (VmSTD)}} = (y)dscf \text{ @ } 68°F * \frac{492°R}{528°R} * \frac{M^3}{35.314\ dscf}$$

$$\boxed{(Z)Nm^3/sec \text{ @ } 0°C} = \frac{(z)dscf \text{ @ } 68°F}{min} * \frac{492°R}{528°R} * \frac{M^3}{35.314\ dscf} * \frac{min}{60\ sec}$$

$$\boxed{(X)ng/Nm^3 \text{ @ } 12\%\ CO_2} = \frac{(x)ng}{(Y)Nm^3 \text{ @ } 0°C} * \frac{12\%\ CO_2}{(i)\%\ CO_2}$$

$$\boxed{lbs/hr} = \frac{(x)ng}{(Y)Nm^3 \text{ @ } 0°C} * \frac{(Z)Nm^3 \text{ @ } 0°C}{sec} * \frac{(i)CO_2}{12} * \frac{3600\ sec}{hr} * \frac{grams}{109\ ng} * \frac{lb}{453.6\ gm}$$

(y)dscf @ 68°F is calculated from U.S. EPA Method 0010 test.
(z)dscf/min is calculated from U.S. EPA Method 0010 test.
(i)% CO_2 is measured during U.S. EPA Method 0010 test.

NOMENCLATURE

A	=	Cross-sectional area of stack (ft^2)
A_n	=	Cross-sectional area of nozzle, (ft^2)
B_{ws}	=	Proportion of water vapor, by volume, in the gas stream
C_p	=	Pitot tube coefficient, dimensionless
C_s	=	Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, (gr/dscf)
C_{SO_2}	=	Concentration of sulfur dioxide, dry basis
$C_{H_2SO_4}$	=	Sulfuric acid (including SO_3) concentration, corrected to standard conditinos (lg/dscf)
ΔH	=	Average pressure differential across the orifice meter, (in H_2O)
K_p	=	Pitot tube constant, 85.49 $\frac{ft}{sec}\left[\frac{(lb/lb\text{-}mole)(in\ Hg)}{(^oR)\ (in\ H_2O)}\right]^{\frac{1}{2}}$
L_p	=	Leakage rate observed during the post-test leak check, (cfm)
L_a	=	Maximum acceptable leakage rate, (0.02 cfm or 4% of averaging sampling rate, whichever is less)
L_1	=	Individual leakage rate observed during the leak check conducted prior to the "i^{th}" component change, (cfm)
M_d	=	Molecular weight of stack gas, dry basis, (lb/lb-mole)
m_n	=	Total weight of particulate matter collected, mg.
M_s	=	Molecular weight of stack gas, wet basis, (lb/lb-mole)
M_w	=	Molecular weight of water, 18 lb/lb-mole
N	=	Normality of barium perchlorate titrant, (millequivalents/ml)
Δp	=	Velocity head of stack, (in H_2O)
P_{bar}	=	Barometric pressure at measurement site (in Hg)
P_g	=	Stack static pressure, (in Hg)
P_m	=	Absolute pressure at dry gas meter
P_s	=	Absolute stack gas pressure, (in Hg)
P_{std}	=	Absolute ~~stack gas~~ Standard pressure, 29.92 in Hg

Q_{std}	=	Dry volumetric stack gas flow rate, standard conditions, (dscfm)
R	=	Ideal gas constant, 21.85 (in Hg) $(ft^3)/(lb\text{-}mole)(^oR)$
t_s	=	Stack temperature, (^oF)
T_m	=	Absolute temperature at meter, (^oR)
T_{std}	=	Standard Absolute temperature, (528^oR)
T_s	=	Absolute stack temperature, (460^o + ts)
V_a	=	Volume of sample aliquot titrated, (ml)
V_{ab}	=	Volume of acetone blank, ml
V_m	=	Dry gas volume measured by dry gas meter, (dcf)
$V_{m(std)}$	=	Dry gas volume measured by dry gas meter, corrected to standard conditions, (dscf)
$V_{wc(std)}$	=	Volume of water vapor condensed corrected to standard conditions, (scf)
$V_{wsg(std)}$	=	Volume of water vapor collected in silica gel corrected to standard conditions (scf)
V_{lc}	=	Volume of water vapor condensed in impingers and silica gel, (ml)
V_f	=	Final volume of condensed water, ml
V_i	=	Initial volume of condensed water, ml
v_s	=	Average stack gas velocity, (ft/sec)
V_{soln}	=	Total volume of solution in which the sulfur dioxide sample is contained (ml)
V_t	=	Volume of barium perchlorate titrant used for the sample, (ml)
V_{tb}	=	Volume of barium perchlorate titrant used for the blank, (ml)
W_f	=	Final weight of silica gel or silica gel plus impinger, (g)
W_i	=	Initial weight of silica gel or silica gel plus impinger, (g)
Y	=	Dry gas meter calibration factor
ρ_w	=	Density of water, (0.00224 lb/ml at 68^oF)
ρ_a	=	Density of acetone, (g/ml)(see bottle label)

MF	=	Moisture factor
$\%CO_2$	=	Percent CO_2 by volume (dry basis)
$\%O_2$	=	Percent O_2 by volume (dry basis)
%CO	=	Percent CO by volume (dry basis)
$\%CH_4$	=	Percent CH_4 by volume (dry basis)
$\%N_2$	=	Percent N_2 by volume (dry basis)
0.264	=	Ratio of O_2 to N_2 in air v/v
0.280	=	Molecular weight of N_2 or CO, divided by 100
0.320	=	Molecular weight of O_2, divided by 100
0.440	=	Molecular weight of CO_2, divided by 100
60	=	Conversion factor, (sec/min)
18.0	=	Molecular weight of water, (lb/lb-mole)
32.03	=	Equivalent weight of sulfur dioxide
Θ	=	Total sampling time (min)
Θ_1	=	Sampling time interval, from the run beginning until first component change, (min)
Θ_i	=	Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, (min)
Θ_p	=	Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, (min)

J. 4. Equipment

Continuous Emission Monitoring System Rented
Clean Air Engineering

Sulfur Dioxide Analyzers	Model No. 721AT2 (Outlet) Model No. 721A (Outlet) Model No. 721A (Inlet) Western Research Division of Bow Valley Resources Services, Ltd. Calgary, Alberta, Canada (403) 291-1313
Oxides of Nitrogen Analyzer	Model No. 10AR Thermo Electron Corporation Instruments Division 108 South Street Hopkinton, MA 01748 (617) 525-0430
Carbon Monoxide Analyzer	Model No. 48 Thermo Electron Corporation Instruments Division 108 South Street Hopkinton, MA 01748 (617) 525-0430
Carbon Dioxide Analyzer	Model No. PIR-2000 (Inlet) Model No. PIR-2000 (Outlet) Horiba Instruments 1021 Duryea Avenue Irvine, CA 92714 (714) 250-4811
Chart Recorder	Model No. DS-8404 Soltec Corporation 12977 Arroyo Street San Fernando, CA 91340 (818) 365-0800

J. 5. Variations from the Source Test Plan

In addition to a change of order in which emissions tests were performed, the following is a list of variations from the Source Test Plan:

U.S. EPA Method 11/101A: Run 1 did not pass the final system leak check; therefore, an extra run was performed. Results of Runs 2, 3, and 4 are reported. The samples were analyzed for the following additional metals required for the health risk assessment: Antinomy, Cobalt, Copper, Manganese, Selenium, Vanadium, and Zinc.

SW-846 Method 0010: PAH results are expressed as a list of individual compounds rather than as benzo-a-pyrene. The additive total of non-detectable levels is misleading and listing individual compounds portrays a clearer perception of the sensitivity of the analytical method.

USS. EPA Methods 3A, 6C, and Modified 6 (Inlet)
U.S. EPA Methods 3A, 5, 6C, 7E, and 10 (Outlet)

Three additional one-hour runs were performed on Unit 1 while the facility was operating at 70% full capacity. These additional tests were performed to demonstrate compliance at reduced load operating conditions.

Removal efficiences for HCl and SO_2 were calculated using ppm_dv corrected to 12% CO_2. This was done to eliminate any possible dilution effects or flow disturbances associated with mass flow emission when sampled at the inlet. Subsequently, all mass emission rates presented for the inlet (uncontrolled emission) were generated using flow data obtained during simultaneous outlet (controlled emission) testing.

CEM equipment used for compliance testing was rented from Clean Air Engineering. Equipment manufacturers and model numbers are presented in Section J(4).

U.S. EPA Method 9:

Facility geometry and weather conditions made it imposssible for NYSDEC to conduct visible emissions evaluations. However, the signed facility opacity excursion log sheets for the days that U.S. EPA Method 5 testing was performed are included in Appendix B.

K. QUALITY ASSURANCE/QUALITY CONTROL

In accordance with EPA-600/4-77-027b, dated August 1977, all OPI field data sheets, analytical data sheets (particulate) and calibration sheets are included in Appendix A.

Organic toxics analysis was performed using National Institute of Standards and Technology (NIST) traceable reagents according to referenced methods. Appendix A includes analytical data (dioxins, furans, PCBs and PAHs) from Triangle Laboratories, Inc. (TLI) as well as data on field blanks, laboratory blanks and surrogate recovery. OPI reviewed the recoveries and although some are below EPA guidelines (40%) they were hand-checked for Quality Assurance by TLI and were deemed to be valid data. These low recoveries occurred for isomers with relatively greater impact on toxic equivalencies. If there had been more time to prepare the report, OPI would have requested that these samples be re-analyzed. TLI review procedures and individual chromatograms are in Appendix C and are available on request.

Metallic toxics analysis was performed using NIST traceable reagents according to referenced methods. Appendix A includes analysis data from Brown and Caldwell Laboratories (Sb, As, Be, Cd, Co, Cr, Cu, Pb, Mn, Hg, Ni, Se, V, and Zn).

Custody sheets documenting the custody exchanges of all samples from OPI to the contract laboratories are included in Appendix A.

Detailed and confidential facility process data for the test periods are included in Appendix B. These data are submitted only for the use of the NYSDEC.