6906 U-004-307 .17

TEST REPORT TRAIL BURN OF CONTAMINATED SOILS AT GEORGE NEAL GENERATING STATION UNIT NO. 1 - (USED AS A REFERENCE IN OU 2 RI REPORT)

00/00/91

KILKELLY ASSOC IPSC
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REPORT

-6906

Site: Peoples Natural Gas
ID #: IAD980852578
Break: 2.4
Other: OU 00

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Test Report
Trial Burn of Contaminated Soils
at George Neal Generating Station
Unit No. 1

Prepared for

Iowa Public Service Company

Prepared by

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1.0 INTRODUCTION

Iowa Public Service Company (IPS) retained Kilkelly Environmental Associates (KEA) to conduct a series of tests to evaluate the disposal of materials containing by-products from the gasification of coal and other hydrocarbons through incineration in an electric steam generating unit. This report presents the results of the tests conducted by KEA for IPS.

IPS has submitted a proposal to EPA to dispose of polyaromatic hydrocarbon-contaminated soil through incineration of the soil in Unit No. 1 at the IPS George Neal power station. Hydrocarbon impregnated soil and other materials will be blended with coal and burned during normal operation of Unit No. 1 for electrical power generation.

In its proposal to EPA, IPS agreed to conduct a trial burn of the coal-waste material mixture in accordance with a "Trial Burn Test Protocol for Incineration of Contaminated Soils at George Neal Generating Station Unit Nos. 1 and 2." [Reference 1.] The purpose of the trial burn is to demonstrate greater than 99.99% destruction and removal efficiency (DRE) of chemical constituents of the waste material.

IPS proposed to demonstrate greater than 99.99% DRE by injecting a surrogate compound — sulfur hexafluoride (SF_6) — into the combustion zone of the furnace and determining the remaining concentration of SF_6 in the combustion effluents. SF_6 was chosen as the surrogate compound for several reasons:

1. SF_6 is difficult to incinerate and thus should provide a conservative indication of the boiler's DRE for other less thermally stable compounds.
2. SF_6 is less expensive than many other possible surrogates.
3. SF_6 is non-toxic.
4. SF_6 is a gas at ambient temperature and pressure, and thus poses fewer materials handling problems than solid or liquid surrogates.
5. SF_6 can be detected in combustion effluents at concentrations as low as 1 part per trillion by volume, thus permitting DREs to be estimated accurately using small amounts of the surrogate material and eliminating the need to burn large amounts of other (expensive) surrogates.

A series of seven trial burn tests were conducted. Test No. 1 was a baseline test conducted to evaluate the testing protocol and to establish baseline conditions with the unit operating at full load while burning only coal. Test Nos. 2 through 4 were conducted with the unit operating at full load while burning a coal-waste material mixture. Tests Nos. 5 through 7 were conducted with the unit operating at reduced load while burning a coal-waste material mixture. DRE testing was performed during all seven trial burn tests. Fuel and ash samples were collected, and particulate, carbon monoxide, benzene, phenol, and pyrene emission measurements were also made during each test. Results of the baseline test, the three full load tests, and the three reduced load tests are summarized in the following table.

SUMMARY OF TRIAL BURN TEST RESULTS

		Baseline Test	Full Load Test	Reduced Load Tests
UNIT OPERATING DATA				
Fuel		Coal	Coal-Waste	Coal-Waste
Gross Load	MWe	140	138	87
Fuel flow	10^3 lb/hr	141.4	140.3	90.4
Excess oxygen	%	3.1	3.3	3.4
Furnace pressure	in H_2O	24.9	24.0	10.6
DESTRUCTION AND REMOVAL EFFICIENCY	%	>99.99942	99.99963	99.99953
EMISSIONS				
Particulate	lb/hr	334	275	61.4
Carbon monoxide	ppm	86.3	57.4	94.2
Benzene	lb/hr	0.0011	0.0036	0.0007
Phenol	lb/hr	<0.29	<0.57	<0.33
Pyrene	lb/hr	<0.149	<0.139	<0.077
METALS IN LEACHATE				
Flyash		ND	ND	ND
Economizer ash		ND	ND	ND
Bottom ash		ND	ND	ND
Bottom ash water		ND	ND	ND
ORGANICS IN ASH		ND	ND	ND

ND - not detected

The principal findings of the trial burn test program are summarized as follows:

1. DRE was greater than 99.999% for all tests. Thus, the principal objective of the project, i.e., to demonstrate DREs in excess of 99.99% was achieved.

2. The average DRE for the reduced load tests (99.99953%) was virtually the same as the average DRE for the full load tests (99.99963%). Thus, the objective of the project to demonstrate acceptable DREs (>99.99%) over the range of unit operating loads was accomplished.

3. The carbon monoxide and benzene emission monitoring data collected during the tests are indicative of complete combustion. Thus, these data support the observed high DREs.

4. Indicated emissions of phenol and pyrene during the full load tests when the unit was burning a coal-waste mixture are similar to the indicated emissions of phenol and pyrene during the full load test when the unit was burning only coal. (Indicated emissions of phenol during two out of three full load tests when the unit was burning a coal-waste mixture are slightly higher than phenol emissions during the full load test when the unit was burning only coal. Pyrene emissions during two out of three of the full load tests when the unit was burning a coal-waste mixture are slightly lower than pyrene emissions during the full load baseline test when the unit was burning only coal.)

5. Phenol, pyrene, and benzene were not detected in any ash or bottom ash sluice water samples collected during the tests. This is consistent with the high DREs, low gaseous hydrocarbon emission measurements, and absence of evidence of incomplete combustion observed during the trial burn tests.

6. Unit operating conditions, such as furnace pressure, furnace excess oxygen, and air heater temperatures during the full load tests when the unit was burning a coal-waste mixture were representative of typical operating conditions of the unit, as indicated by their similarity to operating conditions during the full load baseline test. It is KEA's opinion that the DREs and emissions observed during the trial burn tests are representative of DREs and emissions which would be expected during future incineration of the waste material under similar unit operating conditions.

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2.0 TRIAL BURN TEST METHODOLOGY

The trial burn tests were performed in substantive accordance with the "Trial Burn Test Protocol for Incineration of Contaminated Soils at George Neal Generating Station Unit Nos. 1 and 2," [ref.1] as described in the following sections of this report.

Overview

A total of seven trial burn tests were performed during the period April 23 through April 26, 1990. Each trial burn test consisted of a series of measurements and tests performed in accordance with the methodologies described in the following paragraphs.

The first of the seven trial burn tests was a baseline test conducted to evaluate the testing protocol and to establish baseline conditions with the unit at full load burning only coal. A coal-waste material mixture was burned in the unit during the last six tests. The unit was operated at approximately full load during tests 2, 3, and 4, and at reduced load during tests 5, 6, and 7.

Samples were collected, measurements were made, or data were collected for the following parameters during each of the seven trial burn tests.

- Unit operating parameters - data collected
- Coal and coal-waste material - samples and data (e.g., feed rates) collected
- Ash and bottom ash water - samples collected
- Emissions - samples collected and/or measurements made
  - Particulate
  - Hydrocarbons (phenol, pyrene, benzene)
  - Carbon dioxide, carbon monoxide, and oxygen
- Destruction and removal efficiency - measurements made

Test program supervision and the collection of certain data and samples were performed by personnel of KEA. Mr. Walter Gray of KEA served as manager of the trial burn test program. KEA personnel recorded unit operating parameter data and monitored carbon dioxide (CO_2), carbon monoxide (CO), and oxygen (O_2) emissions. Coal and coal-waste material samples, and ash and bottom ash water samples were collected by IPS personnel, who also provided data on the amount of coal (Test No. 1) and coal-waste mixture (Test Nos. 2 through 7) hoisted to the unit bunkers prior to the tests. Particulate and hydrocarbon emission samples and associated test measurements were

collected by personnel of Clean Air Engineering (CAE) under subcontract to KEA. Personnel of Tracer Technologies (Tracer), also under subcontract to KEA, performed the DRE tests.

Dates, approximate start and stop times, and approximate durations of the seven tests are shown in Table 1.

Table 1. Testing Schedule

Test Number	Description	Date(s)	Approx. Time Start-Stop[a]	Approx. Duration
1	Baseline - full load	4-23-90	18:03-20:20	2 hr
2	Coal-waste mix - full load	4-24-90	12:11-14:37	2 hr
3	Coal-waste mix - full load	4-24-90	16:41-19:08	2 hr
4	Coal-waste mix - full load	4-25-90	08:55-11:08	2 hr
5	Coal-waste mix - 50% load	4-25/26-90	21:40-00:03	2 hr
6	Coal-waste mix - 50% load	4-26-90	01:30-04:05	2 hr
7	Coal-waste mix - 50% load	4-27-90	20:37-23:05	2 hr

[a]/Start and stop times are for emission testing performed by CAE. DRE testing was generally begun approximately 10 min after the start of the CAE emissions testing and was ended approximately 10 min before the end of the CAE testing, for a total duration of approximately 2 hr corresponding to the duration of actual emission sampling performed by CAE. $CO/CO_2/O_2$ emission monitoring was generally begun coincident with or a few minutes before the start of the CAE emissions testing and was ended coincident with or a few minutes after the end of the CAE testing.

Descriptions of the test methodologies are presented in the following paragraphs.

Unit Operating Parameters

Unit No. 1 at the George Neal Station is equipped with three Babcock and Wilcox (B&W) cyclone furnaces, collectively rated at a steam generating capacity of 1.05×10^6 lb/hr at 1005 deg. F and 2075 psig. Each cyclone is served by a separate fuel feeder equipped with a fuel flow rate sensor. Fuel, crushed to approximately 4 mesh, is introduced to the burner along with primary combustion air to produce a swirling, cyclonic flame. Secondary combustion air is introduced above the burner to enhance cyclonic motion in the furnace where the flame temperature is approximately 3000 deg. F. Figure 1 is a schematic diagram of the unit. Additional description of Unit 1 is contained in ref. 1.

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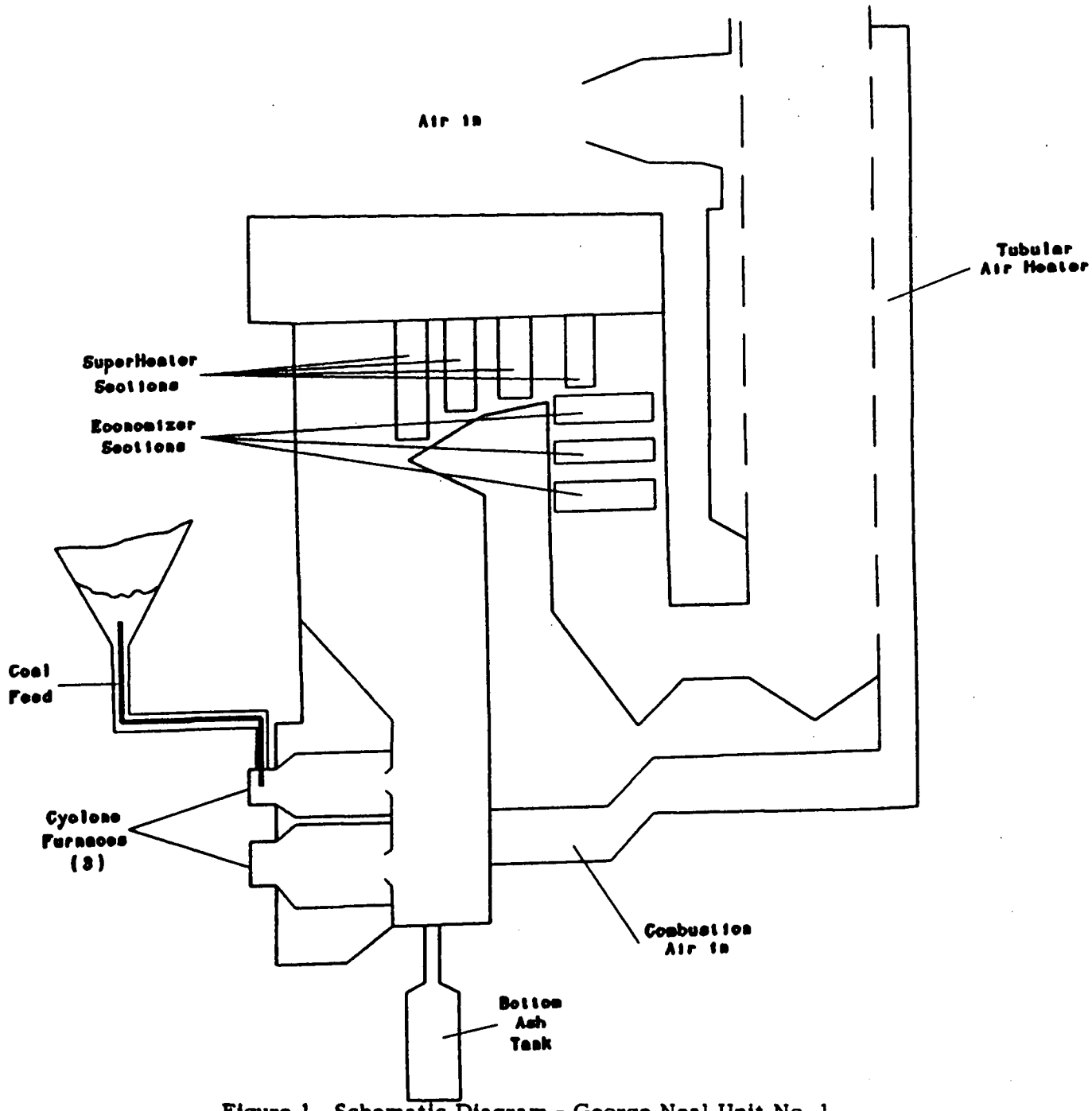

Figure 1. Schematic Diagram - George Neal Unit No. 1.

Data on the following operating parameters of the unit were collected during each trial burn test.

Table 2. Unit Operating Data Collected

Operating Parameter	Units
Load	
Gross	MWe
Net	MWe
Fuel feed rate	
Feeder A	10^3 lb/hr
Feeder B	10^3 lb/hr
Feeder C	10^3 lb/hr
Total	10^3 lb/hr
Percent	%
Temperatures	
Air heater - air in	deg. F
Air heater - air out	deg. F
Air heater - gas in	deg. F
Air heater - gas out	deg. F
Excess oxygen	
Right side	%
Left side	%
Air flow	%
Furnace pressure	in H_2O
Opacity	%

Three or four readings of each of these parameters were made from the boiler control panel displays during each test. The readings were recorded in the program manager's field log for the project. A copy of this log is included as Appendix A to this report.

Coal and Coal-Waste Material Feed Data

The blending of coal and waste material was conducted in accordance with the procedure described in ref. 1. A coal-waste material mixture consisting of 1 part waste to 20 parts coal was loaded into the "A" and "C" bunkers and burned in cyclones "A" and "C" during Test Nos. 2 through 7. Only coal was burned in the unit during baseline Test No. 1. IPS personnel kept records of the bunkering schedule and the amount of coal-waste mixture hoisted to the unit's bunkers during the test program.

Coal and Coal-Waste Material Sampling and Analysis

Coal samples (collected during Test No. 1) and coal-waste material samples (collected during Test Nos. 2 through 7) were collected from an access port located in the pipe between the "A" and "C" bunkers and the "A" and "C" coal feeders. See Figure 2. [The "B" bunker contained only coal during the tests. The "B" cyclone was not in operation during the reduced load tests.] Additional description of fuel sampling facilities is contained in ref. 1.

From two to four, approximately 5-lb samples were collected from each feeder at roughly equal intervals during each test. All samples were placed in moisture-impervious bags and labeled as to feeder and test number. All fuel sampling and sample bagging was performed by IPS personnel.

KEA personnel took possession of the fuel samples, along with sample-identifying chain-of-custody documentation, at the conclusion of the testing. The chain of custody sheets are included as Appendix B to this report. Sample compositing, other sample preparation, and sample analyses were performed by Commercial Testing and Engineering (CT&E) under contract to KEA. The four to eight field samples for each test were composited into a single analysis sample for that test. Each field sample collected during a given test was represented equally by weight in the analysis sample for that test. Instructions provided to CT&E regarding sample compositing and analysis, along with sample chain-of-custody sheets, are contained in Appendix C to this report.

All sample preparation and analysis was performed in accordance with standard methods of the American Society for Testing and Materials (ASTM). The analyses shown in Table 3 were performed.

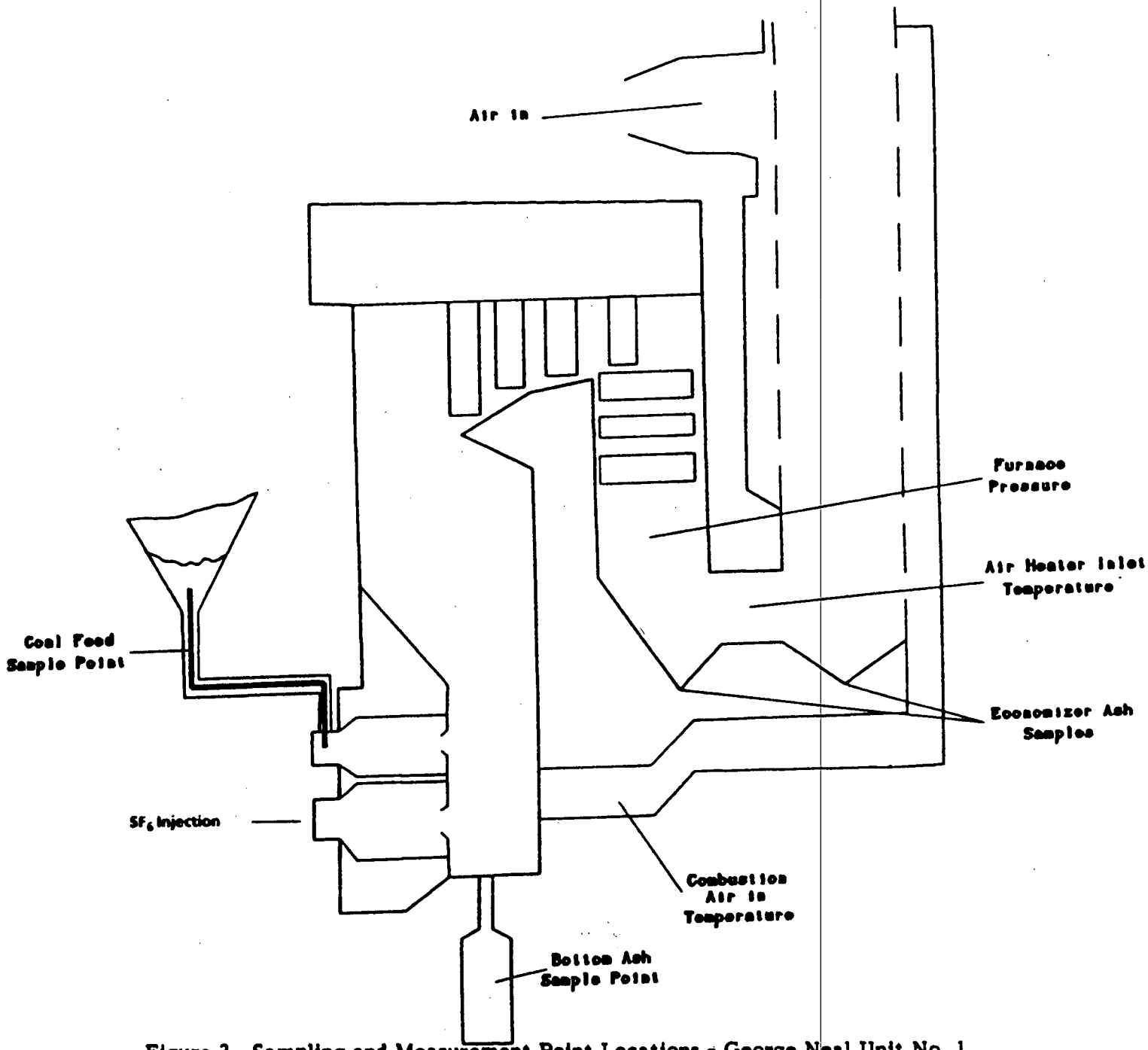

Figure 2. Sampling and Measurement Point Locations - George Neal Unit No. 1.

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Table 3. Analyses Performed on Coal and Coal-Waste Samples

Short Proximate Analysis (As Received and Dry Bases)	
Moisture	Sulfur
Ash	Moisture and Ash-free BTU
BTU	
Ultimate Analysis (As Received and Dry Bases)	
Moisture	Sulfur
Carbon	Ash
Hydrogen	Oxygen (by diff.)
Nitrogen	Total
Standard Metals	
Silicon dioxide	Potassium oxide
Aluminum oxide	Sodium oxide
Titanium oxide	Sulfur trioxide
Iron oxide	Phosphorus pentoxide
Calcium oxide	Strontium oxide
Magnesium oxide	Barium oxide
Manganese oxide	Undetermined (by diff.)
Calculated T250	
Ash Fusion Temperature	
Initial deformation	Softening
Hemispherical	Fluid

Ash and Bottom Ash Water Sampling and Analysis

Fly ash, economizer ash, bottom ash, and bottom ash sluice water samples were collected during each test. Fly ash samples were collected through inspection/cleaning ports located in the ash removal lines below the electrostatic precipitator (ESP) hoppers. Similarly, economizer ash samples were collected through inspection/cleaning ports located in the ash removal lines below the economizer ash hoppers. See Figure 2. ESP and economizer ash hoppers were completely emptied prior to the start of each test.

During each test, four, approximately 1-lb fly ash samples were collected from each of four ESP hoppers at roughly 20-min intervals during each test, resulting in sixteen fly ash samples per test. [Note: Because of the small amount of ash collected by the ESP

during the reduced load tests, only 8 fly ash samples were collected during Test No. 5 and only 14 fly ash samples were collected during Test No. 6.]

Eight, approximately 1-lb economizer ash samples were collected during each test — four from the North-side economizer ash hopper and four from the South-side economizer ash hopper.

Bottom ash is collected as slag in a water-filled tank located beneath the furnace of the unit. The slag in this tank is periodically crushed and removed pneumatically. Bottom ash and bottom ash water samples were collected through an access door to the crusher chamber. See Figure 2. Additional description of ash and bottom ash water handling systems and sampling facilities is contained in ref. 1. One bottom ash sample and one bottom ash sluice water sample[1/] were collected during each test.

All ash and bottom ash water samples were sealed in glass sample bottles and labeled as to sample location and test number. All sampling and sample labeling were performed by IPS personnel.

KEA personnel took possession of the ash and bottom ash water samples, along with sample-identifying chain-of-custody documentation, at the conclusion of the testing. The chain-of-custody sheets are included as Appendix D to this report.

Sample compositing, other sample preparation, and sample analysis were performed by Technical Testing Laboratories — a Division of Commercial Testing and Engineering — under contract to KEA. The various numbers of fly ash and economizer ash field samples collected during a given test were composited into one fly ash analysis sample and one economizer ash analysis sample for each test. Each field sample of a particular type of ash collected during a given test was represented equally by weight in the analysis sample of that type of ash for that test. Instructions provided to Technical Testing regarding sample compositing and analysis, along with sample chain-of-custody sheets, are contained in Appendix E of this report.

The ash and bottom ash water samples were analyzed for chemical constituents according to the analytical methods shown in Table 4.

1/ Two bottom ash water samples were collected during Test No. 2.

Table 4. Methods Used for Analysis of Ash and Bottom Ash Water Samples

Parameter	Method[a]
Organics[b]	
Benzene	SW8240
Phenol	SW8270
Pyrene	SW8270
Metals in EPTOX Leachate	
Arsenic	SW7060
Barium	SW7080
Cadmium	SW7130
Chromium	SW7190
Lead	SW7420
Selenium	SW7740
Silver	SW7760
Mercury	SW7470

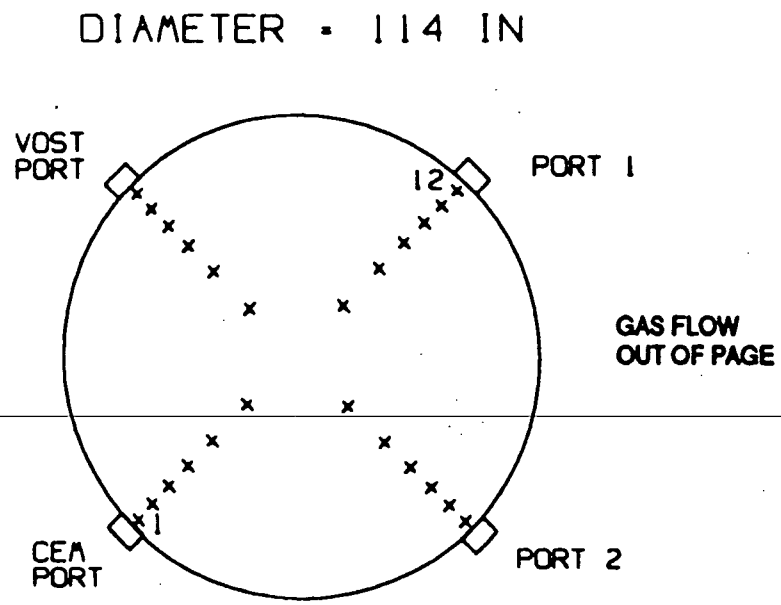
a Reference: US EPA. "Methods for Evaluating Solid Waste." SW-846 (2nd Ed.).

b Extraction by Method 3550 - Sonication.

Emission Sampling and Analysis

All emission sampling and DRE testing was conducted on a testing platform located at the 235 ft elevation on the Unit 1 stack. Stack diameter at the test platform elevation is 9.5 ft. Four test ports situated at 90° to each other are located at the testing elevation. Two ports (Ports 1 and 2) were used for particulate, metals, phenol, and pyrene sampling. A third port was used for benzene sampling. The fourth port was used for extraction of samples for $CO/CO_2/O_2$ monitoring and DRE testing. Figure 3 is a diagram of a cross section of the stack at the sampling location showing sampling point locations.

Particulate, metals, phenol, pyrene, and benzene sampling were performed in accordance with the EPA methods listed in Table 5.



TRAVERSE POINT	PORT TO POINT DISTANCE
1	111.6
2	106.4
3	100.5
4	93.8
5	85.5
6	73.4
7	40.6
8	28.5
9	20.2
10	13.5
11	7.6
12	2.4

Figure 3. Stack Cross Section Diagram.

Table 5. Emission Sampling Methods

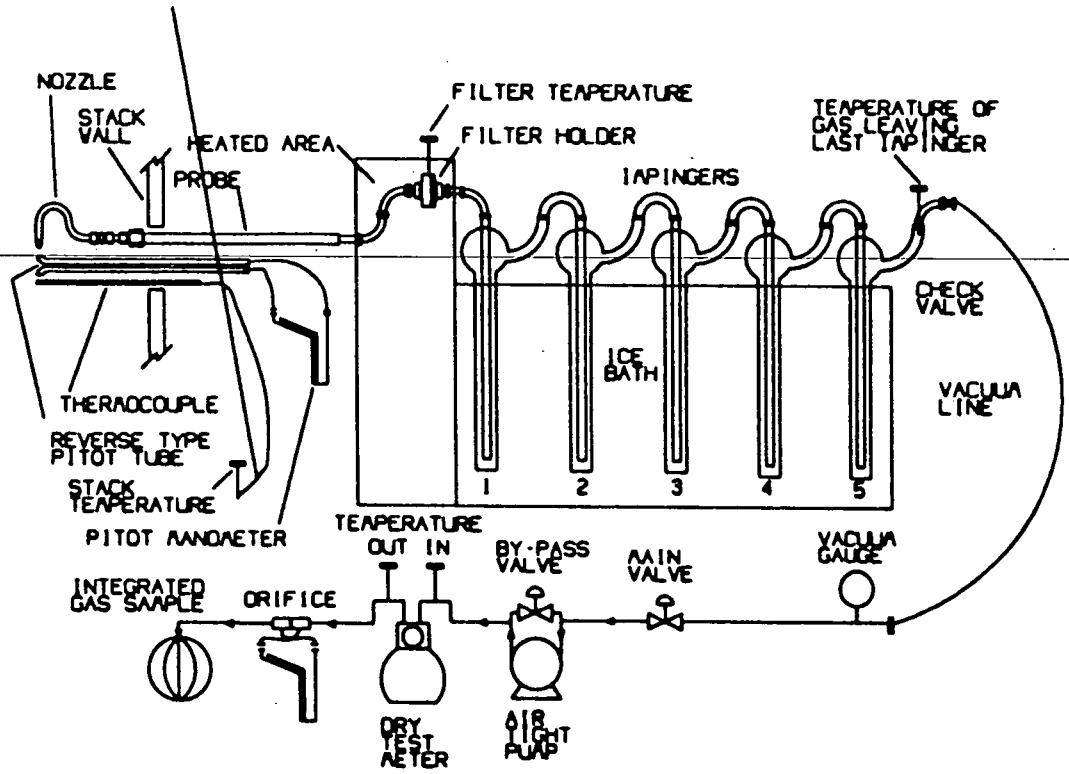
Method 1	"Sample and Velocity Traverses for Stationary Sources"
Method 2	"Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)"
Method 3	"Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight"
Method 4	"Determination of Moisture Content in Stack Gases"
Method 5	"Determination of Particulate Emissions from Stationary Sources"
Method 12 (Modified)	"Determination of Inorganic Lead Emissions from Stationary Sources (Modified for the determination of multi-metals)"
Method 101A	"Determination of Particulate and Gaseous Mercury Emissions from Sewage Sludge Incinerators"
SW-846 0010	"Determination of Destruction and Removal Efficiency of Semi-volatile Principal Organic Hazardous Constituents (POHC) from Incineration Systems"
SW-846 0030	"Volatile Organics Sampling Train (VOST)"

The particulate and metals sampling apparatus was assembled as shown in Figure 4. Twelve points per port were sampled during particulate and metals testing. The sampling time per point was 5 min for a total sampling time of approximately 120 min per test.

The phenol and pyrene sampling apparatus was assembled as shown in Figure 5. Twelve points were sampled twice in each port during phenol and pyrene sampling in Test No. 1. The sampling time was 4 min per point for a total sampling time of approximately 192 min during Test 1. For Test Nos. 2 through 7, 12 points were sampled per port. The sampling time was 7.5 min per point for a total sampling time of approximately 120 min for Test Nos. 2 through 7.

The Volatile Organics Sampling Train (VOST) used for benzene sampling was assembled as shown in Figure 6. A single point 3 ft into the stack was sampled for 20 min during each test.

All aspects of field sampling; sample recovery, preservation, and labeling (including chain-of-custody documentation); and instrument cleaning and calibration for particulate, metals, pyrene, phenol, and benzene sampling were performed by CAE personnel in substantive accordance with EPA guidelines in "Quality Assurance Manuals for Air Pollution Measurement Systems," Vol. 3, "Stationary Source Specific Methods"



IMPINGER CONTENTS:

1. H_2O_2/HNO_3
2. H_2O_2/HNO_3
3. $KMnO_4/H_2SO_4$
4. $KMnO_4/H_2SO_4$
5. SILICA GEL

Figure 4. EPA Method 5/12/101A Sampling Apparatus.

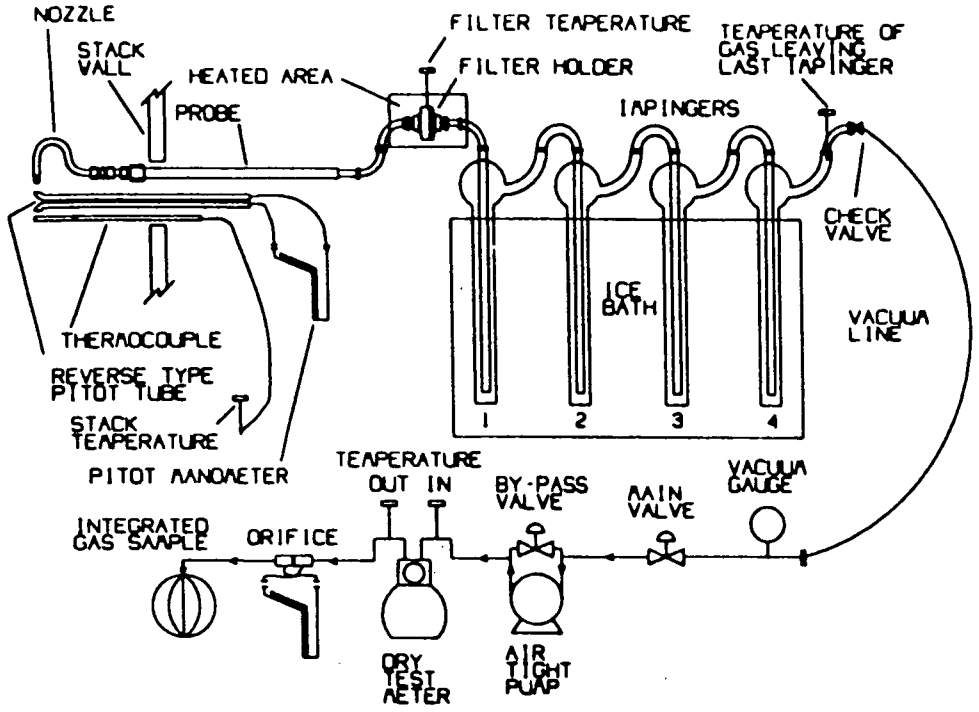


Figure 5. EPA Method SW-846 Method 0010 Sampling Apparatus.

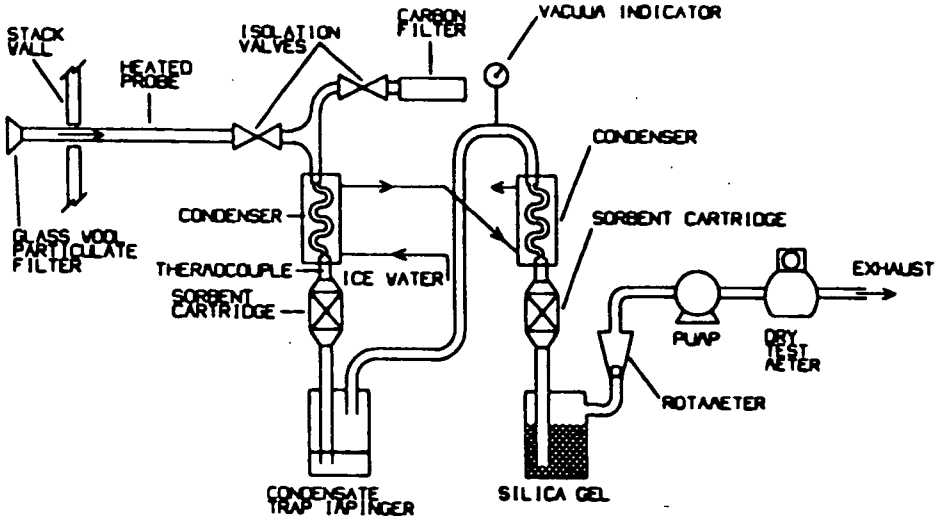


Figure 6. Volatile Organics Sampling Train (VOST).

(EPA-600/4-77-027b). All analysis of field samples was performed by or under subcontract to CAE in accordance with the analytical methods listed in Table 6.

Table 6. Methods Used for Analysis of Emission Samples

Parameter	Method
Organics	SW5040[a]
Metals	Atomic Absorption Spectroscopy

a Reference: US EPA. "Methods for Evaluating Solid Waste." SW-846 (2nd Ed.).

Carbon monoxide concentrations were determined in accordance with the requirements of EPA Method 10 - "Determination of Carbon Monoxide Emissions from Stationary Sources." Carbon dioxide and oxygen concentrations were determined in accordance with the requirements of EPA Method 3A - "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary sources (Instrumental Analyzer Procedure)."

The $CO/CO_2/O_2$ sampling and monitoring system consisted of a probe, calibration valve, heated sample line, sample conditioning system (particulate filter and moisture condenser), sample pump, Anarad Model AR50 CO analyzer, Anarad Model AR1200 O_2 analyzer, Horiba Model PIR-200 CO_2 analyzer, and digital data recorder, assembled as shown in Figure 7. Data were recorded as integrated 1-min concentrations of CO (ppm @ 3% O_2), and CO_2 and O_2, in %, over of the duration of each test.

Destruction and Removal Efficiency (DRE) Testing

The DRE testing involved injecting a surrogate material — sulfur hexafluoride (SF_6) — into the combustion zone of the furnace and measuring the remaining SF_6 concentration at the stack. Gaseous SF_6 was injected at a controlled rate of 4 lb/hr into the primary combustion air to the "C" cyclone. See Figure 2, p. 9. The injection flow rate was controlled by a Porter mass flow controller. A strip chart recorder was used to record the controller output to provide a continuous record of the SF_6 injection rates.

A gas chromatograph equipped with an electron capture detector was utilized for measuring the SF_6 concentration at the stack. Gas samples were obtained from a vent line from the $CO_2/CO/O_2$ monitoring system. See Figure 7. A three-point calibration of

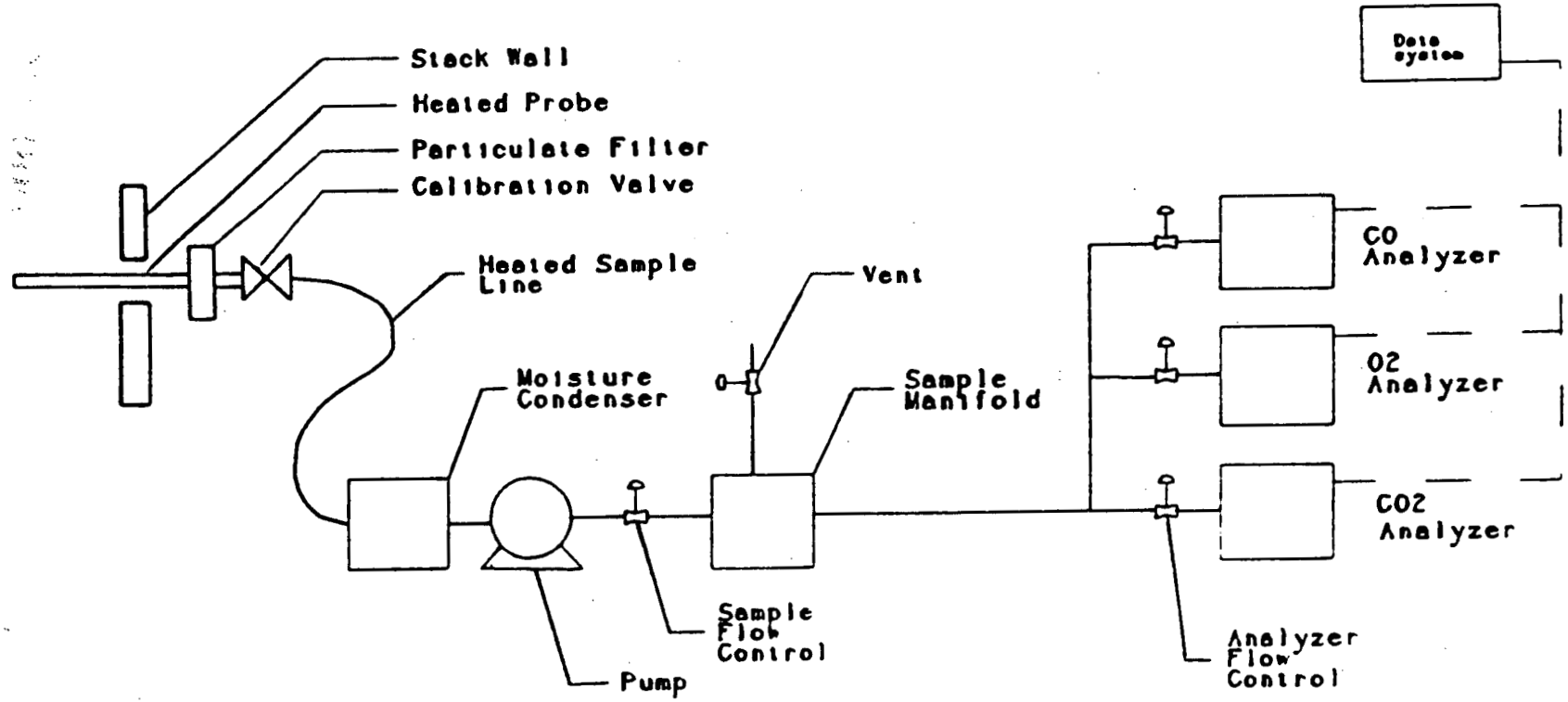


Figure 7. Schematic Diagram of $CO/CO_2/O_2$ Monitoring System

the chromatograph system was performed at the beginning of each test day using known-concentration SF_6 calibration gases, and a one-point calibration check was performed once every two hours during testing.

The SF_6 stack gas concentrations were recorded as continuous chromatograms over the duration of sampling for each test. These data were reduced to average SF_6 concentrations for each test. These averages were used to calculate an average DRE for each test.

3.0 RESULTS

Unit Operating Data

Unit operating data collected during the baseline test are shown in Table No. 6A. Unit operating data collected during the full load trial burn tests (Test Nos. 2 through 4), and unit operating data collected during the reduced load trial burn tests (Test Nos. 5 through 7), are shown in Tables 6B and 6C, respectively. Copies of the original field observations are contained in the field log for the project, which is included as Appendix A to this report.

Table 6 A. Unit Operating Data - Baseline Test

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn - Baseline Test

Date		4-23-90			
Test Number		Test No. 1			
Time		18:48	19:31	20:35	Average
UNIT OPERATING DATA					
Load					
Gross	MWe	140	140	139	139.7
Net	MWe	132	132	132	132.0
Fuel feed rate					
Feeder - A	10^3 lb/hr	50.3	50.2	50.3	50.3
Feeder - B	10^3 lb/hr	41	40.9	41.2	41.0
Feeder - C	10^3 lb/hr	50.4	50	49.9	50.1
Total	10^3 lb/hr	141.7	141.1	141.4	141.4
Percent	%	73	73	73	73.0
Temperatures					
Air heater - air in	deg F		96	94	95.0
Air heater - air out	deg F	421	419	425	421.7
Air heater - gas in	deg F	647	649	651	649.0
Air heater - gas out	deg F	332	334	335	333.7
Ambient	deg F	72	72	71	71.7
Excess oxygen					
Right side	%	3.3	3.3	3.3	3.3
Left side	%	2.7	2.8	2.9	2.8
Average	%	3	3.1	3.1	3.1
Air flow	%	66	66	66	66.0
Furnace pressure	in H2O	24.8	24.8	25	24.9
Barometric pressure	in Hg	28.49	28.74	28.75	28.7
Opacity	%	11.1	11.6	17	13.2

Table 6 B. Unit Operating Data – Full Load Tests

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn – Full Load Tests

Date / Test Number / Time		4-24-90 Test No. 2					4-24-90 Test No. 3				4-25-90 Test No. 4			
		12:07	12:55	13:47	14:53	Average	16:51	18:00	19:06	Average	09:30	10:20	11:21	Average
UNIT OPERATING DATA														
Load														
Gross	MWe	138	139	139	139	138.8	137	139	139	138.3	137	135	135	135.7
Net	MWe	130	131	131	131	130.8	129	130	132	130.3	130	128	128	128.7
Fuel feed rate														
Feeder – A	10^3 lb/hr	49.3	49.6	49.8	50.1	49.7	50	50	49.8	49.9	49.9	50.1	49.9	50.0
Feeder – B	10^3 lb/hr	39.3	40.9	41	40.9	40.5	40.8	40.9	40.6	40.8	39.7	39.7	39.7	39.7
Feeder – C	10^3 lb/hr	49.5	49.9	50.2	50.7	50.1	50.2	52	50.4	50.9	49.4	49.1	49.4	49.3
Total	10^3 lb/hr	138.1	140.4	141	141.7	140.3	141	142.9	140.8	141.6	139.0	138.9	139.0	139.0
Percent	%	72	73	72	72	72.3	72	72	72	72.0		72	67	69.5
Temperatures														
Air heater – air in	deg F	87	89	90	93	89.8	96	93	94	94.3	87	87	90	88.0
Air heater – air out	deg F	418	421	418	420	419.3	425	420	419	421.3	420	412	422	418.0
Air heater – gas in	deg F	645	648	645	645	645.8	645	645	644	644.7	639	642	638	639.7
Air heater – gas out	deg F	326	328	329	330	328.3	332	332	332	332.0	325	327	326	326.0
Ambient	deg F	64	67	68	70	67.3	71	73	72	72.0	64	64	67	65.0
Excess oxygen														
Right side	%	3.4	3.1	3.3	3.2	3.3	3.2	3.2	3.3	3.2	2.9	3.5	2.7	3.0
Left side	%	3.3	3.1	3.1	2.9	3.1	3.3	3.8	3.3	3.5	3.5	3.7	3.2	3.5
Average	%	3.4	3.1	3.2	3.1	3.2	3.3	3.5	3.3	3.4	3.2	3.6	3.0	3.3
Air flow	%	65	65	66	66	65.5	67	68	68	67.7	64	66	64	64.7
Furnace pressure	in H2O	24.5	24.3	24.6	23.7	24.3	24.3	24.5	24.2	24.3	23.6	24.7	22.1	23.5
Barometric pressure	in Hg	28.86	28.85	28.84	28.81	28.8	28.77	28.78	28.78	28.8	28.92	28.95	28.93	28.9
Opacity	%	8.1	12	10.9	26.6	14.4	13	13.9	11.7	12.9	13.8	25.1	19.7	19.5

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Table 6 C. Unit Operating Data – Reduced Load Tests

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn – Reduced Load Tests

Date		4-25-90 4-26-90					4-26-90				4-26-90			
Test Number		Test No. 5					Test No. 6				Test No. 7			
Time		21:48	22:34	23:34	00:23	Average	01:38	02:20	03:13	Average	20:47	22:09	22:54	Average
UNIT OPERATING DATA														
Load														
Gross	MWe	83	88	89	87	88.0	87	87	87	87.0	85	84	86	85.0
Net	MWe	79	82	83	82	82.3	81	81	82	81.3	80	79	80	79.7
Fuel feed rate														
Feeder – A	10^3 lb/hr	45.2	44.8	45.3	45.2	45.1	45.2	45.1	45.1	45.1	45	44.5	45.1	44.9
Feeder – B	10^3 lb/hr	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0
Feeder – C	10^3 lb/hr	45.7	45.3	45.8	45.9	45.7	45.6	45.7	45.5	45.6	44.7	44.7	45.3	44.9
Total	10^3 lb/hr	90.9	90.1	91.1	91.1	90.8	90.8	90.8	90.6	90.7	89.7	89.2	90.4	89.8
Percent	%	44	45	45	45	45.0	45	45	45	45.0	44	45	45	44.7
Temperatures														
Air heater – air in	deg F	92	90	89	89	89.3	88	88	88	88.0	94	92	91	92.3
Air heater – air out	deg F	384	379	379	376	378.0	380	379	383	380.7	389	379	377	381.7
Air heater – gas in	deg F	569	566	563	562	563.7	563	563	564	563.3	577	566	563	568.7
Air heater – gas out	deg F	291	288	286	284	286.0	283	284	284	283.7	298	289	287	291.3
Ambient	deg F	65	64	64	64	64.0	63	63	62	62.7	67	59	58	61.3
Excess oxygen														
Right side	%	3.4	3.5	3.4	3.6	3.5	3.6	3.6	3.8	3.7	3.2	3.2	3.1	3.2
Left side	%	3.2	3.4	3.2	3	3.2	3.1	3.8	3.4	3.4	3.6	3.3	3.4	3.4
Average	%	3.3	3.5	3.3	3.3	3.4	3.4	3.7	3.6	3.6	3.4	3.3	3 3	3.3
Air flow	%	44	46	45	45	45.3	45	45	45	45.0	44	44	44	44.0
Furnace pressure	in H2O	9.9	11	10.8	10.6	10.8	10.4	10.7	10.6	10.6	10.3	10.3	10.3	10.3
Barometric pressure	in Hg	28.93	28.92	28.91	28.89	28.9	28.87	28.86	28.83	28.9	28.83	28.83	28.83	28.8
Opacity	%	7	8.8	6.6	5.6	7.0	5.9	6.9	5.7	6.2	6.4	6.2	6.3	6.3

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Coal and Coal-Waste Feed Data

Table 7 shows the number of tons of coal-waste mixture which were hoisted to the Unit No. 1 bunkers prior to Test Nos. 2 through 7. The approximate amount of coal-waste mixture burned during each test is also shown in Table 7, based on the total fuel feed rates for all feeders, shown in Tables 6B and 6C, and 2-hr test durations. Coal-waste material bunkering logs are included as Appendix F to this report.

Table 7. Tons of Coal-Waste Mixture Bunkered and Burned During Trial Burn Tests

Date	Time Start	Time Stop	Fuel Hoisted to Bunkers (T)	Test No.	Fuel Burned (T)
4-23-90	21:30	23:55	602		
4-24-90	08:45	11:00	677		
4-24-90	12:11	14:37		2	140
4-24-90	16:41	19:08		3	142
4-24-90	20:50	23:55	625		
4-25-90	08:55	11:08		4	139
4-25-90	11:10	15:50	851		
4-25-90	18:55	20:50	465		
4-25/26-90	21:40	00:03		5	91
4-26-90	01:30	04:05		6	91
4-26-90	08:40	13:30	1071		
4-26-90	17:30	19:14	442		
4-26-90	20:37	23:05		7	90

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Coal and Coal-Waste Analysis Data

Results of proximate, ultimate, and ash fusion temperature analyses of coal and coal-waste mixture samples are shown in Table 8. Metals analyses of ashed coal and coal-waste samples are shown in Table 9. CT&E laboratory reports for analyses of all coal and coal-waste mixture samples are included as Appendix G to this report

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Table 8. Analysis of Fuel Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date		4-23-90		4-24-90		4-24-90		4-25-90		4-25/26-90		4-26-90		4-26-90	
Test Number		Test No. 1		Test No. 2		Test No. 3		Test No. 4		Test No. 5		Test No. 6		Test No. 7	
		As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis	As Received	Dry Basis
Proximate Analysis															
Moisture	%	19.34	xxxx	15.67	xxxx	19.36	xxxx	16.81	xxxx	19	xxxx	16.81	xxxx	17.75	xxxx
Ash	%	8.02	9.94	8.72	10.34	8.08	10.02	8.29	9.97	8.59	10.61	9.08	10.91	8.41	10.22
BTU	BTU/lb	9509	11789	9966	11818	9517	11802	9863	11856	9518	11750	9746	11715	9710	11805
Sulfur	%	0.38	0.47	0.4	0.47	0.41	0.51	0.41	0.49	0.42	0.52	0.47	0.56	0.45	0.55
M&AF BTU	BTU/lb	xxxx	13090	xxxx	13181	xxxx	13116	xxxx	13169	xxxx	13145	xxxx	13150	xxxx	13149
Ultimate Analysis															
Moisture	%	19.34	xxxx	15.67	xxxx	19.36	xxxx	16.81	xxxx	19	xxxx	16.81	xxxx	17.75	xxxx
Carbon	%	54.96	68.14	57.48	68.16	55.23	68.49	56.85	68.34	55.22	68.17	56.34	67.72	56	68.08
Hydrogen	%	3.71	4.6	3.91	4.64	3.8	4.71	3.88	4.66	3.73	4.61	3.84	4.62	3.77	4.58
Nitrogen	%	0.9	1.12	0.97	1.15	0.89	1.1	0.9	1.08	0.93	1.15	0.92	1.11	0.96	1.17
Sulfur	%	0.38	0.47	0.4	0.47	0.41	0.51	0.41	0.49	0.42	0.52	0.47	0.56	0.45	0.55
Ash	%	8.02	9.94	8.72	10.34	8.08	10.02	8.29	9.97	8.59	10.61	9.08	10.91	8.41	10.22
Oxygen (by diff)	%	12.69	15.73	12.85	15.24	12.23	15.17	12.86	15.46	12.11	14.94	12.54	15.08	12.66	15.4
Total	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100
Ash Fusion Temperature		Reducing	Oxidizing	Reducing	Oxidizing	Reducing	Oxidizing	Reducing	Oxidizing	Reducing	Oxidizing	Reducing	Oxidizing	Reducing	Oxidizing
Init. Deformation	deg F	2030	xxxx	2050	xxxx	2045	xxxx	2030	xxxx	2040	xxxx	2035	xxxx	2040	xxxx
Softening	deg F	2055	xxxx	2065	xxxx	2060	xxxx	2050	xxxx	2060	xxxx	2055	xxxx	2065	xxxx
Hemispherical	deg F	2065	xxxx	2080	xxxx	2075	xxxx	2065	xxxx	2085	xxxx	2090	xxxx	2075	xxxx
Fluid	deg F	2090	xxxx	2105	xxxx	2115	xxxx	2085	xxxx	2110	xxxx	2115	xxxx	2100	xxxx

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Table 9. Metals Analysis of Ashed Fuel Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date Test Number		4-23-90 Test No. 1	4-24-90 Test No. 2	4-24-90 Test No. 3	4-25-90 Test No. 4	4-25/26-90 Test No. 5	4-26-90 Test No. 6	4-26-90 Test No. 7
METALS								
Silicon dioxide	%	37.65	38.43	37.70	37.53	37.59	37.70	36.11
Aluminum oxide	%	17.80	17.51	17.38	17.12	17.66	17.70	17.17
Titanium dioxide	%	0.92	0.90	0.91	0.87	0.83	0.91	0.93
Iron oxide	%	6.53	6.93	7.12	6.97	7.43	7.54	7.93
Calcium oxide	%	21.55	20.96	21.36	21.22	20.81	19.78	21.10
Magnesium oxide	%	3.39	3.28	3.39	3.84	3.18	3.17	3.22
Potassium oxide	%	0.88	0.94	0.90	0.84	0.92	0.91	0.80
Sodium oxide	%	0.97	0.98	1.00	1.04	0.86	0.89	0.90
Sulfur trioxide	%	6.05	6.62	5.83	8.19	7.14	7.48	8.50
Phosphorus pentoxide	%	0.90	0.86	0.90	0.93	0.87	0.84	0.80
Strontium oxide	%	0.34	0.31	0.32	0.33	0.32	0.31	0.30
Barium oxide	%	0.33	0.32	0.35	0.38	0.35	0.28	0.34
Manganese oxide	%	0.12	0.09	0.10	0.09	0.11	0.10	0.12
Undetermined	%	2.57	1.87	2.74	0.65	1.93	2.39	1.78
T(250)	deg F	2251	2256	2245	2241	2250	2260	2234

Ash and Bottom Ash Water Analysis Data

Results of the analysis of fly ash samples (Table 10), economizer ash samples (Table 11), bottom ash samples (Table 12), and bottom ash water samples (Table 13) for organics and metals in EPTOX leachate are shown in Tables 10 through 13. Technical Testing Laboratories' laboratory analysis reports are included as Appendix H to this report.

Table 10. Analysis of Fly Ash Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date		4-23-90		4-24-90		4-24-90		4-25-90		4-25/26-90		4-26-90		4-26-90	
Test Number		Test No. 1		Test No. 2		Test No. 3		Test No. 4		Test No. 5		Test No. 6		Test No. 7	
	MDL*	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery
ORGANICS															
Benzene	.63 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogate															
Toluene-d8			91		92		97		98		95		101		93
Phenol	.66 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogate															
Phenol-d6			25		10		15		10		26		36		43
Pyrene	.66 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogates															
2-Fluorophenyl			21		17		12		13		23		49		42
Terphenyl-d14			NR		NR		NR		NR		NR		NR		NR
METALS IN EPTOX LEACHATE															
Arsenic	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Barium	50 mg/L	ND		2.8		ND		ND		ND		ND		ND	
Cadmium	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Chromium	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Lead	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Selenium	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Silver	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Mercury	0.0005 mg/L	ND		ND		ND		ND		ND		ND		ND	

* method detection limit

ND - not detected at concentration greater than or equal to MDL.

NR - surrogate was not recovered

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Table 11. Analysis of Economizer Ash Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date / Test Number		4-23-90 Test No. 1		4-24-90 Test No. 2		4-24-90 Test No. 3		4-25-90 Test No. 4		4-25/26-90 Test No. 5		4-26-90 Test No. 6		4-26-90 Test No. 7	
	MDL*	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery
ORGANICS															
Benzene	.63 ug/g	ND		ND		1.4		ND		ND		ND		ND	
Surrogate Toluene-d8			95		92		94		97		103		94		103
Phenol	.66 ug/g	ND		ND		1.1		ND		ND		ND		ND	
Surrogate Phenol-d6			35		30		56		59		48		17		53
Pyrene	.66 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogates 2-Fluorophenyl			39		45		50		48		45		17		64
Terphenyl-d14			NR		NR		3		NR		NR		NR		NR
METALS IN EPTOX LEACHATE															
Arsenic	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Barium	50 mg/L	ND		ND		ND		ND		ND		ND		ND	
Cadmium	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Chromium	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Lead	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Selenium	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Silver	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Mercury	0.0005 mg/L	ND		ND		ND		ND		ND		ND		ND	

* method detection limit

ND - not detected at concentration greater than or equal to MDL.

NR - surrogate was not recovered

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Table 12. Analysis of Bottom Ash Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date / Test Number		4-23-90 Test No. 1		4-24-90 Test No. 2		4-24-90 Test No. 3		4-25-90 Test No. 4		4-25/26-90 Test No. 5		4-26-90 Test No. 6		4-26-90 Test No. 7	
	MDL*	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery	Result	% Recovery
ORGANICS															
Benzene	.63 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogate Toluene-d8			104		95		92		96		93		92		95
Phenol	.66 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogate Phenol-d6			56		48		68		45		76		25		62
Pyrene	.66 ug/g	ND		ND		ND		ND		ND		ND		ND	
Surrogates 2-Fluorophenyl			65		77		86		61		93		69		94
Terphenyl-d14			68		62		85		68		102		77		66
METALS IN EPTOX LEACHATE															
Arsenic	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Barium	50 mg/L	ND		ND		ND		ND		ND		ND		ND	
Cadmium	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Chromium	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Lead	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Selenium	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Silver	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Mercury	0.0005 mg/L	ND		ND		ND		ND		ND		ND		ND	

* method detection limit

ND - not detected at concentration greater than or equal to MDL.

NR - surrogate was not recovered

Table 13. Analysis of Bottom Ash Water Samples

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date / Test Number		4-23-90 Test No. 1		4-24-90 Test No. 2		4-24-90 Test No. 3		4-25-90 Test No. 4		4-25/26-90 Test No. 5		4-26-90 Test No. 6		4-26-90 Test No. 7	
	MDL*	Result	% ecovery	Result	% ecovery	Result	% ecovery	Result	% Recovery	Result	% ecovery	Result	% ecovery	Result	% ecovery
ORGANICS															
Benzene	10 ug/L	ND		ND		ND		ND		ND		ND		ND	
Surrogate Toluene-d8			107		110		108		109		106		110		111		110
Phenol	50 ug/L	ND		ND		ND		ND		ND		ND		ND	
Surrogate Phenol-d6			25		26		30		28		23		34		23		25
Pyrene	50 ug/L	ND		ND		ND		ND		ND		ND		ND	
Surrogates 2-Fluorophenyl			59		82		90		83		84		97		92		68
Terphenyl-d14			53		85		87		92		77		95		79		66
METALS IN EPTOX LEACHATE															
Arsenic	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Barium	50 mg/L	ND		ND		ND		ND		ND		ND		ND	
Cadmium	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Chromium	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Lead	0.5 mg/L	ND		ND		ND		ND		ND		ND		ND	
Selenium	0.2 mg/L	ND		ND		ND		ND		ND		ND		ND	
Silver	0.1 mg/L	ND		ND		ND		ND		ND		ND		ND	
Mercury	0.001 mg/L	ND		ND		ND		ND		ND		ND		ND	
pH		8.76		7.93		7.65		7.42		7.66		7.78		8.5		7.57	

* method detection limit

ND - not detected at concentration greater than or equal to MDL.

NR - surrogate was not recovered

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Results of Emissions and DRE Testing

Results of $CO/CO_2/O_2$ monitoring, particulate testing, hydrocarbon (benzene, phenol, and pyrene) testing, and DRE testing are summarized in Table 14. Printouts of $CO/CO_2/O_2$ monitoring data are included as Appendix I to this report. A selfstanding, two-volume report prepared by CAE on the particulate and hydrocarbon testing is included as Appendix J to this report, and a selfstanding report prepared by Tracer Technologies on the DRE testing is included as Appendix K to this report.

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Table 14. Emissions and DRE Testing Data

Client	Iowa Public Service Company
Station	George Neal
Unit Number	Unit 1
Test Designation	Trial Burn Tests

Date Test Number		4-23-90 Test No. 1	4-24-90 Test No. 2	4-24-90 Test No. 3	4-25-90 Test No. 4	4-25/26-90 Test No. 5	4-26-90 Test No. 6	4-26-90 Test No. 7
DESTRUCTION AND REMOVAL EFFICIENCY	%	>99.99942	99.99955	99.99972	99.99963	99.99955	99.99964	99.99939
GAS CONCENTRATIONS								
Carbon monoxide	ppm	86.3	43.6	48.3	80.3	41.2	67.4	174
Carbon dioxide	%	15.3	14.9	14.1	14.2	13.7	14.1	13.8
Oxygen	%	4	4	4.3	3.8	4.6	4.5	4.6
GAS CONDITIONS								
Temperature	deg F	340	340	340	330	299	296	305
Moisture	%	11.5	11.3	10.9	11.3	10.9	11.1	10.3
VOLUMETRIC FLOW RATE	dscfm	249000	478900	459600	459000	317700	315000	306000
PARTICULATE	gr/dscfm	0.1565	0.0855	0.1658	0.1138	0.0314	0.0325	0.0528
	lb/hr	334	195	366	264	50.5	52	81.6
HYDROCARBONS								
Benzene	mg/dscm	0.0011	0.0033	0.0034	0.0042	0.0013	0.0008	0.0010
	lb/hr	0.0011	0.0032	0.0033	0.0041	0.0009	0.0005	0.0006
Phenol	g/sec	<* 0.0366	<* 0.0443	< 0.0276	<** 0.1435	<** 0.1128	<* 0.0064	<* 0.0054
	lb/hr	< 0.29	< 0.352	< 0.219	< 1.139	< 0.895	< 0.051	< 0.043
Pyrene	g/sec	<* 0.0188	<* 0.0213	<* 0.0158	<** 0.0156	<* 0.0199	<* 0.0050	<* 0.0041
	lb/hr	< 0.149	< 0.1691	< 0.1254	< 0.1238	0.1580	0.0397	0.0325

* – not detected

** – estimated

000038

-6906

Principal Findings

The principal findings of the trial burn test program are summarized as follows:

1. DRE was greater than 99.999% for all tests. Thus, the principal objective of the project, i.e., to demonstrate DREs in excess of 99.99% was achieved.

2. The average DRE for the reduced load tests (99.99953%) was virtually the same as the average DRE for the full load tests (99.99963%). Thus, the objective of the project to demonstrate acceptable DREs (>99.99%) over the range of unit operating loads was accomplished.

3. The carbon monoxide and benzene emission monitoring data collected during the tests are indicative of complete combustion. Thus, these data support the observed high DREs.

4. Indicated emissions of phenol and pyrene during the full load tests when the unit was burning a coal-waste mixture are similar to the indicated emissions of phenol and pyrene during the full load test when the unit was burning only coal. (Indicated emissions of phenol during two out of three full load tests when the unit was burning a coal-waste mixture are slightly higher than phenol emissions during the full load test when the unit was burning only coal. Pyrene emissions during two out of three of the full load tests when the unit was burning a coal-waste mixture are slightly lower than pyrene emissions during the full load baseline test when the unit was burning only coal.)

5. Phenol, pyrene, and benzene were not detected in any ash or bottom ash sluice water samples collected during the tests. This is consistent with the high DREs, low gaseous hydrocarbon emission measurements, and absence of evidence of incomplete combustion observed during the trial burn tests.

6. Unit operating conditions, such as furnace pressure, furnace excess oxygen, and air heater temperatures during the full load tests when the unit was burning a coal-waste mixture were representative of typical operating conditions of the unit, as indicated by their similarity to operating conditions during the full load baseline test. It is KEA's opinion that the DREs and emissions observed during the trial burn tests are representative of DREs and emissions which would be expected during future incineration of the waste material under similar unit operating conditions.

4.0 REFERENCES

1. Trial burn test protocol for incineration of contaminated soils at George Neal Generating Station Unit Nos. 1 and 2. Prepared for Iowa Public Service Co. Prepared by Walter C. Gray, Jr., Kilkelly Environmental Associates. Report No. 132-I345-09/18/89-01F.

APPENDIX A

Iowa Public Service Neal #1 - Trial Burn Field Log

-R900

Composition Book

Iowa Public Service

Neal #1 - Trial Burn

Field Log

80 SHEETS 10 x 7⅞

COLLEGE RULED/MARGIN

AMPAD CORPORATION

Holyoke, MA 01040 • Made in U.S.A.

26-252

0 74319 26252 7

000042

IPS [illegible]

Field Log

George Neal #1

KEA Proj. # - I 345

IPS Proj # - 08158

Boiler

B&W Contract # RB377

April 19, 1990 - Pre-test site visit -

→ check sampling location for
- power
- clearance
- platform width

→ site safety officer
Sam Nelson
Todd Van Diepen
we will get site safety plan for review

→ Ash Samples
MAA { 5 → 10% carbon ~ normal to high
< 5% normal
submitting ash samples for LOI's.
expect results Apr. 20th A.M.

→ Plant operating Parameters: for computer output
load (gross & net)
excess O_2
furnace pressure
fuel feed rate
air flow rate
Pri. air temp
~~windbox pressure~~ Windbox pressure
steam flow

trend 1 every 5 min, 1 hr avg, hi-lo for hour

- samples to be taken by IPS

coal - as-fired once per hour
economizer ash - every 15 min, composite for run
ESP (front hopper) - every 15 min, composite for run
~~bottom~~ ash - once per test, to include H_2O

analysis - LOI (?) - Not Required -
EP Toxicity
Pyrene
Phenol
Benzene

Sam has requested that we (KEA)

To Do

- ✓ Walk down boiler
  - ✓ check instrument calibrations
    talk to people collecting ash
    discuss sample storage
    check on maint. rules for equip. set-up (SF_6 inject)

route

- all instruments have been triple calibrated within past week

site

- general observations
-

plant personnell have done an excellent job of preparing the unit for trial burn. All equipment appears in good working condition and calibrations have been recently performed on all scales and sensors.

Saftey considerations are adequate for the material without being unreasonable or cumbersome.

Call has been made to Pat McDonald to check on status of Protocol revisions.

During testing WCG will be coordinating contrasted sample collection activities with Sam Nelson (mid → noon) or Tod VanDeusen (noon-mid). Also, all questions/discussions with observers will involve either of the two of them as practical

- Load Control has been notified of anticipated schedule of testing.

4-20-90 Pre-test site inspection (cont.)

- Sam Nelson has spoken with Pat McDonald (EPA)
  - there were no questions about the revisions as of 4-19-90 P.M.,
  - if any should come up he will call us today.

- Operator schedule for sample collection has been approved - these operators will be available all week for the full test day. Plans have been made to discuss sample collection, storage, labelling, etc. with them Monday 4-23-90 before practice/blank test starts.

- Ports on stack to be opened and cleaned today.

✓ → Tell Todd about potential for obscuring/interfering with transmissometer sight path during testing! Sample ports may intersect with trans. sight path.

- Per Todd VanDuyen there is no problem with Tracer Test making connections to boiler for SF_6 injection, so long as its their equipment.

- sample custody sheets ready for ash samples have some ready for organics if CAE doesn't bring any.

- reservations made for Motel 6 week of 4-22 to 4-28

→ In control room, identify location of
- load displays
- fuel and air flow rates
- hot air temp
- windbox pressure
- boiler pressure
- superheat tube metal temps (?)
- O_2
- opacity
-

To Do - Monday (4-23-90)

✓ - show test crew around site
✓ - set-up equipment
- meet with operators
not needed - pick-up radios
- check unit status
- make sure waste and fuel hoist weights are recorded during night
✓ - review QA/QC objections with CAE.
= find out if they have

4-23-90

KEA - onsite 7:30
CAE - onsite 8:45
TT - onsite 9:00

begin set-up of instruments - eventually all ready by 1030 except for calibrations, waiting for instruments to stabalize (warm-up)

Travis Tech picked up remainder of equipment and set-up injection hardware and GC/ESD. Ready about 1130. Only pre-test cal. check required/remaining.

CAE setting up equip. most of day, rain delay of start-up, high wind damaged some glass-ware.

Unit load up @ ~ 4:45 some problems with flame sensors indicating instability - beginning to fire nat. gas for stabalization

sample labelling and QA explained to plant people

Test begun @ 5:30 P.M.
sampling started 6:00 PM

Test # 1 - Blank - no waste feed

Time / Operating data

1848 Gross load - 140 mw
Net load - 132 mw

A - feeder 50.3 mlb/hr
B - feeder 41.0
C - feeder 50.4

Furnace Pres. 29.8 in Hg

Air Out (of Air Htr) 421 °F
Gas In 647
Gas Out 332

R. O_2 - 3.3% } Avg 3.0%
L. O_2 - 2.7

opacity - 11.1%

Tot. Air flow 66%
Tot. fuel flow - 73%

Amb. Temp 72 °F

~~A gas flow = 4 KH/hr~~ only when main fuel

B.P. 28.49 " Hg

Test #1 - 130 MW_{net} - no waste

preliminary SF_6 results indicate zero presence (i.e. below detection limits of 10 ppt), also no organics seen in background at this time on GC/ECD

unit operation steady with no unusual load swings (1-2 MW), cyclone flames medium density, able to see far side of cyclone.

fly-ash samples are fine powder with a medium gray coloration

economizer ash samples are pebble like in consistency, with a mixed buff and medium gray coloration

bottom ash water relatively clear

final two SF_6 tests indicated ~ 5 ppt corresponding to ~ 99.999 DRE

coal/waste located @ about 2130, expect clean coal to be finished burning ~0930 4/24/90

left site 2200

Test #1 - Blank - no waste feed
Operating Data

Time: 1931 Total MW = 140
~~g~~ net Load = 132

Total Air flow = 66%
Total fuel flow = 73%
R O_2 = 3.3%
L O_2 = 2.8%

opacity: 11.6%

Furnace Press: 24.8 IN H_2O

A feeder ~~50.2~~
B feeder 40.9
C feeder 50.0

Hot air Out 419
Air In 96
Gas Out 334
Gas In 649

Amb 72

BP 28.74

Test #1 - Blank

Operating Data

Time: 2035 Gross Load 139
Net Load 132

Total Air flow 66%
Total fuel flow 73%

R - O_2 = 3.3 %
L - O_2 = 2.9 %

opacity = 17.0 %

furnace press. = 25.0

A feeder 50.3
B feeder 41.2
C feeder 49.9

Hot air Out 425
air in 94
Gas out 335
Gas in 651

Amb 71

B.P. 28.75

Vort - OK
MMS - OK, % 130 = 100.2 %
Part - OK, % 130 = 101.6 %

field calc. DRE_{SF_6} = 99.9994 %

comments: testing progressed relatively smoothly after set-up was completed. There was some confusion on CAE's part during set-up (which took considerably longer than I would have expected with 6 people on-site) but settled into a reasonably good routine.

Tracer Tech. sampling performance appears to be very good. No apparent problems with any of their equipment or calibrations.

4-24-90

on-site 0910

equipment calibrated and CO interference scrubbers recharged

coal/waste heated @ about 0930 - 1100

all testing ready to begin @ 1200

stack flow during blank test = 249,891 SCFM

Test #2 - 137 MW gross (130 MW net)
waste/fuel ratio 1:20
start time : 1200
MMS/VOST/part. start @ 1205

Stephanie Doolan Tetra Tech

several people from IPS/Midwest Gas (including lawyer) taken on short tour of SO_2 injection equipment and coal handling.

discussed boiler and operations with Stephanie and conducted detailed tour (top to bottom)

completed test #2 @ ~1510

Test # 2 Unit Operating Data
-waste burned-

Time: 1207
gross load: 138 MW
net load: 130

Total air flow: 65%
total fuel flow: 72

left O_2: 3.4%
right O_2: 3.2%
Opacity 8.1%

furnace press. 24.5 in Hg

Air in: 87°F
Air out: 418

gas in: 645°F
gas out: 326

A feeder 49.3 M lb/hr
B feeder 39.3
C feeder 49.5

Amb. Temp: 64°F
B.P. 28.86 in Hg

Test #2 Operating Data

Time 12:55

gross load: 139
net load: 131

Total air flow: 65
Total fuel flow: 73

left O_2: 3.1
right O_2: 3.1

opacity: 12.0

furnace pressure: 24.3

Air in: 89
Air Out: 421

Gas in: 648
Gas out: 328

A feeder: 19.6
B feeder: 40.9
C feeder: 49.9

Amb Temp: 67
B.P. 28.85

Test #2 Operating Data

Time: 1347
gross load: 139
net load: 131

Total airflow: 66
Total fuel flow: 72

left O_2: 3.3
right O_2: 3.1

Opacity: 10.9

furnace press: 24.6

air in: 90
air out: 418
gas in: 645
gas out: 329

A feeder 49.8
B feeder 41.0
C feeder 50.2

Amb T.: 68
B.P.: 28.84

8090 -

Test #2 Operating Data

Time 14:53

gross load : 139
net load : 131

Total air flow : 66
Total fuel flow : 72

left O_2 : 3.2
right O_2 : 2.9

opacity : 26.6

furnace pres. : 23.7

air in : 93
air out : 420
gas in : 645
gas out : 330

A feeder : 50.1
B feeder : 40.9
C feeder : 50.7

Amb. T : 70
B.P. : 28.81

– comments on test #2 –

all testing proceeded with no problems, ash samples collected @ 30 min intervals and ~~tabl~~ logged

initial rough calculations for SF_6 DRE indicate 99.999+% using Q_{SM} = 250,000 DSCFM

unit operation was steady during test with no large swings in any of the monitored parameters

KEA instruments: no zero drift indicated
CO_2 = +0.1% span drift
CO/O_2 = no indicated span drift

occaisional opacity spikes, not attributable to operating problems.

flame intensity about same as test #1

field calculated DRE = 99.9997

test # 3 – with waste @ ~~20mt~~ 1:20 ratio
unit load : ~130 MW net
start delayed due to broken glass on MMS
train : ~~stop~~ began 1635

Coal sample taken @ ~1630

initial SF_6 below detection limits (< 1 ppt)

flame intensity about same as test #1

comments: testing proceeded with no problems, unit operation stable with occasional opacity spikes

all gas sampling equipment (MMS, MS, vent) passed leak checks

EPA observer witnessed sample recovery from both tests, indicated ~~that~~ there were no problems noted

ash and coal sample collection completed with no problems.

field calc. DRE = 99.9997

Test # 3 Operating Data

Time: 1651

Gross load: 137
Net load: 129

Total air flow: 67
Total fuel flow: 72

left O_2: 3.2
right O_2: 3.3

opacity: 13.0

air in: 96
air out: 425
gas in: 645
gas out: 322

A feeder: 50
B feeder: 40.8
C feeder: 50.2

Amb T: 71
B.P.: 28.77

Boiler pressure: 24.3

Test #3 Operating Data

Time 1800

Gross load: 139
net load: 130

boiler pressure: 29.5

Total air flow: 68
Total fuel flow: 72

left O_2: 3.2
right O_2: 3.8

Opacity: 12.9

air in: 92
air out: 420
gas in: 645
gas out: 332

A feeder: 50
B feeder: 40.9
C feeder: 52

Amb. T: 73

Bar. Press.: 28.78

Test #3 Operating Data

Time 1906

Gross load: 139
Net load: 132

Total air flow: 68
Total fuel flow: 72

left O_2: 3.3
right O_2: 3.3

opacity: 11.7

furnace pressure 24.2

air in.: 94
air out: 419

gas in: 644
gas out: 332

a feeder: 49.8
b feeder: 40.6
c feeder: 50.4

Amb. Temp: 72

Barpres.: 28.78

8060

4-25-90

onsite 0730 → recharge CO scrubber reagents

test #4 - 137 MW gross - 1:20 waste/fuel blend
begun 0830
ash sampling, SF_6 begins 0900

during test indications of load swing induced O_2 variations. Although changes were gradual total Δ was about 1% O_2 before settling out. O_2 swing may have been also caused by slight variations in waste to fuel ratio.

flame intensity very high and dense (i.e. cannot see back of cyclone) very hot white color

no problems during testing

check pump filters and reed valves

field calculated DRE = 99.99947

Test #4 Operating Data

Time: 0930

Gross load: 137
Net load: 130

Total air flow: 64
Total fuel flow:

left O_2: 2.9
right O_2: 3.5

opacity: 13.8

furnace pressure: 23.6

air in: 87
air out: ~~60~~ 420
gas in: 639
gas out: 325

a feeder: 49.9
b feeder: 39.7
c feeder: 49.4

Amb T: 64

Bar. Pres: 28.92

Test #4 Operating Data

Time: 1020

Gross load: 135
Net load: 128

Total Air flow: 66
Total fuel flow: 72

furnace pressure: 24.7

left O_2: 3.5
right O_2: 3.7

opacity 25.1

air in: 87
air out: 412
gas in: 612
gas out: 327

A feeder: 50.1
B feeder: 39.7
C feeder: 49.1

Amb T.: 64

Bar Pres: 28.95

Test # 4 Operating Data

Time: 1121

gross load 135
net load 128

total air flow : 64
total fuel flow : 71

left O_2 : 2.7
right O_2 : 3.2

furnace pressure : 22.1

opacity : 19.7

air in : 90
air out : 422
gas in : 636
gas out : 326

a feeder : 49.9
b feeder : 39.7
c feeder : 49.4

out T : 67

Bar Press : 26.93

Test #5 - with waste - 80 MW

delay start due to dispatch restrictions return this evening, anticipate 2100 start time

test #5 started 2135

coal samples 2120

ash samples 2200

SF_6 : 2200

no initial SF_6 detected

for second ash pull no ash in ESP hoppers 2;3;4 minimal in hopper 1; economizer hoppers are also low, 14 MCFH nat gas for flame stab.

EPA observer burned herself while taking fly ash samples, ops. people finished sample collection while she was @ hosp. Todd VanDrepen & WCG collected bottom ash and water samples for her.

Test ended @ ~0045

cyclone fines look good, medium density. good bottom ash tapping, no problems with emptying slag tank.

minimal ash collection due to reduced loads

no indicated operating swings or other process upsets

Test #5 - Operating Data

Time: 2148

gross load: 83
net load 79

total air flow: 44
total fuel flow: 44

left O_2 : 3.4
right O_2 : 3.2

furnace pressure: 9.9

opacity : 7.0

air in: 92
air out: 284
gas in: 569
gas out: 291

a feeder: 45.2
b feeder: 0
c feeder: 45.7

amb T: 65

Bar Pres: 28.93

Test #5 Operating Data

Time: 2234
Gross load: 88
net load: 82

Total air flow: 46
total fuel flow: 45

left O_2: 3.5
right O_2: 3.4

furnace pressure: 11.0

opacity 8.8

air in: 90
air out: 379
gas in: 566
gas out: 288

a feeder: 44.8
b feeder: 0
c feeder: 45.3

amb. Temp: 64

Bar. Pres: 28.92

Test #5 - Operating Data

Time: 2334
Gross load: 89
net load: 83

Total air flow: 45
Total fuel flow: 45

left O_2: 3.4
right O_2: 3.2

opacity: 6.6

furnace pressure: 10.8

air in: 89
air out: 379
gas in: 563
gas out: 286

a feeder: 45.3
b feeder: 0
c feeder: 45.8

amb Temp: 64

Bar Pres: 28.91

Test #5 - Operating Data

Time: 0032 (4-26-90)

Gross load: 87
net load: 82

Total air flow: 45
Total fuel flow: 45

left O_2: 3.6
right O_2: 3.0

opacity: 5.6

furnace pressure: 10.6

air in: 89
air out: 376
gas in: 562
gas out: 284

a feeder: 45.2
b feeder: 0
c feeder: 45.9

amb. temp: 64

Bar. press: 28.89

Test #6
1:20 waste to fuel blend
80 MW net generation

Testing begins 0130
coal sampling: 0130
ash sampling: 0200
SF_6 : 0200

no appreciable SF_6 detected

slag tapping well

~ 14 MCF/hr of nat gas fired for flame stabilization

no problems noted during test.

pelum DRE = 99.9994

Test # 6 Operating Data

Time 0138

Gross load : 87
Net load : 81

Total Air flow : 45
Total fuel flow : 45

left O_2 : 3.6
right O_2 : 3.1

opacity : 5.9

furnace pressure : 10.4

air in : 88
air out : 380
gas in : 563
gas out : 283

a feeder : 45.2
b feeder : 0
c feeder : 45.6

amb. Temp. : 63

Bar Pres. : 28.87

Test #6 Operating Data

Time: 0220

Gross load: 87
net load: 81

Total Air flow: 45
Total fuel flow: 45

left O_2: 3.6
right O_2: 3.8

opacity: 6.9

furnace pressure: 10.7

air in: 88
air out: 379
gas in: 563
gas out: 284

a feeder: 45.1
b feeder: 0
c feeder: 45.7

amb. temp: 63

Bar. press: 28.86

Test #7 - 80 MW, with waste

all inst. calibrated, no problem except for minimal flow on sampling system, changing filters to correct problem. Filter replacement solved problem

start test: 2030
coal sample: 2030
ash samples: 2100
SF_6: 21:00

O_2 upset @ ~ 9:45 with corresponding CO swings

no gas fired tonight

CO running about 160 ppm spiking to 280 ppm

~ 8 to 10 ppt SF_6 detected throughout test

DRE ~ 99.9996

Test 7 operating data

Time: 2047

Gross Load: 85
net load: 80

Total air flow: 44
Total fuel flow: 44

left O_2: 3.2
right O_2: 3.6

opacity: 6.4

furnace pressure: 10.3

air in: 94
air out: 389
gas in: 577
gas out: 298

a feeder: 45.0
b feeder: 0
c feeder: 44.7

amb. Temp: 67

Bar Press: 28.83

Test 7 Operating Data

Time: 2209

Gross load: 84
net load: 79

Total air flow: 44
Total fuel flow: 45

left O_2 : 3.2
right O_2 : 3.3

opacity: 6.2

furnace pressure: 10.3

air in: 92
air out: 379
gas in: 566
gas out: 289

a feeder: 45.5
b feeder: 0
c feeder: 44.7

amb. Temp. : 59

Bar press : 28.83

Test # 7 Operating Data

Time: 2254

Gross load: 86
net load: 80

Total air flow: 44
Total fuel flow: 45

left O_2: 3.1
right O_2: 3.1

opacity: 6.3

furnace pressure: 10.3

air in: 91
air out: 377
gas in: 563
gas out: 287

a feeder: 46.1
b feeder: 0
c feeder: 45.3

amb Temp: 58

Bar Press: 28.83

4-27-90

equipment off stack and packed by 1:30

ash and coal samples picked-up and put on truck. Tommy anticipates being back in Raleigh Sunday evening.

Tracer Tech expects to send report out by the end of next week

CAE organics and metals samples will go to lab on 30th. Report to follow 1+2 weeks after receipt of results from lab.

general: testing proceeded well with minimal process problems except as noted 4-26-90

prepare "test status" memo
1) review test status
2) results
3) general observations

APPENDIX B

Field Sample Custody Sheets for Fuel Samples

000085

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal / RUN NO. 1

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
25	I-345-C-1 A-silo Run #1		SM
26	I-345-C-1 C-silo Run #1		SM
27	I-345-C-2 A-silo Run #1		SM
28	I-345-C-2 C-silo Run #1		SM
29	I-345-BA-1 Bottom Run #1		[illegible]
30	I-345-BW-1 Bottom Run #1		[illegible]

Samples Recovered By

Date Samples Recovered 4-23-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal / RUN NO. 2

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
55	I-345-C-1 A-Silo Run#2	NA	ZN
56	I-345-C-1 C-Silo Run#2	"	ZN
57	I-345-C-2 A-Silo Run#2	"	ZN
58	I-345-C-2 C-Silo Run#2	"	ZN
59	I-345-C-3 A-silo Run#2	"	ZN
60	I-345-C-3 C-silo Run#2	"	ZN
61	I-345-C-4 A-silo Run#2	"	SN
62	I-345-C-4 C-silo Run#2	"	SN.

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-24-90

Date/Time /

Figure 7-2

000086

9069-

000087

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 3

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
93	I-345-C-1 A-silo Run #3	NA	SM
94	I-345-C-1 C-silo Run #3	"	SM
95	I-345-C-2 A-silo Run #3	"	SM
96	I-345-C-2 C-silo Run #3	"	SM
97	I-345-C-3 A-silo Run #3	"	SM
98	I-345-C-3 A-silo Run #3	"	SM

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-24-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 4

PROGRAM MANAGER: Alan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
125	I-345-C-1 A-SILO RUN 4	NA	BE
126	I-345-C-1 C-SILO RUN 4	"	BE
127	I-345-C-2 A-SILO RUN 4	"	BE
128	I-345-C-2 C-SILO RUN 4	"	BE
129	I-345-C-3 A-SILO RUN 4	"	BE
130	I-345-C-3 C-SILO RUN 4	"	BE.

Samples Recovered By Date Samples Recovered 4-25-90

Samples Received By W. Gray Date/Time /

Figure 7-2

000088

9069-

000089

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 5

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
157	I-345-C-1 A-SILO Run 5	NA	J.Y.
158	I-345-C-1 C-SILO Run 5	"	J.Y.
159	I-345-C-2 A-SILO Run 5	"	JJB
160	I-345-C-2 C-SILO Run 5	"	JJB
161	I-345-C-3 A-SILO Run 5	"	JE
162	I-345-C-3 C-SILO Run 5	"	JJB

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal I

RUN NO. 6

PROGRAM MANAGER: Dan Nelson

PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
189	I-345-C-1 A-Silo Run 6	NA	DE
190	I-345-C-1 C-Silo Run 6	"	DE
191	I-345-C-2 A-Silo Run 6	"	DE
192	I-345-C-2 C-Silo Run 6	"	DE
193	I-345-C-3 A-Silo Run 6	"	DE
194	I-345-C-3 C-Silo Run 6	"	DE

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-26-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 7

PROGRAM MANAGER: Dan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
221	I-345-C-1 A-silo Run 7	NA	JJB
222	I-345-C-1 C-silo Run 7	"	JJB
223	I-345-C-2 A-silo Run 7	"	JJB
224	I-345-C-2 C-silo Run 7	"	JJB
225	I-345-C-3 A-silo Run 7	"	JJB
226	I-345-C-3 C-silo Run 7	"	JJB

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-26-90

Date/Time /

Figure 7-2

APPENDIX C

Compositing and Analysis Instructions for Fuel Samples

KILKELLY ENVIRONMENTAL ASSOCIATES

P.O. Box 31265 • Raleigh, NC 27622 • 919-781-3150 • Telecopy 919-781-9524

May 3, 1990

Mr. Rick King
Commercial Testing and Engineering
5793 MacCorkle Ave., SE
Charleston, WV 25304

Dear Mr. King:

This letter provides instructions for the preparation, analysis, and reporting of results for 42 coal samples being delivered to your laboratory.

The samples should be composited into laboratory analysis samples according to the attached tables, which also serve as chain of custody documentation for this project. (Please advise me if any of the samples listed on the attached tables are not received at your laboratory.) Each of the field samples in a group should be represented equally in the analysis sample for that group.

The following analyses should be performed on each of the seven laboratory samples: short proximate (sulfur, moisture, ash, and BTU), ultimate, ash fusion temperature (reducing), standard metal analysis of ashed coal samples, and calculated T250.

Analytical results should be reported to the undersigned via overnight mail service (e.g., Federal Express) for delivery to the following address:

Kilkelly Environmental Associates
Route 70 West
The Water Garden
Raleigh, NC 27612

Results should also be reported via overnight mail service to:

Mr. Sam Nelson
Midwest Gas
401 Douglas Street
Sioux City, IA 51102

I understand that the analytical results will be available for mailing from your laboratory on Wednesday May 9, 1990.

We request that you retain for 60 days the unused portions of the original field samples and laboratory samples for possible additional or duplicated analyses.

A confirming original of our purchase order which was telefaxed to you earlier today is enclosed.

Please advise if you have any questions regarding this work.

Sincerely,

Samuel S. Baker, Jr.

enclosures

SAMPLE IDENTIFICATION			ANALYSES											
FIELD COMPONENT DESCRIPTIO	SAMPLE NO	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	SULFUR	SHORT PROXIMATE MOIST	SHORT PROXIMATE ASH	BTU	ULTIMATE	ASH FUSION (T250)	PYRENE	BENZENE	PHENOL	STANDARD METALS	PH
1345-C-1 A SILO RUN#1	25	COAL	C 1	X	X	X	X	X	X				X	
1345-C-1 C SILO RUN#1	26	COAL												
1345-C-2 A SILO RUN#1	27	COAL												
1345-C-2 C SILO RUN#1	28	COAL												
1345-C-1 A SILO RUN#2	55	COAL	C 2	X	X	X	X	X	X				X	
1345-C-1 C SILO RUN#2	56	COAL												
1345-C-2 A SILO RUN#2	57	COAL												
1345-C-2 C SILO RUN#2	58	COAL												
1345-C-3 A SILO RUN#2	59	COAL												
1345-C-3 C SILO RUN#2	60	COAL												
1345-C-4 A SILO RUN#2	61	COAL												
1345-C-4 C SILO RUN#2	62	COAL												
1345-C-1 A SILO RUN#3	93	COAL	C 3	X	X	X	X	X	X				X	
1345-C-1 C SILO RUN#3	94	COAL												
1345-C-2 A SILO RUN#3	95	COAL												
1345-C-2 C SILO RUN#3	96	COAL												
1345-C-3 A SILO RUN#3	97	COAL												
1345-C-3 C SILO RUN#3	98	COAL												
1345-C-1 A SILO RUN#4	125	COAL	C 4	X	X	X	X	X	X				X	
1345-C-1 C SILO RUN#4	126	COAL												
1345-C-2 A SILO RUN#4	127	COAL												
1345-C-2 C SILO RUN#4	128	COAL												
1345-C-3 A SILO RUN#4	129	COAL												
1345-C-3 C SILO RUN#4	130	COAL												
1345-C-1 A SILO RUN#5	157	COAL	C 5	X	X	X	X	X	X				X	
1345-C-1 C SILO RUN#5	158	COAL												
1345-C-2 A SILO RUN#5	159	COAL												
1345-C-2 C SILO RUN#5	160	COAL												
1345-C-3 A SILO RUN#5	161	COAL												
1345-C-3 C SILO RUN#5	162	COAL												

000095

SAMPLE IDENTIFICATION			ANALYSES											
FIELD COMPONENT DESCRIPTIO	SAMPLE NO	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	SULFUR	SHORT PROXIMATE MOIST	ASH	BTU	ULTIMATE	ASH FUSION (T250)	PYRENE	BENZENE	PHENOL	STANDARD METALS	PH
1345-C-1 A SILO RUN#6	189	COAL												
1345-C-1 C SILO RUN#6	190	COAL												
1345-C-2 A SILO RUN#6	191	COAL	C 6	X	X	X	X	X	X				X	
1345-C-2 C SILO RUN#6	192	COAL												
1345-C-3 A SILO RUN#6	193	COAL												
1345-C-3 C SILO RUN#6	194	COAL												
1345-C-1 A SILO RUN#7	221	COAL												
1345-C-1 C SILO RUN#7	222	COAL												
1345-C-2 A SILO RUN#7	223	COAL	C 7	X	X	X	X	X	X				X	
1345-C-2 C SILO RUN#7	224	COAL												
1345-C-3 A SILO RUN#7	225	COAL												
1345-C-3 C SILO RUN#7	226	COAL												

960000

9069-

APPENDIX D

Field Sample Custody Sheets for Ash and Bottom Ash Water Samples

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal Unit 1 RUN NO. 1

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
1	I-345-F-1 ESP#1 Run#1	NA	S.M.
2	I 345-F-1 ESP#2 Run#1	"	S.M.
3	I-345F-1 ESP#3 Run#1	"	S.M.
4	I-345-F1 ESP#4 Run#1	"	S.M.
5	I 345 F-1 Econ-N Run#1	"	S.M.
6	I 345 F-1 Econ-S Run#1	"	S.M.
7	I 345 F-2 ESP#1 Run#1	"	S.M.
8	I 345 F-2 ESP#2 Run#1	"	S.M.
9	I 345 F-2 ESP#3 Run#1	"	S.M.
10	I 345-F2 ESP#4 Run#1	"	S.M.
11	I 345-E2 Econ-S Run#1	"	S.M.
12	I 345-E2 Econ-N Run#1	"	S.M.

Samples Recovered By

Date Samples Recovered 4-23-90

Samples Received By W Gray

Date/Time /

Figure 7-2

000098

9069-

000099

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 1

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
13	I 345-F3 Esp #1 Run #1		SM
14	I 345-F-3 Esp #3 Run #1		SM
15	I 345-F-3 Esp #3 Run #1		SM
16	I 345-F-3 Esp #4 Run #1		SM
17	I 345-E3 Econ-N Run #1		SM
18	I 345-E3 Econ-S Run #1		SM
19	I 345-F4 Esp #1 Run #1		SM
20	I 345-F-4 Esp #2 Run #1		SM
21	I 345-F4 Esp #3 Run #1		SM
22	I 345-F4 Esp #4 Run #1		SM
23	I 345-E-4 Econ-N Run #1		SM
24	I 345-E-4 Econ-S Run #1		SM

Samples Recovered By

Date Samples Recovered 4-23-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 1

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
25	I-345-C-1 A-silo Run #1		SM
26	I-345-C-1 C-silo Run #1		SM
27	I-345-C-2 A-silo Run #1		SM
28	I-345-C-2 C-silo Run #1		SM
29	I-345-BA-1 bottom Run #1		[illegible]
30	I-345-BW-1 bottom Run #1		[illegible]

Samples Recovered By Date Samples Recovered 4-23-90

Samples Received By W. Gray Date/Time /

Figure 7-2

000101

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 2

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
31	I-345-F-1 ESP#1 Run#2	NA	
32	I-345-F-1 ESP#2 Run#2	"	
33	I-345-F-1 ESP#3 Run#2	"	
34	I-345-F-1 ESP#4 Run#2	"	
35	I-345-E-1 ECON-N RUN #2	"	
36	I-345-E-1 ECON-S RUN #2	"	
37	I-345-F-2 ESP#1 RUN#2	"	
38	I-345-F-2 ESP#2 RUN#2	"	
39	I-345-F-2 ESP#3 RUN#2	"	
40	I-345-F-2 ESP#4 RUN#2	"	
41	I-345-E-2 ECON-N RUN#2	"	
42	I-345-E-2 ECON-S RUN#2	"	

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-24-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal I RUN NO. 2

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
43	I-345-F-3 ESP#1 Run#2	NA	LN
44	I-345-F-3 ESP#2 Run#2	"	LN
45	I-345-F-3 ESP#3 Run#2	"	LN
46	I-345-F-3 ESP#4 Run#2	"	LN
47	I-345-E-3 ECON-N Run#2	"	LN
48	I-345-E-3 ECON-S Run#2	"	LN
49	I-345-F-4 ESP#1 Run#2	"	LN
50	I-345-F-4 ESP#2 Run#2	"	LN
51	I-345-F-4 ESP#3 Run#2	"	LN
52	I-345-F-4 ESP#4 Run#2	"	LN
53	I-345-E-4 ECON-N Run#2	"	LN
54	I-345-E-4 ECON-S Run#2	"	LN
			LN

Samples Recovered By Date Samples Recovered 4-24-90

Samples Received By W. Gray Date/Time /

Figure 7-2

000103

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 2

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
55	I-345-C-1 A-Silo Run#2	NA	PN
56	I-345-C-1 C-Silo Run#2	"	PN
57	I-345-C-2 A-Silo Run#2	"	PN
58	I-345-C-2 C-Silo Run#2	"	PN
59	I-345-C-3 A-Silo Run#2	"	PN
60	I-345-C-3 C-Silo Run#2	"	PN
61	I-345-C-4 A-Silo Run#2	"	SN
62	I-345-C-4 C-Silo Run#2	"	SN.

Samples Recovered By

Date Samples Recovered 4-24-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal / RUN NO. 2

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
75	I-345-BW-1 Bottom Run #2	NA	JYB
76	I-345-BA-1 Bottom Run #2	"	JYB
77	I-345-BW-2 Bottom Run #2	"	JYB
78	I-345-BA-2 Bottom Run #2	"	JYB

Samples Recovered By

Date Samples Recovered 4-24-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

000105

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 3

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
63	I-345-F-1 ESP#1 RUN#3	NA	SM
64	I-345-F-1 ESP#2 RUN#3	"	SM
65	I-345-F-1 ESP#3 RUN#3	"	SM
66	I-345-F-1 ESP #4 RUN#3	"	SM
67	I-345-E-1 ECON-N RUN #3	"	SM
68	I-345-E-1 ECON-S RUN #3	"	SM
69	I-345-F-2 ESP#1 RUN#3	"	SM
70	I-345-F-2 ESP #2 RUN #3	"	SM
71	I-345-F-2 ESP#3 RUN#3	"	SM
72	I-345-F-2 ESP #4 RUN#3	"	SM
73	I-345-E-2 ECON-N RUN#3	"	SM
74	I-345-E-2 ECON-S RUN#3	"	SM

Samples Recovered By

Date Samples Recovered 4-24-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal / RUN NO. 3

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
79	I-345-F-3 ESP#1 Run#3	NA	SM
80	I-345-F-3 ESP#2 Run#3	"	SM
81	I-345-F-3 ESP#3 Run#3	"	SM
82	I-345-F-3 ESP#4 Run#3	"	SM
83	I-345-E-3 ECON-N RUN#3	"	SM
84	I-345-E-3 ECON-S RUN#3	"	SM
85	I-345-F-4 ESP#1 RUN#3	"	SM
86	I-345-F-4 ESP#2 RUN#3	"	SM
87	I-345-F-4 ESP#3 RUN#3	"	SM
88	I-345-F-4 ESP#4 RUN#3	"	SM
89	I-345-E-4 ECON-N RUN#3	"	SM
90	I-345-E-4 ECON-S RUN#3	"	

Samples Recovered By Date Samples Recovered 4-24-90

Samples Received By W. Gray Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal / RUN NO. 3

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
91	I-345-BA-1 Bottom Run #3	NA	JMB
92	I-345-BN-1 Bottom Run #3	"	JMB

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-24-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 3

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
93	I-345-C-1 A-silo Run #3	NA	SM1
94	I-345-C-1 C-silo Run #3	"	SM2
95	I-345-C-2 A-silo Run #3	"	SM
96	I-345-C-2 C-silo RUN #3	"	SM2
97	I-345-C-3 A-silo RUN #3	"	SM
98	I-345-C-3 A-silo RUN #3	"	SM

Samples Recovered By Date Samples Recovered 4-24-90

Samples Received By W. Gray Date/Time /

Figure 7-2

000108

9069

000109

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 4

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
99	I-345-F-1 ESP #1 RUN 4	NA	BE
100	I-345-F-1 ESP #2 RUN 4	"	BE
101	I-345-F-1 ESP #3 RUN 4	"	BE
102	I-345-F-1 ESP #4 RUN 4	"	BE
103	I-345-E-1 ECON-N RUN 4	"	BE
104	I-345-E-1 ECON-S RUN 4	"	BE
105	I-345-F-2 ESP #1 RUN 4	"	BE
106	I-345-F-2 ESP #2 RUN 4	"	BE
107	I-345-F-2 ESP #3 RUN 4	"	BE
108	I-345-F-2 ESP #4 RUN 4	"	BE
109	I-345-E-2 ECON-N RUN 4	"	BE
110	I-345-E-2 ECON-S RUN 4	"	BE

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 4

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
111	I-345-F-3 ESP#1 RUN 4	NA	BE
112	I-345-F-3 ESP#2 RUN 4	"	BE
113	I-345-F-3 ESP#3 RUN 4	"	BE
114	I-345-F-3 ESP#4 RUN 4	"	BE
115	I-345-E-3 ECON-N RUN 4	"	BE
116	I-345-E-3 ECON-S RUN 4	"	BE
117	I-345-F-4 ESP#1 RUN 4	"	BE
118	I-345-F-4 ESP#2 RUN 4	"	BE
119	I-345-F-4 ESP#3 RUN 4	"	BE
120	I-345-F-4 ESP#4 RUN 4	"	BE
121	I-345-E-4 ECON-N RUN 4	"	BE
122	I-345-E-4 ECON-S RUN 4	"	BE

Samples Recovered By

Date Samples Recovered 4-25-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

000110

9069-

000111

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 4

PROGRAM MANAGER: Alan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
123	I-345- BA-1 Bottom Run 4	NA	T. F.
124	I-345- BW-1 Bottom Run 4	"	T. F.

Samples Recovered By Date Samples Recovered 4-25-90

Samples Received By W. Gray Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 4

PROGRAM MANAGER: Alan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
125	I-345-C-1 A-SILO RUN 4	NA	BE
126	I-345-C-1 C-SILO RUN 4	"	BE
127	I-345-C-2 A-SILO RUN 4	"	BE
128	I-345-C-2 C-SILO RUN 4	"	BE
129	I-345-C-3 A-SILO RUN 4	"	BE
130	I-345-C-3 C-SILO RUN 4	"	BE.

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

000113

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 5

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
131	I-345-F-1 ESP #1 RUN 5	NA	JYB
132	I-345-F-1 ESP #2 RUN 5	"	JYB
133	I-345-F-1 ESP #3 RUN 5	"	JYB
134	I-345-F-1 ESP #4 RUN 5	"	JYB
135	I-345-E-1 ECON-N RUN 5	"	JYB
136	I-345-E-1 ECON-S RUN 5	"	JYB
137	I-345-F-2 ESP #1 RUN 5	"	JYB
138	I-345-F-2 ESP #2 RUN 5	"	JYB
139	I-345-F-2 ESP #3 RUN 5	"	JYB
140	I-345-F-2 ESP #4 RUN 5	"	JYB
141	I-345-E-2 ECON-N RUN 5	"	JYB
142	I-345-E-2 ECON-S RUN 5	"	JYB
			JYB

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 5

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
143	I-345-F-3 ESP #1 Run 5	NA	DE
144	I-345-F-3 ESP #2 Run 5	"	DE
145	I-345-F-3 ESP #3 Run 5	"	DE
146	I-345-F-3 ESP #4 Run 5	"	DE
147	I-345-E-3 Econ-N Run 5	"	DE
148	I-345-E-3 Econ-S Run 5	"	DE
149	I-345-F-4 ESP #1 Run 5	"	DE
150	I-345-F-4 ESP #2 Run 5	"	DE
151	I-345-F-4 ESP #3 Run 5	"	DE
152	I-345-F-4 ESP #4 Run 5	"	DE
153	I-345-E-4 Econ-N Run 5	"	DE
154	I-345-E-4 Econ-S Run 5	"	DE

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 5

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
155	I-345-BA-1 Bottom ash Run 5	NA	
156	I-345-BW-1 Bottom water Run 5	"	

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-25-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 5

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
157	I-345-C-1 A-SILO Run 5	NA	J.Y.
158	I-345-C-1 C-SILO Run 5	"	J.Y.
159	I-345-C-2 A-SILO Run 5	"	JMB
160	I-345-C-2 C-SILO Run 5	"	JMB
161	I-345-C-3 A-SILO Run 5	"	JE
162	I-345-C-3 C-SILO Run 5	"	JMB

Samples Recovered By

Date Samples Recovered 4-25-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

000117

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 6

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
163	I-34S-F-1 ESP #1 RUN 6	NA	AE
164	I-34S-F-1 ESP #2 RUN6	"	AE
165	I-34S-F-1 ESP #3 RUN6	"	AE
166	I-34S-F-1 ESP #4 RUN 6	"	AE
167	I-34S-E-1 ECON-N RUN6	"	AE
168	I-34S-E-1 ECON-S RUN6	"	AE
169	I-34S-F-2 ESP#1 RUN6	"	AE
170	I-34S-F-2 ESP#2 RUN6	"	AE
171	I-34S-F-2 ESP#3 RUN6	"	AE
172	I-34S-F-2 ESP#4 RUN6	"	AE
173	I-34S-E-2 ECON-N RUN6	"	AE
174	I-34S-E-2 ECON-S RUN6	"	AE

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-26-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 6

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
175	I-345-F-3 ESP #1 RUN 6	NA	TE
176	I-345-F-3 ESP #2 RUN 6	"	TE
177	I-345-F-3 ESP #3 RUN 6	"	TE
178	I-345-F-3 ESP #4 RUN 6	"	TE
179	I-345-E-3 ECON-N RUN 6	"	TE
180	I-345-E-3 ECON-S RUN 6	"	TE
181	I-345-F-4 ESP #1 RUN 6	"	TE
182	I-345-F-4 ESP #2 RUN 6	"	TE
183	I-345-F-4 ESP #3 RUN 6	"	TE
184	I-345-F-4 ESP #4 RUN 6	"	TE
185	I-345-E-4 ECON-N RUN 6	"	TE
186	I-345-E-4 ECON-S RUN 6	"	TE

Samples Recovered By

Date Samples Recovered 4-26-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

000118

9069-

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1

PROGRAM MANAGER: Alan Nelson

RUN NO. 6

PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
187	I-345-BA-1 Bottom ash Run 6	NA	
188	I-345-BW-1 Bottom water Run 6	"	

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-26-90

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal | RUN NO. 6

PROGRAM MANAGER: Dan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
189	I-345-C-1 A-silo Run 6	NA	DE
190	I-345-C-1 C-silo Run 6	"	DE
191	I-345-C-2 A-silo Run 6	"	DE
192	I-345-C-2 C-silo Run 6	"	DE
193	I-345-C-3 A-silo Run 6	"	DE
194	I-345-C-3 C-silo Run 6	"	DE

Samples Recovered By

Samples Received By W. Gray

Date Samples Recovered 4-26-90

Date/Time /

Figure 7-2

000120

-6906

000121

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 7

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
195	I-345-F-1 ESP #1 Run 7	NA	[illegible]
196	I-345-F-1 ESP #2 Run 7	"	[illegible]
197	I-345-F-1 ESP #3 Run 7	"	[illegible]
198	I-345-F-1 ESP #4 Run 7	"	[illegible]
199	I-345-E-1 ECON-N Run 7	"	[illegible]
200	I-345-E-1 ECON-S Run 7	"	[illegible]
201	I-345-F-2 ESP #1 Run 7	"	[illegible]
202	I-345-F-2 ESP #2 Run 7	"	[illegible]
203	I-345-F-2 ESP #3 Run 7	"	[illegible]
204	I-345-F-2 ESP #4 Run 7	"	[illegible]
205	I-345-E-2 ECON-N Run 7	"	[illegible]
206	I-345-E-2 ECON-S Run 7	"	[illegible]

Samples Recovered By

Date Samples Recovered 4-26-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 7

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
207	I-345-F-3 ESP#1 Run 7	NA	DJB
208	I-345-F-3 ESP#2 Run 7	"	DJB
209	I-345-F-3 ESP#3 Run 7	"	DJB
210	I-345-F-3 ESP #4 Run 7	"	DJB
211	I-345-E-3 ECON-N Run 7	"	DJB
212	I-345-E-3 ECON-S Run 7	"	DJB
213	I-345-F-4 ESP#1 Run 7	"	DJB
214	I-345-F-4 ESP#2 Run 7	"	DJB
215	I-345-F-4 ESP#3 Run 7	"	DJB
216	I-345-F-4 ESP #4 Run 7	"	DJB
217	I-345-E-4 ECON-N Run 7	"	DJB
218	I-345-E-4 ECON-S Run 7	"	DJB

Samples Recovered By Date Samples Recovered 4-26-90

Samples Received By W. Gray Date/Time /

Figure 7-2

0001222

90069

000123

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 7

PROGRAM MANAGER: Sam Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
219	I-345-BA-1 Bottom Ash Run 7	NA	
220	I-345-BW-1 Bottom Water Run 7	"	

Samples Recovered By

Date Samples Recovered 4-26-90

Samples Received By W. Gray

Date/Time /

Figure 7-2

FIELD SAMPLE CUSTODY SHEET

INSTALLATION: George Neal 1 RUN NO. 7

PROGRAM MANAGER: Dan Nelson PROJECT NO.

SAMPLE NO.	COMPONENT DESCRIPTION	VOL/WT	REMARKS
221	I-345-C-1 A-silo Run 7	NA	JB
222	I-345-C-1 C-silo Run 7	"	JB
223	I-345-C-2 A-silo Run 7	"	JB
224	I-345-C-2 C-silo Run 7	"	JB
225	I-345-C-3 A-silo Run 7	"	JB
226	I-345-C-3 C-silo Run 7	"	JB

Samples Recovered By Date Samples Recovered 4-26-90

Samples Received By W. Gray Date/Time /

Figure 7-2

0000-

APPENDIX E

Compositing and Analysis Instructions for Ash and Bottom Ash Water Samples

KILKELLY ENVIRONMENTAL ASSOCIATES 6906

P.O. Box 31265 • Raleigh, NC 27622 • 919-781-3150 • Telecopy 919-781-9524

May 4, 1990

Dr. Syrene Mathur
Technical Testing Laboratories
1256 Greenbriar Street
Charleston, WV 25311

Dear Dr. Mathur:

This letter provides instructions for the preparation, analysis, and reporting of results for 184 ash and ash sluice water samples being delivered to your laboratory. The number of samples of each type of material are shown in the following tabulation:

Type of Material	Number of Samples
Fly Ash	112
Economizer Ash	56
Bottom Ash	8
Bottom Ash Sluice Water	8

The ash samples should be composited into 21 analysis samples according to the compositing scheme shown on the attached tables, which also serve as chain of custody documentation for this project. (Please advise me if any of the samples listed on the attached tables are not received at your laboratory.)

In compositing the ash samples, each of the field samples in a group should be represented equally by weight in the analysis sample for that group. Note that eight of the fly ash samples in groups 5 and 6 contain no (or virtually no) material. Thus, these field samples will not be represented equally with other field samples in the analysis sample for these groups.

The number of composited analysis samples of each type of material are shown in the following tabulation:

Type of Material	Number of Samples	Number of Analysis Samples
Fly Ash	112	7
Economizer Ash	56	7
Bottom Ash	8	7
Bottom Ash Sluice Water	8	8

All samples (both ash and bottom ash sluice water) should be analyzed for pyrene, benzene, phenol, and toxic metals. The pH of bottom ash sluice water samples should also be determined.

Organic analyses should be performed in accordance with the following analytical methods:

Pyrene and Phenol - SW846, Method 8270
Benzene - SW846, Method 8240

Toxic metal analyses should be performed for the eight metals specified, and according to the methods specified, in 40 CFR Part 261, Appendix II, EP Toxicity Procedures.

Analytical results should be reported to the undersigned via overnight mail service (e.g., Federal Express) for delivery to the following address:

Kilkelly Environmental Associates
Route 70 West
The Water Garden
Raleigh, NC 27612

We request that you retain for 60 days the unused portions of the original field samples and analysis samples for possible additional or duplicated analyses.

Our purchase order for this work is enclosed. Please advise if you have any questions.

Sincerely,

Samuel S. Baker, Jr.

w/ enclosures

SAMPLE IDENTIFICATION

ANALYSES

COMPONENT DESCRIPTION	SAMPLE NO.	COMPOSIT MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-F-1 ESP#1 RUN#1	1	FLY ASH						
1345-F-1 ESP#2 RUN#1	2	FLY ASH						
1345-F-1 ESP#3 RUN#1	3	FLY ASH						
1345-F-1 ESP#4 RUN#1	4	FLY ASH						
1345-F-2 ESP#1 RUN#1	7	FLY ASH						
1345-F-2 ESP#2 RUN#1	8	FLY ASH						
1345-F-2 ESP#3 RUN#1	9	FLY ASH						
1345-F-2 ESP#4 RUN#1	10	FLY ASH	F 1	X	X	X	X	
1345-F-3 ESP#1 RUN#1	13	FLY ASH						
1345-F-3 ESP#2 RUN#1	14	FLY ASH						
1345-F-3 ESP#3 RUN#1	15	FLY ASH						
1345-F-3 ESP#4 RUN#1	16	FLY ASH						
1345-F-4 ESP#1 RUN#1	19	FLY ASH						
1345-F-4 ESP#2 RUN#1	20	FLY ASH						
1345-F-4 ESP#3 RUN#1	21	FLY ASH						
1345-F-4 ESP#4 RUN#1	22	FLY ASH						
1345-F-1 ESP#1 RUN#2	31	FLY ASH						
1345-F-1 ESP#2 RUN#2	32	FLY ASH						
1345-F-1 ESP#3 RUN#2	33	FLY ASH						
1345-F-1 ESP#4 RUN#2	34	FLY ASH						
1345-F-2 ESP#1 RUN#2	37	FLY ASH						
1345-F-2 ESP#2 RUN#2	38	FLY ASH	F 2	X	X	X	X	
1345-F-2 ESP#3 RUN#2	39	FLY ASH						
1345-F-2 ESP#4 RUN#2	40	FLY ASH						
1345-F-3 ESP#1 RUN#2	43	FLY ASH						
1345-F-3 ESP#2 RUN#2	44	FLY ASH						
1345-F-3 ESP#3 RUN#2	45	FLY ASH						
1345-F-3 ESP#4 RUN#2	46	FLY ASH						
1345-F-4 ESP#1 RUN#2	49	FLY ASH						
1345-F-4 ESP#2 RUN#2	50	FLY ASH						
1345-F-4 ESP#3 RUN#2	51	FLY ASH						
1345-F-4 ESP#4 RUN#2	52	FLY ASH						
1345-F-1 ESP#1 RUN#3	63	FLY ASH						
1345-F-1 ESP#2 RUN#3	64	FLY ASH						
1345-F-1 ESP#3 RUN#3	65	FLY ASH						
1345-F-1 ESP#4 RUN#3	66	FLY ASH						
1345-F-2 ESP#1 RUN#3	69	FLY ASH						
1345-F-2 ESP#2 RUN#3	70	FLY ASH						
1345-F-2 ESP#3 RUN#3	71	FLY ASH						
1345-F-2 ESP#4 RUN#3	72	FLY ASH						
1345-F-3 ESP#1 RUN#3	79	FLY ASH	F 3	X	X	X	X	
1345-F-3 ESP#2 RUN#3	80	FLY ASH						
1345-F-3 ESP#3 RUN#3	81	FLY ASH						
1345-F-3 ESP#4 RUN#3	82	FLY ASH						
1345-F-4 ESP#1 RUN#3	85	FLY ASH						
1345-F-4 ESP#2 RUN#3	86	FLY ASH						
1345-F-4 ESP#3 RUN#3	87	FLY ASH						
1345-F-4 ESP#4 RUN#3	88	FLY ASH						

000128

-6906

SAMPLE IDENTIFICATION

ANALYSES

COMPONENT DESCRIPTION	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-F-1 ESP#1 RUN#4	99	FLY ASH						
1345-F-1 ESP#2 RUN#4	100	FLY ASH						
1345-F-1 ESP#3 RUN#4	101	FLY ASH						
1345-F-1 ESP#4 RUN#4	102	FLY ASH						
1345-F-2 ESP#1 RUN#4	105	FLY ASH						
1345-F-2 ESP#2 RUN#4	106	FLY ASH						
1345-F-2 ESP#3 RUN#4	107	FLY ASH						
1345-F-2 ESP#4 RUN#4	108	FLY ASH	F4	X	X	X	X	
1345-F-3 ESP#1 RUN#4	111	FLY ASH						
1345-F-3 ESP#2 RUN#4	112	FLY ASH						
1345-F-3 ESP#3 RUN#4	113	FLY ASH						
1345-F-3 ESP#4 RUN#4	114	FLY ASH						
1345-F-4 ESP#1 RUN#4	117	FLY ASH						
1345-F-4 ESP#2 RUN#4	118	FLY ASH						
1345-F-4 ESP#3 RUN#4	119	FLY ASH						
1345-F-4 ESP#4 RUN#4	120	FLY ASH						
1345-F-1 ESP#1 RUN#5	131	FLY ASH						
1345-F-1 ESP#2 RUN#5	132	FLY ASH						
1345-F-1 ESP#3 RUN#5	133	FLY ASH						
1345-F-1 ESP#4 RUN#5	134	FLY ASH						
1345-F-2 ESP#1 RUN#5	137	FLY ASH						
1345-F-2 ESP#2 RUN#5	138	FLY ASH	F5	X	X	X	X	
* 1345-F-2 ESP#3 RUN#5	139	FLY ASH						
* 1345-F-2 ESP#4 RUN#5	140	FLY ASH						
* 1345-F-3 ESP#1 RUN#5	143	FLY ASH						
* 1345-F-3 ESP#2 RUN#5	144	FLY ASH						
1345-F-3 ESP#3 RUN#5	145	FLY ASH						
1345-F-3 ESP#4 RUN#5	146	FLY ASH						
1345-F-4 ESP#1 RUN#5	149	FLY ASH						
* 1345-F-4 ESP#2 RUN#5	150	FLY ASH						
1345-F-4 ESP#3 RUN#5	151	FLY ASH						
* 1345-F-4 ESP#4 RUN#5	152	FLY ASH						
1345-F-1 ESP#1 RUN#6	163	FLY ASH						
1345-F-1 ESP#2 RUN#6	164	FLY ASH						
1345-F-1 ESP#3 RUN#6	165	FLY ASH						
1345-F-1 ESP#4 RUN#6	166	FLY ASH						
1345-F-2 ESP#1 RUN#6	169	FLY ASH						
1345-F-2 ESP#2 RUN#6	170	FLY ASH	F6	X	X	X	X	
1345-F-2 ESP#3 RUN#6	171	FLY ASH						
1345-F-2 ESP#4 RUN#6	172	FLY ASH						
1345-F-3 ESP#1 RUN#6	175	FLY ASH						
* 1345-F-3 ESP#2 RUN#6	176	FLY ASH						
1345-F-3 ESP#3 RUN#6	177	FLY ASH						
* 1345-F-3 ESP#4 RUN#6	178	FLY ASH						
1345-F-4 ESP#1 RUN#6	181	FLY ASH						
1345-F-4 ESP#2 RUN#6	182	FLY ASH						
1345-F-4 ESP#3 RUN#6	183	FLY ASH						
1345-F-4 ESP#4 RUN#6	184	FLY ASH						

* CONTAINS NO MATERIAL

0001129

0000-0000

SAMPLE IDENTIFICATION

ANALYSES

COMPONENT DESCRIPTION	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-F-1 ESP#1 RUN#7	195	FLY ASH						
1345-F-1 ESP#2 RUN#7	196	FLY ASH						
1345-F-1 ESP#3 RUN#7	197	FLY ASH						
1345-F-1 ESP#4 RUN#7	198	FLY ASH						
1345-F-2 ESP#1 RUN#7	201	FLY ASH						
1345-F-2 ESP#2 RUN#7	202	FLY ASH						
1345-F-2 ESP#3 RUN#7	203	FLY ASH						
1345-F-2 ESP#4 RUN#7	204	FLY ASH	F7	X	X	X	X	
1345-F-3 ESP#1 RUN#7	207	FLY ASH						
1345-F-3 ESP#2 RUN#7	208	FLY ASH						
1345-F-3 ESP#3 RUN#7	209	FLY ASH						
1345-F-3 ESP#4 RUN#7	210	FLY ASH						
1345-F-4 ESP#1 RUN#7	213	FLY ASH						
1345-F-4 ESP#2 RUN#7	214	FLY ASH						
1345-F-4 ESP#3 RUN#7	215	FLY ASH						
1345-F-4 ESP#4 RUN#7	216	FLY ASH						

000430

-6906

SAMPLE IDENTIFICATION

ANALYSES

COMPONENT DESCRIPTION	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-F-1 ECON N RUN#1	5	ECON ASH						
1345-F-1 ECON S RUN#1	6	ECON ASH						
1345-E-2 ECON S RUN#1	11	ECON ASH						
1345-E-2 ECON N RUN#1	12	ECON ASH	E 1	X	X	X	X	
1345-E-3 ECON N RUN#1	17	ECON ASH						
1345-E-3 ECON S RUN#1	18	ECON ASH						
1345-E-4 ECON N RUN#1	23	ECON ASH						
1345-E-4 ECON S RUN#1	24	ECON ASH						
1345-E-1 ECON N RUN#2	35	ECON ASH						
1345-E-1 ECON S RUN#2	36	ECON ASH						
1345-E-2 ECON N RUN#2	41	ECON ASH						
1345-E-2 ECON S RUN#2	42	ECON ASH	E 2	X	X	X	X	
1345-E-3 ECON N RUN#2	47	ECON ASH						
1345-E-3 ECON S RUN#2	48	ECON ASH						
1345-E-4 ECON N RUN#2	53	ECON ASH						
1345-E-4 ECON S RUN#2	54	ECON ASH						
1345-E-1 ECON N RUN#3	67	ECON ASH						
1345-E-1 ECON S RUN#3	68	ECON ASH						
1345-E-2 ECON N RUN#3	73	ECON ASH						
1345-E-2 ECON S RUN#3	74	ECON ASH	E 3	X	X	X	X	
1345-E-3 ECON N RUN#3	83	ECON ASH						
1345-E-3 ECON S RUN#3	84	ECON ASH						
1345-E-4 ECON N RUN#3	89	ECON ASH						
1345-E-4 ECON S RUN#3	90	ECON ASH						
1345-E-1 ECON N RUN#4	103	ECON ASH						
1345-E-1 ECON S RUN#4	104	ECON ASH						
1345-E-2 ECON N RUN#4	109	ECON ASH						
1345-E-2 ECON S RUN#4	110	ECON ASH	E 4	X	X	X	X	
1345-E-3 ECON N RUN#4	115	ECON ASH						
1345-E-3 ECON S RUN#4	116	ECON ASH						
1345-E-4 ECON N RUN#4	121	ECON ASH						
1345-E-4 ECON S RUN#4	122	ECON ASH						

0001131

0083

SAMPLE IDENTIFICATION			ANALYSES					
COMPONENT DESCRIPTION	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-E-1 ECON N RUN#5	135	ECON ASH						
1345-E-1 ECON S RUN#5	136	ECON ASH						
1345-E-2 ECON N RUN#5	141	ECON ASH						
1345-E-2 ECON S RUN#5	142	ECON ASH	E 5	X	X	X	X	
1345-E-3 ECON N RUN#5	147	ECON ASH						
1345-E-3 ECON S RUN#5	148	ECON ASH						
1345-E-4 ECON N RUN#5	153	ECON ASH						
1345-E-4 ECON S RUN#5	154	ECON ASH						
1345-E-1 ECON N RUN#6	167	ECON ASH						
1345-E-1 ECON S RUN#6	168	ECON ASH						
1345-E-2 ECON N RUN#6	173	ECON ASH						
1345-E-2 ECON S RUN#6	174	ECON ASH	E 6	X	X	X	X	
1345-E-3 ECON N RUN#6	179	ECON ASH						
1345-E-3 ECON S RUN#6	180	ECON ASH						
1345-E-4 ECON N RUN#6	185	ECON ASH						
1345-E-4 ECON S RUN#6	186	ECON ASH						
1345-E-1 ECON N RUN#7	199	ECON ASH						
1345-E-1 ECON S RUN#7	200	ECON ASH						
1345-E-2 ECON N RUN#7	205	ECON ASH						
1345-E-2 ECON S RUN#7	206	ECON ASH	E 7	X	X	X	X	
1345-E-3 ECON N RUN#7	211	ECON ASH						
1345-E-3 ECON S RUN#7	212	ECON ASH						
1345-E-4 ECON N RUN#7	217	ECON ASH						
1345-E-4 ECON S RUN#7	218	ECON ASH						

SAMPLE IDENTIFICATION

ANALYSES

COMPONENT DESCRIPTION	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-BA-1 BOTTOM RUN#1	29	BOTTOM ASH	BA 1	X	X	X	X	
1345-BA-1 BOTTOM RUN#2	76	BOTTOM ASH						
1345-BA-2 BOTTOM RUN#2	78	BOTTOM ASH	BA 2	X	X	X	X	
1345-BA-1 BOTTOM RUN#3	91	BOTTOM ASH	BA 3	X	X	X	X	
1345-BA-1 BOTTOM RUN#4	123	BOTTOM ASH	BA 4	X	X	X	X	
1345-BA-1 BOTTOM RUN#5	155	BOTTOM ASH	BA 5	X	X	X	X	
1345-BA-1 BOTTOM RUN#6	187	BOTTOM ASH	BA 6	X	X	X	X	
1345-BA-1 BOTTOM RUN#7	219	BOTTOM ASH	BA 7	X	X	X	X	

SAMPLE IDENTIFICATION

FIELD SAMPLE NO.	SAMPLE NO.	MATERIAL	COMPOSIT INTO LAB SAMAPLE NO.	PYRENE	BENZENE	PHENOL	EP TOX METALS	PH
1345-BW-1 BOTTOM RUN#1	30	BOT ASH WATER	BW 1	X	X	X	X	X
1345-BW-1 BOTTOM RUN#2	75	BOT ASH WATER	BW 2A	X	X	X	X	X
1345-BW-2 BOTTOM RUN#2	77	BOT ASH WATER	BW 2B	X	X	X	X	X
1345-BW-1 BOTTOM RUN#3	92	BOT ASH WATER	BW 3	X	X	X	X	X
1345-BW-1 BOTTOM RUN#4	124	BOT ASH WATER	BW 4	X	X	X	X	X
1345-BW-1 BOTTOM RUN#5	156	BOT ASH WATER	BW 5	X	X	X	X	X
1345-BW-1 BOTTOM RUN#6	188	BOT ASH WATER	BW 6	X	X	X	X	X
1345-BW-1 BOTTOM RUN#7	220	BOT ASH WATER	BW 7	X	X	X	X	X

000133

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APPENDIX F

Coal-Waste Material Bunkering Records

IPS ELECTRIC
The Service People

401 Douglas St
P O Box 778
Sioux City, Iowa 51102

April 30, 1990

Walter Gray
Kilkelly Assoc., Inc.
P. O. Box 31265
Raleigh, NC 27622

Dear Walter:

Enclosed are copies of the coal hoisted data you requested. The data shows the total coal hoisted during the incineration of coal tar contaminated soil in Neal 1. I have included two sets of this data along with a tabular format. Both sets contain the same data. On the 11 x 17 tabular log sheets the hours for which coal was being hoisted to A & C silos are highlighted in yellow.

Keep in mind the following items:

1. All of the coal hoisted to the plant during the testing period was not necessarily burned during the testing period.

2. The coal hoisted to B-silo during the testing period is also shown on the log sheets. However, only the coal hoisted to A & C silos is highlighted in yellow.

3. The tonnage across 11-belt is the total tonnage after all blending of the two coals and the contaminated soil has take place. The tonnage across 3-belt is the Hanna Basin coal and the tonnage across C-weigh feeder is the Powder River Basin coal.

4. The value for coal flow rate given on your tabular log sheets is an average of instantaneous scans throughout the hour. More correctly would be an hourly integration of the instantaneous feed rates. However, if unit loading is held constant as was done during the testing period, these values will be nearly equal. If you would like the hourly integrated values, let me know.

I have also included our most recent coal analyses for the Medicine Bow and Coballo coals which are blended for Neal 1 as well as a lab analysis for a sample taken after these two coals have been blended.

If you require anything else, please do not hesitate to ask.

Sincerely,

Todd Van Diepen

Todd Van Diepen
Operations Engineer

vrd
Enclosures

c: Sam Nelson

NEAL 1 COAL TAR WASTE TEST BURN
COAL HOISTED DATA

-6906

DATE	START TIME	STOP TIME	TOTAL COAL HOISTED (TONS)
4/23/90	2130	2355	602
4/24/90	0845	1100	677
4/24/90	2050	2355	625
4/25/90	1110	1550	851
4/25/90	1855	2050	465
4/26/90	0840	1330	1071
4/26/90	1730	1990	442
		TOTAL COAL HOISTED	4733

TVD
4/30/90

0080

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

Total Coal Hoisted

= 1204 - 602 = 602 tons

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER: 0
DATE: 04/23/90 TIME: 21:15:52

[redacted]

	100	2	100	100	WEIGH FDRS	COAL SCALE ACCUMULATIONS IN TONS					
[redacted]											
	57	1.00	100	PCT		0 B	0	0	0	15	
	SPD DMD										
[redacted]											
	NEAL COAL FEEDERS					0 D	0	0	511	1524	
[redacted]											
	100	100			FOR 3 BELT & C FEEDER [redacted]	0	0	-0	[redacted]	256	
[redacted]											
	50 SPD	65 SPD				0					
[redacted]											
	GROSS LOAD	0	MAIN STM TEMP	589	A1 SIDE O2	10.9	COND BACK PRESS	28.8			
	NET LOAD	0	REHEAT STM TEMP	654	A2 SIDE O2	11.1	BOILER EFF.	84.0			
[redacted]											

COPY IN PROGRESS

9069-

00013 8

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER: 0
DATE: 04/23/90 TIME: 21:35:28

FEEDER	MOTOR	MAIN	RECLAIMS
100	2	100	100
57 SPD	1.00 RAT	19 SPD	2 PCT DMD
DMD 1 0	C/3 3 0	DMD 8	5 0

NEAL COAL FEEDERS

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

0 B	0	0	0	15
118 C	19	0	318	135
0 D	0	0	511	1524
30	-0	632	256	

100 100

FOR 3 BELT
C FEEDER 11 BELT

50 SPD 63 SPD

GROSS LOAD	0	MAIN STM TEMP	586	A1 SIDE O2	10.9	COND BACK PRESS	28.8
NET LOAD	0	REHEAT STM TEMP	650	A2 SIDE O2	11.1	BOILER EFF.	84.0

OPACITY

COPY 1 PROGRESS

0001139

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER: 0
DATE: 04/23/90 TIME: 22:02:37

FEEDER		MOTOR	MAX	RECLAIMS						
100	↑	2	100	100	↑	WEIGH FDRS	COAL SCALE ACCUMULATIONS IN TONS			
57		1.00	18	0 PCT		0 B	0	0	0	15
SPD DMD										
1 0		3	0	5 0						
NEAL COAL FEEDERS						0 D	0	0	511	1524
FEEDER										
100	↑	100	↑	FOR 3 BELT & C FEEDER	1.118 1 BELT	11	130	743	256	
50 SPD DMD		65 SPD DMD			0					
2										

GROSS LOAD	0	MAIN STM TEMP	582	A1 SIDE O2	10.9	COND BACK PRESS	28.8
NET LOAD	0	REHEAT STM TEMP	645	A2 SIDE O2	11.1	BOILER EFF.	84.0
THR STM PRESS							
OPACITY							

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER: 0
DATE: 04/23/90 TIME: 23:00:17

FEEDER M	AUTO/MAN	RECLAIMS	WEIGH FDRS	COAL SCALE ACCUMULATIONS IN TONS			
100 ↑	2 100	100 ↑					
57 SPD	1.00 RAT	18 SPD	0 PCT DMD	0 B	0	0	0	15
DMD 1 0	C/3 3 0	DMD 0	5 0	122 C	1	122	490	135
NEAL COAL FEEDERS				0 D	0	0	511	1524
100 ↑	100 ↑		FOR 3 BELT, & C FEEDER	119 11 BELT	1	248	982	256
50 SPD	65 SPD			0				

GROSS LOAD	0	MAIN STM TEMP	573	A1 SIDE O2	10.9	COND BACK PRESS	28.8
NET LOAD	0	REHEAT STM TEMP	634	A2 SIDE O2	11.1	BOILER EFF.	84.1

0001441

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER: 0
DATE: 04/23/90 TIME: 23:55:48

FEEDER H	MOTOR	RMR	RECLAIMS	WEIGH FDRS	COAL SCALE ACCUMULATIONS IN TONS			
100 ↑	2	100	100 ↑					
57	1.00	100	PCT	0 B	0	0	0	15
NEAL COAL FEEDERS				0 D	0	0	511	1524
100 ↑	100 ↑			FOR 3 BELT & C FEEDER	11 BELT 223	248	[redacted]	256
50 SPD	65 SPD			0				

GROSS LOAD	0	MAIN STM TEMP	565	A1 SIDE O2	10.9	COND BACK PRESS	28.8
NET LOAD	0	REHEAT STM TEMP	624	A2 SIDE O2	11.1	BOILER EFF.	84.2
THR STM PRESS	16	TOTAL AIR FLOW	11.5	B1 SIDE O2	11.2	O2 (SP) DATE	04/23/90
OPACITY	13.4	TOTAL FUEL FLOW	0.1	B2 SIDE O2	10.4	9.9 TIME	23:55

COPY IN PROGRESS

000142

906

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

4/24

Total Coal Hoisted

705 - 28 = 677 tons

000143

SCREEN: 700 VER: 0 WINDOW: 0 VER: 0
4/24/90 TIME: 11:05:52

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
	0 B	0	0	0	0
	0 D	0	0	0	511
TOTAL	128				
			134	346	601
BELT Q	152				
DER	11 BELT	[redacted]	280	[redacted]	1204
BLEND	281				
	11 BELT				
	0				

TEMP	1002	COND BACK PRESS	1.39	THR STM FLW MPPH	803
M TEMP	994	LEFT SIDE O2	2.9	BOILER EFF.	86.3
FLOW	87	RIGHT SIDE O2	2.8	DATE	04/24/90
				TIME	11:05:52

COPY IN PROGRESS

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 700 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 11:05:52

WEIGH FEEDER A | FEEDER C | OLD RECLAIMS
FEEDER A | AUTO | MAN
100 | 2 | 100 | 100

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
		0		0	425
57 SPD	1.00 RAT	23 SPD	PCT DMD	0 B	0	0	0	0
					65
				0 D	0	0	0	511

NEAL COAL FEEDERS

WEIGH FEEDER B | WEIGH FEEDER D

TOTAL 128

			346	601
FOR 5 BELT &	132			
C FEEDER	11 BELT	[redacted]	280	[redacted]	1204
COAL BLEND	281			

SPD DMD | SPD DMD

GROSS LOAD	133	MAIN STM TEMP	1002	COND BACK PRESS	1.39	THR STM FLW MPPH	803
NET LOAD	127	REHEAT STM TEMP	994	LEFT SIDE O2	2.9	BOILER EFF.	86.3
THR STM PRESS	1788	TOTAL AIR FLOW	83	RIGHT SIDE O2	[illegible]	DATE	04/24/90
						TIME	11:05

COPY IN PROGRESS

9069

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

4/24

Total Coal Hoisted

= 1460 - 835 = 625 tons

000145

IBSCREEN: 801 VER: 0 WINDOW: Q VER: 0
04/24/90 TIME: 20:47:57

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

0	B	0	0	45	0
0	D	0	0	65	511
	11 BELT	0	0	[illegible]	1204

TM.SEAL MAN.SUPPLY	189	STM SEAL GEN TEMP	209
TM SEAL PRESS	1	TURB SHELL EXP	773

COPY IN PROGRESS

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 801 VER: 0 WINDOW: 0 VER: 0

DATE: 04/24/90 TIME: 20:47:57

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

100		2	100	100							
41		1.00	100	PCT		0 B	0	0	45	0	
0		0	0	0		0 D	0	0	65	511	
100		100			FOR 3 BELT & C FEEDER	11 BELT	0	0	835	120	
44 SPD		38 SPD									

NEAL COAL FEEDERS

OIL COOLER IN TEMP	99.9	STM.SEAL MAN.SUPPLY	189	STM SEAL GEN TEMP	209
OIL COOLER OUT TEMP	97.4	STM SEAL PRESS	1	TURB SHELL EXP	773
TURB BRG OIL PRESS		STM SEAL EXP	50	TURB DIFF EXP	577
TURB EHC PRESS		STM SEAL TEMP	218	TURB SPEED	

OPS IN PROGRESS

9069-

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 700 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 20:56:40

WEIGH FEEDER A	FEEDER C AUTO	MAN	OLD RECLAIMS
100	2	100	100
41 SPD DMD	1.00 RAT	19 SPD DMD	PCT DMD

NEAL COAL FEEDERS	
WEIGH FEEDER B	WEIGH FEEDER D
100	100
41 SPD DMD	38 SPD DMD

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
	0 A	0	0	66	445
	0 B	0	0	45	0
	0 C	12	0	410	593
	0 D	0	0	65	511
TOTAL	120	11	-0	417	601
3 BELT	114	15	-0	850	1204
11 BELT	103	0	0	209	979
13 BELT	0				

WINDOW TREND FOR 3 BELT & C FEEDER COAL BLEND

GROSS LOAD	138	MAIN STM TEMP	986	COND BACK PRESS	1.44	THR STM FLW MPPH	851
NET LOAD	131	REHEAT STM TEMP	993	LEFT SIDE O2	3.2	BOILER EFF.	86.2
THR STM PRESS	1881	TOTAL AIR FLOW	88	RIGHT SIDE O2	3.1	DATE	04/24/90
1ST STG PRESS	128	[illegible]	72	OPACITY	18.8	TIME	20:56

COPY IN PROGRESS

000147

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 801 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 20:58:07

WEIGH

FEEDER B		MAN	RECLAIMS
08	2	100	100
41 SPD DMD	1.00	18	3 PCT DMD
1 0	3 0	0	5 0

NEAL COAL FEEDERS

WEIGH FEEDER B

100	100	
44 SPD DMD	38 SPD DMD	
2	4	

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	HOURLY	PREV HOUR	DAILY	PREV DAY
A			66	445
0 B	0	0	45	0
	15		412	55
0 D	0	0	65	511
			420	
FOR 3 BELT & C FEEDER COAL BLEND	117	20	-0	1204
	205			
15 BELT	0	0	-0	979
	0			

OIL COOLER IN TEMP	99.9	STM.SEAL MAN.SUPPLY	198	STM SEAL GEN TEMP	208
OIL COOLER OUT TEMP	97.4	STM SEAL PRESS	2	TURB SHELL EXP	773
TUR			505	TURBINE EXP	57
TUR			215	TURB SPEED	

TRIP IN PROGRESS

9069-

000148

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 700 VER: 0 WINDOW: 0 VER: 0

DATE: 04/24/90 TIME: 20:59:13

WEIGH FEEDER A | WEIGH FEEDER C | OLD RECLAIMS

FEEDER A	AUTO	MAN	RECLAIMS
100	2	100	100
41	1.00	18	PCT
SPD	PAT	SPD	DMD
DMD			
1 0			

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
		0	0	66	445
	0 B	0	0	45	0
				419	593
	0 D	0	0	65	511
		16	-0	422	601
		24	-0	859	1204
		0	-0	209	979

NEAL COAL FEEDERS

WEIGH FEEDER B	WEIGH FEEDER D
100	100
44	38
SPD	SPD
DMD	DMD
2 0	4 0

TOTAL 112
CONTROL FROM 3 BELT 113
FOR 3 BELT & 113
C FEEDER 11 BELT
COAL BLEND 212
13 BELT 0

GROSS LOAD	138	MAIN STM TEMP	987	COND BACK PRESS	1.44	THR STM FLW MPPH	853
NET LOAD	131	REHEAT STM TEMP	995	LEFT SIDE O2	3.1	BOILER EFF.	86.2
THR STM PRESS	1802	TOTAL AIR FLOW	[illegible]	RIGHT SIDE O2	3.0	DATE	04/24/90
1ST STG PRESS	428	TOTAL GAS FLOW	[illegible]	CAPACITY	23.1	TIME	20:59

COPY IN PROGRESS

000149

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 801 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 21:06:16

FEEDER H	RUN/MAN	RECLAIMS
100	2 100	100
41	1.00 0	3 PCT
SPD DMD		

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	HOURLY	PREV HOUR	DAILY	PREV DAY
	0	2	66	
0 B	0	0	46	0
	8	1	427	534
0 D	0	0	66	511
	7	12	431	601
	19	27	881	1204
			209	

NEAL COAL FEEDERS

WEIGH FEEDER D	FEEDER D
100	100
44 SPD DMD	38 SPD DMD

WINDOW BREW FOR 3 BELT & C FEEDER COAL BLEND

11 BELT

OIL COOLER IN TEMP	99.9	STM.SEAL MAN.SUPPLY	198	STM SEAL GEN TEMP	208
OIL COOLER OUT TEMP	97.4	STM SEAL PRESS	1	TURB SHELL EXP	773
TURB BRG OIL PRESS			510	TURB DISC EXP	579
TURB EHC PRESS		TURB TEMP	218	TURB SPEED	1

BUSY IN PROGRESS

000150

9065

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 801 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 22:00:45

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

FEEDER H	WORK MAN		RECLAIMS
100	2	100	100
41	1.00	21	0 PCT
SPD DMD	RAT	SPD DMD	DMD
1 0	3 0	0	5 0

0 B	0	0	45	0
24 C	2	106	528	593
0 D	0	0	85	511

MEAL COAL FEEDERS

WEIGH FEEDER D			
100	100		
44	38		
SPD DMD	SPD DMD		
2 0	14		

FOR 3 BELT & C FEEDER

124	3	204	1068	1204
0	0	209		979

OIL COOLER IN TEMP	100.0	STM.SEAL MAN.SUPPLY	146	STM SEAL GEN TEMP	201
OIL COOLER OUT TEMP	97.5	STM SEAL PRESS	-0	TURB SHELL EXP	769
TURB BRG OIL PRESS	15	STM SEAL GEN PRESS	663	TURB DIFF EXP	584
TURB EHC PRESS	1629	STM SEAL MAN TEMP	218	TURB SPEED	3

MAIN PROGRESS

0001551

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 801 VER: 0 WINDOW: 0 VER: 0
DATE: 04/24/90 TIME: 23:00:19

WEIGH

FEEDER A	AUTO/MAN	RECLAIMS
100	2 100	100
41	1.00 100	24 PCT
SPD DMD		DMD
1 0	3 0 0	5 0

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	HOURLY	PREV HOUR	DAILY	PREV DAY
0 B	0	0	45	0
0 D	0	0	65	511
0	0	0	546	601
0	0	232	1298	1204
0	0	0	209	875

NEAL COAL FEEDERS

WEIGH FEEDER B	FEEDER C
100	100
44 SPD DMD	38 SPD DMD
2 0	4

WINDOW TREND FOR 3 BELT & C FEEDER COAL BLEND

3 BELT

11 BELT

OIL COOLER IN TEMP	99.8	STM.SEAL MAN.SUPPLY	223	STM SEAL GEN TEMP	235
OIL COOLER OUT TEMP	97.3	STM SEAL PRESS	2	TURB SHELL EXP	763
TURB BRG OIL PRESS	[illegible]	STM SEAL [illegible]	548	TURB DIFF EXP	578
TURB EHC PRESS	[illegible]	STM SEAL [illegible] TEMP	[illegible]	TURB SPEED	[illegible]

IN PROGRESS

000152

9069-

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 800 VER: 0 WINDOW: 0 VER:
DATE: 04/25/90 TIME: 00:00:07

WEIGH FEEDERS

FEEDER A	HOPPER	MAN	RECLAIMS
100	2	100	100
41 SPD DMD	1.00	100 SPD DMD	10 PCT DMD

NEAL COAL FEEDERS

FEEDER		
100	100	
44 SPD DMD	38 SPD DMD	

WINDOW CREDIT FOR 3 BELT & C FEEDER COAL BLEND

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	HOURLY	PREV HOUR	DAILY	PREV DAY
B		0		
C	0		0	219
D	0	0	0	65
		162	0	1460
	0		0	209

GROSS LOAD	0	MAIN STM TEMP	812	A1 SIDE O2	10.9	COND BACK PRESS	3.02
NET LOAD	2	REHEAT STM TEMP	764	A2 SIDE O2	11.1	BOILER EFF.	79.7
THR STM PRESS	663	TOTAL AIR FLOW	32.9	B1 SIDE O2	11.2	O2 (SP) DATE	04/25/90
OPACITY	61.2	TOTAL FUEL FLOW	8.8	B2 SIDE O2	10.4	9.9 TIME	00:00

COPY IN PROGRESS

000153

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

Total Coal Hoisted

- 1173 - 322 = 851 tons

Start time 1100
Stop time 1455

TIME: 14:54:36

COAL SCALE ACCUMULATIONS IN TONS

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0 B	0	0	67	66
0 C	99	111	579	719
TAL 0				
ND 3 BELT	100	111	581	724
1				
13 BELT	0	0	229	209

SPD
DMD 2 0
DMD 4 0

9069-

000154

01 0PM

000155

SCREEN: 2190 DATE: 04/23/90 TIME: 14:54:36

WEIGH FEEDER A

100

41
SPD
DMD
1 0

FEEDER C AUTO

RAT
C/3

SPD
DMD

3 5

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0 A	0	0	67	66
0 B				
0 C	99	111	579	719
0 D				
TOTAL 0				
3 REJT	100	111	581	724
13 REJT	0	0	229	209

NEAL COAL FEEDERS

WEIGH FEEDER B

100

44
SPD
DMD
2 0

WEIGH FEEDER D

38
SPD
DMD
4 0

WINDOW TREND

FOR
COAL BLEND 1

01:00PM

[redacted]

-0906

PG 4/26/90 00:00:43

HEAL NORTH HOURLY COAL HOISTED
SEND TO JERRY WHEELER

1 [illegible]
2 PREV HOUR 11 BELT TONNAGE
3 PREV HOUR 12 BELT TONNAGE
4 PREV HOUR 3 BELT TONNAGE
5 WEIGH FEEDER A PREV HOUR
6 WEIGH FEEDER B PREV HOUR
7 WEIGH FEEDER C PREV HOUR
8 WEIGH FEEDER D PREV HOUR

COAL HOISTED TO B-SILO

HH:MM:SS	1 SYSTIME NUM	2 XF0120HH TONS	3 XF0121HH TONS	4 XF0122HH TONS	5 XF0125HH TONS	6 XF0126HH TONS	7 XF0127HH TONS
01:00:00	4259000	0.46	-0.00	1.89	0.00	0.00	0.00
02:00:00	4259001	0.89	-0.00	1.88	0.00	0.00	0.00
03:00:00	4259002	0.79	-0.00	1.80	0.00	0.00	0.00
04:00:00	4259003	[redacted]	-0.01	156.78	0.00	0.00	154.54
05:00:00	4259004	[illegible]	230.00	0.00	67.35	[illegible]	[illegible]
06:00:00	4259005	-0.00	-0.00	-0.00	0.00	0.00	0.00
07:00:00	4259006	-0.00	-1.07	0.00	0.00	0.00	0.00
08:00:00	4259007	-0.00	-0.00	0.00	0.00	0.00	0.00
09:00:00	4259008	-0.00	-0.00	0.00	0.00	0.00	0.00
10:00:00	4259009	-0.00	-0.00	-0.00	0.00	0.00	0.00
11:00:00	4259010	0.45	-0.00	[illegible]	0.00	0.00	0.00
12:00:00	4259011	209.48	-0.00	109.48	0.00	0.00	110.20
13:00:00	4259012	198.58	-0.00	89.48	0.00	0.00	104.57
14:00:00	4259013	227.03	-0.00	110.55	0.00	0.00	111.03
15:00:00	4259014	213.30	-0.00	100.00	0.00	0.00	98.77
16:00:00	4259015	202.45	-0.00	100.05	0.00	0.00	97.37
17:00:00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
18:00:00	4259017	-0.00	225.79	-0.00	56.00	67.64	[illegible]
19:00:00	4259018	22.12	-0.61	14.41	0.00	0.00	15.12
20:00:00	4259019	243.30	-0.00	117.19	0.00	0.00	117.73
21:00:00	4259020	199.19	-0.00	96.37	0.00	0.00	[illegible]
22:00:00	4259021	167.35	-0.00	87.14	0.00	0.00	84.13
23:00:00	4259022	-0.00	-0.00	0.00	0.00	0.00	[illegible]
00:00:00	4259023	-0.00	-0.00	0.00	0.00	0.00	0.00
SUMMARY DATA							
SUM	********	2007.35	931.32	996.72	2[illegible].20	271.21	98[illegible]

000156

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

4/25

Total Coal Hoisted

1840 - 1375 = 465 tons

0004157

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0 A	0	68	282	66
0 C	0	0	676	719
OTAL 0				
END R RFLT	0	-0	681	724
D 0				
IR RFLT	-1	230	906	209

DMD 2 0

DMD 4 0

INSCREEN:

DATE: 04/25/90 TIME: 18:48:48

WEIGH FEEDER A | FEEDER C | OLD

100

AUTO CLAIMS

SCALE ACCUMULATIONS TONS

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0 A	0	68	282	66
0 C	0	0	676	719
0	0	0	289	65

41 | 00 | 22

SPD DMD | RAT C/3 | SPD DMD | DMD

1 0 | 3 | 5

NEAL COAL FEEDERS

WEIGH FEEDER B | WEIGH FEEDER D

TOTAL 0

WINDOW TREND 3 RFLT 0 -0 681 724

100

FEEDS

COAL BLEND 0

13 RFLT -1 230 906 209

44 | 38

SPD DMD | SPD DMD

2 0 | 4 0

9069 -

WEIGH FEEDER A | FEEDER C AUTO MAN | OLD RECLAIMS

100 | 100 | 100

41 SPD DMD | 100 RAT C/3 | 100 SPD DMD | 18 PCT DMD

1 0

MEAL COAL FEEDERS

WEIGH FEEDER B | WEIGH FEEDER D

100 | 100

44 SPD DMD | 18 SPD DMD

2 0 | 4 0

WINDOW TREND FOR 3 BE C FEEDER

TOTAL 117

3 BELT

11 BELT

COAL BLEND 238

13 BELT

MILL FORS COAL SCALE ACCUMULATIONS IN TONS

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0	0	0	282	66
0	0	0	273	45
117	0	15	692	719
0	0	0	267	65
0	0	14	696	724
1	0	-23	1398	1480
0	0	-1	906	289

COPY IN PROGRESS

0001459

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 700 VER: 0 WINDOW: 0 VER: 0
DATE: 04/25/90 TIME: 19:28:54

WEIGH FEEDER A | FEEDER C | OLD RECLAIMS
AUTO MAN

100 2 100 100

41 SPD DMD 1.00 RAT 16 SPD DMD 5 PCT DMD

NEAL COAL FEEDERS

WEIGH FEEDER B | WEIGH FEEDER D

100 100

44 SPD DMD 38 SPD DMD

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
	A	0	0	282	66
	0 B	0	0	273	45
	19 C	57	15	749	719
	0 D	0	0	267	65
TOTAL	110				
CONTROL BRKR	3 BELT	52	11	753	724
FOR 3 BELT &	109				
C FEEDER	11 BELT	119	22	1516	1460
COAL BLEND	233				
	13 BELT	0	-1	906	209
	0				

GROSS LOAD	108	MAIN STM TEMP	965	COND BACK PRESS	1.56	THR STM FLW MPPH	648
NET LOAD	102	REHEAT STM TEMP	949	LEFT SIDE O2	2.9	BOILER EFF.	86.7
THR STM PRESS	1748	TOTAL AIR FLOW	55	RIGHT SIDE O2	3.5	DATE	04/25/90
1ST STG PRESS	1981	TOTAL FUEL FLOW	56	OPACITY	7.9	TIME	19:28

COPY IN PROGRESS

9069-

000160

MAINSCREEN: 2090 VER: 0 SUBSCREEN: 700 VER: 0 WINDOW: 0 VER: 0
DATE: 04/25/90 TIME: 19:29:07

WEIGH FEEDER A	FEEDER C AUTO	FEEDER C MAN	OLD RECLAIMS
100	2	100	100
41 SPD DMD	1.00 RAT	18 SPD DMD	PCT DMD
1 0			

NEAL COAL FEEDERS

WEIGH FEEDER B	WEIGH FEEDER D
100	100
44 SPD DMD	38 SPD DMD
2 0	4

WEIGH FDRS COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
	0 A	0	0	282	66
	0 B	0	0	273	45
	0 D	0	0	267	65
TOTAL	116				
		58	14	753	724
FOR 3 BELT &	117				
C FEEDER	11 BELT	120	22	1517	1460
COAL BLEND	231				
	15 BELT	0	0	906	209

GROSS LOAD	108	MAIN STM TEMP	966	COND BACK PRESS	1.58	THR STM FLW MPPH	649
NET LOAD	102	REHEAT STM TEMP	949	LEFT SIDE O2	2.9	BOILER EFF.	86.7
THR STM PRESS	1749	TOTAL AIR FLOW	54	RIGHT SIDE O2	3.8	DATE	04/25/90
1ST STG PRESS	982	TOTAL FUEL FLOW	56	OPACITY	7.6	TIME	19:29

COPY IN PROGRESS

0001161

SCREEN: [illegible]

DATE: 04/25/90 TIME: 20:03:39

WEIGH FEEDER C OLD

FEEDER A AUTO [illegible]

100

41

SPD DMD

1 -0

RAT C/3 SPD DMD DMD

WEIGH FEEDS COAL SCALE ACCUMULATIONS IN TONS

RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
0 A	0	0	282	66
0	0	0	[illegible]	[illegible]
122 C	2	118	817	719
0	0	0	[illegible]	65
127				
127	2	117	820	724
0	0	0	[illegible]	1468
243				
0	0	-0	906	209

WEAL COAL FEEDERS

WEIGH FEEDER R

WEIGH FEEDER D

100

44

SPD DMD

2 0

38

SPD DMD

4 0

TOTAL 127

WINDOW TREND 3 BELT

COAL BLEND 243

13 BELT

0

9069-

17:22:35 RETURN CC3691 SILO 3F HIGH LEVEL NORMAL

0004162

INSCREEN: 2490 , VER: 0 SUBSCREEN: 11 VER: 102 WINDOW: VER:
DATE: 04/25/90 TIME: 20:51:25

WEIGH FEEDER A | FEEDER C | ALD RECLAIMS

100 | 100 | 100

41 SPD DMD | 1.00 RAT C/3 | 100 SPD DMD | 5 PCT DMD

1 0 | 13 | 15

WEIGH FEEDERS

WEIGH FEEDER B | WEIGH FEEDER D

100 | 100

44 SPD DMD | 38 SPD DMD

2 0 | 4 0

COAL SCALE ACCUMULATIONS IN TONS

	RATES	HOURLY	PREV HOUR	DAILY	PREV DAY
A	0	0	0	282	66
B	0	0	0	273	45
C	0	95	118	904	719
D	0	0	0	262	65
TOTAL	0	96	117	909	724
3 BELT					160
11 BELT		199	243		
13 BELT		0	0	906	209

WINDOW TREND

3 BELT

11 BELT

13 BELT

COAL BLEND 2

20:47:44 ALARM CC3619 WEIGH FEEDER C OFF ALARM
20:47:39 ALARM CC3662 ALL RECLAIM FEEDERS STOPPED ALARM

COPY IN PROGRESS

000163

IPS ELECTRIC
The Service People

TODD VAN DIEPEN

9/26

Total Coal Hoisted

= 1513 tons

SCREEN: 11 VER: 102 WINDOW: 0 VER: 0
/26/90 TIME: 19:14:37

RATE				
0 A	0	0	96	282
0 C	19	123	753	989
TREND	21	122	748	997
ELT & 2				
13 BELT 0	0	-0	1216	906

000164

9069-

MAINSCREEN: 2490 VER: 0 SUBSCREEN: 11 VER: 102 WINDOW: 0 VER: 0
DATE: 04/26/90 TIME: 19:14:37

000165

100 WEIGH FDR RATES

0 A 0 0

41. SPD DMD 1.00 RAT C/3 100 SPD DMD PCT DMD 0

0 C 19 123

REAL COAL FEEDERS

WEIGH WEIGH TOTAL

: : WINDOW TREND FOR 3 BELT & 2 B FEEDER COAL RATE

21 122

BELT 0 -0 1216 906

42 SPD DMD 36 SPD DMD

COPY IN PROGRESS

PG 4/27/90 00:00:43 NEAL NORTH HOURLY COAL HOISTED LOG # 3 PAGE 1

SEND TO JERRY WHESLER

[illegible] 11 BELT TONNAGE 6 WEIGH FEEDER D [illegible] HOUR

[illegible] 12 BELT TONNAGE 7 WEIGH FEEDER [illegible] PREV HOUR

4 PREV HOUR 3 BELT TONNAGE 8 WEIGH FEEDER D PREV HOUR 12

HH:MM:SS	1 DATE MDYY	2 MF1120HH TONS	3 MF1121HH TONS	4 MF1122HH TONS	5 MF1125HH TONS	6 MF1126HH TONS	7 MF1127HH TONS	8 MF1128HH TONS	9	10	11	12
01:00:00	4269000	-0.00	303.43	0.00	0.00	137.94	1.54	143.45				
02:00:00	4269001	-0.00	502.36	0.00	0.00	224.76	0.00	241.40				
03:00:00	4269002	-0.00	68.05	0.00	0.00	20.17	0.00	22.55				
04:00:00	4269003	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00				
05:00:00	4269004	-0.00	247.[illegible]	0.00	62.47	72.[illegible]	0.00	11.[illegible]				
06:00:00	4269005	-0.00	102.96	0.00	27.30	28.91	0.00	28.55				
07:00:00	4269006	-0.00	-6.23	0.00	0.00	0.00	0.00	0.00				
08:00:00	4269007	-0.00	-0.33	0.00	0.00	0.00	0.00	0.00				
09:00:00	4269008	[redacted]	-0.00	[redacted]	0.00	0.00	[redacted]	0.00				
10:00:00	4269009		-0.00		0.00	0.00		0.00				
11:00:00	4269010		-0.00		0.00	0.00		0.00				
12:00:00	4269011		-0.00		0.00	0.00		0.00				
13:00:00	4269012		-0.00		0.00	0.00		0.00				
14:00:00	4269013		-0.00		0.00	0.00		0.00				
15:00:00	4269014		-0.00		0.00	0.00		0.00				
16:00:00	4269015		-0.00		0.00	0.00		0.00				
17:00:00	4269016		-0.00		0.00	0.00		0.00				
18:00:00	4269017	[redacted]	-0.00	[redacted]	0.00	0.00	[redacted]	0.00				
19:00:00	4269018		-0.00		0.00	0.00		0.00				
20:00:00	4269019	[illegible]	8.52	[illegible]	4.04	0.00	[illegible]	[illegible]				
21:00:00	4269020	[illegible]	68.43	[illegible]	230.69	[illegible]	0.00	[illegible]				
22:00:00	4269021	[illegible]	[illegible]	[illegible]	261.08	0.00	[illegible]	[illegible]				
23:00:00	4269022	[illegible]	[illegible]	[illegible]	219.71	0.00	0.00	[illegible]				
00:00:00	4269023	435.46	448.77	420.69	220.92	0.00	0.00	216.97				

SUMMARY DATA

SUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TOTAL COAL HOISTED TO A&C SILOS 0900 - 1410 = ~~[illegible]~~ TONS 1071

TOTAL COAL HOISTED TO A&C SILOS 1800 - 1900 = ~~[illegible]~~ TONS 442

1513

000466

9069

PG

1 BROADCAST TIME MN/DY/YR/HR
2 PREV HOUR 11 BELT TONNAGE
3 PREV HOUR 12 BELT TONNAGE
5 WEIGH FEEDER A PREV HOUR

	SYSTIME MDYH	MF3120HH TONS	MF3121HH TONS	MF3122HH TONS	MF3123HH TONS				
03:00:00	4239002	-0.00	-0.00						
04:00:00	4239003	-0.00							
05:00:00	4239004	-0.00	190.01	-0					
09:00:00	4239008	148.66	0.00	86					
10:00:00	4239009	50.4	0.00						
11:00:00	4239010	-0.00	-0.00						
12									
13:00									
14:00									
15:00:00	4239014	242.26	-0.00	127.76	0.00	0.00	125.73		
16:00:00	4239015	160.90	-0.00	74.19					
17:00:00	4239016	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00	
18:00									
19:00									
20:00:00									
21:00:00	4239020	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00	
22:00:00	4239021		-0.00		0.00				
23:00:00	4239022		-0.00		0.00				
00									
SUM	++++++++	1203.60	978.86	600.76	444.65	0.02	593.11	511.06	

00014?

-6906

718.76 64.74

000168

PG 4/26/90 00:00:43

NEAL NORTH HOURLY COAL HOISTED
SEND TO JERRY WHEELER

[illegible] 11 BELT TONNAGE
4 PREV HOUR 3 BELT TONNAGE

6 WEIGH FEEDER A PREV HOUR 9
5 WEIGH FEEDER B PREV HOUR 10
7 WEIGH FEEDER C PREV HOUR 11
8

HH:MM:SS	1 SYSTIME MWH	2 MF[illegible]HH MG	3 MF3121HH TONS	4 MF2122HH TONS	MF3125HH TONS	MF3126HH TONS	MF3127HH TONS	MF3128HH TONS
01:00:00	4269000	0.46	-0.00	1.09	[illegible]	0.00	[illegible]	[illegible]
02:00:00	4269001	0.59	-0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
03:00:00	4269002	0.79	-0.00	1.80	0.00	0.00	0.00	0.00
04:00:00	4269003	222.28	-0.01	164.78	0.00	0.00	164.64	0.00
[illegible]	4269004	[illegible]	[illegible]	0.00	[illegible]	[illegible]	[illegible]	[illegible]
06:00:00	4269005	-0.00	-0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]
07:00:00	4269006	-0.00	-1.07	0.00	[illegible]	[illegible]	[illegible]	[illegible]
08:00:00	4269007	-0.00	-0.00	0.00	[illegible]	[illegible]	[illegible]	[illegible]
09:00:00	4269008	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00
10:00:00	4269009	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00
[illegible]	4269010	0.44	-0.00	[illegible]	0.00	0.00	0.00	0.00
12:00:00	4269011	[illegible]	-0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13:00:00	4269012	[illegible]	-0.00	[illegible]	[illegible]	0.00	[illegible]	[illegible]
14:00:00	4269013	[illegible]	-0.00	[illegible]	[illegible]	0.00	[illegible]	[illegible]
[illegible]	4269014	[illegible]	-0.00	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	4269015	[illegible]	-0.00	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	141.83	133.29	0.00	141.14
18:00:00	4269017	-0.00	229.79	-0.00	69.00	67.84	0.00	64.03
19:00:00	4269018	[illegible]	-0.61	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	4269019	[illegible]	-0.00	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	4269020	[illegible]	-0.00	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	4269021	[illegible]	-0.00	[illegible]	0.00	0.00	[illegible]	0.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00	0.00	[illegible]	0.00
00:00:00	4269023	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00

SUMMARY DATA

[illegible]	********	[illegible]	90[illegible].32	[illegible].72	264.20	271.21	98[illegible].28	267.30

BELTING TO 2

000469

-6906

HOUR 2

0.00

0.00 0.00 0.00

0.00 283.78

283.

0.00 217.37

SUM 3063.78 782.57 1066.64

000170

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1313 SOUTH HIGHLAND AVE SUITE 210 B LOMBARD ILLINOIS 60148 • (708) 953-9300
Member of the SGS Group (Société Générale de Surveillance)

April 18, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO:
609 CHARLES ST., BILLINGS, MT 59102
TELEPHONE: (406) 252-5818
FAX: (406) 252-5818

IOWA PUBLIC SERVICE COMPANY
P.O. Box 778
Sioux City, IA 51102

Sample identification by
Iowa Public Service Company

Neal 1
50/50 Blend
Med Bow / Caballo

Kind of sample reported to us: Coal

Sample taken at: ------

Sample taken by: Iowa Public Service Company

Date sampled: March 27, 1990

Date received: April 4, 1990

Analysis Report No. 51-35626

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	36.04
Aluminum oxide	16.91
Titanium dioxide	0.96
Iron oxide	6.45
Calcium oxide	22.09
Magnesium oxide	3.36
Potassium oxide	0.69
Sodium oxide	1.44
Sulfur trioxide	7.94
Phosphorus pentoxide	0.95
Strontium oxide	0.36
Barium oxide	0.48
Manganese oxide	0.12
Undetermined	2.21
	100.00

Silica Value = 53.05
Base:Acid Ratio = 0.63
T_{250} Temperature = 2232 °F

Fouling Index = 0.91
Slagging Index = 0.30

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Steve Judd
Manager, Billings Laboratory

000171

F-465

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE., SUITE 210 B, LOMBARD, ILLINOIS 60148 • (708) 953-9900 - 6906
Member of the SGS Group (Societe Generale de Surveillance)

April 18, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO:
609 CHARLES ST., BILLINGS, MT 59102
TELEPHONE: (406) 252-5818
FAX: (406) 252-5818

IOWA PUBLIC SERVICE COMPANY
P.O. Box 778
Sioux City, IA 51102

Sample identification by
Iowa Public Service Company

Neal 2
Medicine Bow

Kind of sample reported to us: Coal

Sample taken at: ------

Sample taken by: Iowa Public Service Company

Date sampled: March 28, 1990

Date received: April 4, 1990

Analysis Report No. 51-35627

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	12.91	xxxxx
% Ash	7.66	8.79
% Volatile	33.76	38.76
% Fixed Carbon	45.67	52.45
	100.00	100.00
Btu/lb	10491	12046
% Sulfur	0.39	0.45
MAF Btu		13207
Alk. as Sodium Oxide	0.13	0.15

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	12.91	xxxxx
% Carbon	61.04	70.09
% Hydrogen	4.04	4.64
% Nitrogen	1.05	1.21
% Sulfur	0.39	0.45
% Ash	7.66	8.79
% Oxygen(diff)	12.91	14.82
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2131	2159
Softening (ST)	2159	2168
Hemispherical (HT)	2175	2178
Fluid (FT)	2215	2231

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Steve Judd

Manager, Billings Laboratory

000172

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (708) 953 9300
Member of the SGS Group (Société Générale de Surveillance)

April 18, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO:
609 CHARLES ST., BILLINGS, MT 59102
TELEPHONE: (406) 252-5818
FAX: (406) 252-5818

IOWA PUBLIC SERVICE COMPANY
P.O. Box 778
Sioux City, IA 51102

Sample identification by
Iowa Public Service Company

Neal 2
Medicine Bow

Kind of sample reported to us: Coal

Sample taken at: ------

Sample taken by: Iowa Public Service Company

Date sampled: March 28, 1990

Date received: April 4, 1990

Analysis Report No. 51-35627

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	32.50
Aluminum oxide	15.43
Titanium dioxide	0.55
Iron oxide	7.40
Calcium oxide	26.88
Magnesium oxide	3.28
Potassium oxide	0.76
Sodium oxide	1.23
Sulfur trioxide	7.38
Phosphorus pentoxide	0.91
Strontium oxide	0.34
Barium oxide	0.31
Manganese oxide	0.24
Undetermined	2.79
	100.00

Silica Value = 46.39
Base:Acid Ratio = 0.82
T_{250} Temperature = 2173 °F

Fouling Index = 1.01
Slagging Index = 0.37

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Steve Judd
Manager, Billings Laboratory

000173

COMMERCIAL TESTING & ENGINEERING CO.
COMMERCIAL TESTING & ENGINEERING CO. 1010 BOTTOMLY BLDG. 1010 BOTTOMLY BLDG. SUITE 210 DENVER, COLORADO 80202
Member of the SGS Group (Societe Generale de Surveillance)

-6906

October 25, 1989

PLEASE ADDRESS ALL CORRESPONDENCE TO
409 CHARLES ST. BILLINGS, MONTANA
TELEPHONE (406) [illegible]
FAX (406) [illegible]

IOWA PUBLIC SERVICE COMPANY
P.O. Box 778
Sioux City, IA 51102

Sample identification by
Iowa Public Service Company

Neal 4
Heat Rate Test

Caballo

Kind of sample reported to us: Coal

Sample taken at: Neal 4

Sample taken by: Iowa Public Service Company

Date sampled: October 11, 1989

Date received: October 18, 1989

Analysis Report No. 51-33935

PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	28.89	xxxxx
% Ash	5.77	8.11
% Volatile	31.21	43.89
% Fixed Carbon	34.13	48.00
	100.00	100.00
Btu/lb	8451	11884
% Sulfur	0.39	0.55
MAF Btu		12933
Alk. as Sodium Oxide	0.10	0.14

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	28.89	xxxxx
% Carbon	49.07	69.01
% Hydrogen	3.38	4.76
% Nitrogen	0.75	1.05
% Sulfur	0.39	0.55
% Ash	5.77	8.11
% Oxygen(diff)	11.75	16.52
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2131	2180
Softening (ST)	2137	2196
Hemispherical (HT)	2142	2208
Fluid (FT)	2192	2270

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Billings Laboratory

Original Copy Watermarked For Your Protection

F-466 SPECIAL

000174

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1918 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 9[illegible]
Member of the BGS Group (Société Générale de Surveillance)

October 25, 1989

PLEASE ADDRESS ALL CORRESPONDENCE TO:
608 CHARLES ST., BILLINGS, MT 59102
TELEPHONE (406) 252-5818
FAX (406) 252-5018

IOWA PUBLIC SERVICE COMPANY
P.O. Box 778
Sioux City, IA 51102

Sample identification by
Iowa Public Service Company

Neal 4
Heat Rate Test

Kind of sample reported to us: Coal

Sample taken at: Neal 4

Sample taken by: Iowa Public Service Company

Date sampled: October 11, 1989

Date received: October 18, 1989

Analysis Report No. 51-33935

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	34.28
Aluminum oxide	17.64
Titanium dioxide	1.31
Iron oxide	5.41
Calcium oxide	19.81
Magnesium oxide	3.48
Potassium oxide	0.37
Sodium oxide	1.43
Sulfur trioxide	13.28
Phosphorus pentoxide	0.99
Strontium oxide	0.40
Barium oxide	0.64
Manganese oxide	0.00
Undetermined	1.16
	100.00

Silica Value = 54.43
Base:Acid Ratio = 0.57
Tase Temperature = 2260 °F

Fouling Index = 0.82
Slagging Index = 0.31

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Billings Laboratory

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APPENDIX G

Fuel Analysis Reports

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE SUITE 210-B LOMBARD ILLINOIS 60148 • 312 953-9300

Member of the SGS Group Societe Generale de Surveillance

May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 808, CHARLESTON WV 25323
TELEPHONE (304) 925-6631
FAX (304) 925-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-1

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 1	25
1345-C-1 C SILO RUN NO. 1	26
1345-C-2 A SILO RUN NO. 1	27
1345-C-2 C SILO RUN NO. 1	28

Analysis Report No. 61-25349-1

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.34	xxxxx
% Ash	8.02	9.94
Btu/lb	9509	11789
% Sulfur	0.38	0.47
MAF Btu		13090
Alk. as Sodium Oxide	xxxxx	xxxxx

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.34	xxxxx
% Carbon	54.96	68.14
% Hydrogen	3.71	4.60
% Nitrogen	0.90	1.12
% Sulfur	0.38	0.47
% Ash	8.02	9.94
% Oxygen(diff)	12.69	15.73
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2030	xxxx
Softening (ST)	2055	xxxx
Hemispherical (HT)	2065	xxxx
Fluid (FT)	2090	xxxx

Respectfully submitted.
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE SUITE 210-B LOMBARD ILLINOIS 60148 • (312) 953-9300

-6906

Member of the SGS Group Societe Generale de Surveillance

May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 808, CHARLESTON WV 25323
TELEPHONE: (304) 325-6631
FAX: (304) 325-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-1

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 1	25
1345-C-1 C SILO RUN NO. 1	26
1345-C-2 A SILO RUN NO. 1	27
1345-C-2 C SILO RUN NO. 1	28

Analysis Report No. 61-25349-1

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	37.65
Aluminum oxide	17.80
Titanium dioxide	0.92
Iron oxide	6.53
Calcium oxide	21.55
Magnesium oxide	3.39
Potassium oxide	0.88
Sodium oxide	0.97
Sulfur trioxide	6.05
Phosphorus pentoxide	0.90
Strontium oxide	0.34
Barium oxide	0.33
Manganese oxide	0.12
Undetermined	2.57
	100.00

Silica Value = 54.47
Base:Acid Ratio = 0.59
T_{250} Temperature = 2251 °F

Fouling Index = 0.57
Slagging Index = 0.28

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-663
FAX: (304) 925-887

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-2

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 2	55
1345-C-1 C SILO RUN NO. 2	56
1345-C-2 A SILO RUN NO. 2	57
1345-C-2 C SILO RUN NO. 2	58
1345-C-3 A SILO RUN NO. 2	59
1345-C-3 C SILO RUN NO. 2	60
1345-C-4 A SILO RUN NO. 2	61
1345-C-4 C SILO RUN NO. 2	62

Analysis Report No. 61-25349-2

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	15.67	xxxxx
% Ash	8.72	10.34
Btu/lb	9966	11818
% Sulfur	0.40	0.47
MAF Btu		13181
Alk. as Sodium Oxide	0.14	0.17

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	15.67	xxxxx
% Carbon	57.48	68.16
% Hydrogen	3.91	4.64
% Nitrogen	0.97	1.15
% Sulfur	0.40	0.47
% Ash	8.72	10.34
% Oxygen(diff)	12.85	15.24
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2050	xxxx
Softening (ST)	2065	xxxx
Hemispherical (HT)	2080	xxxx
Fluid (FT)	2105	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-663
FAX: (304) 925-88

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-2

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 2	55
1345-C-1 C SILO RUN NO. 2	56
1345-C-2 A SILO RUN NO. 2	57
1345-C-2 C SILO RUN NO. 2	58
1345-C-3 A SILO RUN NO. 2	59
1345-C-3 C SILO RUN NO. 2	60
1345-C-4 A SILO RUN NO. 2	61
1345-C-4 C SILO RUN NO. 2	62

Analysis Report No. 61-25349-2

ANALYSIS OF ASH	WEIGHT %, DRY BASIS
Silicon dioxide	38.43
Aluminum oxide	17.51
Titanium dioxide	0.90
Iron oxide	6.93
Calcium oxide	20.96
Magnesium oxide	3.28
Potassium oxide	0.94
Sodium oxide	0.98
Sulfur trioxide	6.62
Phosphorus pentoxide	0.86
Strontium oxide	0.31
Barium oxide	0.32
Manganese oxide	0.09
Undetermined	1.87
	100.00

Silica Value = 55.22
Base:Acid Ratio = 0.58
T_{250} Temperature = 2256 °F

Fouling Index = 0.57
Slagging Index = 0.27

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

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PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE (304) 925-6631
FAX (304) 925-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-3

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 3	93
1345-C-1 C SILO RUN NO. 3	94
1345-C-2 A SILO RUN NO. 3	95
1345-C-2 C SILO RUN NO. 3	96
1345-C-3 A SILO RUN NO. 3	97
1345-C-3 C SILO RUN NO. 3	98

Analysis Report No. 61-25349-3

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.36	xxxxx
% Ash	8.08	10.02
Btu/lb	9517	11802
% Sulfur	0.41	0.51
MAF Btu		13116
Alk. as Sodium Oxide	xxxxx	xxxxx

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.36	xxxxx
% Carbon	55.23	68.49
% Hydrogen	3.80	4.71
% Nitrogen	0.89	1.10
% Sulfur	0.41	0.51
% Ash	8.08	10.02
% Oxygen(diff)	12.23	15.17
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2045	xxxx
Softening (ST)	2060	xxxx
Hemispherical (HT)	2075	xxxx
Fluid (FT)	2115	xxxx

Respectfully submitted.
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-6631
FAX: (304) 925-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-3

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 3	93
1345-C-1 C SILO RUN NO. 3	94
1345-C-2 A SILO RUN NO. 3	95
1345-C-2 C SILO RUN NO. 3	96
1345-C-3 A SILO RUN NO. 3	97
1345-C-3 C SILO RUN NO. 3	98

Analysis Report No. 61-25349-3

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	37.70
Aluminum oxide	17.38
Titanium dioxide	0.91
Iron oxide	7.12
Calcium oxide	21.36
Magnesium oxide	3.39
Potassium oxide	0.90
Sodium oxide	1.00
Sulfur trioxide	5.83
Phosphorus pentoxide	0.90
Strontium oxide	0.32
Barium oxide	0.35
Manganese oxide	0.10
Undetermined	2.74
	100.00

Silica Value = 54.19
Base:Acid Ratio = 0.60
T_{250} Temperature = 2245 °F

Fouling Index = 0.60
Slagging Index = 0.31

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 808, CHARLESTON WV 25323
TELEPHONE (304) 925-6[illegible]
FAX: (304) 925-6[illegible]

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-4

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 4	125
1345-C-1 C SILO RUN NO. 4	126
1345-C-2 A SILO RUN NO. 4	127
1345-C-2 C SILO RUN NO. 4	128
1345-C-3 A SILO RUN NO. 4	129
1345-C-3 C SILO RUN NO. 4	130

Analysis Report No. 61-25349-4

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	16.81	xxxxx
% Ash	8.29	9.97
Btu/lb	9863	11856
% Sulfur	0.41	0.49
MAF Btu		13169
Alk. as Sodium Oxide	0.13	0.16

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	16.81	xxxxx
% Carbon	56.85	68.34
% Hydrogen	3.88	4.66
% Nitrogen	0.90	1.08
% Sulfur	0.41	0.49
% Ash	8.29	9.97
% Oxygen(diff)	12.86	15.46
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2030	xxxx
Softening (ST)	2050	xxxx
Hemispherical (HT)	2065	xxxx
Fluid (FT)	2085	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-6631
FAX: (304) 925-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-4

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 4	125
1345-C-1 C SILO RUN NO. 4	126
1345-C-2 A SILO RUN NO. 4	127
1345-C-2 C SILO RUN NO. 4	128
1345-C-3 A SILO RUN NO. 4	129
1345-C-3 C SILO RUN NO. 4	130

Analysis Report No. 61-25349-4

ANALYSIS OF ASH	WEIGHT %, DRY BASIS
Silicon dioxide	37.53
Aluminum oxide	17.12
Titanium dioxide	0.87
Iron oxide	6.97
Calcium oxide	21.22
Magnesium oxide	3.84
Potassium oxide	0.84
Sodium oxide	1.04
Sulfur trioxide	8.19
Phosphorus pentoxide	0.93
Strontium oxide	0.33
Barium oxide	0.38
Manganese oxide	0.09
Undetermined	0.65
	100.00

Silica Value = 53.95
Base:Acid Ratio = 0.61
T_{250} Temperature = 2241 °F

Fouling Index = 0.63
Slagging Index = 0.30

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-5

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 5	157
1345-C-1 C SILO RUN NO. 5	158
1345-C-2 A SILO RUN NO. 5	159
1345-C-2 C SILO RUN NO. 5	160
1345-C-3 A SILO RUN NO. 5	161
1345-C-3 C SILO RUN NO. 5	162

Analysis Report No. 61-25349-5

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.00	xxxxx
% Ash	8.59	10.61
Btu/lb	9518	11750
% Sulfur	0.42	0.52
MAF Btu		13145
Alk. as Sodium Oxide	0.13	0.16

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	19.00	xxxxx
% Carbon	55.22	68.17
% Hydrogen	3.73	4.61
% Nitrogen	0.93	1.15
% Sulfur	0.42	0.52
% Ash	8.59	10.61
% Oxygen(diff)	12.11	14.94
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2040	xxxx
Softening (ST)	2060	xxxx
Hemispherical (HT)	2085	xxxx
Fluid (FT)	2110	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
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May 9, 1990

PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-6663
FAX: (304) 925-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-5

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 5	157
1345-C-1 C SILO RUN NO. 5	158
1345-C-2 A SILO RUN NO. 5	159
1345-C-2 C SILO RUN NO. 5	160
1345-C-3 A SILO RUN NO. 5	161
1345-C-3 C SILO RUN NO. 5	162

Analysis Report No. 61-25349-5

ANALYSIS OF ASH	WEIGHT %, DRY BASIS
Silicon dioxide	37.59
Aluminum oxide	17.66
Titanium dioxide	0.83
Iron oxide	7.43
Calcium oxide	20.81
Magnesium oxide	3.18
Potassium oxide	0.92
Sodium oxide	0.86
Sulfur trioxide	7.14
Phosphorus pentoxide	0.87
Strontium oxide	0.32
Barium oxide	0.35
Manganese oxide	0.11
Undetermined	1.93
	100.00

Silica Value = 54.47
Base:Acid Ratio = 0.59
T_{250} Temperature = 2250 °F

Fouling Index = 0.51
Slagging Index = 0.31

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.

GENERAL OFFICES 1919 SOUTH HIGHLAND AVE SUITE 210-B LOMBARD ILLINOIS 60148 • (312) 953-9300

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PLEASE ADDRESS ALL CORRESPONDENCE TO
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FAX: (304) 325-8877

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-6

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 6	189
1345-C-1 C SILO RUN NO. 6	190
1345-C-2 A SILO RUN NO. 6	191
1345-C-2 C SILO RUN NO. 6	192
1345-C-3 A SILO RUN NO. 6	193
1345-C-3 C SILO RUN NO. 6	194

Analysis Report No. 61-25349-6

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	16.81	xxxxx
% Ash	9.08	10.91
Btu/lb	9746	11715
% Sulfur	0.47	0.56
MAF Btu		13150
Alk. as Sodium Oxide	0.14	0.16

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	16.81	xxxxx
% Carbon	56.34	67.72
% Hydrogen	3.84	4.62
% Nitrogen	0.92	1.11
% Sulfur	0.47	0.56
% Ash	9.08	10.91
% Oxygen(diff)	12.54	15.08
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2035	xxxx
Softening (ST)	2055	xxxx
Hemispherical (HT)	2090	xxxx
Fluid (FT)	2115	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
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PLEASE ADDRESS ALL CORRESPONDENCE TO
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TELEPHONE: (304) 925-663
FAX: (304) 925-887

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-6

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 6	189
1345-C-1 C SILO RUN NO. 6	190
1345-C-2 A SILO RUN NO. 6	191
1345-C-2 C SILO RUN NO. 6	192
1345-C-3 A SILO RUN NO. 6	193
1345-C-3 C SILO RUN NO. 6	194

Analysis Report No. 61-25349-6

ANALYSIS OF ASH	WEIGHT %, DRY BASIS
Silicon dioxide	37.70
Aluminum oxide	17.70
Titanium dioxide	0.91
Iron oxide	7.54
Calcium oxide	19.78
Magnesium oxide	3.17
Potassium oxide	0.91
Sodium oxide	0.89
Sulfur trioxide	7.48
Phosphorus pentoxide	0.84
Strontium oxide	0.31
Barium oxide	0.28
Manganese oxide	0.10
Undetermined	2.39
	100.00

Silica Value = 55.29
Base:Acid Ratio = 0.57
T_{250} Temperature = 2260 °F

Fouling Index = 0.51
Slagging Index = 0.32

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300
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May 9, 1990

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FAX: (304) 925-887

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-7

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 7	221
1345-C-1 C SILO RUN NO. 7	222
1345-C-2 A SILO RUN NO. 7	223
1345-C-2 C SILO RUN NO. 7	224
1345-C-3 A SILO RUN NO. 7	225
1345-C-3 C SILO RUN NO. 7	226

Analysis Report No. 61-25349-7

SHORT PROXIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	17.75	xxxxx
% Ash	8.41	10.22
Btu/lb	9710	11805
% Sulfur	0.45	0.55
MAF Btu		13149
Alk. as Sodium Oxide	xxxxx	xxxxx

ULTIMATE ANALYSIS

	As Received	Dry Basis
% Moisture	17.75	xxxxx
% Carbon	56.00	68.08
% Hydrogen	3.77	4.58
% Nitrogen	0.96	1.17
% Sulfur	0.45	0.55
% Ash	8.41	10.22
% Oxygen(diff)	12.66	15.40
	100.00	100.00

FUSION TEMPERATURE OF ASH, (°F)

	Reducing	Oxidizing
Initial Deformation (IT)	2040	xxxx
Softening (ST)	2065	xxxx
Hemispherical (HT)	2075	xxxx
Fluid (FT)	2100	xxxx

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

COMMERCIAL TESTING & ENGINEERING CO.
GENERAL OFFICES 1919 SOUTH HIGHLAND AVE., SUITE 210-B, LOMBARD, ILLINOIS 60148 • (312) 953-9300
Member of the SGS Group (Societe Generale de Surveillance)

-6906

PLEASE ADDRESS ALL CORRESPONDENCE TO
P.O. BOX 808, CHARLESTON, WV 2532
TELEPHONE: (304) 925-663
FAX: (304) 925-887

May 9, 1990

KILKELLY ENVIRONMENTAL ASSOC.
ROUTE 70 WEST
THE WATER GARDEN
RALEIGH NC 27612
P.O. NO.: KEA-0590-715

Sample identification by
KILKELLY ENVIRONMENTAL ASSOC.

LAB SAMPLE NO.: C-7

Kind of sample reported to us: COAL

Sample taken at: --

Sample taken by: KILKELLY ENVIRONMENTAL ASSOC.

Date sampled: ------

Date received: May 4, 1990

FIELD COMPONENT DESCRIPTION	SAMPLE NO.
1345-C-1 A SILO RUN NO. 7	221
1345-C-1 C SILO RUN NO. 7	222
1345-C-2 A SILO RUN NO. 7	223
1345-C-2 C SILO RUN NO. 7	224
1345-C-3 A SILO RUN NO. 7	225
1345-C-3 C SILO RUN NO. 7	226

Analysis Report No. 61-25349-7

ANALYSIS OF ASH	WEIGHT %, IGNITED BASIS
Silicon dioxide	36.11
Aluminum oxide	17.17
Titanium dioxide	0.93
Iron oxide	7.93
Calcium oxide	21.10
Magnesium oxide	3.22
Potassium oxide	0.80
Sodium oxide	0.90
Sulfur trioxide	8.50
Phosphorus pentoxide	0.80
Strontium oxide	0.30
Barium oxide	0.34
Manganese oxide	0.12
Undetermined	1.78
	100.00

Silica Value = 52.82
Base:Acid Ratio = 0.63
T_{250} Temperature = 2234 °F

Fouling Index = 0.57
Slagging Index = 0.35

Respectfully submitted,
COMMERCIAL TESTING & ENGINEERING CO.

Manager, Charleston Laboratory

OVER 40 BRANCH LABORATORIES STRATEGICALLY LOCATED IN PRINCIPAL COAL MINING AREAS, TIDEWATER AND GREAT LAKES PORTS, AND RIVER LOADING FACILITIES

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APPENDIX H

Ash and Bottom Ash Water Analysis Reports

Flyash

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

F-1 ASH
Date Received 05/07/90

Laboratory Number K7805

Sampled by CLIENT
PO # KEA-0530-717

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/15/90 15:04 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	91	------	% REC	SW8240	05/15/90 15:04 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 11:30 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	25	------	% REC	SW8270	05/19/90 11:30 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 11:30 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	21	------	% REC	SW8270	05/19/90 11:30 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/19/90 11:30 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7805

Respectfully Submitted:

F-1 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	YES
Sludge	
Liquid	
Suspended Solids,%	
>0.5	YES
<0.5	
Sample Treatment	
Extracted,Filtered,and Analyzed	YES
Filtered and Analyzed	

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

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LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

F-1 ASH
Date Received 05/07/90

Laboratory Number K7805

Sampled by CLIENT
PO # KEA-0590-717

Respectfully Submitted:

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

-6906

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

F-2 ASH

Date Received 05/07/90

Laboratory Number K7806

Sampled by CLIENT

PO # KEA-0590-717

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/18/90 13:40 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	92	------	% REC	SW8240	05/18/90 13:40 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/18/90 12:06 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	10	------	% REC	SW8270	05/18/90 12:06 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/18/90 12:06 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	17	------	% REC	SW8270	05/18/90 12:06 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/18/90 12:06 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7806

Respectfully Submitted:

F-2 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

= 0906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7806

Respectfully Submitted:

F-2 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/19/90 17:00 MS
Barium(in EPTOX leachate)	2.8	0.5	MG/L	SW7081	05/22/90 09:30 MS
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/21/90 15:00 DK
Chromium(in EPTOX leachate)	ND	0.1	MG/L	SW7191	05/22/90 09:00 MS
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/21/90 15:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/18/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/21/90 17:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7807

Respectfully Submitted:

F-3 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/16/90 16:37 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	97	------	% REC	SW8240	05/16/90 16:37 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/18/90 15:79 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	15	------	% REC	SW8270	05/18/90 15:79 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/18/90 15:79 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	12	------	% REC	SW8270	05/18/90 15:79 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/18/90 15:79 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7807

Respectfully Submitted:

F-3 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7807

Respectfully Submitted:

F-3 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

D: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

ethod Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7808

Respectfully Submitted:

F-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/15/90 16:49 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	98	------	% REC	SW8240	05/15/90 16:49 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/18/90 15:51 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	10	------	% REC	SW8270	05/18/90 15:51 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/18/90 15:51 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	13	------	% REC	SW8270	05/18/90 15:51 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/18/90 15:51 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8068 -

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7808

Respectfully Submitted:

F-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

Solid---------- YES

Sludge----------

Liquid----------

Suspended Solids,%

>0.5---------- YES

<0.5----------

Sample Treatment

Extracted,Filtered,and Analyzed---- YES

Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7808

Respectfully Submitted:

F-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

0008

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7809

Respectfully Submitted:

F-5 ASH

Date Received 05/07/90

Sampled by CLIENT

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/16/90 17:19 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	95	------	% REC	SW8240	05/16/90 17:19 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/17/90 11:48 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	26	------	% REC	SW8270	05/17/90 11:48 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/17/90 11:48 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	23	------	% REC	SW8270	05/17/90 11:48 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/17/90 11:48 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7809

Respectfully Submitted:

F-5 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8080

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7809

Respectfully Submitted:

F-5 ASH
Date Received 05/07/90

Sampled by CLIENT
PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

- -6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7810

Respectfully Submitted:

F-6 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/16/90 18:01 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	101	------	% REC	SW8240	05/16/90 18:01 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/18/90 17:12 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	36	------	% REC	SW8270	05/18/90 17:12 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/18/90 17:12 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	49	------	% REC	SW8270	05/18/90 17:12 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/18/90 17:12 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

0003

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7810

Respectfully Submitted:

F-6 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	YES
Sludge	
Liquid	
Suspended Solids,%	
>0.5	YES
<0.5	
Sample Treatment	
Extracted,Filtered,and Analyzed	YES
Filtered and Analyzed	

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7810

Respectfully Submitted:

F-6 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

0068

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7811

Respectfully Submitted:

F-7 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/17/90 10:47 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	93	------	% REC	SW8240	05/17/90 10:47 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/17/90 19:45 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	43	------	% REC	SW8270	05/17/90 19:45 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/17/90 19:45 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	42	------	% REC	SW8270	05/17/90 19:45 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/17/90 19:45 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7811

Respectfully Submitted:

F-7 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA 0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

Solid---------- YES

Sludge----------

Liquid----------

Suspended Solids,%

>0.5---------- YES

<0.5----------

Sample Treatment

Extracted,Filtered,and Analyzed---- YES

Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725

4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400

CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8088

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7811

Respectfully Submitted:

F-7 ASH

Date Received 05/07/90

Sampled by CLIENT

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

-6906

Economizer Ash

000214

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7812

Respectfully Submitted:

E-1 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/17/90 14:35 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	95	------	% REC	SW8240	05/17/90 14:35 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/17/90 21:23 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	35	------	% REC	SW8270	05/17/90 21:23 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/17/90 21:23 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	39	------	% REC	SW8270	05/17/90 21:23 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/17/90 21:23 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkeily Env. Associates-NC/Baker

Laboratory Number K7812

Respectfully Submitted:

E-1 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

Solid---------- YES

Sludge----------

Liquid----------

Suspended Solids,%

>0.5---------- YES

<0.5----------

Sample Treatment

Extracted,Filtered,and Analyzed---- YES

Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725

4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400

CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8008 -

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7812

Respectfully Submitted:

E-1 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7813

Respectfully Submitted:

E-2 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/17/90 13:52 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	92	------	% REC	SW8240	05/17/90 13:52 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/17/90 22:13 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	30	------	% REC	SW8270	05/17/90 22:13 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/17/90 22:13 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	45	------	% REC	SW8270	05/17/90 22:13 BEL
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/17/90 22:13 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

0063

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7813

Respectfully Submitted:

E-2 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7813

Respectfully Submitted:

E-2 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/19/90 17:00 MS
Barium(in EPTOX leachate)	ND	0.5	MG/L	SW7081	05/22/90 09:30 MS
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/21/90 15:00 DK
Chromium(in EPTOX leachate)	ND	0.1	MG/L	SW7191	05/22/90 09:00 MS
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/21/90 15:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/18/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/21/90 17:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8089

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7814

Respectfully Submitted:

E-3 ASH
Date Received 05/07/90

Sampled by CLIENT
PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	1.4	0.63	ug/G	SW8240	05/17/90 21:16 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	94	------	% REC	SW8240	05/17/90 21:16 CLF
Semi-Volatiles					
Phenol[108-95-2]	1.1	0.66	ug/G	SW8270	05/17/90 23:06 BEL
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	56	------	% REC	SW8270	05/17/90 23:06 BEL
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/17/90 23:06 BEL
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	50	------	% REC	SW8270	05/17/90 23:06 BEL
Terphenyl-d14(SURROGATE)	3.0	------	% REC	SW8270	05/17/90 23:06 BEL

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7814

Respectfully Submitted:

E-3 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

Solid---------- YES

Sludge----------

Liquid----------

Suspended Solids,%

>0.5---------- YES

<0.5----------

Sample Treatment

Extracted,Filtered,and Analyzed---- YES

Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725

4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400

CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7814

Respectfully Submitted:

E-3 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 13:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7815

Respectfully Submitted:

E-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/17/90 11:23 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	97	------	% REC	SW8240	05/17/90 11:23 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 12:04 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	59	------	% REC	SW8270	05/19/90 12:04 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 12:04 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	48	------	% REC	SW8270	05/19/90 12:04 JAS
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/19/90 12:04 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

8002

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7815

Respectfully Submitted:

E-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

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LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7815

Respectfully Submitted:

E-4 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 17:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7816

Respectfully Submitted:

E-5 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/17/90 11:57 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	103	------	% REC	SW8240	05/17/90 11:57 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 12:55 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	48	------	% REC	SW8270	05/19/90 12:55 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 12:55 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	45	------	% REC	SW8270	05/19/90 12:55 JAS
Terphenyl-d14(SURROGATE)	NR	------	% REC	SW8270	05/19/90 12:55 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

NR: The surrogate was not recovered.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7816

Respectfully Submitted:

E-5 ASH

Sampled by CLIENT

Date Received 05/07/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%

- >0.5---------- YES
- <0.5----------

Sample Treatment

- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7816

Respectfully Submitted:

E-5 ASH

Date Received 05/07/90

Sampled by CLIENT

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/12/90 19:00 MS
Barium(in EPTOX leachate)	ND	10.0	MG/L	SW7080	05/15/90 15:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/11/90 12:00 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/15/90 14:00 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/11/90 12:00 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/11/90 12:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/11/90 12:00 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/11/90 17:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

Bottom Ash

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7819

Respectfully Submitted:

W23 BTM ASH BA-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 12:55 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	104	------	% REC	SW8240	05/13/90 12:55 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 14:09 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	56	------	% REC	SW8270	05/19/90 14:09 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 14:09 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	65	------	% REC	SW8270	05/19/90 14:09 JAS
Terphenyl-d14(SURROGATE)	68	------	% REC	SW8270	05/19/90 14:09 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

-6906

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7819

Respectfully Submitted:

#29 BTM ASH BA-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%
- >0.5---------- YES
- <0.5----------

Sample Treatment
- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7819

Respectfully Submitted:

#29 BTM ASH BA-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#76, #78 BTM ASH BA-2
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7820

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 13:36 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	95	------	% REC	SW8240	05/13/90 13:36 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 14:56 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	48	------	% REC	SW8270	05/19/90 14:56 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 14:56 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	77	------	% REC	SW8270	05/19/90 14:56 JAS
Terphenyl-d14(SURROGATE)	62	------	% REC	SW8270	05/19/90 14:56 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#76, #78 BTM ASH BA-2
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7820

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	YES
Sludge	
Liquid	
Suspended Solids,%	
>0.5	YES
<0.5	
Sample Treatment	
Extracted,Filtered,and Analyzed	YES
Filtered and Analyzed	

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7820

Respectfully Submitted:

W76, W78 BTM ASH BA-2
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO W KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#91 BTM ASH BA-3
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7821

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 14:17 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	92	------	% REC	SW8240	05/13/90 14:17 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 15:30 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	68	------	% REC	SW8270	05/19/90 15:30 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 15:30 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	86	------	% REC	SW8270	05/19/90 15:30 JAS
Terphenyl-d14(SURROGATE)	85	------	% REC	SW8270	05/19/90 15:30 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

-6906

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7821

Respectfully Submitted:

W91 BTM ASH BA-3
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%
- >0.5---------- YES
- <0.5----------

Sample Treatment
- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#31 BTM ASH BA-3
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7821

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

-6906

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7822

Respectfully Submitted:

N123 BTM ASH BA-4

Sampled by CLIENT

Date Received 05/07/90

Date Sampled 04/25/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 14:58 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	96	------	% REC	SW8240	05/13/90 14:58 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 16:09 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	45	------	% REC	SW8270	05/19/90 16:09 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 16:09 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	61	------	% REC	SW8270	05/19/90 16:09 JAS
Terphenyl-d14(SURROGATE)	68	------	% REC	SW8270	05/19/90 16:09 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

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LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7822

Respectfully Submitted:

#123 BTM ASH BA-4
Date Received 03/07/90

Sampled by CLIENT
Date Sampled 04/25/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%
- >0.5---------- YES
- <0.5----------

Sample Treatment
- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

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LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7822

Respectfully Submitted:

#123 BTM ASH BA-4

Sampled by CLIENT

Date Received 05/07/90

Date Sampled 04/25/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
~~Arsenic(in EPTOX leachate)~~	~~ND~~	~~0.2~~	~~MG/L~~	~~SW7060~~	~~05/16/90 19:00 MS~~
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

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LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#155 BTM ASH BA-5
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7823

Sampled by CLIENT
Date Sampled 04/25/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 15:40 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	93	------	% REC	SW8240	05/13/90 15:40 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/20/90 17:18 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	76	------	% REC	SW8270	05/20/90 17:18 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/20/90 17:18 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	93	------	% REC	SW8270	05/20/90 17:18 JAS
Terphenyl-d14(SURROGATE)	102	------	% REC	SW8270	05/20/90 17:18 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

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LABORATORY ANALYSIS REPORT

- -6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7823

Respectfully Submitted:

M155 BTM ASH BA-5

Sampled by CLIENT

Date Received 05/07/90

Date Sampled 04/25/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%
- >0.5---------- YES
- <0.5----------

Sample Treatment
- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

8088

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7823

Respectfully Submitted:

W155 BTM ASH BA-5
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/25/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7824

Respectfully Submitted:

W187 BTM ASH BA-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 16:22 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	92	------	% REC	SW8240	05/13/90 16:22 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/19/90 17:20 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	25	------	% REC	SW8270	05/19/90 17:20 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/19/90 17:20 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	69	------	% REC	SW8270	05/19/90 17:20 JAS
Terphenyl-d14(SURROGATE)	77	------	% REC	SW8270	05/19/90 17:20 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

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LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

W187 BTM ASH BA-6
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7824

Sampled by CLIENT
Date Sampled 04/26/90

Respectfully Submitted:

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	YES
Sludge	
Liquid	
Suspended Solids,%	
>0.5	YES
<0.5	
Sample Treatment	
Extracted,Filtered,and Analyzed	YES
Filtered and Analyzed	

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

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LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7824

Respectfully Submitted:

W187 BTM ASH BA-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

0003

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7825

Respectfully Submitted:

M219 BTM ASH BA-7
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	0.63	ug/G	SW8240	05/13/90 17:03 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	95	------	% REC	SW8240	05/13/90 17:03 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	0.66	ug/G	SW8270	05/20/90 17:52 JAS
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	62	------	% REC	SW8270	05/20/90 17:52 JAS
Pyrene[129-00-0]	ND	0.66	ug/G	SW8270	05/20/90 17:52 JAS
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	94	------	% REC	SW8270	05/20/90 17:52 JAS
Terphenyl-d14(SURROGATE)	66	------	% REC	SW8270	05/20/90 17:52 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7825

Respectfully Submitted:

#219 BTM ASH BA-7
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid---------- YES
- Sludge----------
- Liquid----------

Suspended Solids,%
- >0.5---------- YES
- <0.5----------

Sample Treatment
- Extracted,Filtered,and Analyzed---- YES
- Filtered and Analyzed----------

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7000
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7825

Respectfully Submitted:

#219 BTM ASH BA-7
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.0005	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

Bottom Ash Water

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7826

Respectfully Submitted:

M36 BTM ASH WATER BW-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	8.76	--	SU	EPA150.1	05/07/90 18:00 CSC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7826

Respectfully Submitted:

#36 BTM ASH WATER BW-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 12:10 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	107	------	% REC	SW8240	05/12/90 12:10 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	50	ug/L	SW8270	05/19/90 18:28 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	25	------	% REC	SW8270	05/19/90 18:28 JAS
Pyrene[129-00-0]	ND	50	ug/L	SW8270	05/19/90 18:28 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	59	------	% REC	SW8270	05/19/90 18:28 JAS
Terphenyl-d14(SURROGATE)	53	------	% REC	SW8270	05/19/90 18:28 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/5 of the normal volume used for extraction.

000254

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7826

Respectfully Submitted:

#36 BTM ASH WATER BW-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	
Sludge	
Liquid	YES
Suspended Solids,%	
>0.5	
<0.5	YES
Sample Treatment	
Extracted,Filtered,and Analyzed	
Filtered and Analyzed	YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7826

Respectfully Submitted:

#36 BTM ASH WATER BW-1
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/23/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7827

Respectfully Submitted:

W75 BTM ASH WATER BW-2A
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.93	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

- -6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7827

Respectfully Submitted:

M75 BTM ASH WATER BW-2A
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 12:50 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	110	------	% REC	SW8240	05/12/90 12:50 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	50	ug/L	SW8270	05/19/90 19:01 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	26	------	% REC	SW8270	05/19/90 19:01 JAS
Pyrene[129-00-0]	ND	50	ug/L	SW8270	05/19/90 19:01 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	82	------	% REC	SW8270	05/19/90 19:01 JAS
Terphenyl-d14(SURROGATE)	85	------	% REC	SW8270	05/19/90 19:01 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/5 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

LABORATORY ANALYSIS REPORT

80 [illegible]

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7827

Respectfully Submitted:

#75 BTM ASH WATER BW-2A

Sampled by CLIENT

Date Received 05/07/90

Date Sampled 04/24/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase

Solid----------

Sludge----------

Liquid---------- YES

Suspended Solids,%

>0.5----------

<0.5---------- YES

Sample Treatment

Extracted,Filtered,and Analyzed----

Filtered and Analyzed---------- YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725

4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400

CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

#75 BTM ASH WATER BW-2A
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7827

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
~~Arsenic(in EPTOX leachate)~~	~~ND~~	~~0.2~~	~~MG/L~~	~~SW7060~~	~~05/16/90 19:00 MS~~
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7828

Respectfully Submitted:

W77 BTM ASH WATER BW-2B
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.65	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7828

Respectfully Submitted:

#77 BTM ASH WATER BW-2B
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 13:31 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	108	------	% REC	SW8240	05/12/90 13:31 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	40	ug/L	SW8270	05/19/90 19:32 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	30	------	% REC	SW8270	05/19/90 19:32 JAS
Pyrene[129-00-0]	ND	40	ug/L	SW8270	05/19/90 19:32 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	90	------	% REC	SW8270	05/19/90 19:32 JAS
Terphenyl-d14(SURROGATE)	87	------	% REC	SW8270	05/19/90 19:32 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/4 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7828

Respectfully Submitted:

W77 BTM ASH WATER BW-2B
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid----------	
Sludge----------	
Liquid----------	YES
Suspended Solids,%	
>0.5----------	
<0.5----------	YES
Sample Treatment	
Extracted,Filtered,and Analyzed----	
Filtered and Analyzed----------	YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7828

Respectfully Submitted:

#77 BTM ASH WATER BW-28
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#32 BTM AEH WATER BW-3
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7829

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.42	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#92 BTM ASH WATER BW-3
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7829

Sampled by CLIENT
Date Sampled 04/24/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 14:13 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	109	------	% REC	SW8240	05/12/90 14:13 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	40	ug/L	SW8270	05/19/90 20:05 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	28	------	% REC	SW8270	05/19/90 20:05 JAS
Pyrene[129-00-0]	ND	40	ug/L	SW8270	05/19/90 20:05 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	83	------	% REC	SW8270	05/19/90 20:05 JAS
Terphenyl-d14(SURROGATE)	92	------	% REC	SW8270	05/19/90 20:05 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/4 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7829

Respectfully Submitted:

W32 BTM ASH WATER BW-3
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	
Sludge	
Liquid	YES
Suspended Solids,%	
>0.5	
<0.5	YES
Sample Treatment	
Extracted,Filtered,and Analyzed	
Filtered and Analyzed	YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

P 906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7829

Respectfully Submitted:

W92 BTM ASH WATER BW-3
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/24/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
~~Arsenic(in EPTOX leachate)~~	~~ND~~	~~0.2~~	~~MG/L~~	~~SW7060~~	~~05/16/90 19:00 ME~~
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 D
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 D
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 D
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 D
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 ME
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 D
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#124 BTM ASH WATER BW-4
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7830

Sampled by CLIENT
Date Sampled 04/25/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.66	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

W124 BTM ASH WATER BW-4
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7830

Sampled by CLIENT
Date Sampled 04/25/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 14:54 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	106	------	% REC	SW8240	05/12/90 14:54 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	50	ug/L	SW8270	05/20/90 10:36 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	23	------	% REC	SW8270	05/20/90 10:36 JAS
Pyrene[129-00-0]	ND	50	ug/L	SW8270	05/20/90 10:36 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	84	------	% REC	SW8270	05/20/90 10:36 JAS
Terphenyl-d14(SURROGATE)	77	------	% REC	SW8270	05/20/90 10:36 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/5 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7830

Respectfully Submitted:

W124 BTM ASH WATER BW-4
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/25/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	
Sludge	
Liquid	YES
Suspended Solids,%	
>0.5	
<0.5	YES
Sample Treatment	
Extracted,Filtered,and Analyzed	
Filtered and Analyzed	YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

#:24 BTM ASH WATER BW-4
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7830

Sampled by CLIENT
Date Sampled 04/25/90

Respectfully Submitted:

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

8000-

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#156 BTM ASH WATER BW-5
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7831

Sampled by CLIENT
Date Sampled 04/25/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.78	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilvelly Env. Associates-NC/Baker

Laboratory Number K7631

Respectfully Submitted:

[illegible] BOM ASH WATER BW-5
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/25/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 15:35 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	110	------	% REC	SW8240	05/12/90 15:35 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	50	ug/L	SW8270	05/20/90 11:09 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	34	------	% REC	SW8270	05/20/90 11:09 JAS
Pyrene[129-00-0]	ND	50	ug/L	SW8270	05/20/90 11:09 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	97	------	% REC	SW8270	05/20/90 11:09 JAS
Terphenyl-d14(SURROGATE)	95	------	% REC	SW8270	05/20/90 11:09 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/5 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7831

Respectfully Submitted:

#156 BTM ASH WATER BW-5
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/25/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid----------
- Sludge----------
- Liquid---------- YES

Suspended Solids,%
- >0.5----------
- <0.5---------- YES

Sample Treatment
- Extracted,Filtered,and Analyzed----
- Filtered and Analyzed---------- YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7831

Respectfully Submitted:

W156 BTM ASH WATER BW-5

Sampled by CLIENT

Date Received 05/07/90

Date Sampled 04/25/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kelly Env. Associates-NC/Baker

Laboratory Number K7832

Respectfully Submitted:

W188 BTM ASH WATER BW-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	8.50	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7832

Respectfully Submitted:

#188 BTM ASH WATER BW-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 16:16 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	111	------	% REC	SW8240	05/12/90 16:16 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	50	ug/L	SW8270	05/20/90 11:43 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	23	------	% REC	SW8270	05/20/90 11:43 JAS
Pyrene[129-00-0]	ND	50	ug/L	SW8270	05/20/90 11:43 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	92	------	% REC	SW8270	05/20/90 11:43 JAS
Terphenyl-d14(SURROGATE)	79	------	% REC	SW8270	05/20/90 11:43 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/5 of the normal volume used for extraction.

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7832

Respectfully Submitted:

H188 BTM ASH WATER BW-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT CHECK

EPTOX PREPARATION DATA(Mark with "YES")

Sample Phase
- Solid----------
- Sludge----------
- Liquid---------- YES

Suspended Solids,%
- >0.5----------
- <0.5---------- YES

Sample Treatment
- Extracted,Filtered,and Analyzed----
- Filtered and Analyzed---------- YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7832

Respectfully Submitted:

4188 BTM ASH WATER BW-6
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#220 BTM ASH WATER BW-7
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7833

Sampled by CLIENT
Date Sampled 04/26/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
pH(Lab Determination)	7.57	--	SU	EPA150.1	05/07/90 18:00 CMC

REF: USEPA; Methods For Chemical Analysis Of Water And Wastes; March,1983.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

-6906

Kilkelly Env. Associates-NC/Baker

#220 BTM ASH WATER BW-7
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7833

Sampled by CLIENT
Date Sampled 04/26/90

Respectfully Submitted:

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Volatiles					
Benzene[71-43-2]	ND	10	ug/L	SW8240	05/12/90 16:57 CLF
SURROGATE RECOVERY-VOLATILE FRACTION					
Toluene-d8(SURROGATE)	110	------	% REC	SW8240	05/12/90 16:57 CLF
Semi-Volatiles					
Phenol[108-95-2]	ND	80	ug/L	SW8270	05/20/90 12:16 JAS *
SURROGATE RECOVERY-ACID FRACTION					
Phenol-d6(SURROGATE)	25	------	% REC	SW8270	05/20/90 12:16 JAS
Pyrene[129-00-0]	ND	80	ug/L	SW8270	05/20/90 12:16 JAS *
SURROGATE RECOVERY-BASE/NEUTRAL FRACTION					
2-Fluorobiphenyl(SURROGATE)	68	------	% REC	SW8270	05/20/90 12:16 JAS
Terphenyl-d14(SURROGATE)	66	------	% REC	SW8270	05/20/90 12:16 JAS

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

*: The initial volume was 1/8 of the normal volume used for extraction.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

Kilkelly Env. Associates-NC/Baker

#220 BTM ASH WATER BW-7
Date Received 05/07/90

PO # KEA-0590-717

Laboratory Number K7833

Sampled by CLIENT
Date Sampled 04/26/90

Respectfully Submitted:

E.P. TOXICITY LEACHING PROCEDURE *

SAMPLE EVALUATION AND TREATMENT	CHECK
EPTOX PREPARATION DATA(Mark with "YES")	
Sample Phase	
Solid	
Sludge	
Liquid	YES
Suspended Solids,%	
>0.5	
<0.5	YES
Sample Treatment	
Extracted,Filtered,and Analyzed	
Filtered and Analyzed	YES

*: As outlined in USEPA; SW-846,Test Methods For Evaluating Solid Waste,2nd Ed.

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

TECHNICAL TESTING LABORATORIES

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO

LABORATORY ANALYSIS REPORT

- - 0906

Kilkelly Env. Associates-NC/Baker

Laboratory Number K7833

Respectfully Submitted:

H220 BTM ASH WATER BW-7
Date Received 05/07/90

Sampled by CLIENT
Date Sampled 04/26/90

PO # KEA-0590-717

ANALYSIS OF METALS IN EPTOX LEACHATE:STANDARD LIST

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST
Arsenic(in EPTOX leachate)	ND	0.2	MG/L	SW7060	05/16/90 19:00 MS
Barium(in EPTOX leachate)	ND	50	MG/L	SW7080	05/18/90 16:00 DK
Cadmium(in EPTOX leachate)	ND	0.1	MG/L	SW7130	05/17/90 17:30 DK
Chromium(in EPTOX leachate)	ND	0.5	MG/L	SW7190	05/17/90 16:15 DK
Lead(in EPTOX leachate)	ND	0.5	MG/L	SW7420	05/17/90 16:15 DK
Selenium(in EPTOX leachate)	ND	0.2	MG/L	SW7740	05/15/90 19:00 MS
Silver(in EPTOX leachate)	ND	0.1	MG/L	SW7760	05/18/90 09:30 DK
Mercury(in EPTOX leachate)	ND	0.001	MG/L	SW7470	05/18/90 11:00 DK

ND: Not detected at a concentration greater than or equal to the MDL - Method Detection Limit.

Method Reference: USEPA:"Methods for Evaluating Solid Waste":SW-846(2nd Ed.)

1256 GREENBRIER STREET, CHARLESTON, WEST VIRGINIA 25311 — TELEPHONE 304 346-0725
4643 BENSON AVENUE, BALTIMORE, MARYLAND 21227 — TELEPHONE 301 247-7400
CINCINNATI, OHIO AREA — TELEPHONE 513 421-3872 OR 606 344-0084

APPENDIX I

$CO/CO_2/O_2$ Monitoring Printouts

[illegible]

[illegible]

Test Location: [illegible] Test Station, [illegible]

<EA Project ID: [illegible]

Run #: [illegible] -- [illegible]

1 - Minute Averages

-6906

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
18:19:10	86	14.9	4.2	79
18:20:10	87	15	4.1	79
18:21:10	87	15	4.1	79
18:22:10	87	15	4.1	79
18:23:10	88	15	4.1	79
18:24:10	88	14.9	4.2	79
18:25:10	88	14.9	4.2	79
18:26:10	89	15	4.2	79
18:27:10	89	14.9	4.2	79
18:28:10	89	15	4.1	79
18:29:10	90	14.9	4.2	79
18:30:10	90	14.8	4.3	79
18:31:10	91	15	4.1	79
18:32:10	91	15.1	4.1	79
18:33:10	91	15	4.1	79
18:34:10	93	15	4.1	79
18:35:10	93	15.1	4	79
18:36:10	92	15	4.1	79
18:37:10	93	15	4.1	79
18:38:10	94	15.2	4	79
18:39:10	94	15.1	4	79
18:40:10	95	15.1	4	79
18:41:10	95	15.1	4	79
18:42:09	95	15.1	4.1	79
18:43:09	96	15	4.1	79
18:44:09	96	15.1	4.1	79
18:45:09	97	15	4.2	79
18:46:09	97	15.1	4.1	79
18:47:09	94	15.3	4.1	79
18:48:09	95	15.3	4.1	79
30-min Avg	92	15	4.1	79

Date [illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT 1
VEA Project ID: 1-245
Run #: # 1 -- blank

8088

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
18:49:09	96	15.3	4.1	79
18:50:09	97	15.2	4.1	79
18:51:09	97	15.2	4.1	79
18:52:09	97	15.2	4.1	79
18:53:09	94	15.3	4.1	79
18:54:09	94	15.4	4.1	79
18:55:09	94	15.4	4.1	79
18:56:09	96	15.4	4.1	79
18:57:09	94	15.3	4.2	79
18:58:09	94	15.3	4.2	79
18:59:09	93	15.2	4.3	79
19:00:09	94	15.6	3.9	79
19:01:09	94	15.6	3.9	79
19:02:09	94	15.5	4	79
19:03:09	96	15.5	4.1	79
19:04:09	97	15.5	4	79
19:05:09	97	15.5	4	79
19:06:09	96	15.5	4	79
19:07:09	92	15.6	3.9	79
19:08:09	93	15.6	3.9	79
19:09:09	95	15.6	3.9	79
19:10:09	96	15.6	3.9	79
19:11:09	96	15.6	4	79
19:12:09	96	15.6	4	79
19:13:09	97	15.6	4	79
19:14:09	97	15.6	4	79
19:15:09	96	15.7	4	79
19:16:09	95	15.7	4	79
19:17:09	95	15.7	4	79
19:18:09	96	15.7	4	79
30-min Avg	95	15.5	4	79

Date: [illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT 1
[illegible]EA Project ID: [illegible]-045
Run #: [illegible] -- blank

[illegible] -6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
19:26:55	94	15.7	4	79
19:27:55	96	15.7	4	79
19:28:55	97	15.7	4.1	79
19:29:55	96	15.3	4	79
19:30:55	96	15.3	4	79
19:31:55	96	15.3	4	78
19:32:55	96	15.2	4	78
19:33:55	95	15.3	4	78
19:34:55	96	15.2	4	79
19:35:55	95	15.2	4	79
19:36:55	95	15.2	4	79
19:37:55	95	15.3	4	79
19:38:55	95	15.2	4	78
19:39:55	96	15.2	4	78
19:40:55	97	15.2	4	78
19:41:55	97	15.2	4.1	79
19:42:55	96	15.2	4	78
19:43:55	91	15.4	4.1	78
19:44:55	92	15.5	4	79
19:45:55	93	15.5	4	78
19:46:55	93	15.5	3.9	78
19:47:55	94	15.5	3.9	78
19:48:55	94	15.5	3.9	79
19:49:55	94	15.4	4	78
19:50:55	94	15.3	4.1	78
19:51:55	94	15.3	4.1	79
19:52:55	95	15.3	4.1	78
19:53:55	96	15.3	4.1	78
19:54:55	95	15.3	4.1	78
19:55:54	94	15.4	4	78
30-min Avg	95	15.4	4	78

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: 1-345
Run #: # 1 -- blank

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
19:56:54	94	15.3	4.1	77
19:57:54	95	15.3	4	77
19:58:54	94	15.3	4.1	78
19:59:54	94	15.2	4.2	78
20:00:54	92	15.4	4	77
20:01:54	92	15.5	4.1	77
20:02:54	93	15.5	4.1	77
20:03:54	94	15.5	4.1	77
20:04:54	94	15.5	4	78
20:05:54	94	15.4	4.1	77
20:06:54	94	15.4	4.1	77
20:07:54	94	15.4	4.1	77
20:08:54	94	15.2	4.2	78
20:09:54	94	15.3	4.1	77
20:10:54	95	15.3	4.1	77
20:11:54	96	15.3	4.2	77
20:12:54	95	15.3	4.2	77
20:13:54	94	15.4	4	77
20:14:54	93	15.5	4	77
20:15:54	92	15.4	4	77
20:16:54	94	15.4	4.1	77
20:17:54	93	15.3	4.2	77
20:18:54	92	15.3	4.1	77
20:19:54	93	15.4	4.1	77
20:20:54	94	15.3	4.2	77
20:21:54	92	15.3	4.2	77
20:22:54	92	15.4	4.1	77
20:23:54	93	15.4	4.1	77
20:24:54	95	15.3	4.1	77
20:25:54	94	15.2	4.1	77
30-min Avg	94	15.4	4.1	77

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: I-345
Run #: # 1 -- blank

-6906

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
20:26:54	95	15.2	4.1	77
20:27:54	94	15.2	4.1	77
20:28:54	93	15.1	4.1	77
20:29:54	92	15.1	4.1	77
20:30:54	90	15.2	4.1	77
20:31:54	90	15.2	4	77
20:32:54	91	15.2	4	77
20:33:54	93	15.1	4	77
20:34:54	93	15	4.1	77
20:35:54	93	14.9	4.3	77
20:36:54	92	15	4.1	77
20:37:54	92	15	4.1	77
20:38:54	89	14.9	4.2	77
20:39:54	91	14.9	4.1	77
20:40:54	91	14.9	4.2	77
20:41:54	92	14.9	4.2	77
20:42:54	93	14.9	4.2	77
20:43:53	91	15.1	4.1	76
20:44:54	92	15.1	4.2	77
20:45:53	92	15.1	4.1	77
20:46:53	93	15	4.2	76
20:47:53	93	15	4.2	76
20:48:53	92	15	4.2	76
20:49:53	92	15	4.1	77
20:50:53	93	15	4.2	76
20:51:53	94	15.1	4.1	76
20:52:53	94	15	4.1	76
20:53:53	96	14.9	4.3	76
20:54:53	96	14.7	4.4	75
20:55:53	95	14.9	4.3	76
30-min Avg	93	15	4.2	77

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
USA Project ID: I-345
Run #: status check

0093

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)	CO (ppm @ 3% O2)
10:20:35	51	15.2	3.5	66.2	53
10:21:35	50	15.1	3.6	66.3	52
10:22:35	52	15.1	3.5	66.5	53
10:23:35	54	15.2	3.4	66.5	55
10:24:35	54	15.2	3.4	66.5	55
10:25:34	53	15.2	3.4	66.3	55
10:26:34	54	15.2	3.4	66.3	55
10:27:34	53	15.2	3.4	66.4	54
10:28:34	52	15.2	3.4	66.5	54
10:29:34	52	15.4	3.2	66.3	52
10:30:34	52	15.4	3.1	66.3	52
10:31:34	52	15.2	3.4	66.3	53
10:32:34	52	15.1	3.5	66.2	53
10:33:34	51	15.2	3.4	66.2	52
10:34:34	50	15.2	3.4	66.2	51
10:35:34	49	15.2	3.4	66.2	50
10:36:34	48	15.2	3.4	66.2	49
10:37:34	48	15.2	3.4	66.3	49
10:38:34	47	15.2	3.4	66.2	49
10:39:34	47	15.2	3.5	66.2	48
10:40:34	46	15.2	3.4	66.2	48
10:41:34	46	15.2	3.4	66.2	47
10:42:34	45	15.2	3.4	66.2	46
10:43:34	45	15.2	3.4	66.2	46
10:44:34	45	15.2	3.4	66.2	46
10:45:34	45	15.1	3.5	66.2	46
10:46:34	44	15.2	3.4	66.2	45
10:47:34	44	15.2	3.4	66.2	45
10:48:34	44	15.2	3.4	66.2	45
10:49:34	44	15.3	3.3	66.2	45
30-min Avg 9.42749E+10	49	15.2	3.4	66.3	
TEST AVGS	86.3	15.3	4.0		

000291

Date: [illegible]
Site Name:
Test Location: [illegible] George [illegible] Station, [illegible]
EPA Project ID: I-245
Run #: 2 -- with waste burned

-6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
12:00:50	38	15	4	68.1
12:01:50	39	15	4	68
12:02:50	39	15	4	68
12:03:50	38	14.9	4.1	68.1
12:04:50	37	14.8	4.1	68.1
12:05:50	35	14.9	4.1	68.1
12:06:50	36	14.9	4.2	68.2
12:07:50	35	14.9	4.2	68.2
12:08:50	34	14.9	4	68
12:09:50	34	14.9	4.1	68.1
12:10:50	34	14.8	4.1	68.1
12:11:50	32	14.9	4	68.1
12:12:50	32	14.9	4.1	68.1
12:13:50	33	14.8	4.1	68.3
12:14:50	32	14.8	4.2	68.1
12:15:50	32	14.7	4.2	68.4
12:16:50	32	14.8	4.1	68.6
12:17:50	36	14.8	4.1	68.7
12:18:50	36	14.8	4.1	69.4
12:19:50	36	14.8	4	69.5
12:20:50	36	14.8	4.1	69.3
12:21:50	36	14.7	4.3	69.6
12:22:50	36	14.7	4.2	69.5
12:23:50	34	14.7	4.2	69.6
12:24:50	33	14.7	4.3	69.6
12:25:50	33	14.7	4.2	69.7
12:26:50	36	14.7	4.1	69.7
12:27:50	35	14.8	4.1	69.8
12:28:50	34	14.9	3.9	69.8
12:29:50	33	14.9	3.9	69.8
30-min Avg	35	14.8	4.1	68.8

Date: [illegible]
Site Name:
Test Location: USS George Neal Station, UNIT 1
EEA Project ID: 1-245
Run #: 2 [illegible] with waste burned

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
12:30:50	31	14.8	3.9	69.8
12:31:50	34	14.8	3.9	69.8
12:32:50	36	14.8	4	69.9
12:33:50	35	14.8	4	69.8
12:34:50	35	14.8	3.9	69.8
12:35:50	34	14.8	3.9	69.8
12:36:49	34	14.9	3.9	69.8
12:37:49	34	14.9	3.8	69.8
12:38:49	34	14.9	3.9	69.9
12:39:49	33	14.9	3.8	69.8
12:40:49	32	14.9	3.8	69.9
12:41:49	32	14.7	4	70
12:42:49	29	14.9	3.9	69.9
12:43:49	28	14.9	3.8	70.2
12:44:49	27	14.9	3.8	70.7
12:45:49	27	14.9	3.9	70.3
12:46:49	29	14.9	3.8	70.2
12:47:49	29	14.8	4	70.2
12:48:49	29	14.8	3.9	70.4
12:49:49	28	14.9	3.9	70.3
12:50:49	28	14.9	4	70.5
12:51:49	29	14.7	4.1	70.2
12:52:49	27	14.8	4	71.4
12:53:49	28	14.8	4	71.5
12:54:49	29	14.9	3.9	71.3
12:55:49	30	14.9	3.9	71.5
12:56:49	30	14.8	3.9	71.5
12:57:49	30	14.8	3.9	71.5
12:58:49	31	14.7	3.9	71.5
12:59:49	32	14.7	4	71.6
30-min Avg	31	14.8	3.9	70.4

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
CEM Project ID: 1-745
Run #: 2 -- with waste burner

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
13:00:49	33	14.8	4	71.6
13:01:49	33	14.8	4	71.6
13:02:49	33	14.9	4	71.5
13:03:49	34	14.8	4.1	71.5
13:04:49	35	14.9	4	71.4
13:05:49	36	14.7	4.1	71.6
13:06:49	37	14.8	4	71.6
13:07:49	37	14.8	4	71.5
13:08:49	38	14.7	4.1	71.5
13:09:49	37	14.8	4	71.6
13:10:49	39	14.7	4	71.6
13:11:49	38	14.7	4.1	71.6
13:12:49	39	14.7	4.1	71.6
13:13:49	39	14.6	4.1	71.6
13:14:49	40	14.7	4.1	71.6
13:15:49	39	14.7	3.9	71.6
13:16:49	40	14.8	3.9	71.6
13:17:49	40	14.8	3.8	71.6
13:18:49	40	14.7	4	71.6
13:19:49	41	14.7	4	71.6
13:20:49	41	14.7	4	71.6
13:21:49	42	14.8	3.9	71.6
13:22:49	42	14.7	3.9	71.6
13:23:48	42	14.7	4	71.6
13:24:48	42	14.6	4.1	71.6
13:25:48	42	14.7	3.9	71.6
13:26:48	43	14.8	3.9	71.6
13:27:48	43	14.7	4	71.7
13:28:48	43	14.7	4	72.1
13:29:48	44	14.8	3.9	72.4
30-min Avg	39	14.7	4	71.6

Test Location: [illegible] George Neal Station, UNIT 1
[illegible] Project ID: 1-[illegible]
Run #: [illegible] -- with waste burned

1-Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
13:30:48	43	14.8	3.8	71.9
13:31:48	44	14.7	4	71.8
13:32:48	44	14.7	4	71.9
13:33:48	45	14.7	4	72.4
13:34:48	46	14.7	4	72.1
13:35:48	46	14.8	3.9	71.9
13:36:48	46	14.8	4	71.7
13:37:48	46	14.8	3.9	71.9
13:38:48	46	14.8	4	72.4
13:39:48	46	14.7	4.1	72.4
13:40:48	46	14.7	4	72.9
13:41:48	45	15	4	73.1
13:42:48	45	15.2	3.9	72.6
13:43:48	45	15.1	4	73.2
13:44:48	45	15.1	3.9	73.3
13:45:48	45	15.1	4	73.1
13:46:48	45	15	4	73.1
13:47:48	46	14.9	4	72.4
13:48:48	46	14.9	4.1	72.2
13:49:48	45	14.9	4	72.1
13:50:48	45	15.1	4	73.2
13:51:48	45	15.2	4	73.1
13:52:48	45	15.2	4	73.4
13:53:48	45	15.2	3.9	73.4
13:54:48	46	15.2	3.9	73.3
13:55:48	46	15.3	3.9	72.4
13:56:48	46	15.2	4	73.3
13:57:48	47	15.1	4	73.4
13:58:48	47	15.1	4.1	73.4
13:59:48	47	15.1	4.1	73.4
Mean Avg	46	15	4	72.8

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
IES Project ID: I-045
Run #: 2 -- with waste burned

-6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
14:00:49	48	15.1	4	73.4
14:01:48	47	15.1	4	73.4
14:02:48	47	15.2	3.9	73.4
14:03:49	48	15.2	3.9	73.5
14:04:48	49	15.1	4	73.6
14:05:48	48	15.1	4	73.9
14:06:48	48	15	4	73.5
14:07:48	50	15.1	4.1	73.4
14:08:48	49	15.1	4	73.4
14:09:48	49	15	4	73.4
14:10:47	48	15.1	3.9	74
14:11:47	49	15.1	4	74.1
14:12:47	48	15.1	3.9	74.1
14:13:47	49	15.1	3.9	74.1
14:14:47	49	15.1	3.9	74
14:15:47	49	15.1	4	74.1
14:16:47	50	15.1	3.9	75.1
14:17:47	49	15.1	3.9	75.1
14:18:47	49	15.1	3.9	75.1
14:19:47	51	15	4	75.1
14:20:47	49	15	4	75.1
14:21:47	49	15.1	4	75.1
14:22:47	49	15.1	3.9	75.1
14:23:47	50	15	4	75.1
14:24:47	50	15	4	75.2
14:25:47	49	15	3.9	75.2
14:26:47	49	15.1	3.9	75.2
14:27:47	48	15.2	3.9	75.2
14:28:47	48	15.1	4	75.1
14:29:47	47	15.2	4	75.1
Hourly Avg	49	15.1	4	74.4

000296

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
EPA Project ID: [illegible]
Run #: [illegible] with waste burned

8080

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
14:30:47	47	15.2	3.9	75.2
14:31:47	48	15.1	4.1	75.2
14:32:47	48	15.1	4	75.2
14:33:47	49	15.1	4	75.2
14:34:47	48	15.2	3.9	75.3
14:35:47	49	15.2	3.9	75.3
14:36:47	49	15.1	3.9	75.2
14:37:47	49	15.1	4	75.2
14:38:47	50	15.1	4	75.2
14:39:47	50	15.1	4	75.3
14:40:47	51	15.1	4	75.2
14:41:47	51	15.1	4	75.6
14:42:47	50	15.2	3.9	76.1
14:43:47	50	15.2	3.9	75.7
14:44:47	50	15.2	3.9	75.3
14:45:47	50	15.1	4	75.2
14:46:47	51	15	4.1	75.3
14:47:47	51	15	4.1	75.4
14:48:47	51	15	4	75.4
14:49:47	51	15	4	76.2
14:50:47	51	15	4	75.9
14:51:47	53	15.1	3.9	76.6
14:52:47	51	15.3	3.9	76.4
14:53:47	51	15.3	3.9	76.6
14:54:47	50	15.2	3.9	77
14:55:47	50	15.1	3.9	76.9
14:56:46	49	15.1	3.9	76.8
14:57:46	49	15.1	4	77
14:58:46	49	15.1	3.9	77
14:59:46	49	15.1	4	76.9
30-min Avg	50	15.1	4	75.8

Date: 04-24-199[illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: I-045
Run #: 2 -- with waste burned

- 6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
15:00:46	52	15.1	4	77
15:01:46	52	15	3.9	76.7
15:02:46	52	15	3.9	76.4
15:03:46	52	15	4	75.6
15:04:46	52	14.9	4	76
15:05:46	52	15.1	4.1	76.7
15:06:46	53	15	4.1	76.9
15:07:46	54	15	4.1	77
15:08:46	54	15	4.1	77
15:09:46	54	15.1	4.1	77
15:10:46	53	15.2	4	77
15:11:46	53	15.3	3.9	77
15:12:46	54	15.3	4	77
15:13:46	54	15.2	4.1	77.5
15:14:46	56	14.9	4.4	77.6
15:15:46	55	15.1	4.1	77.3
15:16:46	56	15.1	4.1	77.7
15:17:46	56	15.1	4.1	77.2
15:18:46	56	15.1	4	77.1
15:19:46	55	15.2	4	77.1
15:20:46	54	15.2	4	77.1
15:21:46	54	15.2	4.1	77.2
15:22:46	56	15.1	4.2	77.4
15:23:46	56	15.1	4.2	77.4
15:24:46	57	15.2	4.1	78
15:25:46	57	15.3	4	78
15:26:46	57	15.3	4	78
15:27:46	57	15.3	4	77.6
15:28:46	58	15.2	4.1	77.9
15:29:46	58	15.1	4.1	78.4
30-min Avg	55	15.1	4.1	77.2
TEST HUGS	43.6	14.9	4.0	

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: 1-245
Run #: 4 -- with waste -- 130 MW

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
11:15:03	78	14.3	3.7	68.9
11:16:03	79	14.3	3.7	69.2
11:17:03	80	14.3	3.7	69.7
11:18:03	80	14.2	3.7	69.7
11:19:03	79	14.3	3.6	69.7
11:20:03	79	14.3	3.6	69.8
11:21:03	80	14.3	3.6	69.8
11:22:03	79	14.3	3.6	69.8
11:23:03	79	14.3	3.6	69.8
11:24:03	78	14.2	3.8	69.8
11:25:03	77	14.3	3.7	69.9
11:26:02	78	14.3	3.7	69.8
11:27:02	78	14.4	3.6	69.8
11:28:02	77	14.4	3.5	69.8
11:29:02	77	14.4	3.5	69.8
11:30:02	76	14.3	3.7	69.8
11:31:02	75	14.3	3.7	69.8
11:32:02	77	14.3	3.7	70
11:33:02	77	14.3	3.7	70
11:34:02	78	14.3	3.7	70.1
11:35:02	80	14.3	3.7	69.9
11:36:02	81	14.5	3.5	70.4
11:37:02	79	14.3	3.8	70.5
11:38:02	77	14.3	3.7	70.8
11:39:02	79	14.3	3.6	71.1
11:40:02	79	14.3	3.7	70.7
11:41:02	80	14.3	3.7	70.7
11:42:02	81	14.3	3.7	71
11:43:02	80	14.3	3.7	71
11:44:02	81	14.3	3.6	70.6
30-min Avg	79	14.3	3.7	70.1
TEST AVGS	80.3	14.2	3.8	

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Time	[illegible]	[illegible] %	[illegible] %	Abs. Temp deg F
17:17:59	55	14.2	4.2	78.2
17:18:59	55	14.3	4.2	78.3
17:19:59	57	14.3	4.3	78.5
17:20:59	57	14.3	4.2	78.4
17:21:59	59	14.2	4.2	78.4
17:22:59	56	14.3	4.2	78.7
17:23:59	56	14.2	4.2	78.7
17:24:59	58	14.3	4.2	78
17:25:59	57	14.3	4.2	78
17:26:59	59	14.3	4.2	78.4
17:27:59	60	14.2	4.3	78
17:28:59	60	14.2	4.1	77.4
17:29:58	61	14.2	4.2	77.6
17:30:58	61	14.1	4.2	77.3
17:31:58	60	14.1	4.2	77.1
17:32:58	60	14.2	4.1	77.1
17:33:58	61	14.2	4.2	77
17:34:58	61	14.1	4.2	77
17:35:58	62	14.1	4.3	77
17:36:58	61	14	4.3	77
17:37:58	58	14.1	4.3	77
17:38:58	57	14.1	4.3	77
17:39:58	56	14.1	4.2	77
17:40:58	56	14.1	4.2	77
17:41:58	56	14.1	4.3	77
17:42:58	56	14.1	4.3	77
17:43:58	55	14.2	4.2	76.9
17:44:58	55	14.1	4.3	76.9
17:45:58	54	14	4.3	76.9
17:46:58	55	14	4.3	76.7
30-min Avg	58	14.2	4.2	77.5

Test Operator:
Data Name:
Test Location: IPS George Neal Station, UNIT 1
NSA Project ID: I-045
Run #: 3 - with waste

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
17:47:58	54	14	4.3	76.7
17:48:58	54	14	4.3	76.5
17:49:58	55	14.1	4.2	76.6
17:50:58	53	14.2	4.2	76.2
17:51:58	52	14.2	4.2	75.9
17:52:58	51	14.2	4.3	75.5
17:53:58	50	14.1	4.4	75.8
17:54:58	50	14.2	4.3	76
17:55:58	47	14.1	4.3	76
17:56:58	49	14.1	4.3	75.5
17:57:58	50	14.1	4.3	76
17:58:58	48	14.2	4.2	75.5
17:59:58	48	14.2	4.2	75.7
18:00:58	49	14.2	4.2	76.1
18:01:58	50	14.2	4.2	75.9
18:02:58	51	14.1	4.3	76.2
18:03:58	50	14	4.3	76.3
18:04:58	51	14	4.3	76.4
18:05:58	49	14.1	4.2	76.3
18:06:58	48	14.1	4.2	75.8
18:07:58	48	14.1	4.2	75.7
18:08:58	48	14.1	4.3	75.9
18:09:58	48	14.1	4.2	75.9
18:10:58	47	14.1	4.2	75.9
18:11:58	47	14.2	4.2	75.8
18:12:58	46	14.2	4.3	75.7
18:13:58	45	14.2	4.3	75.7
18:14:58	44	14.2	4.2	75.5
18:15:58	44	14.2	4.2	75.6
18:16:57	44	14.2	4.2	75.8
30-min Avg	49	14.1	4.3	75.9

Date: [illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT 1
[illegible]EA Project ID: [illegible]-045
Run #: [illegible] - with waste

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
18:17:57	43	14.2	4.2	76
18:18:57	43	14.2	4.2	76.2
18:19:57	43	14.2	4.2	76.3
18:20:57	43	14.2	4.2	76.4
18:21:57	44	14.1	4.3	76.6
18:22:57	44	14.1	4.3	76.7
18:23:57	44	14.1	4.2	76.2
18:24:57	42	14.1	4.3	76.6
18:25:57	43	14.1	4.2	76.7
18:26:57	43	14.1	4.2	76.7
18:27:57	45	14.1	4.3	76.4
18:28:57	45	14.1	4.3	76.5
18:29:57	45	14	4.3	76.2
18:30:57	45	14	4.2	75.7
18:31:57	45	14.1	4.2	75.8
18:32:57	42	14	4.2	76
18:33:57	41	14.1	4.3	75.5
18:34:57	42	14	4.4	75.3
18:35:57	43	14.1	4.3	75.2
18:36:57	43	14.1	4.3	75.3
18:37:57	44	14	4.3	75.4
18:38:57	44	14	4.3	75.5
18:39:57	44	14	4.3	75.5
18:40:57	44	14.1	4.3	76
18:41:57	43	14.1	4.3	76
18:42:57	42	14.1	4.2	75.5
18:43:57	42	14.1	4.3	75.5
18:44:57	42	14.1	4.3	75.5
18:45:57	40	14.1	4.3	75.5
18:46:57	42	14	4.2	75.6
30-min Avg	43	14.1	4.3	75.9

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
SEA Project ID: [illegible]
Run #: 3 - with waste

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
18:47:57	42	14.1	4.3	75.3
18:48:57	42	14.1	4.2	75.3
18:49:57	42	14.1	4.3	75.6
18:50:57	40	14.1	4.3	75.4
18:51:57	40	14.1	4.3	75.5
18:52:57	41	14.1	4.3	75.3
18:53:57	41	14.1	4.2	75.3
18:54:57	40	14.1	4.2	75.3
18:55:57	39	14	4.3	75.6
18:56:57	39	14	4.3	76
18:57:57	38	14	4.2	75.8
18:58:57	40	14	4.3	75.6
18:59:57	40	13.9	4.4	75.4
19:00:57	39	13.9	4.2	75.3
19:01:57	39	14	4.2	75.3
19:02:57	39	13.9	4.3	75.3
19:03:56	40	13.8	4.4	75.3
19:04:56	44	13.8	4.5	75.3
19:05:56	42	13.9	4.4	75.5
19:06:56	38	14.1	4.3	75.7
19:07:56	37	14.1	4.2	75.2
19:08:56	36	14	4.3	75.3
19:09:56	38	14	4.3	75.3
19:10:56	38	14	4.3	75.2
19:11:56	38	13.9	4.4	75.2
19:12:56	38	14	4.4	75.4
19:13:56	39	14	4.3	75.3
19:14:56	38	14.1	4.3	75.3
19:15:56	39	14.1	4.3	75.3
19:16:56	39	14.1	4.3	75.3
Stack Avg	39	14	4.3	75.4

000303

Date: [illegible]
Site Name:
Test Location: IPG George Neal Station, UNIT 1
VEA Project ID: 1-045
Run #: 3 - with waste

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
19:17:56	39	14.1	4.2	75.2
19:18:56	39	13.9	4.4	75.2
19:19:56	41	13.9	4.4	75.2
19:20:56	41	14	4.3	75.2
19:21:56	40	14	4.3	75.3
19:22:56	40	13.9	4.3	75.4
19:23:56	41	14	4.3	75.3
19:24:56	43	14	4.3	75.2
19:25:56	42	14	4.2	75.2
19:26:56	42	14	4.3	75.2
19:27:56	39	14	4.3	75.2
19:28:56	40	14	4.4	75.2
19:29:56	41	14	4.4	75.2
19:30:56	41	14	4.4	75.2
19:31:56	39	14	4.4	75.2
19:32:56	37	14	4.4	75.2
19:33:56	37	14.1	4.2	75.2
19:34:56	39	14.1	4.3	75.2
19:35:56	41	14	4.3	75.2
19:36:56	41	14	4.3	75.1
19:37:56	42	13.9	4.4	75.2
19:38:56	45	13.9	4.4	75.2
19:39:56	45	13.9	4.4	75.2
19:40:56	45	13.8	4.4	75.2
19:41:56	46	13.8	4.4	75.2
19:42:56	47	14	4.3	75.2
19:43:56	46	14	4.3	75.2
19:44:56	46	14	4.2	75.2
19:45:56	44	14	4.3	75.2
19:46:56	43	14	4.2	75.1
30-min Avg	42	14	4.3	75.2
TEST AVGS	48.3	14.1	4.3	

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, Unit [illegible]
<EA Project ID: 1-345
Run #: 4 -- with waste -- 130 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
08:45:06	80	14.6	3.7	64.4
08:46:06	84	14.5	3.8	64.4
08:47:06	84	14.6	3.8	64.4
08:48:06	84	14.6	3.7	64.4
08:49:06	84	14.7	3.7	64.4
08:50:06	83	14.7	3.7	64.4
08:51:06	82	14.6	3.8	64.4
08:52:06	83	14.6	3.9	64.4
08:53:06	82	14.7	3.7	64.4
08:54:06	83	14.6	3.8	64.4
08:55:06	84	14.6	3.7	64.4
08:56:06	83	14.7	3.6	64.4
08:57:06	82	14.6	3.7	64.4
08:58:06	82	14.6	3.8	64.5
08:59:06	83	14.7	3.6	64.7
09:00:06	83	14.7	3.6	64.6
09:01:06	80	14.7	3.6	64.9
09:02:06	79	14.7	3.6	65
09:03:06	77	14.6	3.6	65.2
09:04:06	81	14.6	3.6	65
09:05:05	81	14.6	3.7	65.4
09:06:05	85	14.6	3.6	65.2
09:07:05	84	14.6	3.6	65.3
09:08:05	82	14.6	3.6	65.4
09:09:05	81	14.6	3.6	65.1
09:10:05	79	14.5	3.7	65.8
09:11:05	83	14.5	3.6	65.9
09:12:05	81	14.5	3.7	65.9
09:13:05	80	14.5	3.6	65.8
09:14:05	81	14.6	3.6	65.8
30-min Avg	82	14.6	3.7	64.9

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: 1-345
Run #: 4 -- with waste -- 130 MW

-6906

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
09:15:05	80	14.5	3.6	66.1
09:16:05	80	14.5	3.7	66
09:17:05	80	14.6	3.5	66.1
09:18:05	77	14.6	3.5	66.2
09:19:05	76	14.5	3.6	66.2
09:20:05	75	14.5	3.6	66.2
09:21:05	77	14.5	3.6	66.2
09:22:05	76	14.5	3.6	66.2
09:23:05	77	14.5	3.6	66.2
09:24:05	77	14.5	3.5	66.2
09:25:05	77	14.5	3.5	66.3
09:26:05	78	14.5	3.5	66.5
09:27:05	77	14.4	3.6	66.3
09:28:05	76	14.5	3.5	66.3
09:29:05	75	14.4	3.6	66.5
09:30:05	79	14.3	3.7	66.7
09:31:05	81	14.3	3.6	66.8
09:32:05	80	14.3	3.7	66.3
09:33:05	80	14.2	3.7	66.4
09:34:05	82	14.2	3.8	66.7
09:35:05	81	14.2	3.8	66.8
09:36:05	82	14.2	3.8	66.9
09:37:05	82	14.2	3.8	67
09:38:05	82	14.1	3.8	66.7
09:39:05	83	14.2	3.8	66.7
09:40:05	82	14.1	3.9	66.8
09:41:05	82	14.1	3.9	66.9
09:42:05	80	14	3.9	66.7
09:43:05	81	14	3.9	66.6
09:44:05	83	14	3.9	66.8
30-min Avg	79	14.3	3.7	66.5

000306

Test Location: [illegible] George Nav. Station, [illegible]
Test Project ID: [illegible]
Run #: 4 -- with waste -- 120 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Ambt. Temp (deg F)
09:45:05	86	14	3.9	66.6
09:46:05	84	14	3.9	66.3
09:47:05	86	13.9	4.1	66.5
09:48:05	86	13.8	4.2	66.7
09:49:05	86	13.7	4.3	66.8
09:50:05	86	13.9	4	66.6
09:51:05	88	14	3.9	66.6
09:52:04	87	13.9	4	66.3
09:53:04	92	13.9	4.1	66.3
09:54:04	91	14.1	4.1	66.2
09:55:04	90	14	4.2	66.3
09:56:04	89	14.1	4.1	66.5
09:57:04	87	14.1	4.1	66.2
09:58:04	85	14.1	4	66.2
09:59:04	85	14.1	4	66.2
10:00:04	85	14.1	4	66.2
10:01:04	84	14	4.1	66.2
10:02:04	85	13.9	4.1	66.2
10:03:04	84	13.9	4	66.2
10:04:04	83	13.9	4.1	68
10:05:04	84	13.9	4.1	67.5
10:06:04	84	13.9	4.1	67.3
10:07:04	84	13.9	4.2	67.4
10:08:04	86	13.9	4.2	67.2
10:09:04	89	13.9	4.1	66.7
10:10:04	90	13.9	4.4	67
10:11:04	91	13.8	4.3	67.4
10:12:04	90	14	4.2	67.4
10:13:04	87	13.9	4.1	67.1
10:14:04	85	14	4.2	67.1
20-min Avg	87	14	4.1	66.7

Date: [illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT 1
[illegible] Project ID: [illegible]
Run #: 4 -- with waste -- [illegible] MW

-6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
10:15:04	86	14	4.1	67.1
10:16:04	86	14	4.1	66.7
10:17:04	86	14	4.1	66.6
10:18:04	87	13.8	4.2	66.8
10:19:04	91	14	4	67.1
10:20:04	87	13.9	4.1	67.1
10:21:04	86	13.9	4.1	67.1
10:22:04	87	13.8	4.3	67.7
10:23:04	89	13.8	4.3	67.7
10:24:04	87	13.8	4.2	67.9
10:25:04	86	13.8	4.2	67.8
10:26:04	88	13.8	4.2	67.8
10:27:04	86	13.9	4.1	68
10:28:04	85	13.8	4.2	68
10:29:04	89	13.8	4.2	67.9
10:30:04	90	13.9	4.1	68
10:31:04	90	13.8	4.2	68
10:32:04	90	13.9	4	68
10:33:04	99	14.1	3.8	68
10:34:04	84	14.1	3.7	68
10:35:04	95	14.2	3.6	67.9
10:36:04	71	14.3	3.5	68
10:37:04	66	14.3	3.5	68
10:38:04	66	14.4	3.4	68
10:39:03	67	14.3	3.4	68
10:40:03	66	14.4	3.4	68
10:41:03	66	14.4	3.3	67.8
10:42:03	66	14.4	3.4	67.9
10:43:03	68	14.4	3.4	68
10:44:03	70	14.4	3.3	68
30-min Avg	81	14	3.9	67.7

0088

Test Location: IPS George Neal Station, UNIT 1
Test Project ID: I-245
Run #: 4 -- with waste -- 130 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
10:45:03	72	14.4	3.3	68
10:46:03	74	14.3	3.4	68
10:47:03	77	14.4	3.3	68
10:48:03	79	12.3	6.3	67.9
10:49:03	56	12	6	68
10:50:03	74	14.3	3.4	68
10:51:03	75	14.2	3.6	68
10:52:03	76	14.1	3.6	68
10:53:03	75	14.1	3.6	68.1
10:54:03	78	14.1	3.5	68
10:55:03	78	14.3	3.3	68.1
10:56:03	76	14.3	3.4	68.1
10:57:03	75	14.4	3.3	68.4
10:58:03	74	14.3	3.4	68.2
10:59:03	74	14.2	3.5	68.4
11:00:03	75	14.2	3.5	69
11:01:03	74	14.3	3.5	68.8
11:02:03	75	14.3	3.4	69.2
11:03:03	75	14.3	3.4	69.3
11:04:03	75	14.4	3.4	68.6
11:05:03	76	14.5	3.4	69.3
11:06:03	75	14.4	3.5	69.6
11:07:03	75	14.4	3.4	69.1
11:08:03	73	14.3	3.6	69.2
11:09:03	72	14.4	3.5	69.2
11:10:03	73	14.4	3.5	69.6
11:11:03	74	14.5	3.4	69.7
11:12:03	73	14.5	3.4	69.6
11:13:03	76	14.5	3.4	69.5
11:14:03	76	14.4	3.5	69.5
30-min Avg	74	14.2	3.6	68.7

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
EPA Project ID: I-245
Run #: 4 -- with waste -- 100 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
11:15:03	78	14.3	3.7	68.9
11:16:03	79	14.3	3.7	69.2
11:17:03	80	14.3	3.7	69.7
11:18:03	80	14.2	3.7	69.7
11:19:03	79	14.3	3.6	69.7
11:20:03	79	14.3	3.6	69.8
11:21:03	80	14.3	3.6	69.8
11:22:03	79	14.3	3.6	69.8
11:23:03	79	14.3	3.6	69.8
11:24:03	78	14.2	3.8	69.8
11:25:03	77	14.3	3.7	69.8
11:26:02	78	14.3	3.7	69.8
11:27:02	78	14.4	3.6	69.8
11:28:02	77	14.4	3.5	69.8
11:29:02	77	14.4	3.5	69.8
11:30:02	76	14.3	3.7	69.8
11:31:02	75	14.3	3.7	69.8
11:32:02	77	14.3	3.7	70
11:33:02	77	14.3	3.7	70
11:34:02	78	14.3	3.7	70.1
11:35:02	80	14.3	3.7	69.9
11:36:02	81	14.5	3.5	70.4
11:37:02	79	14.3	3.8	70.5
11:38:02	77	14.3	3.7	70.8
11:39:02	79	14.3	3.6	71.1
11:40:02	79	14.3	3.7	70.7
11:41:02	80	14.3	3.7	70.7
11:42:02	81	14.3	3.7	71
11:43:02	80	14.3	3.7	71
11:44:02	81	14.3	3.6	70.6
30-min Avg	79	14.3	3.7	70.1
TEST AVGS	80.3	14.2	3.8	

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
WEP Project ID: I-345
Run #: 5 -- with waste -- 80 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
21:45:09	32	14	4.5	68
21:46:09	32	13.9	4.5	68
21:47:09	33	14	4.5	68
21:48:09	31	13.9	4.5	67.9
21:49:09	32	13.9	4.6	67.9
21:50:09	32	14	4.5	67.8
21:51:09	33	14	4.5	67.8
21:52:09	33	14.3	4.1	67.8
21:53:09	33	14.4	4	68
21:54:09	33	14.2	4.2	67.9
21:55:09	34	14	4.4	67.9
21:56:09	35	13.9	4.6	67.9
21:57:09	35	13.9	4.5	67.9
21:58:09	35	13.9	4.6	68
21:59:09	35	13.9	4.6	68
22:00:09	35	14	4.5	68
22:01:09	36	13.9	4.6	67.9
22:02:09	36	13.9	4.5	67.9
22:03:09	35	13.9	4.6	68
22:04:09	36	13.8	4.7	67.7
22:05:09	36	13.8	4.7	67.7
22:06:09	36	13.7	4.7	67.7
22:07:09	36	13.7	4.8	67.5
22:08:09	37	13.7	4.7	67.7
22:09:09	37	13.8	4.6	67.6
22:10:09	38	13.8	4.6	67.9
22:11:09	38	13.8	4.6	67.9
22:12:09	39	13.8	4.7	67.7
22:13:09	39	13.8	4.8	67.7
22:14:09	39	13.6	4.9	67.3
30-min Avg	35	13.9	4.6	67.8

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
EPA Project ID: I-245
Run #: 5 -- with waste -- 80 MW

- -6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
22:15:09	39	13.6	4.9	67.1
22:16:08	40	13.6	4.9	67.4
22:17:08	40	13.7	4.9	67.6
22:18:08	40	13.7	4.8	67.4
22:19:08	40	13.8	4.8	67.3
22:20:08	40	13.7	4.8	67.4
22:21:08	39	13.7	4.8	67.7
22:22:08	40	13.7	4.8	67.3
22:23:08	39	13.8	4.8	67.8
22:24:08	40	13.8	4.7	67.8
22:25:08	40	13.8	4.6	67.7
22:26:08	40	14	4.4	67.8
22:27:08	40	13.9	4.6	67.5
22:28:08	40	13.9	4.5	67.2
22:29:08	39	13.9	4.6	67.5
22:30:08	40	13.9	4.6	67.7
22:31:08	40	13.9	4.5	67.4
22:32:08	40	13.8	4.6	67.1
22:33:08	41	13.9	4.6	67.1
22:34:08	40	13.9	4.5	67
22:35:08	40	13.9	4.6	65.8
22:36:08	40	13.8	4.6	66.5
22:37:08	42	13.9	4.5	66.7
22:38:08	42	13.9	4.5	67.2
22:39:08	42	13.9	4.6	67.2
22:40:08	42	13.8	4.6	66.3
22:41:08	42	13.9	4.5	66.4
22:42:08	42	13.8	4.6	66.5
22:43:08	43	13.8	4.6	66.3
22:44:08	42	13.7	4.7	66.5
30-min Avg	40	13.8	4.7	67.2

Date: 04-25-1990
Site Name:
Test Location: IPS George Neal Station, UNIT 1
CEA Project ID: I-345
Run #: 5 -- with waste -- 90 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
22:45:08	42	13.8	4.6	66.2
22:46:08	42	13.7	4.6	66.3
22:47:08	43	13.7	4.6	66.3
22:48:08	43	13.8	4.5	66.3
22:49:08	44	13.9	4.5	66.3
22:50:08	43	13.8	4.6	66.4
22:51:08	43	13.8	4.6	66.7
22:52:08	43	13.8	4.5	66.5
22:53:08	44	13.8	4.6	66.4
22:54:08	43	13.8	4.5	66.3
22:55:08	43	13.7	4.6	66.5
22:56:08	43	13.6	4.8	66.5
22:57:08	42	13.4	5	66.3
22:58:08	39	13.5	4.9	66.3
22:59:08	38	13.6	4.8	66.2
23:00:08	38	13.6	4.7	66.3
23:01:08	37	13.6	4.8	66.3
23:02:07	37	13.7	4.6	66.4
23:03:07	37	13.7	4.7	66.3
23:04:07	37	13.7	4.7	66.3
23:05:07	37	13.7	4.7	66.3
23:06:07	36	13.6	4.7	66.2
23:07:07	37	13.5	4.9	66.2
23:08:07	37	13.7	4.6	66.3
23:09:07	36	13.7	4.6	66.4
23:10:07	35	13.7	4.7	66.3
23:11:07	36	13.6	4.7	66.3
23:12:07	36	13.6	4.7	66.2
23:13:07	36	13.7	4.7	66.2
23:14:07	37	13.6	4.8	66.3
30-min Avg	39	13.7	4.7	66.3

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: 1-745
Run #: 5 -- with waste -- 30 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
23:15:07	36	13.6	4.5	66.3
23:16:07	37	13.5	4.9	66.2
23:17:07	36	13.8	4.5	66.3
23:18:07	36	13.7	4.6	66.3
23:19:07	37	13.7	4.6	66.3
23:20:07	37	13.8	4.4	66.3
23:21:07	37	13.8	4.4	66.3
23:22:07	37	13.7	4.5	66.5
23:23:07	38	13.7	4.5	66.3
23:24:07	37	13.8	4.5	66.2
23:25:07	38	14	4.3	66.3
23:26:07	38	13.8	4.4	66.3
23:27:07	37	13.9	4.3	66.2
23:28:07	37	13.7	4.5	66.2
23:29:07	37	13.6	4.6	66.4
23:30:07	37	13.6	4.6	66.2
23:31:07	37	13.7	4.5	66.2
23:32:07	38	13.7	4.5	66.2
23:33:07	38	13.6	4.6	66.2
23:34:07	38	13.9	4.3	66.2
23:35:07	38	14	4.1	66.2
23:36:07	39	13.8	4.2	66.3
23:37:07	38	13.8	4.4	66.3
23:38:07	38	13.8	4.4	66.3
23:39:07	40	13.6	4.6	66.4
23:40:07	39	13.6	4.6	66.4
23:41:07	39	13.5	4.7	66.4
23:42:07	38	13.6	4.5	66.8
23:43:07	39	13.6	4.5	66.4
23:44:07	40	13.6	4.5	66.2
30-min Avg	38	13.7	4.5	66.3

Date: [illegible]
Site Name: [illegible]
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: [illegible]
Run #: 5 -- with waste -- 80 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
23:45:07	41	13.5	4.6	66.2
23:46:07	41	13.5	4.6	66.3
23:47:07	40	13.6	4.6	66.2
23:48:07	40	13.6	4.6	66.3
23:49:06	40	13.4	4.7	66.3
23:50:06	39	13.5	4.6	66.4
23:51:06	39	13.4	4.8	66.3
23:52:06	39	13.5	4.7	66.2
23:53:06	39	13.5	4.7	66.3
23:54:06	39	13.6	4.5	66.2
23:55:06	40	13.6	4.5	66.3
23:56:06	41	13.6	4.5	66.4
23:57:06	42	13.6	4.5	66.3
23:58:06	42	13.5	4.6	66.3
23:59:06	43	13.5	4.6	66.3
00:00:06	43	13.5	4.5	66.3
00:01:06	43	13.5	4.5	66.2
00:02:06	43	13.4	4.7	66.3
00:03:06	44	13.4	4.7	66.3
00:04:06	44	13.4	4.6	66.2
00:05:06	45	13.4	4.7	66.2
00:06:06	45	13.4	4.6	66.2
00:07:06	46	13.4	4.6	66.2
00:08:06	47	13.5	4.5	66.2
00:09:06	46	13.6	4.5	66.2
00:10:06	47	13.5	4.6	66.2
00:11:06	47	13.5	4.6	66.3
00:12:06	47	13.4	4.6	66.2
00:13:06	47	13.4	4.6	66.2
00:14:06	46	13.5	4.5	66.2
30-min Avg	43	13.5	4.6	66.3

-6906

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: I-245
Run #: 5 -- with waste -- 80 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
00:15:06	48	13.5	4.6	66.3
00:16:06	48	13.6	4.4	66.3
00:17:06	49	13.5	4.5	66.3
00:18:06	49	13.5	4.5	66.2
00:19:06	49	13.5	4.5	66.2
00:20:06	49	13.4	4.6	66.2
00:21:06	49	13.4	4.6	66.2
00:22:06	50	13.3	4.7	66.2
00:23:06	51	13.4	4.5	66.2
00:24:06	51	13.4	4.6	66.2
00:25:06	51	13.5	4.4	66.2
00:26:06	52	13.5	4.5	66.2
00:27:06	52	13.4	4.5	66.2
00:28:06	52	13.5	4.5	66.2
00:29:06	53	13.4	4.5	66.2
00:30:06	52	13.3	4.5	66.2
00:31:06	53	13.4	4.6	66.2
00:32:06	53	13.3	4.6	66.2
00:33:06	52	13.3	4.6	66.2
00:34:06	53	13.4	4.5	66.2
00:35:06	53	13.4	4.5	66.2
00:36:05	54	13.5	4.3	66.2
00:37:06	55	13.5	4.4	66.2
00:38:06	55	13.4	4.4	66.2
00:39:05	56	13.3	4.6	66.2
00:40:05	56	13.3	4.7	66.2
00:41:05	56	13.3	4.5	66.2
00:42:05	56	13.5	4.6	66.2
00:43:05	56	13.8	4.5	66.2
00:44:05	56	13.8	4.6	66.2
30-min Avg	52	13.5	4.5	66.2
TEST AVGS	41.2	13.7	4.6	

8088

Test Location: [illegible] George Mem. Station, [illegible]
EPA Project ID: [illegible]
Run #: [illegible] -- with waste -- 90 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
01:33:48	48	14.4	4.6	65.9
01:34:48	49	14.4	4.6	66
01:35:48	49	14.4	4.6	66.1
01:36:48	50	14.4	4.6	65.9
01:37:48	50	14.4	4.6	66.1
01:38:48	50	14.4	4.6	65.8
01:39:48	51	14.4	4.6	65.3
01:40:48	51	14.4	4.5	65.4
01:41:48	52	14.5	4.4	65.6
01:42:48	52	14.5	4.5	65.7
01:43:48	52	14.5	4.4	65.5
01:44:48	52	14.4	4.5	65.2
01:45:48	52	14.3	4.6	65.4
01:46:48	52	14.4	4.5	65.7
01:47:48	52	14.5	4.4	65
01:48:48	52	14.6	4.3	65.2
01:49:48	54	14.2	4.7	64.9
01:50:48	54	14.3	4.6	64.8
01:51:48	54	14.4	4.4	64.6
01:52:48	54	14.4	4.4	64.7
01:53:48	55	14.4	4.4	64.3
01:54:47	54	14.5	4.4	64.5
01:55:47	54	14.5	4.3	64.6
01:56:47	54	14.5	4.4	64.5
01:57:47	54	14.5	4.3	64.5
01:58:47	54	14.4	4.4	64.4
01:59:47	55	14.4	4.5	64.4
02:00:47	54	14.5	4.4	64.4
02:01:47	54	14.4	4.5	64.5
02:02:47	54	14.4	4.5	64.4
30-min Avg	52	14.4	4.5	65.1

[illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT 1
[illegible] Project ID: [illegible]
Run #: [illegible] -- with waste -- 30 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
02:03:47	54	14.4	4.4	64.4
02:04:47	54	14.4	4.5	64.7
02:05:47	55	14.3	4.6	64.4
02:06:47	55	14.3	4.5	64.5
02:07:47	56	14.3	4.5	64.4
02:08:47	57	14.3	4.5	64.4
02:09:47	58	14.3	4.5	64.4
02:10:47	58	14.1	4.8	64.4
02:11:47	57	13.8	5.2	64.5
02:12:47	58	13.7	5.2	64.5
02:13:47	58	14.3	4.5	64.5
02:14:47	61	14.3	4.4	64.5
02:15:47	62	14.3	4.5	64.5
02:16:47	64	14.1	4.7	64.4
02:17:47	64	14.1	4.7	64.5
02:18:47	64	14.2	4.6	64.4
02:19:47	64	14.1	4.6	64.5
02:20:47	64	14.2	4.5	64.4
02:21:47	65	14.2	4.5	64.4
02:22:47	65	14.2	4.5	64.5
02:23:47	66	14.2	4.5	64.6
02:24:47	67	14.2	4.6	64.4
02:25:47	67	14.1	4.6	64.4
02:26:47	68	14.2	4.5	64.5
02:27:47	69	14.2	4.5	64.5
02:28:47	68	14.2	4.5	64.5
02:29:47	69	14.2	4.5	64.4
02:30:47	69	14.3	4.4	64.4
02:31:47	69	14.2	4.5	64.4
02:32:47	70	14.1	4.6	64.5
30-min Avg	63	14.2	4.6	64.5

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
WEA Project ID: 1-345
Run #: 6 -- with waste -- 80 MW

808

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
02:33:47	71	14.1	4.6	64.5
02:34:47	72	14.1	4.6	64.5
02:35:47	72	14.1	4.6	64.5
02:36:47	71	14.1	4.5	64.4
02:37:47	71	14.2	4.5	64.4
02:38:47	70	14.2	4.5	64.4
02:39:47	71	14.2	4.4	64.4
02:40:47	72	14.3	4.4	64.4
02:41:46	72	14.2	4.4	64.4
02:42:46	72	14	4.7	64.4
02:43:46	73	14.2	4.5	64.5
02:44:46	73	14.2	4.5	64.4
02:45:46	74	14.1	4.5	64.4
02:46:46	75	14.1	4.6	64.4
02:47:46	75	14	4.7	64.4
02:48:46	74	14	4.6	64.4
02:49:46	74	14.1	4.5	64.4
02:50:46	76	14.1	4.5	64.4
02:51:46	75	14.2	4.4	64.4
02:52:46	75	14.2	4.4	64.4
02:53:46	77	14.2	4.4	64.5
02:54:46	78	14.2	4.5	64.5
02:55:46	78	14	4.6	64.5
02:56:46	79	14	4.5	64.4
02:57:46	79	14.1	4.5	64.4
02:58:46	78	14.1	4.5	64.4
02:59:46	78	14.1	4.5	64.5
03:00:46	79	14.1	4.5	64.5
03:01:46	80	14.1	4.5	64.5
03:02:46	79	14.1	4.5	64.5
30-min Avg	75	14.1	4.5	64.4

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, Unit 1
EPA Project ID: 1-745
Run #: 5 -- with waste -- 90 MW

6906

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
03:03:46	80	14.1	4.5	64.4
03:04:46	80	14	4.6	64.4
03:05:46	79	14	4.5	64.4
03:06:46	79	14	4.6	64.4
03:07:46	80	14	4.5	64.4
03:08:46	81	14	4.5	64.4
03:09:46	81	14.1	4.5	64.4
03:10:46	82	14.1	4.5	64.4
03:11:46	82	14.1	4.5	64.4
03:12:46	82	14.1	4.5	64.4
03:13:46	83	14	4.6	64.4
03:14:46	83	14	4.6	64.4
03:15:46	81	14	4.7	64.4
03:16:46	82	13.9	4.8	64.4
03:17:46	81	13.9	4.7	64.4
03:18:46	83	14	4.6	64.4
03:19:46	82	14	4.5	64.4
03:20:46	83	14	4.6	64.4
03:21:46	83	14	4.5	64.4
03:22:46	84	14	4.6	64.4
03:23:46	84	13.9	4.7	64.4
03:24:46	84	13.9	4.7	64.4
03:25:46	85	13.9	4.6	64.3
03:26:46	85	13.9	4.6	64.4
03:27:46	85	14	4.5	64.4
03:28:45	-11	14	4.6	64.3
03:29:45	-138	14	4.5	64
03:30:45	-138	14	4.5	63.9
03:31:45	-138	14	4.9	64
03:32:45	-138	13.9	4.7	64.1
30-min Avg	~~50~~ 52.16	14	4.6	64.3

25-min

000320

Date [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
[illegible] Project ID: 1-245
Run #: 7 -- with waste -- 90 MW

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
21:21:24	90	14.3	4.5	66.2
21:22:24	203	14.3	4.3	66.2
21:23:24	241	14	4.7	66.2
21:24:24	193	14	4.5	66.2
21:25:24	152	14.2	4.3	66.2
21:26:24	124	14.1	4.4	66.1
21:27:24	106	14	4.5	66.2
21:28:24	114	14.1	4.4	66.2
21:29:24	106	14	4.5	66.2
21:30:24	86	14	4.4	66.1
21:31:24	72	14	4.4	66.1
21:32:24	66	14	4.3	65.7
21:33:24	58	14.1	4.6	65.5
21:34:24	144	14	4.5	65.8
21:35:24	132	14	4.4	65.7
21:36:24	79	14	4.5	65.5
21:37:24	51	13.9	4.5	65.4
21:38:24	37	13.9	4.6	65.7
21:39:24	29	13.9	4.6	65.6
21:40:24	23	13.8	4.6	65.3
21:41:24	19	13.8	4.5	65.3
21:42:24	15	13.8	4.6	64.9
21:43:24	13	14.2	4.7	64.9
21:44:24	11	13.9	4.6	64.9
21:45:24	12	14.1	4.6	65.1
21:46:24	88	14	4.5	65.1
21:47:24	144	13.9	4.5	64.9
21:48:24	98	13.9	4.5	64.8
21:49:24	68	14.1	4.7	64.9
21:50:24	71	14	4.6	64.5
30-min Avg	88	14	4.5	65.6
TEST AVGS.	67.4	14.1	4.5	

000321

Date: [illegible]
Site Name:
Test Location: IPS George Neal Station, UNIT 1
KEA Project ID: I-345
Run #: [illegible] -- with waste -- 90 MW

6906

1 - Minute Averages

Time	CO (ppmc)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
21:51:24	173	14	4.7	64.9
21:52:24	154	13.9	4.5	64.7
21:53:24	130	14	4.6	65
21:54:24	119	14.2	4.1	64.7
21:55:24	106	14.7	3.8	65.1
21:56:24	103	14.4	4.1	65.1
21:57:24	107	14.2	4.2	64.5
21:58:24	116	14.1	4.4	64.5
21:59:24	113	14.1	4.3	64.4
22:00:24	127	13.9	4.7	64.5
22:01:24	158	13.7	4.7	64.5
22:02:24	185	13.9	4.4	64.6
22:03:24	193	13.9	4.5	64.5
22:04:24	174	13.8	4.7	64.6
22:05:23	174	13.8	4.5	70.8
22:06:23	176	13.8	4.4	64.5
22:07:23	191	13.9	4.5	64.4
22:08:23	170	13.8	4.8	64.4
22:09:23	155	13.9	4.7	64.4
22:10:23	164	13.8	4.8	64.4
22:11:23	165	14	4.6	64.4
22:12:23	174	13.9	4.5	64.2
22:13:23	179	13.9	4.5	64.2
22:14:23	172	14	4.5	63.9
22:15:23	169	14.1	4.4	64.4
22:16:23	162	14	4.6	64.4
22:17:23	164	13.8	4.7	72.9
22:18:23	162	13.9	4.6	64.4
22:19:23	157	13.9	4.4	64.3
22:20:23	170	14	4.4	64.4
30-min Avg	155	14	4.5	65

000322

Date: 14-Oct-[illegible]
Site Name:
Test Location: [illegible] George Neal Station, [illegible]
EI Project ID: [illegible]-245
[illegible] -- with waste -- 80 MW

1-Minute Averages

Time	[illegible]	[illegible] %	[illegible] %	Avg. Temp deg F
22:21:23	174	13.9	4.6	62.4
22:22:23	171	14	4.5	62.4
22:23:23	179	13.8	4.7	62.4
22:24:23	181	13.8	4.7	62.4
22:25:23	179	13.9	4.7	62.4
22:26:23	177	13.9	4.6	62.5
22:27:23	177	13.9	4.6	62.5
22:28:23	178	14.1	4.4	62.7
22:29:23	179	14	4.5	62.6
22:30:23	177	14.1	4.3	62.6
22:31:23	177	13.8	4.5	62.6
22:32:23	176	13.8	4.5	62.6
22:33:23	178	13.7	4.6	62.6
22:34:23	178	13.7	4.6	62.6
22:35:23	179	13.6	4.6	62.6
22:36:23	179	13.6	4.6	62.6
22:37:23	179	13.6	4.6	62.6
22:38:23	176	13.6	4.5	62.6
22:39:23	177	13.6	4.4	62.6
22:40:23	177	13.5	4.5	62.6
22:41:23	177	13.5	4.5	62.6
22:42:23	179	13.5	4.6	62.6
22:43:23	181	13.5	4.7	62.6
22:44:23	178	13.5	4.7	62.6
22:45:23	176	13.5	4.6	62.6
22:46:23	178	13.5	4.6	62.6
22:47:23	181	13.4	4.5	62.6
22:48:23	180	13.8	4.5	62.6
22:49:23	169	14.1	4.4	62.6
22:50:23	176	14.1	4.4	62.7
30-min Avg	177	13.7	4.6	62

000322

Date: [illegible]
Site Name:
Test Location: [illegible] George Neal Station, UNIT [illegible]
[illegible]EA Project ID: [illegible]
Run #: [illegible] -- with waste -- 30 MW

6906

1 - Minute Averages

Time	CO (ppm)	CO2 (%)	O2 (%)	Amb. Temp (deg F)
22:51:23	175	14	4.4	62.9
22:52:22	175	13.9	4.5	62.7
22:53:22	174	13.7	4.6	62.7
22:54:22	173	13.7	4.6	62.6
22:55:22	171	14	4.2	62.6
22:56:22	193	13.7	4.7	62.6
22:57:22	192	13.4	4.9	62.9
22:58:22	183	13.6	4.9	62.9
22:59:22	194	13.6	4.9	62.6
23:00:22	188	13.6	4.7	62.7
23:01:22	188	13.8	4.7	63.1
23:02:22	189	13.8	4.7	62.8
23:03:22	193	13.8	4.6	62.6
23:04:22	194	13.8	4.6	62.7
23:05:22	197	13.7	4.6	62.7
23:06:22	198	13.8	4.6	62.6
23:07:22	198	14	4.4	62.6
23:08:22	197	13.9	4.5	62.7
23:09:22	196	13.8	4.6	62.5
23:10:22	195	13.8	4.6	62.5
23:11:22	194	13.9	4.4	62.5
23:12:22	198	14.2	4.1	62.5
23:13:22	204	14.1	4.4	62.6
23:14:22	198	14	4.5	62.6
23:15:22	198	13.8	4.6	62.6
23:16:22	198	13.7	4.7	62.6
23:17:22	194	13.8	4.7	62.6
23:18:22	199	13.8	4.6	62.6
23:19:22	199	13.9	4.5	62.6
23:20:22	199	13.8	4.5	62.6
20-min Avg	191	13.8	4.6	62.7
TEST AVGS	174	13.8	4.6	