

FILED
DATE
NO. 12.909

INNOVATIVE COKE OVEN GAS CLEANING SYSTEM

FOR

RETROFIT APPLICATIONS

QUARTERLY ENVIRONMENTAL MONITORING REPORT NO. 2

FOR THE PERIOD COVERING

JULY 1, 1991 THROUGH SEPTEMBER 30, 1991

PARTICIPANT

BETHLEHEM STEEL CORPORATION

BETHLEHEM, PA

PREPARED FOR THE UNITED STATES DEPARTMENT OF ENERGY

UNDER COOPERATIVE AGREEMENT NO. DE-FC22-90PC89658

SEPTEMBER 21, 1992

PATENTS CLEARED BY CHICAGO ON September 28, 1992

QUARTERLY ENVIRONMENTAL MONITORING REPORT NO. 2

FOR THE PERIOD COVERING

JULY 1, 1991 THROUGH SEPTEMBER 30, 1991

INNOVATIVE COKE OVEN GAS CLEANING SYSTEM

FOR

RETROFIT APPLICATIONS

BETHLEHEM STEEL CORPORATION

SECTION 1.0 INTRODUCTION

Bethlehem Steel Corporation (BSC), in conjunction with the Department of Energy (DOE) is conducting a Clean Coal Technology (CCT) project at its Sparrows Point, Maryland Coke Oven Plant. This project combines several existing technologies into an integrated system for removing impurities from Coke Oven Gas (COG) to make it an acceptable fuel. DOE is providing cost-sharing under a Cooperative Agreement with BSC.

This Cooperative Agreement requires BSC to develop and conduct an Environmental Monitoring Plan (EMP) for the Clean Coal Technology project and to report the status of the EMP on a quarterly basis. This report is the second quarterly status report of the EMP. It covers the Environmental Monitoring Plan activities for the period July 1, 1991 through September 30, 1991.

See Sections 2, 3 and 4 for status reports of the Project Installation and Commissioning, the Environmental Monitoring activities and the Compliance Monitoring results for the period. Section 5 contains a list of Compliance Reports submitted to regulatory agencies during the period.

1.1 EMP Purpose

The EMP describes in detail the environmental monitoring activities to be performed during the project execution. The purpose of the EMP is to: (1) document the extent of compliance of monitoring activities, i.e. those monitoring required to meet permit requirements, (2) confirm the specific impacts predicted in the National Environmental Policy Act documentation, and (3) establish an information base for the assessment of the environmental performance of the technology demonstrated by the project.

1.2 EMP Scope

The EMP as approved by DOE, specifies the streams to be monitored (e.g. clean coke oven gas, ammonia still effluent), and the species to be analyzed (e.g. sulfur compounds, nitrogen compounds, trace elements, etc.). The operation and frequency of the monitoring activities is specified, as well as the timing for the monitoring activities related to project phase (e.g. construction, pre-operational, operational, post-operational). Within the five project phases, monitoring is broken down into two types. COMPLIANCE monitoring is that which is or will be required under existing and/or anticipated regulatory requirements or permit conditions. SUPPLEMENTAL monitoring includes data gathering activities deemed important to measure operational or environmental

performance, but not required to be measured by permits or regulations. A list of the Compliance and Supplemental sample streams is given in Table 1-1.

1.3 Project Description

The coke plant at the Sparrows Point Plant consists of three coke oven batteries (A, 11 and 12) and two coal chemical plants (A and B). The by-product coke oven gas (COG) consists primarily of hydrogen, methane, carbon monoxide, nitrogen, and contaminants consisting of tars, light oils (benzene, toluene, and xylene) hydrogen sulfide, ammonia, water vapor, and other hydrocarbons. This raw coke oven gas needs to be cleaned of most of its contaminants before it can be used as a fuel at other operations at the Sparrows Point Plant.

In response to environmental concerns, BSC decided to replace much of the existing coke oven gas treatment facilities in the two coal chemical plants (A and B) with a group of technologies consisting of;

- o Secondary Cooling of the Coke Oven Gas
- o Hydrogen Sulfide Removal
- o Ammonia Removal
- o Deacidification of Acid Gases Removed
- o Ammonia Distillation and Destruction
- o Sulfur Recovery

The installation of this combination of technologies will replace the existing ammonia removal system, the final coolers, hydrogen sulfide removal system and the sulfur recovery system. The existing wastewater treatment, tar recovery and one of the three light oil recovery systems will continue to be used to support the new, innovative combination of COG treatment technologies. Figures 1-1 and 1-2 are simplified block diagrams of the new COG treatment process.

1.4 EMP Sampling Programs

The EMP consists of a Compliance Monitoring Sampling Program and a Supplemental Monitoring Sampling Program. The Compliance Monitoring Sampling Program will be conducted during a summer and a winter Baseline periods during the Pre-Construction/Construction phases of the Project and during a summer and a winter period following the successful Startup and Operational phase of the completed Project.

Compliance monitoring consist of conducting all the sampling and observation programs associated with existing required Federal, State, and Local Regulations, Permits and Orders. These include air, water, and waste monitoring and OSHA and NESHAP monitoring.

The Supplemental Monitoring Program will also be conducted during a summer and a winter Baseline periods during the Pre-Construction/Construction phases of the Demonstration Facility and during a summer and a winter period following the successful startup and Operational phase of the completed Facility.

Supplemental Monitoring includes sampling of 27 additional streams that are important to measure operational or environmental performance and impacts of the installation of the new COG treatment facilities.

Collecting Compliance Monitoring data and Supplemental Monitoring data during the Baseline and Operational Phases of the Facility will provide a basis for comparing and estimating the impact of the Demonstration Facility on the compliance streams and important influent and effluent streams of treatment facilities.

Collecting Compliance monitoring data and Supplemental Monitoring data during summer and winter periods will provide a basis for demonstrating the impact of ambient temperature on the performance of the Demonstration Facility and hence, the impact on the compliance streams. This is important since the solubility of the hydrogen sulfide and ammonia contaminants in the COG are temperature dependant and the performance of the wet surface air cooler equipment at the initial part of the Demonstration Facility will be impacted by the ambient summer and winter temperatures and humidities.

1.5 Contents of EMP Reports

The quarterly and annual EMP reports will present information on the status of planned supplemental and compliance environmental monitoring activities. It will also contain a brief summary of the results of these monitoring activities. The sampling campaign reports will contain all of the data collected during the various sampling campaigns.

TABLE 1-1 ENVIRONMENTAL MONITORING PLAN SAMPLE STREAMS
List of Compliance and Supplemental Monitoring Streams

A. List of Compliance Streams (Sampled during all Phases of Project)

1. PERMITTED STREAMS

STREAM STREAM NAME

Gaseous

G-1 Battery 'A' Stack Gas
G-2 Battery 11 Stack Gas
G-3 Battery 12 Stack Gas

Aqueous

A-5 Monitoring Point 121-Effluent from Waste Water Treatment Plant
A-6 Outfall 021-Discharge to Patapsco River

Solids

S-4 Sludge Blowdown to BRWWTP from Waste Water Treatment Plant

2. BENZENE NESHAP WASTEWATER STREAMS

A-7 Tar Sludge Decanter
A-8 'A' Flushing Liquor Strainer
A-9 'B' Secondary Decanter
A-10 Final Cooler Emulsified Oil
A-11 Final Cooler Condensate
A-12 Desulfurizer Blowdown
A-13 Coke Oven Drip Condensate
A-14 Gas Pump Tank Condensate
A-15 Light Oil Still Drainage
A-16 Vapor Oil Exchanger Condensate
A-17 Primary Light Oil Condensate
A-18 Secondary Light Oil Condensate
A-19 'B' Reflux Condensate
A-20 Centrifuge Water
A-21 Vapor Oil Exchanger and Centrifuge Condensate
A-22 Secondary Light Oil Tank Drainage

3. OSHA WORKER EXPOSURE DATA-Quarterly Monitoring of Coke Oven and
Coal Chemical Worker Exposure

TABLE 1-1 ENVIRONMENTAL MONITORING PLAN SAMPLE STREAMS
List of Compliance and Supplemental Monitoring Streams - continued

B. List of Supplemental Streams

1. Sampled During Pre-Construction/Construction and Operational Phases

<u>STREAM</u>	<u>STREAM NAME</u>
<u>Gaseous</u>	
G-1,G-7	Battery 'A' Stack Gas
G-2	Battery 11 Stack Gas
G-3	Battery 12 Stack Gas
G-5	Blast Furnace Gas to Mixing Station
G-6	Mix Gas to Coke Oven Underfire Burners
G-23	Coke Oven Gas to Mixing Station
<u>Aqueous</u>	
A-24	Composite Feed from Equilization Tank
A-42	Fixed Ammonia Still Wastewater
<u>Solids</u>	
S-26	Coal Mix Feed to Coke Ovens
S-27	Coke Product

OSHA WORKER EXPOSURE DATA-Quarterly Monitoring of Coke Oven and
Coal Chemical Worker Exposure

2. Sampled During Operational Phase of Project

<u>STREAM</u>	<u>STREAM NAME</u>
<u>Gaseous</u>	
G-25	Coke Oven Gas to Secondary Cooler
G-29	Coke Oven Gas to H ₂ S Scrubber
G-41	Coke Oven Gas to Light Oil Scrubber
G-54	Air to Catalytic Oxidizer
G-55	Process Gas to Claus Plant
G-57	Tail Gas to Primary Cooler
<u>Aqueous</u>	
A-28	Flushing Liquor and Tar to Tar Decanter
A-31	Flushing Liquor to Secondary Cooler
A-39	Excess Flushing Liquor to Ammonia Scrubber
A-40	Stripped Liquor from Ammonia Still
A-42	Fixed Ammonia Still Wastewater
A-45	NaOH to Fixed Ammonia Still
<u>Solids</u>	
L-32	Tar to Sump of Secondary Cooler
L-56	Sulfur Product from Claus Plant
S-58	Catalytic Oxidizer Spent Catalyst
S-59	Claus Unit Spent Catalyst

Figure 1-1
 Bethlehem Steel's Innovative
 Coke Oven Gas Cleaning System

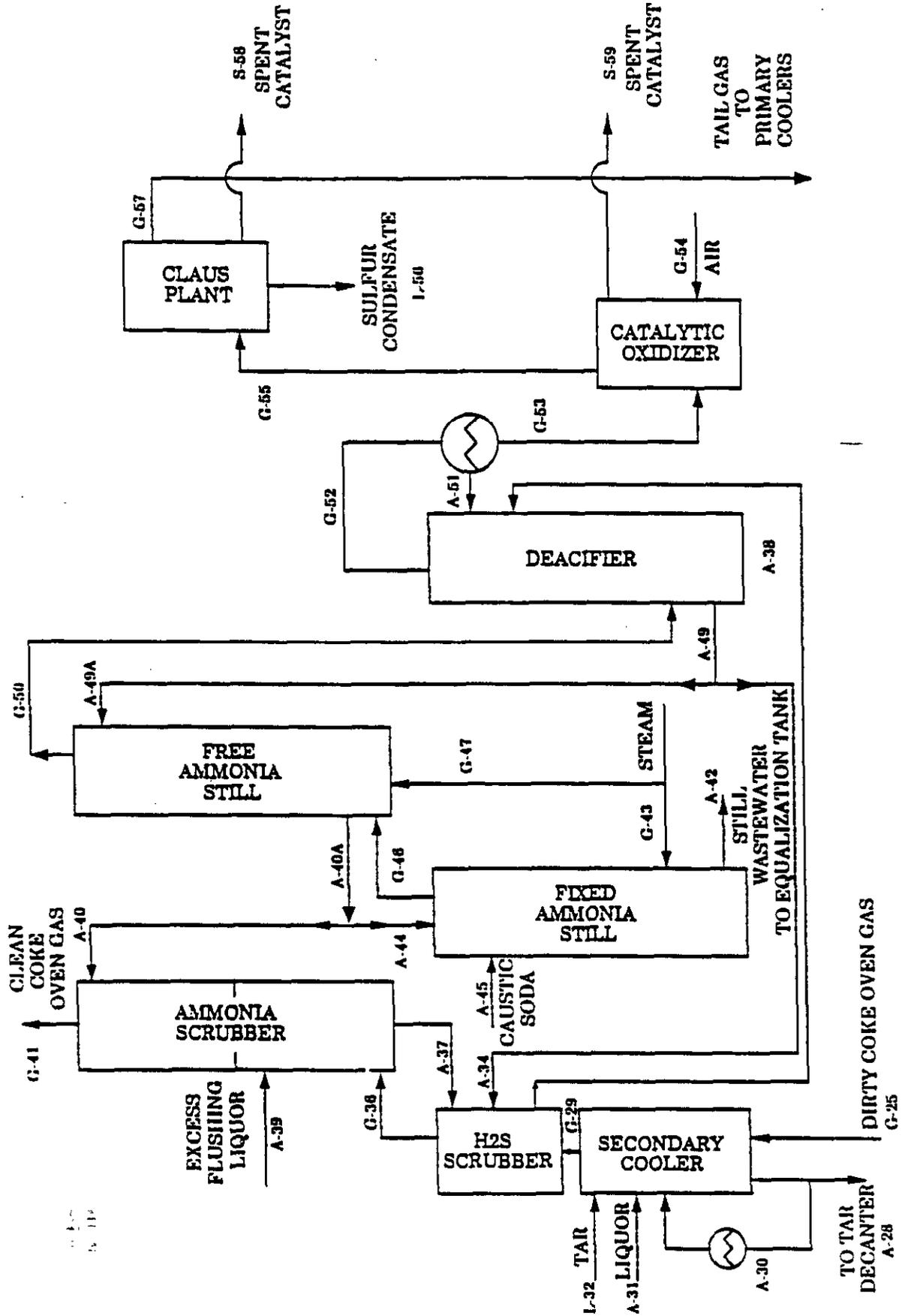
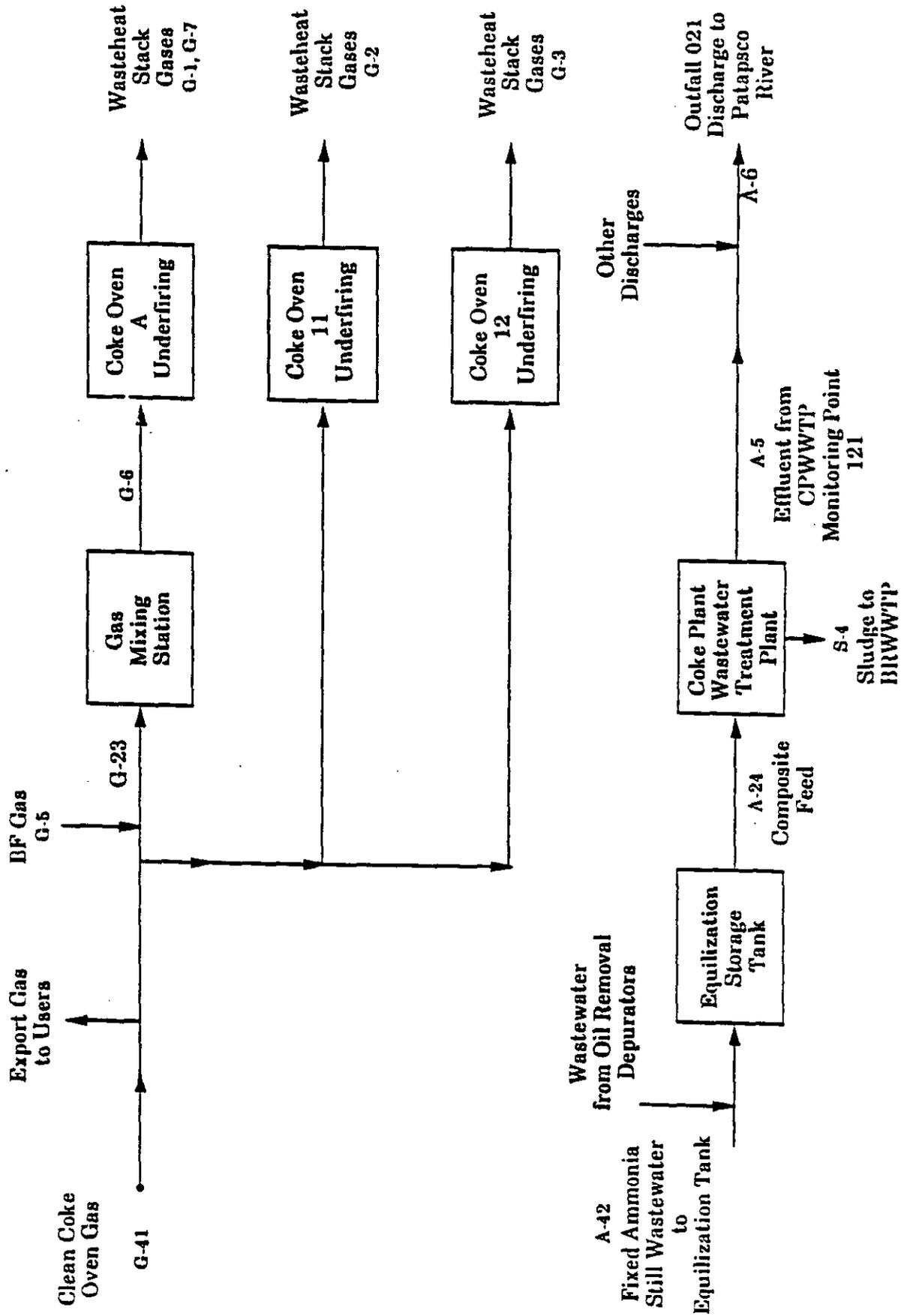


Figure 1-2
**Bethlehem Steel's Innovative
 Coke Oven Gas Cleaning System**
Utilization, Treatment and Disposal of Principal Process Product Streams



SECTION 2.0 PROJECT STATUS

2.1 Installation and Commissioning of Facilities

Construction and Commissioning Status. As of the end of September, 1991, the Project Status as noted in the September, 1991, Monthly Report was as follows;

	<u>Percent Complete</u>
Engineering	95 %
Materials Ordered	100 %
Materials Delivered	99 %
Construction	82 %

It is expected that all construction will be completed by end of the October, 1991, and that Cold Commissioning will begin October 1, 1991, and be completed by October 31, 1991.

Significant Events and Comments. On September 16, 1991, Bethlehem Steel announced that, before the end of 1991, all coke production at Sparrows Point will be suspended for a period of at least two years. Idling of the coke ovens will eliminate cokemaking emissions while permitting the assessment of options and implementation of activities to complete the coke plant emissions reduction program to meet present and future emission control regulations. The suspension of coke making will result in suspension of the generation of coke oven gas. In meetings with DOE-PETC it was agreed to postpone hot commissioning of the facilities in order to maintain their integrity. Efforts are underway to establish procedures for the reasonable "mothballing" of the CCT-II facilities.

2.2 Environmental Monitoring Plan

The final version of the Environmental Monitoring Plan was issued on July 5, 1991 and sent to the Department of Energy on July 25, 1991.

SECTION 3.0 ENVIRONMENTAL MONITORING STATUS

3.1 Overall Schedule

Figure 3-1 shows the overall schedule of the Innovative Coke Oven Gas Cleaning Project including the Design and Construction Phases (Phases I and II) and the Environmental and Operational Monitoring Phase (Phase III).

The Environmental Compliance Monitoring portion of the EMP is continuing throughout the duration of the project.

During the third quarter, 1991, the Summer Baseline Supplemental Sampling program was conducted between August 19th and August 28th.

3.2 Planned Activities This Quarter (3Q91)

Gaseous, Aqueous, and Solid Streams. The Baseline Compliance Monitoring Sampling Program continued as required by Federal, State, and local government regulations.

The summer round of the Baseline Supplemental Monitoring Program was scheduled for August, 1991. The materials to be sampled were "A" battery combustion stack gases, coal charged and coke produced, blast furnace gas, coke oven gas, combined blast furnace and coke oven gas, ammonia still effluent, and the discharge of the one million gallon storage tank to the bio-oxidation basin. In addition, on-site analyses of the combustion stack gases for coke oven batteries No. 11 and No. 12 were added to the program.

OSHA Supplemental Personnel Monitoring. Supplemental Personnel Monitoring was planned for all personnel in the Coal Chemical Plant areas for exposure to hydrogen sulfide, ammonia, carbon monoxide, and fugitive hydrocarbons.

3.3 Completed Activities This Quarter (3Q91)

Gaseous, Aqueous and Solid Streams. The Baseline Compliance Monitoring Sampling Program was carried out as required by Federal, State, and Local regulations.

All planned Baseline Supplemental Monitoring Program activities described in 3.2 above were carried out. The combustion stack gas analyses for batteries No. 11, No. 12, and "A" were carried out on-site. The liquid and gas samples listed in Tables 3-1 and 3-2 were collected and submitted to an outside laboratory daily for chemical analyses. The coal and coke samples were collected and analyzed by on-site laboratories at the Sparrows Point Plant.

Supplemental Monitoring at Coal Chemical Plants. During July and August, 1991 supplemental personnel exposure monitoring was conducted at the Coal Chemical plants as required by the EMP. Forty two (42) workers in this area were monitored for exposure to hydrogen sulfide, carbon monoxide, ammonia, and fugitive hydrocarbons. Drager Detection Tubes were used to monitor for ammonia and hydrogen sulfide. An Interscan Monitor was used for carbon monoxide and a 3M Organic Vapor Monitor was used to monitor for fugitive hydrocarbons. Fugitive hydrocarbons and carbon monoxide monitoring was done in July, 1991, and ammonia and hydrogen sulfide monitoring was done in August, 1991. Reports of the results of this monitoring were sent to the Coke Plant management.

3.4 Problems With Sampling and Analytical Efforts

The only Baseline Supplemental Monitoring Samples not collected were the ammonia still effluent (sample No. A-42) for August 19 and 20 during the second week of the summer sampling period. The ammonia still was down for repairs during these days and no still effluent was produced. All other samples were collected and preserved according to agreed upon protocols.

Bethlehem Steel personnel collected the liquid samples and delivered them daily to Laboratory Resources in Bethlehem, Pennsylvania for chemical analyses. The gas sampling and analysis was conducted on-site by Keystone Environmental Resources, Inc. These two contractor laboratories replaced the contractor used during the baseline winter sampling program because of poor performance of that contractor. We experienced no problems with these new contractors during the period.

3.5 Plans For the Next Reporting Period (4Q91)

The collection of the Baseline Compliance Monitoring Samples will continue as required by Federal, State, and Local regulations.

No additional Baseline Supplemental Monitoring Sampling is scheduled for the fourth quarter of 1991.

FIGURE 3-1 OVERALL SCHEDULE OF INNOVATIVE COKE OVEN GAS CLEANING PROJECT

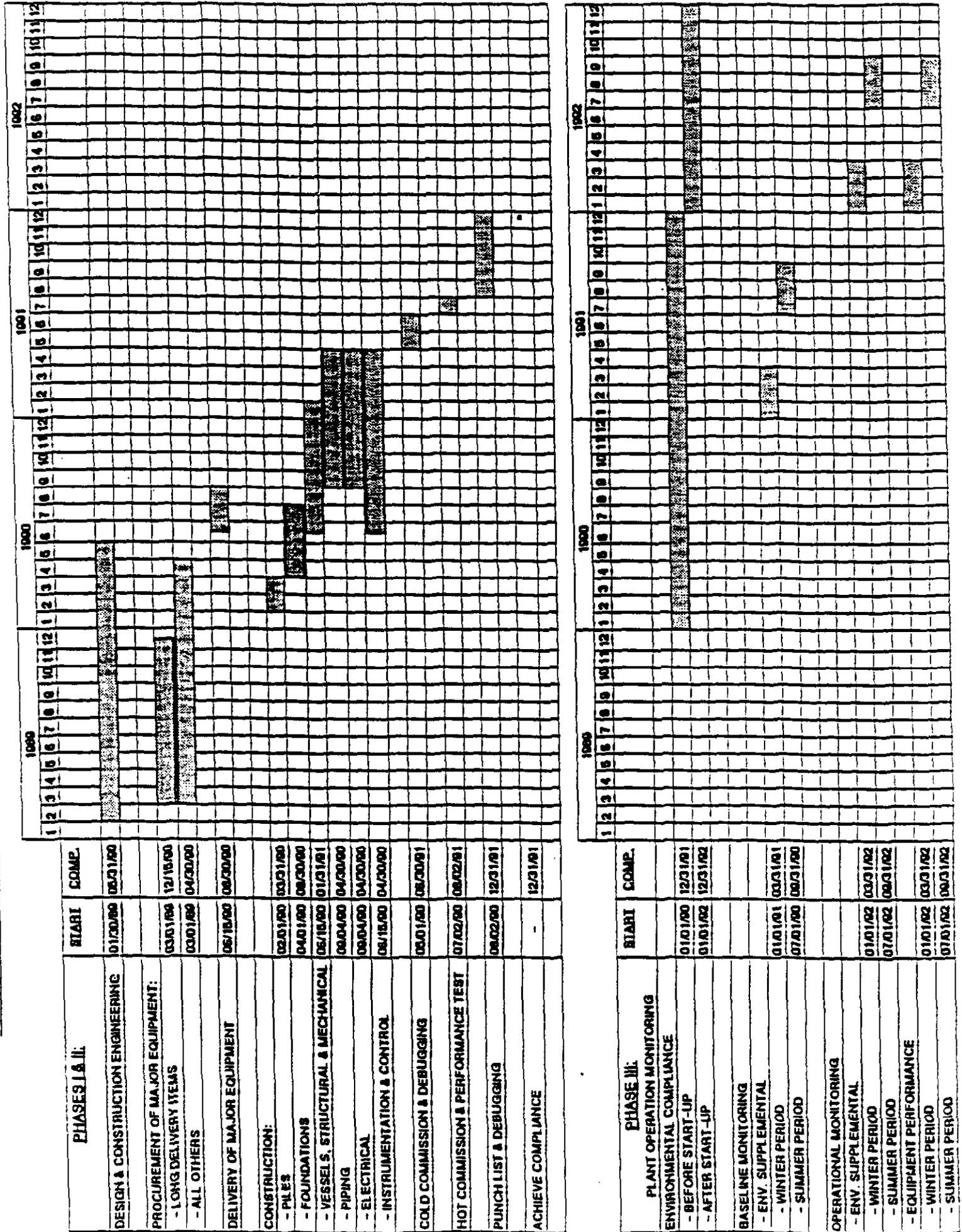


Table 3-2 Sample Time Log for Gaseous Samples
 Environmental Monitoring Plan - Supplemental Samples - Winter 1991
 Sparrows Point Coke Oven - ICCI Demonstration Project

Sample	Date - 3/25/91		Date - 3/26/91		Date - 3/27/91							
	Time	Time	Time	Time	Time	Time						
Coke Oven/Blast Furnace Mix	0945	1045	1145	1345	0955	1100	1150	1245	1135	1225	1255	1345
Coke Oven Gas	0950	1050	1150	1355	1005	1105	1205	1250	1140	1230	1305	1350
Blast Furnace Gas	1000	1055	1155	1400	1010	1110	1200	1255	1145	1235	1310	1355

Sample	Date - 4/01/91		Date - 4/02/91		Date - 4/03/91							
	Time	Time	Time	Time	Time	Time						
Coke Oven/Blast Furnace Mix	1040	1145	1305	1400	0910	1000	1100	1155	0925	1015	1115	1250
Coke Oven Gas	1035	1155	1315	1405	0820	1010	1105	1200	0935	1020	1120	1255
Blast Furnace Gas	1030	1140	1320	1415	0925	1015	1110	1205	0940	1025	1125	1300

SECTION 4.0 COMPLIANCE MONITORING RESULTS

The following compliance areas of the Sparrows Point Coke Plant will be impacted by the implementation of the new COG treatment system;

- o Coal Chemical Plants A and B
 - Benzene NESHAP emissions
 - OSHA worker exposure monitoring
 - NPDES outfalls 121 (discharge from the coke oven wastewater treatment plant)
 - NPDES outfalls 021 (combined discharges from the coke plant area)
 - Spills

- o Coke Ovens Batteries No. 11, No. 12 and "A"
 - waste heat stack for each battery (continuous opacity monitoring)

4.1 Air Compliance Monitoring Results

Coke Oven Waste Heat Stack Monitoring. Continuous opacity monitoring was conducted throughout the period for the waste heat stack emissions for "A" Coke Battery, No. 11 Coke Battery and No. 12 Coke Battery. A Quarterly report of the results was sent to Maryland's Department of Environment on October 25, 1991 and monthly reports were sent on August 8, and September 16, 1991. No other compliance monitoring for the waste heat stacks was required during the period.

The waste heat stacks for all three of the coke oven batteries continued to experience exceedances of the applicable opacity standards during the period.

A list of the air compliance reports submitted to the Maryland Department of the Environment during the period is provided the Appendix, (See Section 5.1).

4.2 Water Compliance Monitoring Results - Coke Oven Outfalls

All sampling programs required for Compliance Monitoring for Outfall 021 and Monitoring Point 121 were completed during the period July 1, 1991 through September 30, 1991. Daily Monitoring Reports were submitted to Maryland Department of Environment and the US EPA-Region III on a monthly basis and non-compliance reports were filed for Outfall 021 and 121 on an as needed basis. See Section 5.2 for references to Water Compliance Monitoring Reports submitted during the period.

Outfall 021. This is the outfall for all non-contact cooling waters and treated wastewaters from the coke ovens area. During the period there were three exceedances of NPDES permit limitations reported; July 18, 1991 for low pH limit; August 9, 1991 for naphthalene limit; and August 30, 1991 for benzene limit. These were reported to the Maryland Department of the Environment and to Region III of the EPA on July 23, 1991, September 12, 1991, and October 11, 1991.

Monitoring Point 121. This monitoring point is the discharge from the coke oven wastewater biological treatment plant. It is a tributary to Outfall 021. During the period there were four exceedances of NPDES permit limitations reported; the July monthly average limit for ammonia, and the August monthly average limits for phenol and ammonia. These were reported to the Maryland

Department of the Environment and to Region III of the EPA on August 14, 1991 and September 12, 1991.

4.3 Solid Waste Compliance Monitoring Results

Sludge Blowdown to Back River Wastewater Treatment Plant. The coke oven wastewater biological treatment plant sludge that is discharged to Baltimore's Back River Municipal Wastewater Treatment plant was sampled on July 8, 9, 10, 11, 15, 16, and August 22, 1991. The analytical results of this sampling program were submitted to the Bureau of Utilities of Baltimore County on December 6, 1991. The results of requested followup sampling were reported on January 20, 1992. A list of the reports to the Bureau of Utilities of Baltimore County during the period is provided in Appendix 5, Section 5.3

Spills. During the period July 1, 1991 to September 31, 1991 there were eleven spill incidences that were reported by telephone to either the Maryland Department of the Environment, the U. S Coast Guard, or the National Response Center. The dates of the telephone calls and a brief description of the spills reported are listed in the Appendix, Section 5.3. Six of the spills may have been above the equivalent Reportable Quantity for the substances involved.

4.4 Benzene NESHAP Monitoring Results

Equipment Monitoring. A large number of pumps, valves, and other equipment in the Coal Chemical Plants at Sparrows Point are monitored for benzene leaks using a Foxboro Organic Vapor Analyzer on a monthly, quarterly, semi-annual, and annual basis according to a prescribed protocol. This monitoring is done for the Sparrows Point Plant by an outside contractor. All required monitoring in the third quarter 1991 was completed, and the results of this monitoring were reported by the contractor to the Sparrows Point Plant. During the period there was one valve leak, one pump leak, and one exhauster leak detected. All the needed repair work was completed. The results of this monitoring were also reported by Sparrows Point to the U. S. Environmental Protection Agency on December 26, 1991.

Wastewater Streams. No sampling or analyses was conducted during the period on the 16 Benzene NESHAP wastewater streams listed in Table 1-1, Section A.2. No reports were sent.

A list of the Benzene NESHAP monitoring reports submitted to Maryland during the period is provided in Appendix 5, Section 5.4.

4.5 OSHA Monitoring Results

Required Monitoring at Coal Chemical Plants. All required OSHA personnel exposure monitoring was conducted during the period and reported internally to Coke Plant Operations. There is no reporting requirement to either State or Federal Agencies.

In those areas where the exposure limit was greater than the permissible exposure limit, appropriate control measures are now in place.

SECTION 5.0 APPENDIX

List of Compliance Reports
Submitted July 1, 1991 through September 30, 1991

5.1 AIR COMPLIANCE REPORTS

1. Coke Oven Wasteheat Stack Opacity Measurements - Quarterly Reports

1. Mr Ronald E. Lipinski, Administrator
Enforcement Programs
Air Management Administration
Maryland Department of the Environment
2500 Broeing Highway
Baltimore, Maryland 21224

October 25, 1991 (for 3rd Qtr 1991)

2. Coke Oven Wasteheat Stack Opacity Measurements - Monthly Reports

2. Mr Ronald E. Lipinski, Administrator
Enforcement Programs
Air Management Administration
Maryland Department of the Environment
2500 Broeing Highway
Baltimore, Maryland 21224

August 8, 1991 (for July, 1991)

September 16, 1991 (for August, 1991)

(September information included in Quarterly Report.)

5.2 WATER COMPLIANCE REPORTS

1. Non-Compliance Reports for NPDES Monitoring Program - Outfall 021

1. Mr. James Metz, Administrator
Enforcement Programs
Water Management Administration
Maryland Department of the Environment
2500 Broeing Highway
Baltimore, Maryland 21224

Reports issued on July 23, 1991
September 12, 1991 and
October 7, 1991.

2. Non-Compliance Reports for NPDES Monitoring Program - Outfall 121

1. Mr. James Metz, Administrator
Enforcement Programs
Water Management Administration
Maryland Department of the Environment
2500 Broeing Highway
Baltimore, Maryland 21224

Reports issued on August 14, 1991, and September 12, 1991

3. Daily Monitoring Reports for NPDES Monitoring Program

1. Mr. James Metz, Administrator
Enforcement Programs
Water Management Administration
Maryland Department of the Environment
2500 Broeing Highway
Baltimore, Maryland 21224

and

United States Environmental Protection Agency
Region III: Attention 3WM-55
841 Chestnut Building
Philadelphia, PA 19107

Reports issued August 27, 1991
September 27, 1991
October 28, 1991

5.3 SOLID WASTE COMPLIANCE REPORTS

1. Analyses of Sludge Blowdown to Back River Wastewater Treatment Plant

to

Mr. Gary Sipes
Bureau of Utilities
Pollution Control Section
9901 York Road
Cockesville, MD 21030

No report submitted in 3rd Quarter 1991.
The results of sampling conducted in the 3rd Quarter were submitted on December 6, 1991 and a followup report was submitted on January 20, 1992.

2. Telephone Reporting of Spills to

- | | | |
|---|---|--|
| (a) James Lizear, Acting Head
Hazardous and Solid Waste Management
Maryland Dept. of Environment
2500 Broeing Highway
Baltimore, Maryland 21224
Telephone No. 301-631-3400 | (b) National Response Center
800-424-8802
(for oil to water and reportable quantity spills) | (c) U. S. Coast Guard
Marine Safety Office
U. S. Customs House
40 So. Gay St.
Baltimore, MD 21202-4022
Telephone No. 301-962-5100 |
|---|---|--|

List of Spills in the Sparrows Point Coke Plant Area - 3Q91

<u>Date</u>	<u>Spill Description</u>	
07/01/91	wash oil from 'B' Plant Final Cooler.	(approx. 15 gallons)
07/16/91	coal tar from transfer line.	(approx. 300 gallons)
07/31/91	phosphoric acid from tank suction line	(approx. 100 gallons)
08/08/91	wash oil to outfall 021 from cooler	(approx. 20 gallons) *
08/11/91	wash oil from coke oven gas holder	(approx. 1000 gallons) *
08/21/91	wash oil from storm runoff(?)	(approx. 75 gallons) *
08/23/91	coal tar from decanters	(approx. 100 gallons)
08/30/91	flushing liquor from 'B' Saturators	(unknown amount)
08/30/91	wash oil from pumps	(approx. 75 gallons) *
09/09/91	wash oil from scrubber sump	(approx. 75 gallons) *
09/18/91	wash oil from storm runoff(?)	(approx. 100 gallons) *

* Indicates the spill may have exceeded the reportable quantity for this material.

5.4 BENZENE NESHAP MONITORING AND SAMPLING PROGRAM

1. Equipment Monitoring Program - Semi-Annual Reports sent to

Mr. Thomas Maslany
Air Management Division
United States Environmental Protection Agency
841 Chestnut Building
Philadelphia, PA 19107

Report issued on December 26, 1991

Summary of Benzene Leak Detection for Period (3Q91)

Sampling Frequency	----- Number of Leaking-----		
	<u>Valves</u>	<u>Pumps</u>	<u>Exhausters</u>
	monthly	monthly	quarterly
Month - July	1	0	-
- August	0	1	-
- September	0	0	1

2. Benzene NESHAP Wastewater Sampling Program

No sampling was required and no reports were sent.

5.4 OSHA - PERSONNEL MONITORING IN COAL CHEMICAL PLANTS (3Q91)

1. Compliance Monitoring

All required OSHA monitoring was completed during the period. No required reporting to State or Federal Agencies. Internal Sparrows Point Plant reports are written to transmit exposure monitoring results to Coke Oven Operations.