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SYNTHANE PILOT PLANT
BRUCETON, PA.

RUN REPORT NO. 1

OPERATING PERIOD
JULY - DECEMBER, 1976

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SECTION I

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SECTION II

ABSTRACT

Test Directive No. 1 for operation of the Synthane Pilot Plant was issued by ERDA, now the Department of Energy, to The Lummus Company on June 9, 1976. The directive provided the operating conditions and process requirements for the first coal to be gasified in the Synthane Pilot Plant. Rosebud coal, which is a western sub-bituminous coal, was chosen by DOE because of its non-caking properties and reactivity. This report summarizes and presents the data from Test Directive No. 1.

Following this directive, the pilot plant produced gas for a total of 228 hours and gasified 709 tons of Rosebud coal from July 7 to December 20, 1976. Most of the six-month period was spent in achieving process reliability and learning how to operate and control the gasifier. A significant number of equipment and process changes were required to achieve successful operation of the coal grinding and handling facilities, the Petrocarb feed system, and the char handling facilities. A complete revision of all gasifier instrumentation was necessary to achieve good control. Twenty-one test runs were accomplished within the 6-month period, the longest of which was 37 hours. During the 37-hour run, carbon conversions of 57 to 60% were achieved at bed temperatures of 1450 to 1475°F. Earlier attempts to operate the gasifier with bed temperatures of 1550 and 1650°F resulted in clinker formation in the gasifier and the inability to remove char.

Test Directive No. 1 was discontinued in January 1977, without meeting the directive's goals because the process conditions of free fall of coal feed into the Synthane gasifier resulted in excessive quantities of tar and fines carryover into the gas scrubbing area. Each time the gasifier was opened after a run, the internal cyclone dip leg was found to be plugged solidly with hard tar and fines. The gas scrubbing area equipment was always badly fouled with char and tar requiring an extensive and difficult cleanout. Packing in the gas scrubber had to be completely changed twice due to extensive fouling.

A new Test Directive, 1-DB, has been issued to cover the next operating period. This directive discontinues free fall and specifies the injection of coal deep into the fluidized bed. Since studies at the Pittsburgh Energy Research Center's Process Development Unit have indicated much lower tar and phenol production by this method, similar benefits are expected to be achieved at the pilot plant.

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SECTION III

INTRODUCTION

The Synthane Coal Gasification Pilot Plant located in South Park Township, Allegheny County, Pennsylvania, is operated by The Lummus Company, Bloomfield, New Jersey, for the Department of Energy under Contract EY-76-C-02-0003.*000. The facility is totally owned by the government. Lummus is currently operating under the contract that began August 1, 1974, and extends through September 30, 1978.

The objective of the contract is to obtain definitive process information sufficient for commercial design purposes on the conversion of coal to pipeline quality gas. This objective is to be accomplished through the execution of experimental and developmental operating programs in the Government-owned Synthane Pilot Plant.

The Pilot Plant began operation on July 7, 1976 as per Test Directive No. 1. The directive specified operating procedures and process requirements for the gasification of Rosebud coal. This report presents the operating data, comments and conclusions of the pilot plant's activities for this Test Directive. The report encompasses the operation of the pilot plant from July 7, 1976 to December 20, 1976.

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SECTION IV

SUMMARY AND CONCLUSIONS

Twenty-one test runs, designated as Run 1-A through 1-T, were conducted at the Synthane Pilot Plant from July 1976 through December 1976. The runs were based on Test Directive No. 1 issued by the Department of Energy to The Lummus Company in June, 1976. The Test Directive required that Rosebud coal be gasified to a conversion of 67% at 600 psi pressure for a steady state period of 12 to 14 days.

The Test Directive was discontinued in January of 1977 without reaching steady state conditions or 67% conversion because the gas scrubbing area was unable to handle the tar, char, and fresh feed which carried over from the gasifier. Tar generated by the free fall of coal into the gasifier and the low overhead temperature of the gasifier continually plugged the cyclone dip leg. This allowed tar, char, and fresh coal feed to carry over into the gas scrubbing equipment. The scrubbing facilities were incapable of handling and disposing of the tar and char which caused continual plugging and fouling of the heat exchangers, pumps, vessels, and gas scrubber facilities. Extensive runs under these conditions could not be achieved without a redesign of the scrubbing area.

Test Directive 1-DB has been instituted to supercede Test Directive No. 1. This directive specifies the continuation of the gasification of Rosebud coal but requires that the coal feed be injected below the surface of the fluidized bed. Tests at the Pittsburgh Energy Research Center (PERC) have shown that with this procedure less tars and phenols are generated, and for this reason it is expected that the operating problems experienced in the gas scrubbing area would be lessened. This report deals with the achievements, findings and problems associated with the experimental work conducted at the Synthane Plant under Test Directive No. 1.

Major achievements during Runs 1-A through 1-T:

1. The Plant operated producing gas for a total time of 228 hours and processed 709 tons of coal under Test Directive No. 1.
2. During Run 1-T, a continuous operation of 37 hours with oxygen, coal feed, and char removal was achieved. The run was terminated due to a letdown valve failure in the process gas line to the flare because of solids erosion.
3. Carbon conversions of 57 to 60% were achieved during Run 1-T without clinker formation, at bed temperatures of 1450°F to 1470°F. Char conversions of more than 60% were achieved during other runs. These higher conversion runs, however, were terminated due to clinker formation.

4. The coal handling and coal grinding operations were improved during this operating period and are now performing at design specifications.
5. Gas composition, carbon conversions, and yields have been obtained for all test periods. Data correlations are presented in Section VIII, Operating Data.
6. The Petrocarb coal feed system is now performing well at 600 psig.
7. The char filter area is performing as per design and adequately handles all char generated.
8. The gasifier has required essentially no internal repairs and has performed as per expectations.
9. Gasifier differential pressure instrumentation required extensive modifications. These revisions have now resulted in excellent operability.
10. The Utility facilities are now reliable and performing as per design.

Major Problems Remaining after Completion of Run 1-T:

1. Tar and fines carryover from the gasifier results in major plugging, fouling, and erosion of the gas scrubbing equipment. Extensive cleanout is required after each run. During the free fall program, the internal cyclone failed to function because of the plugging of the dip leg with tar and fines. Overhead temperatures of the gasifier did not exceed 800 to 900°F which is within the tar condensing range. The fouling was so extensive in the gas scrubbing area that runs of long duration could not be achieved.
2. Clinkers formed in the gasifier with Rosebud coal at 1500 to 1600°F fluid bed temperatures and with 0.3 ft/sec fluidizing velocities. The clinkers adhered to metal surfaces within the cone. Attempts to operate over 1475°F with higher fluidizing velocities in the bed may be successful but have not been attempted.
3. Control of bed level by manipulation of the differential pressure between the gasifier and the char cooler, as originally designed, was erratic and essentially uncontrollable. Bed level control has been improved by the addition of an actuator controller to the trickle valve in the char cooler standpipe. This system, however, is still not adequate and requires improvement.
4. The transfer of char through the char line from the char cooler to the filter area has improved but further improvement is still required.
5. The thermal oxidizer is presently not performing at design. Efforts with the manufacturer, John Zink Company, are underway to improve the operation because it is needed to handle all waste water generated during processing. Any malfunction of the thermal oxidizer becomes a process limitation.

6. Improvements in flow metering and the addition of new instrumentation are necessary in order to achieve improved data. Material balance closure achieved, thus far, is not considered adequate.

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SECTION V

PROCESS DESCRIPTION

The SYNTHANE process is designed to operate at pressures up to 1000 psig with any coal or lignite available in the United States. Under Test Directive No. 1, only Rosebud sub-bituminous coal was to be gasified and the operating pressure was to be held to 600 psig. Although the Synthane plant has Benfield and Stretford Units for removal of carbon dioxide and sulfur plus a methanation section for converting mixtures of carbon monoxide and hydrogen to methane, these systems were not commissioned during this early phase of operation. We concentrated only on those systems necessary to successfully operate the gasification process. A flow diagram of the equipment placed in service during this operating period is shown in Figure 1, page 8.

The first step in the process is coal preparation. Raw coal is trucked to the plant and dumped into the truck hopper. From there it is carried by the belt feeder to the bucket elevator for deposit in the raw coal storage bin.

Coal is withdrawn from the raw coal storage bin and fed by the raw coal weigh feeder to the flash drying impact mill. Hot gas from the drying air heater plus hot recycle gas enter the mill simultaneously with the coal. The coal is flash dried to approximately 7 weight percent moisture and ground to a finer size. The coal-gas mixture leaves the flash drying mill and enters the cyclone separator. The separated coal is fed to the pulverized coal storage bin through the vibrating screen which returns particles larger than 20 mesh to the flash drying mill for further grinding. Less than 30 weight percent of the material passing through the screen is finer than 200 mesh. The hot gases leaving the cyclone separator pass through the dust collector where fine coal particles are removed. A part of the gases leaving the dust collector is vented while a major portion is recirculated back to the drying air heater through the drying system fan located immediately ahead of the dust collector. The coal particles removed from the gas in the dust collector are fed to the pulverized coal storage bin.

Dry coal stored in the pulverized coal storage bin at atmospheric pressure, is brought up to operating pressure by a Petrocarb lock hopper system as shown in Figure 2, page 9. A prescribed weight of coal is transferred from the pulverized coal storage bin into the weigh hopper. The weigh hopper alternately feeds two storage injectors when level probes indicate that the injectors are empty. After a storage injector is filled with coal, it is isolated from the rest of the system and pressurized with CO₂. When pressurization is complete, the coal is fed from the storage injector to the primary injector for feed to the gasifier. When the storage injector is empty, it is depressured and prepared to receive another batch of coal. The cycling of the two storage injectors is

valved so that the CO₂ vented from one injector can be used to partially pressurize the other. This cross-pressurization considerably reduces the total CO₂ demand of the Petrocarb unit. The coal is then pneumatically transported by CO₂ from the Petrocarb primary injector to the gasifier through a 1-inch line.

The gasifier depicted in Figure 3, page 10, is a 62-foot high vessel that is separated from the char cooler by an internal head. The gasifier is 5 ft. in diameter, lined with 9 inches of castable refractory, and contains a 3 ft. diameter Incoloy 800 shroud that extends halfway up the vessel.

In the gasifier, coal is fluidized and reacted with steam and oxygen at temperatures up to 1800°F. The fluid bed height is normally maintained between 10 and 20 feet. The coal feed line terminated at the gasifier approximately 20 to 30 feet above the bed level. The coal, therefore, "free falls" through a zone of hot gas thereby undergoing partial carbonization as it is heated by the counter-current flow of hot gases leaving the fluidized bed.

Hot char from the gasifier flows through the standpipe to the char cooler where a fluidized bed is maintained and cooled with steam. Char from the char cooler is then pneumatically conveyed by high pressure steam to the high pressure char slurry tank where it is slurried with filtrate water and let down to atmospheric pressure through Willis Choke valves into the slurry filter feed tank. The slurry is then pumped to the char filters from where the cake is discharged onto a conveyor belt and dumped into hoppers for removal from the plant site. The clean filtrate from the filters is recovered and pumped back to the high pressure char slurry tank for remixing with fresh char.

The gases that leave the gasifier through an internal cyclone are quenched with water in the venturi scrubber and the gas-liquid mixture is then separated in the scrubber surge tank. The gas leaving the scrubber surge tank passes through the raw gas scrubber where it is cooled to approximately 330°F and then let down in pressure into the flare header and burned.

The scrubber surge tank consists of three internal compartments. The venturi scrubber discharges flow into one of the end compartments and overflows to the center compartment. Similarly, the liquid flow from the raw gas scrubber flows into the other end of the surge tank and also overflows into the center compartment. The material collected in the center compartment, which is a multiphase mixture of water, coal fines, tars and oils, is sent to the decanter and then to the thermal oxidizer for disposal.

The plant's utility systems include: air compressors, boiler feed water treatment facility, cooling tower and low and high pressure steam generation system. A carbon dioxide storage unit supplies low pressure carbon dioxide to compressors which provide pressurized gas for the Petrocarb System and for instrument purges in the gasifier. An oxygen storage unit provides the oxygen required for the gasification reaction.

SYNTHANE PILOT PLANT

FIGURE 1

PETROCARB HIGH PRESSURE COAL FEED SYSTEM

FIGURE 2

SYNTHANE GASIFIER

FIGURE 3

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SECTION VI

PLANT OPERATION

In preparation for beginning gasification, a test program was conducted over a period of four months which was specifically designed to: test the capability of the raw coal handling and grinding facilities, operate the Petrocarb System, determine some fluidization characteristics, test the ability to control level, study solids removal in the gasifier, and test the capability of the filter area to handle char. During this period, coal was unloaded into the coal storage facility, ground and then fed to the Petrocarb System. Using carbon dioxide, the gasifier was pressurized to 75 psig and coal was transported to the gasifier from the Petrocarb System under various conditions to achieve some coal feed rate data. The ground coal in the gasifier was then fluidized at various superficial velocities using carbon dioxide and then moved to the char cooler. From the char cooler, coal was slurried with water in the slurry tank and then transferred to the filter area and filtered. This program was effective in pointing out some of the potential problems with the facility before beginning gasification.

Test Directive No. 1, issued in June of 1976, specified that Rosebud coal was to be gasified at 600 psi to a conversion of 67%. The gasifier was to be operated bypassing the pretreater in a free fall mode with the coal feed line terminating in the upper portion of the gasifier. Downstream processing equipment, namely the Benfield, Stretford, and Methanation systems were to be bypassed.

The gasifier program for Test Directive No. 1 began on July 7, 1976, and was concluded on December 20, 1976. During this period, the Plant produced gas for a period of 228 hours, processing 709 tons of coal. A summary of the Plant operation through this period, is provided below:

<u>Date</u>	<u>Run No.</u>	<u>Hours Duration</u>	<u>Reason For Curtailment</u>
7/7/76	1-A	1.8 hours	Instrument problems
7/8/76	1-B	6.5 hours	Low CO ₂ capacity
7/19/76	1-C	10.5 hours	Plugged line FA-403
7/20/76	1-D	14.5 hours	Overgasified bed
8/11/76	1-E	2.5 hours	Poor pressure control
8/12/76	1-F	8 hours	No coal in primary injector
8/13/76	1-G	5 hours	Plugged line FA-403
8/14/76	1-H	2 hours	Plugged standpipe to char cooler
8/15/76	1-I	5 hours	Plugged line FA-403
8/16/76	1-J	7 hours	Boiler outage
9/15/76	1-K	4 hours	Plugged standpipe to char cooler
9/30/76	1-L	4.5 hours	Plugged standpipe to char cooler
10/10/76	1-M	17 hours	No char removal, clinker in gasifier
10/29/76	1-N	11 hours	Plugged line to filter area

10/30/76	1-O	19 hours	No coal feed, wet coal
10/31/76	1-P	22 hours	O ₂ pump shutdown
11/19/76	1-Q	16.7 hours	Plugged standpipe to char cooler
11/20/76	1-R	6.6 hours	PCV-338 failure, blown RD
11/21/76	1-R	7.7 hours	Low CO ₂ capacity
11/22/76	1-S	19.5 hours	Gasifier outlet plugged
12/20/76	1-T	37 hours	PCV-2205, bypass leak
	Total	227.8 hours	

As shown in the summary, the Plant achieved a continuous operating period of 37 hours with coal and oxygen feed during Run 1-T in December of 1976.

Many major modifications were made to the process equipment during the six-month period to make the process reliable. Most of these changes are discussed in some detail in Section VII, Equipment Modifications.

OPERATING DETAIL

Runs 1-A, 1-B

The Plant first began gasification of Rosebud coal on July 7, 1976 beginning with Run 1-A. Oxygen and coal were introduced for only 1.8 hours at which time feed was withdrawn due to a gasifier pressure fluctuation that tripped the oxygen valve and blew a rupture disc. During this period bed temperatures of only 1250°F were obtained. Run 1-B was conducted on July 8, 1976 when oxygen and coal were reintroduced, and bed temperatures were brought to 1550°F. Coal and oxygen were withdrawn after 6 hours because of the inability to remove char and excessive usage of steam and carbon dioxide. Attempts to restart the gasifier failed due to a high differential pressure that developed across the steam and oxygen distributor cone as a result of steam condensation in the gasifier during the holding period. The Plant was then depressured and opened for inspection.

Major problems encountered during the run were poor control of the gasifier differential pressure instruments, rupture disc failures, and insufficient carbon dioxide vaporization capacity. Outage revisions after conclusion of the run included gasifier pressure differential instrument revisions and the relocation of CO₂ purges at Petrocarb and char slurry tank.

Runs 1-C, 1-D

Gas production resumed July 19 beginning Run 1-C as bed temperatures were brought to 1550°F. Feed was held at 2 tons per hour and fluid bed velocities were 0.3 ft/sec. The gasifier operated at these conditions for 10.5 hours at which time oxygen was removed because the char slurry line to the filter area plugged. Gas production was resumed on July 20 beginning Run 1-D. Because carbon conversions at 1550°F were below 60%, bed temperatures were brought to 1650°F. Oxygen was stopped after 14.5 hours of operation because char was not being withdrawn from the gasifier.

The gasifier bed had been overgasified at the 1650°F bed temperature. The Plant was then depressured and opened for inspection. When opened the gasifier contained a large clinker in the cone.

Major problems during the run were poor bed level control, char line plugging, rupture disc failures, excessive fines and tar carryover into gas scrubbing, and clinker formation in the gasifier. Outage revisions after shutdown included the relocation and modification of bed level purges and instruments, installation of scrubber surge drum blowdowns, and changes to rupture discs.

Runs 1-E, 1-F, 1-G, 1-H, 1-I, 1-J

On August 11, 1976, coal and oxygen were introduced beginning Run 1-E and bed temperatures were brought to 1200°F. The gasifier was held at this temperature until char flow from the gasifier could be established. Oxygen and feed were withdrawn after 2.5 hours because of repeated oxygen trips. Subsequently, over the next four days, runs of very short duration (Runs 1-F, 1-G, 1-H and 1-I) were achieved but were curtailed because of plugging of the char slurry line, the standpipe between the char cooler and gasifier, and in the char cooler itself.

On August 16, Run 1-J was conducted during which time the bed temperatures were brought to 1550°F. This run lasted 7 hours and was curtailed due to a boiler outage. After resumption of the boiler, char withdrawal from the the gasifier could not be established. Unable to remove char, the gasifier was depressured for inspection. When opened, the gasifier was found to contain a large clinker.

Major problems encountered during the run were poor gasifier instrument control, excessive fines and tar carryover to the gas scrubbing system, Petrocarb feed problems, char slurry line plugging, and standpipe plugging between the gasifier and char cooler. Outage revisions after the run included major gasifier instrumentation revisions, electric tracing of char transfer line from the char cooler to the slurry tank, addition of a second char slurry line, addition of new isolation valves at the gas scrubbing system pumps, addition of a new purge to cyclone dip leg, and installation of four new thermocouples in the gasifier.

Run 1-K

On September 15, coal and oxygen were introduced to the gasifier and the temperature of the bed was brought to 1500°F. Fluidizing velocities of 0.3 ft/sec were utilized at 2 tons per hour coal feed rate. This run lasted 4 hours and was curtailed because the standpipe between the gasifier and char cooler plugged with wet char. At this time, boiler feed water was being injected into the char cooler to quench the char as it was dumped from the gasifier. Overquenching caused condensate to form in the standpipe. The gasifier required depressuring to unplug the line.

Outage revisions after the run included the addition of a desuperheater station to more effectively use the fluidizing steam in the char cooler

to cool char and to eliminate the use of boiler feed water for quench. This procedure has proven to be very effective.

Run 1-L

On September 28, an attempt was made to operate the gasifier. At this time, however, the Petrocarb System became saturated with wet coal due to backflow of steam through the Petrocarb vent system from the char cooler outlet steam line which joins the Petrocarb vent line as it goes to the thermal oxidizer. After cleaning and drying out of the Petrocarb System, the gasifier was operated on September 30 beginning Run 1-L. This run lasted only 4.5 hours and was terminated again because the standpipe from the gasifier to the char cooler was plugged with wet char. The removal of the plug again required the gasifier to be depressured. It was then determined that the steam purge used in the standpipe was wet due to the long length of line from the superheated main header and the low steam flow.

Major problems encountered during the run were wet coal in the Petrocarb System and plugging of the standpipe from the gasifier to the char cooler. Revisions completed after the run included electric tracing of purges to standpipe and adding a drain to the Petrocarb vent lines to prevent condensate backflow.

Run 1-M

On October 10, Run 1-M began as the bed was brought to 1550°F. This run lasted 17 hours and was finally curtailed due to low CO₂ inventory. Upon attempting to restart the gasifier, coal in the Petrocarb System again became saturated with wet steam which required that the Petrocarb System be depressured for cleaning. At this time, the Petrocarb vent line was disconnected from the line to the thermal oxidizer and vented directly to atmosphere. After cleaning the Petrocarb System and while attempting to restart the gasifier on October 14, char removal was not possible. The gasifier was then depressured and a large clinker was found in the cone.

Major problems encountered during the run were excessive fines and tar carryover to gas scrubbing system, wet coal in the primary injector, char slurry line plugging, clinker formation, and insufficient CO₂ vaporization capacity. Revisions after the run included separation of the Petrocarb vent line from the thermal oxidizer and plugging of the bottom row of 8 nozzles in the gasifier cone in an attempt to prevent clinker formation in the outlet area of the cone due to potential excessive oxygen concentrations at the base of the cone.

Runs 1-N, 1-O, 1-P

It was now recognized that clinker formation was a major problem and in an attempt to prevent clinker formation, operating procedures were modified to include maintaining all bed temperatures below 1500°F, (actually 1400°F was held) increasing the gasifier fluidizing velocities

from 0.3 to 0.4 ft/sec, and increasing the feed rate from 2 to 3 tons per hour in an attempt to reduce the residence time in the gasifier. With these parameters, an 11-hour run, Run 1-N, was achieved on October 29, which was curtailed due to a plugged char slurry line. On October 30, Run 1-O lasted 15 hours. This run was curtailed because of the loss of coal feed due to plugging of the Petrocarb coal feed nozzle with foreign material. On October 31, Run 1-P was conducted for 22 hours. This run was finally terminated due to loss of oxygen feed. This operating period was by far the best experienced to date. During this phase, the gasifier produced no clinkers but carbon conversions were only 49%. The run was finally terminated because of a cement line deposit, which washed down from the manway bricks and plugged the outlet of the gasifier cone.

Major problems encountered during the run were char slurry line plugging, oxygen pump trips, excessive coal and char fines, char carryover to gas scrubbing, and the plugging of the outlet of the cone with manway brick material. Revisions after the run included installing a new purge in the standpipe, new rebricking procedures, and modifying the standpipe trickle valve for automatic control by attaching a valve actuator to the trickle valve.

Runs 1-Q, 1-R, 1-S

Runs 1-Q through 1-S were conducted from November 19 through November 23, 1977. The runs were conducted at 3 tons per hour coal feed rate, 0.4 ft/sec fluidizing velocity and 1400°F bed temperatures. These conditions were held to improve gasifier operability as well as check the operation of the newly installed automatic trickle valve in the standpipe of the gasifier. Runs of 17, 7, 8 and 20 hours were achieved. The runs were stopped due to a steam flow failure to the gasifier, loss of CO₂ vaporizer pressure, plugging of the Petrocarb feed line, and the inability to remove char from the gasifier. The termination of the run was caused by lumps of tar and char that fell out of the cyclone dip leg into the gasifier cone plugging the outlet of the cone. This operation produced no clinkers and the newly installed automatic trickle valve greatly improved the bed level control in the gasifier.

Major problems encountered during the run were fines and tar carryover to gas scrubbing, steam valve failure, insufficient CO₂ vaporization capacity, and cyclone dip leg plugging. Revisions after the run included the doubling of CO₂ vaporization capacity, revision of the scrubber surge drum baffles, electric tracing cyclone dip leg purges, installing a screen over gasifier outlet standpipe, and increasing the capacity of thermal oxidizer.

Run 1-T

Run 1-T was conducted beginning December 17 and lasted 37 hours, the longest, continuous run achieved to date. During the run, bed temperatures were controlled between 1450-1470°F, at fluidizing velocities of 0.4 ft/sec. Carbon conversions of 57 to 60% were obtained. The feed rate was controlled at approximately 3 tons per hour and bed height

was held at 15 ft. This run was the most successful to date and was finally terminated due to erosion of the bypass valve of the gasifier process gas letdown valve to the flare.

Major problems during the run were excessive tar and fines carryover to gas scrubbing which eventually eroded the bypass valve, plugged the exchangers, and fouled the gas scrubber. Major revisions were undertaken in the plant after this run in preparation for Run 1-DB. These revisions will be discussed in the 1-DB report.

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SECTION VII

EQUIPMENT MODIFICATIONS

RAW COAL HANDLING

A number of modifications to the coal handling equipment were made in order that a 25-ton truck of wet coal could be unloaded without difficulty into the raw coal storage bin in less than 45 minutes. Also coal must be fed reliably from the raw coal storage bin, across a weigh feeder, and into the grinding mill.

To prevent plugging of the raw coal feed conveyor with large lumps of coal, additional cross bars were installed on the bar grid on top of the truck unloading hopper.

Since wet coal was plugging the inlet chute to the bucket elevator, the chute was enlarged to allow the coal to drop directly down into the elevator boot. In addition, wet coal was plugging the outlet piping from the bucket elevator. The outlet piping from the elevator to the raw coal storage bin was relocated from its center to directly under the elevator outlet spout.

To prevent freezing the wet coal in the raw coal storage bin, steam panels were installed on the outer surface of the lower section of the bin.

Due to a bucket elevator chain failure, a chain of new design and materials of construction was installed in the elevator.

As a safety measure, to prevent a concentration of CO_2 in the coal unloading pit, an air blower was installed to circulate fresh air through the pit. Also sensing heads were installed to monitor excessive CO_2 and low O_2 concentrations in the pit.

COAL GRINDING AND DRY COAL STORAGE

Coal grinding operations were greatly improved as modifications were made to the dust collector and to the air heater. Additional modifications to the gravimetric feeder, the baghouse, the transfer and recycle lines, and the alarm circuits have also improved operations.

The dust collector was provided with explosion panels that opened indiscriminately. Fike rupture panels have now been installed. These rupture panels have proved to be very reliable, especially since the snap blow sequencing has been changed so that bag blowing does not come into service when the isolating valves on the dust collector are closed. The dust collector itself was internally reinforced to prevent bulging and the seams were welded to contain the dust. Very little dust is now evident during grinding operations.

Two fires occurred in the dust collector while attempting to repair the old explosion panels. As a result, entry procedures have been changed to keep the dust collector under an inert gas atmosphere during repair periods and a continuous fire watch is maintained as long as maintenance effort in the dust collector is undertaken.

To prevent the dust collector filter bag frame holders from dropping into the screw conveyor in the bottom of the dust collector, a grating was installed above the screw conveyor trough. This grating is also used as a working platform for removing and reinstalling filter bags.

A smaller capacity fuel oil burner was installed in the drying air heater to reduce the vent temperature and allow a minimum firing of the heater. The oil fired pilot was replaced with a propane system as the fuel oil pilot proved to be unreliable. To prevent erosion of the drying air heater refractory, the louvers in the recycle gas stream were readjusted to divert the stream way from the refractory lining.

Although the chute from the gravimetric feeder to the grinding mill still periodically plugs with wet coal, the following changes have improved reliability of the coal feed: a new stainless steel chute with maximum slope was installed; the rotary star feeder was removed; the opening to the mill was enlarged; a manual mechanical scraper was installed; the chute to the mill was steam-traced and insulated; and an air vibrator was added. In addition, steam tracing of the downcomer feed piping from the raw coal storage bin to the gravimetric feeder has prevented frozen lumps of coal from entering the feeder and damaging the weigh belt.

Expansion joints in the transfer and recycle gas lines have been trouble-free since the original rubber expansion joints were replaced with stainless steel. The heat conduction from the mill when the system shut down damaged the rubber expansion joints and caused them to leak allowing oxygen to enter the system.

Shutdown trip circuits in the coal grinding system have been modified to shut down all air blowers and open inert gas purges to hot sections to prevent intake of fresh air and thus prevent explosion or fire in the event of a system shutdown. Since this was done, no problems have been encountered in the operation of the unit.

PETROCARB SYSTEM

Overall reliability of the Petrocarb System has improved to the point that coal feed to the gasifier can be maintained on automatic more than 50% of the time. Major modifications made to the system include: a screen was installed in the weigh hopper; steam was discontinued to the dry coal storage bin external heating panels; level probes were modified and insulated so they could be inserted into the vessels. The probes occasionally drift out of calibration and must be adjusted routinely. Other modifications included adding restricting bleed valves to the actuator air dump line in order to slow down the valve actuators; suppressors were added to the relays to prevent the weight totalizers from reading incorrectly. Even with these changes, the weight totalizer

for the weigh hopper is still not reliable enough to use as an inventory control system. One EBV vent valve was replaced with a Grove Flex Valve for test purposes. This valve has operated successfully over a period of one year and is much more economical than an EBV valve.

GASIFIER

Major changes made to the gasifier before the initial startup included the repair of gasifier top head, the installation of rupture disc piping, and the replacement of off-spec purge piping. The internal head was damaged during the coal fluidization test program as the result of an instrumentation failure that overpressured the plenum zone. The gasifier as originally designed did not provide adequate protection to handle this possibility. As a result of this failure, the internal head was braced and two additional rupture discs were added to the gasifier system.

Heat distribution from the startup heater was inadequate during initial heatup. This required resizing and routing changes of the heatup piping. Hot spots which developed on the inline burner shell were remedied by the addition of refractory and changes to burner tip.

Gasifier instrumentation during the initial tests was not reliable. One of the contributing factors was the purge configuration. This was compounded by sensing lines freezing when condensation migrated beyond the purge points. As a result, all instrument transmitters were relocated above the taps and the lines were sloped to contain no pockets. Also purge piping was completely modified to purge directly from the instrument transmitters to the taps.

The venturi scrubber had to be extensively redesigned due to temperature limitations and flooding. Redesign of the char mixing tee at the char cooler was also necessary in order to transfer coal from the char cooler to the slurry mix tank.

Excessive waste water became a problem especially during standby operation. With the addition of rotameters to control seal waterflush to the circulating pumps, this problem was resolved.

Failure of the rupture discs due to excessive temperature was solved with the addition of seal loops filled with water and purged with CO₂ and new rupture disc design. Rupture discs were originally made of teflon coated aluminum and were extremely temperature sensitive. These original discs were substituted with teflon rupture discs that are stainless steel backed. This modification has given superior performance.

Erosion of the char cooler backpressure letdown valve to the thermal oxidizer was a major concern. A ceramic insert in the outlet of the valve trim resulted in extending the valve life.

Steam purges to the cyclone standpipe and gasifier standpipe were finally electric traced after constant plugging with wet char was evident.

The installation of an automatic control valve in the gasifier standpipe was one of the most significant improvements made to the gasifier. As originally designed, level in the gasifier was to be controlled by changing the pressure differential between the gasifier and char cooler. This became nearly impossible to operate inasmuch as only 0.5 psi pressure difference meant flow or no flow from the gasifier. The attaching of a control arm to the flapper valve and extending it out of the char cooler wall to a valve actuator provided much improved gasifier level control.

GAS SCRUBBING

Additional supports and spring hangers were installed on the suction and discharge piping of the circulating water pumps to prevent misalignment which was causing failures in the scrubber circulating pumps. Also plug cock valves were installed on both suction and discharge piping with remote actuators to provide shutoff in the event of an emergency. The pumps could not be blocked in and depressurized for maintenance during normal operation until the plug valves were installed.

Boiler feed water seal flush piping to the scrubber circulating pumps was modified with pressure reducing regulators and rotameters to control flow to the seals to prevent seal failures.

Modifications were made to the surge drum to improve its solids removal capability. The 7-inch internal downcomer pipe was removed. A splash plate was installed on the gas inlet and a flood nipple was installed on the venturi scrubber recycle pump suction line. The venturi scrubber side internal baffle was reduced in height by 15 inches in order to allow for skimming of floating solids.

To provide for more condensing surface in the blowdown exchangers and to lessen the atmospheric plume from the decanter, the waste water exchangers were connected in series, and wash oil pumps were connected to the waste water exchangers to increase velocities through the exchangers in order to prevent settling out of solids in the tubes.

The shutdown procedures were changed to include a hot trisodium phosphate wash of the gas scrubbing system before opening for inspection. This TSP wash has proved to be successful in removing most of the tars and coal fines from the equipment and has minimized the use of hydrojetting equipment for cleaning.

HIGH PRESSURE CHAR SLURRY SYSTEM AND CHAR FILTRATION

The high pressure char slurry system presently operates reasonably well on automatic level and flow control as the result of modifications to the system.

The mixing tee in the outlet of the char cooler was changed to a straight tee and electric tracing of all outlet piping from the char cooler to the high pressure slurry pumps was necessary to prevent condensation of steam in the line and loss of flow.

The differential pressure controller of the char slurry tank on the original installation was found to be inadequate to maintain pressure on the vessel. Instrument modifications were made to allow inert gas to be made up to a constant pressure and to allow excess pressure to be vented as required to prevent overpressure.

The level control valve for the char slurry tank was relocated from directly under the tank to the low pressure char slurry tank which is located in the filter area. The liquid slurry transfer line was changed from 3 inches to 1 inch to increase its velocity to prevent solids settling out in the line.

Two Willis Choke valves were then installed in place of a standard level control valve for the char slurry letdown. A second char letdown line was added from the high pressure char slurry tank to the slurry filter feed tank to provide more flexibility in operation.

To prevent damage to the high pressure filtrate recycle pump due to excessive fines carryover from the rotary filters, liquid cyclone separators and filters were installed in the suction line of the pump. A spare reciprocating pump with variable speed drive has been purchased and will be installed in parallel with the existing centrifugal pump.

Ceramic lined slurry pump casings were installed to replace Ni Resist casings that failed in the slurry service. The inlet to the low pressure char slurry tank was modified to reduce the coal fines vented to the atmosphere. The line now extends below the water level which acts as a water seal. A water spray was also added to vent. Excessive water from the seals of rotary filter vacuum pumps was taken from the oily water sump drains and repiped to storm sewer.

NEUTRALIZING PIT

Modifications to the neutralizing pit were necessary to provide sufficient capacity to complete a three-bed regeneration without overflow of unneutralized wash water to the sewer. Neutralizing time and chemical usage in the pit were reduced by the addition of a motor driven agitator.

INERT GAS GENERATORS

Severe corrosion problems in the piping, tanks, and equipment throughout the plant were caused by the high sulfur content of the fuel oil which produced dilute sulfuric acid and oxides of nitrogen. A packaged CO₂ storage and vaporization system was installed to correct the inert gas generator problem.

HIGH PRESSURE BOILER

The boiler has been operating reliably since the original atomizing steam pressure control valve was replaced with a smaller valve to reduce atomizing steam pressure and a ten-second time delay was installed which prevents low atomizing differential pressure trips on rapid load change.

WATER TREATMENT

Installation of a water heater on the water inlet line to the treating facilities was required in order to maintain temperatures at 60 to 70°F thus permitting the unit to operate at design capacity during the winter.

COOLING WATER

Cooling water piping and equipment was subjected to corrosion caused by iron and sulfate reducing bacteria. Changes in the biocide treatment in the water to a combination biocide plus a wetting agent has reduced corrosion rates from 15.0 mils to less than 5.0 mils per year.

PLANT AND INSTRUMENT AIR

Plant and instrument air compressors were having trouble caused by frequent loading and unloading of the compressors. This problem was overcome by bypassing the air dryers with plant air and using the dryers for instrument air only. The installation of a new air receiver has also reduced the load and unload cycle of the air compressors and has relieved the problems caused by minimum surge capacity.

HIGH PRESSURE CO₂ COMPRESSORS

The CO₂ system now reliably maintains high pressure CO₂ for use in coal lock hoppers and in the gasifier as a result of major changes. The unloading switches were changed from three-load phase to manual load and unload. The suction piping was chemically cleaned to remove dirt which was affecting the suction and discharge valves. Check valves were installed on the discharge piping. Suction filters were installed on the inlet suction piping to the compressors. Piston rings were converted from brass to teflon and teflon rider rings were added on all stages. Manzell lubricators were installed on the compressors to individually add oil to each required point of injection.

THERMAL OXIDIZER

The thermal oxidizer still does not operate as per design. Flame impingement is damaging the refractory in the oxidizer and the oxidizer can vaporize only 18 GPM of water compared with a 30 GPM design. The oxidizer cannot keep up with the amount of waste water produced by the gasifier.

CHAR POND

A 150,000 gallon concrete char and waste water pond was installed on the plant site to provide a temporary storage for char slurry or waste water in the event of operating problems with the char or waste water system.

SYNTHANE PILOT PLANT
RUN REPORT NO. 1

SECTION VIII

OPERATING DATA

DATA PRESENTATION

The ERDA Test Directive contained a list of parameters to be measured or calculated. Figure 4, page 24 and Figure 5, page 25, locates the key instruments used for collecting the data. These instruments were standard, commercially available units. Reliable commercial instruments for measuring the solids flow were not available during this run period. Efforts are being expended to acquire devices to measure solids flow continuously and improve the performance and reliability of other instruments which operate under extremely severe conditions.

Process Data is presented in the Appendix and is subdivided and identified by the corresponding run number. This group contains the results of the calculations and other pertinent information required to evaluate the performance of the runs. Pictorial representation of the data is also included in each section.

Figure 6, page 26 shows the location of the pertinent sample points. A list of the types of samples obtained from these points, and the sampling methods used is on page 27. The laboratory data is in the Appendix and is divided into groups identified by the sample point symbol.

In examining these laboratory data, an important point should be considered. There are two sets of samples for some of the gas scrubbing area water samples because there were solids in the liquids as sampled. In a few instances the Laboratory filtered the solids from the liquid and analyzed them. This type of analysis can be helpful in determining solids carryover to the gas scrubbing area and will be continued in the future runs.

Material balance data for Run 1-T is presented in the Appendix. Because of the short durations of the previous runs and the lack of sufficient data, attempts to achieve a material balance for Runs 1-A to Run 1-S have not been undertaken.

FIGURE 4

GASIFIER TEMPERATURE LOCATIONS

FIGURE 5

SYNTHANE PLANT SAMPLE LOCATIONS

FIGURE 6

LABORATORY SAMPLES AND SAMPLING METHODS

<u>Location Number</u>	<u>Material</u>	<u>Procedure</u>
C1	Raw Coal	Grab Sample
CLA	Raw Coal	C1 Composite
C7	Ground Coal	Automatic Sampler
C7A	Ground Coal	C7 Composite
G1	Char Slurry	Grab Sample
G2	Char Filter Cake	Grab Sample
S1	Product Gas	Bomb Sample
S2	Tars	Grab Sample
S3	Venturi Scrubber Recycle Water	Grab Sample
S4	Raw Gas Scrubber Recycle Water	Grab Sample
S5	Blowdown, FA-215	Grab Sample
S7	Skimmer, FA-215	Grab Sample

CALCULATION PROCEDURES

A total of 71 gas samples were taken and analyzed during the July through the December 1976 operating period. Of these 71 samples, 60 were used in the calculations. Nine of the remaining samples were discarded due to incomplete analyses. The remaining two samples could not be used due to insufficient operating data to do the calculations requested by ERDA. For each of the sixty samples chosen, a complete set of calculations is provided in the Process Data Section of the Appendix.

Because of the numerous operating problems encountered during this operating test run, extended run lengths with steady state periods of 24 hours were not obtained. The following unified approach was therefore adopted:

The data was analyzed for a period of 15 minutes before and up to 15 minutes after the time of a gas sample.

For data points not recorded by the computer, appropriate values based on recorder chart readings or log sheet information were entered into the computer.

The values presented on the process data tables and the operating conditions plus flow rates shown on the pictorials represent the average gasifier operation for a period of time, approximately 1/2 hour surrounding the time of each gas sample. This is termed a steady state period.

Due to the lack of continuous solids flow measuring devices, special calculation procedures were adopted to estimate the coal feed rate to the gasifier and the char removal rate.

The unique design of the gasifier and char cooler as one single vessel also gave rise to terms in the calculations which are specific to this plant. The approach taken to evaluate these terms and some of the definitions used in this report are as follows:

1. Coal Feed

The most serious problem which affects the accuracy of the calculations is the estimation of the coal feed rate to the gasifier. Since there is not a direct measurement of coal flow, an indirect method was set up to estimate the coal feed rate.

Attempts were made to correlate the coal feed rate with the pressure drop measured between the Petrocarb primary injector and the gasifier. This method was not very successful, mainly due to absolute pressure fluctuations in the system and erratic pressure drop readings.

The monitoring of the weight of individual coal batches over a definite period of time was, therefore, used for feed rate determination. This is a good method with an estimated error of $\pm 10\%$, provided the run time is of significant duration.

2. Char Removal

The char removal rate, as presented in the calculation summaries, is calculated from an ash balance around the gasifier. It is assumed that all of the ash entering the system with the coal feed leaves the system with the char recovered in the filtration area. This would normally be a valid assumption; however, operating experience has shown that at times significant amounts of solids were carried over from the gasifier into the gas scrubbing area. Since the carryover rate is not measured, the calculated char removal rate can be in error. Attempts to close the material balance by estimating both the char removal rate and the char carryover rate have been inconclusive.

3. Standpipe Steam

Standpipe steam to the gasifier from the char cooler is calculated based on a balance around the char cooler. The difference between the feed steam (FR-205+FI-253) and the existing steam (FR-254) is assumed to be flowing up or down the gasifier/char cooler standpipe. The major assumption is that no steam flows out with the char to the filtration area. This assumption may or may not be valid as its measurement is impossible.

4. Superficial Velocities

The superficial velocity at the bottom of the gasifier bed, is calculated from several terms. The velocity at the bottom is calculated from the total gas flow obtained by adding together, before the start of any reaction, the feed steam, oxygen, and the various purge and aeration flows added below the cone line, along with the standpipe steam. The gasifier bottom bed temperature (TR-205) is used to calculate densities. The velocities at the top of the gasifier bed and at the outlet are obtained by calculating the gasifier overhead gas/steam product flow rate at the appropriate temperature and vessel geometry from the product gas flow rate and the waste water flow rate. The mid-bed velocity is the average of the top and bottom bed velocities.

5. Carbon Conversions

Carbon conversion is calculated in two separate ways: on a char sample basis and on a gas sample basis. The char sample based calculation depends on an ash balance between the coal feed and the char production rate. The gas sample based calculation considers a carbon balance between the various gasifier inlet streams and the product gas as measured by FR-209 and gas analyses.

6. Equivalent Methane

Equivalent methane is calculated by hydrogenating and converting all of the hydrocarbons higher than methane in the gas product stream to methane. This theoretical amount of methane is added to the actual methane produced in the gasifier to determine the equivalent methane production rate.

7. Ultimate Methane

Ultimate methane adds to the equivalent methane production rate the theoretical amount of methane which can be produced from the carbon monoxide and hydrogen remaining after the shift conversion reaction.

EVALUATION METHODS

Because of the numerous operating problems encountered during Run 1 tests, extended run lengths with steady state periods of 24 hours were not obtained. Due to these problems, insufficient data has been obtained to accurately provide a proper process evaluation. The data discussion will, therefore, be limited in content. The technical evaluation will attempt only to make some correlation of char conversion, product gas compositions and yields, and will concentrate on the data obtained from Run 1-T from which the most extensive data was obtained.

1. Waste Water Flow

The waste water flow meter which measures the waste water recovered in the gas scrubbing area performed poorly during the entire series of runs. In addition, frequent unmeasured blowdowns of the scrubber system to prevent solids accumulation made accurate estimation of waste water flow rates even more difficult. Often the pump seal water flow was unmeasured and at times was erratic. This poor performance adversely affected the water balance calculations. Thus, the steam decompositions, in most cases, are negative. Steam decomposition affects the superficial velocity at the top of the gasifier and thereby the mid bed velocity.

2. Char Cooler Steam Flow

The flow meter which measures the steam leaving the char cooler was unreliable principally due to solids carryover. Inaccurate readings by this flow meter affect the amount of steam calculated to be flowing up or down the gasifier/char cooler standpipe. This in turn affects the calculated gasifier superficial velocity at the bottom. The standpipe steam is estimated to alter the superficial velocity by as much as 15%.

3. Product Gas Flow

The flow meter which measures the raw gas flow from the gas scrubbing area fluctuated considerably. It has been difficult to quantitatively estimate the effect of the fluctuations on calculations such as carbon conversion on gas basis, equivalent methane produced, and dry CO₂ free gas produced.

4. Bed Height and Bed Density

The gasifier bed height and the bed density are obtained by the classical method of measuring the pressure drop through the entire bed and a known linear section of the bed. During the initial runs, the pressure taps for these measurements plugged repeatedly.

5. Carbon Conversions

The carbon conversion calculated from gas analyses is corrected for an estimated amount of CO_2 entering the gasifier via the Petrocarb primary injector, transport line, and various purges and aeration taps. While the gas entering the transport line is directly measured by FIC-1, the purge and aeration gas flows are measured by a number of rotameters, the accuracy of which are limited. Perhaps the greatest influence on the carbon conversion is the gas entering the gasifier with the coal feed via the Petrocarb-primary injector. As this quantity is not directly measured, the calculations assume all the gas entering the primary injector, as measured by FI-7, ultimately flows into the gasifier. Neglecting this quantity can increase the calculated carbon conversion from gas analyses by as much as 10 percent.

DATA CORRELATION AND DISCUSSION

1. Statistical Analysis of Ground Rosebud Coal

The Laboratory conducted a statistical analysis of the ground coal used during Run 1 tests. The results are derived from a composite of all samples of the coal that was ground during the test period. These data are used throughout for carbon conversion calculations. The data obtained from these analyses is presented in the Appendix.

2. Effect of Bed Temperature on Carbon Conversion

Figure 7 on page 34 is a plot of carbon conversion as a function of gasifier bed temperature at various steam-to-coal ratios. The data show increasing carbon conversions with increased bed temperatures and increasing steam to coal ratios. Thus, with higher steam to coal ratios, the gasifier can be operated at lower bed temperatures and produce the same conversions. Likewise, at lower steam to coal ratios, higher bed temperatures are required for the equivalent yield in conversion. Although there is reasonable confidence in the data trends, it should not be used as a quantitative design basis because the operation of the unit was usually not at steady state conditions long enough for the majority of sampling to be totally reliable.

The carbon conversion is based upon an ash balance between char and coal feed, which assumes that there is no carryover of solids with the product gas. If the solids carried over are identical in conversion with that of the char which is removed from the process, the calculated carbon conversion will be valid. During all Run 1 tests, solids entrainment was high due to plugging of the cyclone dip leg and could not be measured. The conversion of the solids carried over was also as much as 10 to 20% below char conversions. As better data is achieved in future runs, the preliminary conclusions drawn from these free fall runs will be substantiated or modified.

The carbon conversion is also affected by the sampling procedure used. The char samples were obtained from the char filter screen and, therefore, may or may not correspond to the conditions prevailing in the gasifier at the time of the sampling. However, if a long steady state period of operation is established, these uncertainties will be of less significance.

3. Effect of Bed Temperature on Product Gas Compositions

The accompanying graph, Figure 8, page 36, illustrates attempts to correlate moisture-free product gas compositions with operating bed temperatures. As is clearly evidenced by the plots, there is a scatter of data over various operating ranges. An overall evaluation of the data, however, shows that carbon monoxide and hydrogen concentrations increase with increasing bed temperature. Superficial examination of the graphs creates the impression that the methane concentration is invariant with temperature. However, the methane concentration may actually decrease somewhat with increasing temperature. Attempts to correlate gas composition versus temperature with varying steam-to-coal ratios were not conclusive.

4. Water Samples From Gas Scrubbing

Water samples taken from the gas scrubbing area of the plant constitute a majority of samples analyzed by the laboratory and are presented in the Appendix.

Examination of the water sample analyses illustrate the quality of water condensed out of the gasifier overhead product and an indication of the amount of solids carried over from the gasifier.

The data shows that the production and subsequent condensation of phenols and tars are high. Phenols are recorded as high as 5,300 ppm and COD as high as 71,100 ppm. Also there is essentially no production of ammonia. These results are in basic agreement with the data produced by The Pittsburgh Energy Research Center from runs in their Synthane PDU.

The amount of suspended solids in the scrubber water varies widely from sample to sample. The range of 5 to 10% by weight is a clear indication of substantial carryover of solids from the gasifier to the gas scrubbing section of the plant. Examination of the damage to the gas scrubbing area circulation pumps and the fouling of the gas scrubbing area heat exchangers along with the large solids buildup in the gas scrubbing area drums substantiate this conclusion. Only a few samples of solids filtered from the scrubbing water samples were analyzed. Future runs include definite plans for the analysis of such solids and a closer examination into analyses of the scrubber water.

FIGURE 8

EFFECT OF BED TEMPERATURE ON GAS COMPOSITION FOR RUN I-T

SYNTHANE PILOT PLANT
RUN REPORT NO. 1

SECTION VIII

OPERATING DATA

TECHNICAL EVALUATION OF RUN 1-T DATA

Run 1-T was conducted beginning on December 17, 1976, encompassing some 37 hours of continuous oxygen and coal feed to the gasifier. This was, by far, the best operating run which yielded 14 calculation periods. Gas scrubbing conditions during the run were so severe, due to tar and fines carryover from the gasifier, that the run was finally terminated because of erosion of the product gas letdown bypass valve which is located downstream of the scrubbing area.

A summary of average run conditions taken from the process data for Run 1-T is as follows:

Gasifier coal feed, ton/hr.	2.52
Gasifier O_2 /ground coal, SCF/lb. a)	2.32
Gasifier steam/ground coal, lb/lb.	1.12
Gasifier bed height, ft.	15.0
Gasifier bed density, lb/ft. ³	19.6
Gasifier bed temperature, °F	1,434
Equivalent CH_4 /MAF coal, SCF/lb. b)	2.52
Carbon conversion (char analysis), %	57.4
Raw gas production, dry, SCFH c)	102,200
Dry gas analysis, mole %	

CO_2	51.5
CO	6.0
H_2	31.0
CH_4	10.0
C_2H_6	0.9
H_2S	0.3
N_2	0.3

-
- a) Standard conditions: 60°F, 1 atm.
b) Equivalent CH_4 /MAF Coal = $(CH_4 + 2 \times C_2H_6)$ in SCF/lb. moisture and ash-free coal.
c) Includes approximately 21,500 SCFH of transport, Petrocarb and purge CO_2 .

Material balances were obtained for the 14 calculation periods during Run 1-T and these are provided in the Appendix. The overall closure for 14 calculation periods varied between 96.8 and 132.9% closure, with the average being 114%. The high percentage variances are mainly due to the inability to accurately determine the quantity of condensed scrubber water which is measured by FR-255. Efforts to improve these balances are being given major consideration now that less attention has to be directed towards making the gasifier functional.

GLOSSARY OF TERMS

Carbon Conversion	Percentage of carbon in feed coal converted to gaseous and liquid products.
Clinker	Rock-like material, primarily organic in nature, formed from the ash in coal by fusion under gasification conditions.
Deep Bed Injection	The process of introducing the fresh coal feed to the gasifier at a point submerged deep in the fluidized bed.
Dip Leg	A 3" pipe which allows the solids separated in the gasifier internal cyclone to drain into the fluidized bed.
D.O.E.	Department of Energy
Equivalent Methane	Total hydrocarbon produced expressed as Methane = $(CH_4 + 2C_2H_6 + 3C_3H_8 + \dots \text{etc.})$
E.R.D.A.	Energy Research and Development Administration
Free Fall	The process of introducing fresh coal feed at a point above the gasifier fluidized bed and allowing the coal to free fall through the vapor space before reaching the bed.
P.E.R.C.	Pittsburgh Energy Research Center
Standpipe	A 2" pipe that allows solids to drain from the gasifier to the char cooler.
Steady State Period	For the purpose of this report only, steady state period refers to an individual calculation period extending from 15 minutes before to 15 minutes after a gas sample is taken.
Superficial Velocity	Velocity of gases as if flowing through an empty vessel under the prevailing condition at the location of interest.
Standpipe Trickle Valve	A standard trickle valve modified after Run 1-P to actuate the flapper mechanically for controlling the gasifier bed level.
Ultimate Methane	The theoretical amount of methane that can be obtained by converting all the hydrocarbons, carbon monoxide and hydrogen to methane after shift conversion, if necessary.

Useful Gas	Represents the total quantity of product gas with all components having a heating value.
M.A.F.	Moisture and ash free
P.D.U.	Process development unit.
C.O.D.	Chemical oxygen demand.

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
SYNTHANE PILOT PLANT
4800 FORBES AVENUE
PITTSBURGH, PENNSYLVANIA 15213

June 2, 1976

Mr. S. E. Carson
Plant Manager
The Lummus Company
P. O. Box 18076
Pittsburgh, Pa. 15236

SUBJECT: TEST DIRECTIVE NO. 1

Dear Mr. Carson:

This letter will serve to officially transmit to you
Test Directive No. 1 for the start-up and initial
operation of the Synthane Coal Gasification Pilot Plant.

Very truly yours,

Robert Lewis
ERDA Project Manager
Synthane Plant

Attachment (30)
Test Directive #1

cc w/att.
E. L. Clark
A. J. Forney
W. P. Haynes
J. P. Strakey

cc w/o att.
D. Morse

RL:djl

RECEIVED

JUN 9 1976

S. E. CARSON

E.R.D.A.

SYNTHANE PILOT PLANT

TEST DIRECTIVE: NO. 1

DATE: 6/9/76

Objective: To gasify Montana Rosebud sub-bituminous coal at 600 psig for a steady state period of 12 to 14 days at a carbon conversion of about 67% to test the gasifier system operability and reliability, to determine product compositions and yields, and gasifier throughput. The run should be terminated by a voluntary shutdown and then the gasifier should be inspected for signs of slag, erosion, corrosion, and refractory deterioration.

Test Conditions:

1. Coal handling: Rosebud coal should be ground to 20x0 mesh with not more than 30% through 200 mesh. Ground coal should be dried to below 14% moisture (ASTM method).
2. Pretreatment: The pretreater is not needed and should be bypassed.
3. Petrocarb: Ground coal should be transported from the Storage Injector to the gasifier with CO_2 . Initial estimates are that the transport line velocity should be 11 ft/sec. The CO_2 carried with the coal will add about 9 ft/sec to the velocity in the transport line, so the total velocity is estimated to be 20 ft/sec.

The CO_2 will be provided from the CO_2 storage system since the Benfield system will not be operated to recover CO_2 from the product gas. The coal feed rate should be 2 tons/hr.

4. Gasification: Bed height will be controlled at 10 ft.
Fluidizing velocity (steam + O_2) will be 0.3 ft/sec. Bed temperature is 1550° F.
5. Char cooler: Fluidizing velocity (base of char cooler) should be 0.3 ft/sec. Temperature should be held at 525°-600° F.
6. Char removal: The alternate high pressure slurry system should be used since the lock hopper system is not available.
7. Raw Gas Scrubbing: The venturi and water wash section of the raw gas scrubber should be operated at design conditions.
8. Downstream Processing: After the water wash, product gas will be sent directly to the thermal oxidizer and the normal shift, Benfield, and methanation will not be used.
9. Analytical: Coal and char analysis to be done each 8 hours to establish carbon conversion. Condensate should also be sampled from the venturi scrubber line to determine suspended solids. Samples of wastewater from the scrubber surge tank should be taken every 8 hours and saved for analysis of pollutants. Tar samples should also be obtained every 8 hours and saved for possible analysis.

10. Parameters to be reported: The attached list of Gasifier Calculations should be done and reported as much as possible. CO_2 flow from the Petrocarb system will be estimated since tracer studies will not be done this run.
11. Operating Procedure: This should follow the detailed Operating Manual.
12. Alteration of Conditions: Carbon conversion should be determined as soon as possible through at least two determinations and then a meeting should be held with the ERDA Operating Committee to determine changes to be made to achieve the desired carbon conversion of 67%.

Calculations for Hourly Log

Feed Rates

Coal Feed Rate	#/hr ft ² #/hr ft ³
Oxygen to Coal Ratio	#/# raw coal SCF/# raw coal
Steam to Coal Ratio	#/# raw coal SCF/# raw coal

Gasifier Fluid Bed Properties

Gas superficial velocity (bottom of bed)	ft/sec
Fluid bed density	lb/ft ³
Fluid bed height	ft
Pressure drop	in H ₂ O/ft of bed
Solids inventory	lbs
Residence Time	

Char Cooler Fluid Bed Properties

Fluidizing steam superficial velocity	ft/sec
Vaporized water superficial velocity	ft/sec
Total steam superficial velocity	ft/sec
Fluid bed density	lb/ft ³
Pressure drop	in H ₂ O/ft of bed
Solids inventory	lb
ΔP (gasifier - char cooler)	in H ₂ O
ΔP Maximum	in H ₂ O
ΔP Minimum	in H ₂ O
Residence Time	

Product Rates

Tar	lb/lb coal
Condensate	lb/lb coal
Gas composition	scf/# raw coal
(H ₂ , CO, CO ₂ , CH ₄ , C ₂ H ₆ , NH ₃)	
Equivalent CH ₄ , N ₂ , H ₂ S, H ₂ O	scf/# maf coal

Entrainment Line

Superficial velocity	ft/sec
Steam-coal ratio	lb/lb raw coal SCF/lb raw coal
O ₂ -coal ratio (bottom)	lb/lb raw coal SCF/lb raw coal
O ₂ -coal (total)	lb/lb raw coal SCF/lb raw coal

Pretreater

Bed ht (actual)	ft
Bed ht (calculated)	ft
Superficial velocity	ft/sec
Pressure drop	in H ₂ O/ft of bed
Solids inventory	lbs
Residence Time	
Bed Density	

Pretreater, Gasifier and Char Cooler Calculations

Run Identification Number: _____

Reporting Period

Begin: _____

End: _____

Coal:

Feed System and Pretreater Calculations

Coal Feed System

Temperatures:

CO₂ supply TR 1-7 _____ °C _____ °F

Primary injector temp. TR 1-9 _____ °C _____ °F

Steam temp. TR 1-8 _____ °C _____ °F

Entrainment line temp. TR 1-1 _____ °C _____ °F

TR 1-3 _____ °C _____ °F

TR 1-4 _____ °C _____ °F

Entrainment line
(bottom of pretreater) TE 1-5 _____ °C _____ °F
Not presently in computer

Pressures:

Entrained line AP PDIC-15 _____ psi

Pressure in Primary injector PI-16 _____ psi

AP - Petrocarb orifice _____ psi
(add to computer)

Flows:

Steam flow _____ lb/hr

_____ lb/lb coal, raw

_____ SCF/lb coal

O ₂ flow (base of line)	_____ lb/hr
	_____ lb/lb coal
	_____ SCF/lb coal
O ₂ flow - Total	_____ lb/hr
	_____ lb/lb coal
	_____ SCF/lb coal
CO ₂ flow (by tracer)	_____ SCF/hr
	_____ lb/hr
Coal flow (weigh hopper)	_____ lb/hr
	_____ ton/hr
Coal flow (orifice)	_____ lb/hr
	_____ ton/hr
Line velocity	_____ ft/sec

Pretreater

Pretreater temp. (TR 265- 1)	_____ °C	_____ °F
(TRC- 203)	_____ °C	_____ °F
Pretreater pres. (PI - 267)	_____ atm,	_____ psig
Bed height calc.	_____ ft	
Bed height (actual)	_____ ft	
Bed Density	_____ lb/ft ³	
Δ P	_____ in	

Gas Composition

CO	_____ %
CO ₂	_____ %
H ₂	_____ %
O ₂	_____ %
N ₂	_____ %
CH ₄	_____ %
C ₂ H ₆	_____ %
H ₂ O	_____ %
Residence time	_____ min
Inventory	_____ lb
Superficial velocity (bottom)	_____ ft/sec

Operating Conditions - Gasifier

1) Temperatures

a. gasifier - upper bed (TR 265-3)	_____°C	_____°F
b. gasifier - middle (TR 265-4)	_____°C	_____°F
c. gasifier - lower (TI - 200-2)	_____°C	_____°F
d. gasifier distributor cone		
minimum: location _____	_____°C	_____°F
average	_____°C	_____°F
maximum: location _____	_____°C	_____°F
e. gasifier steam and O ₂ mixture	_____°C	_____°F
f. gasifier - raw gas (TR 265-2)	_____°C	_____°F
g. char cooler - upper (TI 200-4)	_____°C	_____°F
h. char cooler - middle (TI 200-3)	_____°C	_____°F
i. char cooler - lower (TR 265-5)	_____°C	_____°F

2) Pressures

a. gasifier PI 256	_____ atm	_____ psig
PR 295	_____ atm	_____ psig
b. char cooler	_____ atm	_____ psig

3) Feed Rates

a. Gasifier	_____ #/hr
1. specific raw coal feed rate	_____ #/hr ft ²
	_____ #/hr ft ³
2. oxygen to coal ratio	_____ #/# raw coal
	_____ SCF/# raw coal
	_____ #/# maf coal
3. steam to coal ratio	_____ #/# raw coal
	_____ SCF/# raw coal
	_____ #/# maf coal
b. Char Cooler	
1. specific char(moisture free) feed rate	_____ #/hr ft ²

- _____ #/hr ft³
2. char (moisture free) to raw coal ratio _____ #/#
 3. fluidizing steam to char (moisture free) ratio _____ #/#
 4. fluidizing steam to raw coal ratio _____ #/#
 5. spray H₂O to char (moisture free) ratio _____ #/#
 6. spray H₂O to raw coal ratio _____ #/#

Fluid Bed Properties

1. Gasifier

- a. gas superficial velocity
 bottom of fluid bed _____ ft/sec
 mean bed _____ ft/sec
 top of fluid bed _____ ft/sec
 outlet of gasifier _____ ft/sec
- b. fluid bed density _____ lb/ft³
- c. fluid bed height _____ ft
- d. pressure drop _____ in H₂O/ft of bed
- e. solids residence time _____ min
- f. solids inventory _____ lb
- g. gasifier diameter _____ ft

2. Char Cooler

- a. fluidizing steam superficial velocity _____ ft/sec
- purge steam superficial velocity _____ ft/sec
- b. vaporized water superficial velocity _____ ft/sec
- c. total steam superficial velocity _____ ft/sec
- d. fluid bed density _____ #/ft³
- e. calculated bed height pressure drop _____ in H₂O/ft of bed
- f. solids residence time _____ min
- g. solids inventory _____ #
- h. Δ P - gasifier-char cooler _____ in H₂O

Gasifier Kinetic Rates

1. Carbon inventory	_____ lb
2. Gasification rate	_____ lb C /hr ft ³
	_____ lb C /hr lb C in bed
3. Methane format in rate	ft ³ of CH ₄ /hr ft ³ of bed
	lb C/hr lb C in bed

Conversions

1. steam decomposition (water balance)	%
2. steam decomposition (H balance)	%
3. % C gasified	%
4. % C converted	%

Solids, Feeds and Effluents

1. Raw coal	
a. feed rate	#/hr
b. chemical analysis (weight percent)	

	<u>As Rec'd</u>	<u>Moisture free</u>	<u>MAF</u>
Moisture			
Ash			
Volatile matter			
Fixed Carbon			
Carbon			
Hydrogen			
Oxygen			
Nitrogen			
Sulfur			

c. Size distribution

<u>Mesh</u>	<u>Wt. % on</u>
—	—
—	—
—	—
—	—
—	—

d. HHV Btu/lb

e. Free swelling index

2. Char

a. production rate	{ #/# raw coal
#C/#C in coal
b. Chemical analysis
(same as above)	
c. Size distribution
(same as above)	
d. Moisture free HHV	Btu/lb

3. Fines

- a.
- b.
- c. same as above
- d.

Gas Effluent (Raw Gas Scrubber Effluent)

	SCF/# raw coal	SCF/# maf coal	Vol. %
Total Gas			
H ₂	-	-	-
CO	-	-	-

	SCF/# raw coal	SCF/# MAF coal	Vol. %
Total Gas			
CO ₂	-	-	-
CH ₄	-	-	-
C ₂ H ₆	-	-	-
Equivalent CH ₄	-	-	-
N ₂	-	-	-
NH ₃	-	-	-
H ₂ S	-	-	-
H ₂ O	-	-	-

Liquid Effluents

1. Condensate

- a. production rate _____ #/# raw coal
- b. composition : pH, suspended solids, _____
phenol, COD, thiocyanate, cyanide,
NH₃, Cl, carbonate, bicarbonate, Total S.

2. Tar

- a. production rate _____ #/lb raw coal
_____ #/maf coal
- b. composition (wt. percent)

C	_____
H	_____
O	_____
N	_____
S	_____
- c. HHV _____ Btu/lb

Material Balance

<u>Inputs</u>	<u>lb/hr</u>	<u>%H</u>	<u>lb/hr</u>	<u>%O</u>	<u>lb/hr</u>	<u>%C</u>	<u>lb/hr</u>	<u>%N</u>	<u>lb/hr</u>	<u>%S</u>	<u>lb/hr</u>
oxygen	--			--	--						
coal	--	--	--	--	--	--	--	--	--	--	--
steam	--	--	--	--	--						
CO ₂	--			--	--	--	--				
Total	--		--		--		--		--		--
<u>Outputs</u>											
	<u>lb/hr</u>	<u>%H</u>	<u>lb/hr</u>	<u>%O</u>	<u>lb/hr</u>	<u>%C</u>	<u>lb/hr</u>	<u>%N</u>	<u>lb/hr</u>	<u>%S</u>	<u>lb/hr</u>
condensate	--	--	--	--	--	--	--	--	--	--	--
char	--	--	--	--	--	--	--	--	--	--	--
tar	--	--	--	--	--	--	--	--	--	--	--
finer	--	--	--	--	--	--	--	--	--	--	--
gas	--	--	--	--	--	--	--	--	--	--	--
total	--		--		--		--		--		--
% closure (recovery)	--		--		--		--		--		--

INTER-OFFICE CORRESPONDENCE

TO E. O. Curtiss, Jr. ✓
(OFFICE)DATE August 29, 1977FROM R. A. Casey
(OFFICE)NUMBER 7848-RAC-286-77SUBJECT Statistical Analysis of Rosebud Coal

Below is listed the final statistical analysis of the results obtained from ground Rosebud Coal.

As per ASTM D-3176, the hydrogen and oxygen, on an as received basis, contain hydrogen and oxygen present in moisture. On a moisture free basis, the hydrogen and oxygen have been adjusted to eliminate the hydrogen and oxygen present in moisture.

A. Rosebud Coal - As Received

<u>Component</u>	<u># of Samples</u>	<u>Mean</u>	<u>Standard Deviation</u>
Moisture	107	6.76 wt. %	+ 1.85
Volatiles	107	34.83 wt. %	+ 1.00
Ash	107	10.57 wt. %	+ 0.67
Hydrogen	44	4.87 wt. %	+ 0.15
Carbon	44	62.20 wt. %	+ 1.04
Nitrogen	44	0.95 wt. %	+ 0.10
Sulfur	44	0.81 wt. %	+ 0.09
BTU/lb.	44	10,545	+ 201

B. Rosebud Coal - Moisture Free

<u>Component</u>	<u># of Samples</u>	<u>Mean</u>	<u>Standard Deviation</u>
Volatiles	107	37.32 wt. %	+ 0.89
Ash	107	11.32 wt. %	+ 0.69
Hydrogen	44	4.45 wt. %	+ 0.11
Carbon	44	66.2 wt. %	+ 0.75
Nitrogen	44	0.99 wt. %	+ 0.12
Sulfur	44	0.85 wt. %	+ 0.12
BTU/lb.	44	11,213	+ 231

C. Rosebud Coal - Sieve Analysis

<u>Mesh Size</u>	<u># of Samples</u>	<u>Mean</u>	<u>Standard Deviation</u>
+ 20	168	0.38 wt. %	± 0.18
+ 30	168	6.99 wt. %	± 4.77
+ 50	168	40.57 wt. %	± 3.46
+ 60	168	46.63 wt. %	± 3.74
+100	168	68.79 wt. %	± 11.18
+140	168	76.80 wt. %	± 7.10
+200	168	83.55 wt. %	± 7.78
+325	168	90.21 wt. %	± 3.31
-325	168	9.79 wt. %	± 3.32

D. Rosebud Coal - Coulter Counter

<u>Microns</u>	<u># of Samples</u>	<u>Mean</u>	<u>Standard Deviation</u>
+ 50.8	71	12.55 wt. %	± 8.35
+ 40.3	71	30.80 wt. %	± 11.12
+ 32.0	71	48.66 wt. %	± 11.95
+ 25.2	71	65.82 wt. %	± 11.15
+ 20.2	71	79.41 wt. %	± 7.46
+ 16.0	71	88.65 wt. %	± 5.29
+ 12.7	71	92.91 wt. %	± 4.03
+ 10.08	71	95.74 wt. %	± 3.15
+ 8.0	71	97.27 wt. %	± 2.36
+ 6.35	71	97.85 wt. %	± 2.43
+ 5.04	71	98.32 wt. %	± 2.01
+ 4.0	71	98.92 wt. %	± 0.83

R. A. Casey
 R. A. Casey
 Plant Chemist

RAC:lw

cc:
 Technical Personnel

SYNTHANE PLANT, BRUCETON, PENNSYLVANIA

COAL ANALYSIS REPORT

Sample of Ground & Dried Rosebud CoalType of sample Processed Synthane GasifierDate of sampling During Run-1

Special comments _____

Statistical Analysis

The results are reported and calculated in accordance with ASTM D-3176.

AIR-DRY LOSS		COAL (Air dried)	COAL (As received)	COAL (Moisture free)	COAL (Moisture and ash free)
Proximate Anal.	Moisture		6.76	—	—
	Volatile matter		34.83	37.32	42.08
	Fixed carbon		47.84	57.36	57.92
	Ash		10.57	11.32	—
			100.00	100.00	100.00
Ultimate Analysis	Hydrogen		4.87	4.45	5.02
	Carbon		62.20	66.20	74.65
	Nitrogen		0.95	0.99	1.12
	Oxygen		20.60	16.19	18.25
	Sulphur		0.81	0.85	0.96
	Ash		10.57	11.32	—
			100.00	100.00	100.00
Heating Value Btu/lb HHV			10,545	11,213	

RAC 12/12/75

Particle Size Microns

- 09 -

FOR STEADY STATE PERIOD 1 RUN 1-8
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 14 40 7 8-76
ENDING TIME 15 15 7 8-76

FOR STEADY STATE PERIOD 2 RUN 1-8
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 18 1 7 8-76
ENDING TIME 19 11 7 8-76

STEADY STATE PERIOD NO. 1.

GAS STREAMS

	2	3	9	10	11	14
SOPH	10299.0	80526.0	110531.5	8483.5	42166.7	57314.1
MW	44	32.57	18	32	18	18
LB/HR	1194.1	6911.2	5622.1	546.7	2000.0	2718.5

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	9326.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	1350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	1258.		877.

STREAM NO. 3

LB STEAM/LB WF COAL	4.47	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB WF COAL	0.43	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB WF COAL	5.51		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	13.13
CHAR BASIS	20.51	MOL PCT-CO	1.03
GAS BASIS	152.46	MOL PCT-CO2	64.08
GASIFIER TOP SURF. VEL., FPS	0.398	MOL PCT-CH4	6.85
VOL PCT O2 IN PLENUM	5.19	MOL PCT-C2H6	0.30
		MOL PCT-N2	0.00
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	14.54
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 2.

GAS STREAMS

	2	3	9	10	11	14
SCFH	10133.0	74076.0	138264.5	8215.0	39621.3	41802.2
MM	44	27.71	18	32	18	18
LB/HR	1174.8	5408.8	6558.0	682.7	1879.3	1982.7

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	5235.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	1350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	1258.		533.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE (DEG F)	Square
PRESSURE (PSIG)	Circle
BED LEVEL (FEET)	Diamond
DENSITY (LB/CU.FT.)	Rectangle

LB STEAM/LB MF COAL	5.21
LB OXYGEN/LB MF COAL	0.95
SCF ULTIMATE CH ₄ /LB MF COAL	7.16
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	56.55
GAS BASIS	86.67
GASIFIER TOP SUPERF. VEL. FPS	0.426
VOL PCT O ₂ IN FLENUM	5.61

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	22.02
MOL PCT-CO	2.77
MOL PCT-CO ₂	49.65
MOL PCT-CH ₄	8.91
MOL PCT-C ₂ H ₆	0.24
MOL PCT-H ₂	0.96
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	14.73
MOL PCT-O ₂	0.71

UPDATED CALCULATION VALUES

PAGE 2

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	1	2
GASIFICATION CALCULATIONS				
84	X0001	COAL FEED RATE PPH	1350.00	1350.00
550	CSFTG	STEAM FLOW TO GASIF LB/HR	5622.05	6558.00
227	F203	GSFR O2 FEED RATE SCFH	6483.47	8215.00
501	CSOCTG	STNPIPE STM TO GSFR PPH	718.458	103.446
345	T205	GSFR BOTTOM BD TEMP DEGF	1200.00	1400.00
421	C2FBDG	GSF FLD BED DNSTY LB/FT3	25.2405	25.0998
425	C2FBHG	GSF FLD BED HEIGHT FT	18.7737	13.5740
572	CGBV	GASIFIER BED VOLUME FT3	82.8000	102.600
427	C2S1G	GSF SOLIDS INVENTORY LB	2918.00	2575.00
425	C2SRTG	GSF SOLIDS RES TIME MIN	139.151	122.794
429	C2SC02	GASF COAL FEED PPH/FT2	190.948	190.948
429	C2SC01	GASF COAL FEED PPH/FT3	16.3043	13.1579
526	C20PD	GSF PRESS DROP "H2O/FTBD	6.70674	4.03300
420	C2SV0G	GSF SUP VEL-BOT BED FPS	0.354518	0.379554
423	C2SV00	GSF SUP VEL-OUTLET FPS	0.294224	0.299835
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0.398043	0.426425
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0.376201	0.402989
504	CGSF02	GSF O2/RAW COAL SCF/LB	4.00257	6.00518
433	C2S002	GASF O2/NF COAL SCF/LB	5.15298	6.52917
435	C2S004	GASF O2/MAF COAL SCF/LB	5.91425	7.36705
505	CGSF03	GASF O2/RAW COAL LB/LB	0.404960	0.513112

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	1	2
432	C250G1	GASF O2/MF COAL LB/LB	0 424587	0 550549
434	C250G3	GASF O2/MAF COAL LB/LB	0 490266	0 621201
586	CGSHSM	GASF STM/RAW COAL SCF/LB	87 7232	102 327
437	C255G2	GASF STM/MF COAL SCF/LB	94 1236	109 792
439	C255G4	GASF STM/MAF COAL SCF/LB	106 202	121 893
587	CGSSTM	GASF STM/RAW COAL LB/LB	4 16440	4 85778
436	C255G1	GASF STM/MF COAL LB/LB	4 46833	5 21221
438	C255G3	GASF STM/MAF COAL LB/LB	5 04175	5 60109
342	F255	WASTE WATER FLOW GPM	18 3000	18 1000
343	F221	TAR FLOW THRLM OXDRZ GPM	0 000000	0 000000
345	F209	RAW GS SCRBR EF 1000-SCFH	80 5260	74 0760
574	CNR6G	RAW GAS FROM GASF SCFH	224640	216273
575	CTGFB	TOTAL GAS FROM BED SCFH	214986	206619
475	C2CI	GASF CARBON INVENTORY LB	2220 60	1761 30
551	CCGPPH	CARBON GASIFIED PPH	172 237	474 819
594	C2GR4	GASF RATE LBC/HR-FT2BD	2 08016	4 62786
595	C2GR3	GASF RATE LBC/HR-LBCBD	0 775626E-01	0 269584
455	C2MR02	CH4 PROD GAS SCFH, FT2BD	62 5794	64 3229
454	C2MRG1	CH4 IN RAW GAS LBC, LBCBD	0 704986E-01	0 112479
451	C2CG1	CARBON CONVSN (CHAR) %	20 5118	56 5462
452	C2CG12	CARBON CONVSN (GAS) %	120 282	61 2490

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	1	2
396	CCCTUG	C CNVRTG TO USEFUL GAS %	22 2098	44 2736
392	CECH4R	EQUIV CH4 SCF/LB-RAW	4 51689	5 15408
591	CECH4M	EQUIV CH4 SCF/LB-MF	4 84645	5 53045
579	CECH4C	EQUIV CH4 SCF/LB-MAF	5 46839	6 24018
466	C2NYG4	G3F CH4 YLD-MAF CF HR-LB	4 94275	5 91820
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	6300 34	9012 42
560	CUCH4F	ULT CH4 FAW COAL SCF/LB	5 13359	6 87557
561	CUCH4M	ULT CH4 MF COAL SCF/LB	5 50814	7 16225
562	CUCH4R	ULT CH4/MAF COAL SCF/LB	6 21500	9 08217
450	C2SCG	STM CONV - H2O BALANCE %	-20 1410	-14 9051
598	C2SCH2	STM CONV - H2 BALANCE %	10 3793	10 3857

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PTID	NAME	DESCRIPTION	1	2
CHAR COOLER CALCULATIONS				
230	F205	CHR CLR STM FEED PPH	2718.46	1982.72
214	F220	H2O FLW TO CHR CLR GPH	0.000000	0.000000
216	F253	HP STM TO CHR CLR PPH	0.000000	0.000000
487	C2FBDG	CC FLD BED DNSTY LB/FT3	29.6617	26.0100
488	C2FBHC	CC FLD BED HEIGHT FT	11.5300	13.5500
573	C008V	CHAR CLR BED VOLUME FT3	11.8400	12.4500
490	C2SIC	CC SOLIDS INVENTORY LB	944.430	1104.20
489	C2SPTC	CC SOLIDS RES TIME MIN	64.6050	124.192
520	C2S0C2	CC MF CHAR FD LB/HR-FT2	332.229	202.065
499	C2S0C1	CC MF CHAR FD LB/HR-FT3	27.5467	12.5666
514	C2CPD	CC PRESS DROF "420 FTBD	5.71234	5.00000
484	C2SSV	CC STEAM SUP VEL FPS	0.275890	0.210103
485	C2WSV	CC WAF H2O SUP VEL FPS	0.000000	0.000000
590	C0ATSM	CC ATM STM SUP VEL FPS	0.119209E-06	0.000000
486	C2TSV	CC TOT STM SUP VEL FPS	0.275890	0.220102
		CC WAF LB/LB	0.649693	0.298149
482	C2SSC3	CC STM/MF CHAR LB/LB	3.09942	2.71677
583	C0C3TM	CC STM/PAW COAL LB/LB	2.01587	1.46868
494	C2SSC4	CC STM/MF COAL LB/LB	2.16050	1.57503
589	C0C3TM	CC STM/PAW COAL LB/LB	2.43786	1.77606
487	C2SWC2	CC H2O/MF CHAR LB/LB	0.000000	0.000000

UPDATED CALCULATION VALUES PAGE 7

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		1	2
498	C2SMC4	CC H2O/RAW COAL	LB/LB	0 000000	0 000000
529	CFRPPH	CHAR REMOVAL RATE	PPH	877 086	507 451

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	1		2		DRY	WET	DRY	WET	DRY	WET
	DRY	WET	DRY	WET						
MOL%-H2	15 07	13 13	25 03	22 02						
MOL%-CO	1 31	1 03	1 25	2 77						
MOL%-CO2	74 38	64 00	50 23	43 65						
MOL%-CH4	8 01	6 85	10 45	8 91						
MOL%-C2H6	0 43	0 36	0 20	0 24						
MOL%-N2	0 00	0 00	1 13	0 96						
MOL%-NH3	0 00	0 00	0 00	0 00						
MOL%-H2S	0 00	0 00	0 00	0 00						
MOL%-H2O	0 00	14 54	0 00	14 73						
MOL%-O2	0 00	0 00	0 03	0 71						
MOL%-C2H4	0 00	0 00	0 00	0 00						
MOL%-C3H8	0 00	0 00	0 00	0 00						
MOL%-C3H6	0 00	0 00	0 00	0 00						
MOL%-C4H10	0 00	0 00	0 00	0 00						

UPSTR PRESS-(P227) PSIG	596 99	589 00
FLOW TEMP-(T120010) DEGF	320 00	320 00
MOL WT (WET)	22 57	27 71
DRY GAS MALE, 1000-SCFH	62 82	63 16
WET GAS MALE, 1000-SCFH	80 51	74 08

FOR STEADY STATE PERIOD 03 RUN 1-C
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 21:44 7/19/76
ENDING TIME 22:14 7/19/76

FOR STEADY STATE PERIOD 04 RUN 1-C
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 23:44 7/19/76
ENDING TIME 0:14 7/20/76

FOR STEADY STATE PERIOD 05 RUN 1-C
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 1:44 7/20/76
ENDING TIME 2:14 7/20/76

FOR STEADY STATE PERIOD 06 RUN 1-C
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 3:44 7/20/76
ENDING TIME 4:14 7/20/76

FOR STEADY STATE PERIOD 07 RUN 1-C
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 5:44 7/20/76
ENDING TIME 6:14 7/20/76

STEADY STATE PERIOD NO. 3

GAS STREAMS

	2	3	9	10	11	14
SCFH	12518.0	75000.0	150308.7	6242.9	31625.0	35526.4
MM	44	31.28	18	32	18	19
LB/HR	1451.4	6183.5	7129.3	695.1	1500.0	1685.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3350.		
PERCENT MOISTURE	8.8		
LB/HR (MOISTURE FREE)	3122.		2516.

STREAM NO. 3

LB STEAM/LB MF COAL	2.01	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.22	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH ₄ /LB MF COAL	1.96		
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS	14.39	MOL PCT-H ₂	16.40
GAS BASIS	75.55	MOL PCT-CO	2.48
GASIFIER TOP SUPPLY VEL. FPS	0.390	MOL PCT-CO ₂	60.56
VOL PCT O ₂ IN PLENUM	5.20	MOL PCT-CH ₄	5.33
		MOL PCT-C ₂ H ₆	0.16
		MOL PCT-H ₂	0.01
		MOL PCT-H ₂ O	0.00
		MOL PCT-H ₂ S	0.00
		MOL PCT-H ₂ O	15.02
		MOL PCT-O ₂	0.01

STEADY STATE PERIOD NO. 4

	GAS STREAMS					
	2	3	9	10	11	14
SCFH	12718.0	75000.0	161821.5	7266.8	31825.0	35990.8
MM	44	29.34	18	32	18	18
LB/HR	1474.6	5798.0	7680.1	612.7	1500.0	1707.1

	LIQUID STREAMS			
LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

	SOLID STREAMS		
	1	7	15
LB/HR (AS RECEIVED)	3350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3122.		2547.

STREAM NO. 3		AVERAGE GAS COMPOSITION	
LB STEAM/LB MF COAL		MOLE PERCENT - WET BASIS	
LB OXYGEN/LB MF COAL			
SCF ULTIMATE CH4/LB MF COAL			
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS			
GAS BASIS			
GASIFIER TOP SUPPLEVEL, FPS			
VOL PCT O2 IN PLENUM			
2.08		VOL PCT-H2	18.6%
0.20		VOL PCT-CO	3.41
2.68		VOL PCT-CO2	54.77
8.65		VOL PCT-CH4	7.11
35.92		VOL PCT-C2H6	0.42
0.380		VOL PCT-NE	0.01
4.30		VOL PCT-NH3	0.00
		VOL PCT-H2S	0.05
		VOL PCT-H2O	14.96
		VOL PCT-O2	0.01

STEADY STATE PERIOD NO. 5

GAS STREAMS

	2	3	9	10	11	14
SOPH	12440.0	75000.0	151184.7	6886.0	31625.0	35070.1
MW	44	28.02	18	32	18	18
LB/HR	1442.3	5735.7	7170.8	581.5	1500.0	1863.4

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3122.		1819.

LEGEND

STREAM NUMBER	HEXAGON
TEMPERATURE, °C	RECTANGLE
PRESSURE, PSIG	CIRCLE
BED LEVEL, FEET	DIAMOND
DENSITY, LB/CU. FT.	SQUARE

LB STEAM/LB MF COAL	2.07
LB OXYGEN/LB MF COAL	0.19
SOP ULTIMATE CHA/LB MF COAL	3.53
AVERAGE CARBON CONW WEIGHT PCT	
CHAR BASIS	40.19
GAS BASIS	37.94
GASIFIER TOP SURFCL VEL., FPS	0.421
VEL PCT O2 IN PLENUM	4.36

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	18.45
MOL PCT-CO	4.36
MOL PCT-CO2	52.62
MOL PCT-CH4	9.61
MOL PCT-C2H6	0.35
MOL PCT-N2	0.01
MOL PCT-N2O	0.00
MOL PCT-H2S	0.00
MOL PCT-H2O	14.36
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 6

GAS STREAMS

	2	3	9	10	11	14
SCFH	1256.0	52303.0	156386.7	6379.3	31625.0	35659.4
MM	44	28.96	18	32	18	18
LB/HR	145.6	3991.0	7446.0	537.9	1500.0	1700.8

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6575.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3122.		1819.

LEGEND

STREAM NUMBER

TEMPERATURE (DEG F)

PRESSURE (PSIC)

BED LEVEL (FEET)

DENSITY (LB/CU.FT)

STREAM NO. 3

AVERAGE GAS COMPOSITION
MOLE PERCENT - WET BASIS

LB STEAM/LB MF COAL	2.13	VOL PCT-H2	18.34
LB OXYGEN/LB MF COAL	0.17	VOL PCT-CO	4.34
SCF ULTIMATE CH4/LB MF COAL	2.45	VOL PCT-CO2	52.32
AVERAGE CARBON CONV WEIGHT PCT		VOL PCT-CH4	9.56
CHAR BASIS	40.19	VOL PCT-C2H6	0.35
GAS BASIS	34.77	VOL PCT-N2	0.01
GASIFIER TOP SURFQZ VEL. FPS	0.30	VOL PCT-NH3	0.00
VOL PCT O2 IN PLENUM	3.90	VOL PCT-H2S	0.00
		VOL PCT-H2O	15.07
		VOL PCT-O2	0.01

STEADY STATE PERIOD NO. 7

GAS STREAMS

	2	3	9	10	11	14
SCFH	12605.0	101952.0	154679.6	6439.1	31625.0	49630.2
MM	44	25.76	18	32	18	18
LB/HR	1461.4	6821.0	7336.5	543.0	1500.0	2363.5

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	5754.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3350.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3122.		1380.

STREAM NO. 3

LB STEAM/LB MF COAL	2.12	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.17	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB MF COAL	3.96		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	27.73
CHAR BASIS	56.81	MOL PCT-CO	4.00
GAS BASIS	46.47	MOL PCT-CO2	45.79
GASIFIER TOP SURFCL VEL: FPS	0.358	MOL PCT-CH4	7.45
VOL PCT O2 IN PLENUM	4.00	MOL PCT-C2H6	0.33
		MOL PCT-N2	0.01
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	14.68
		MOL PCT-O2	0.01

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTIC	NAME	DESCRIPTION		3	4	5	6	7
GASIFICATION CALCULATIONS								
24	0001	COAL FEED RATE	PPH	3250.00	3250.00	3250.00	3250.00	3350.00
210	P286	GSFR VESSEL PRESS	PSIG	542.786	553.663	538.034	531.393	544.141
208	P285	CACIFFR PRESS FE	PSIG	0.000000	0.000000	0.000000	0.000000	0.000000
253	P375	STEAM FLOW TO GASIF	LB/HR	6288.61	6502.29	6457.87	6643.34	6615.97
207	P200	GSFR OL FEED RATE	SCFH	8240.87	7166.75	6896.04	6379.27	6439.08
541	C500T0	STEAM FLOW TO GSFR	PPH	310.426	252.960	316.891	249.994	962.096
245	T205	GSFR BOTTL. 1 BD TEMP	DEGF	1550.00	1553.00	1548.00	1550.00	1550.00
424	C2FBD0	GSF FLOW BED DENSITY	LB/FT3	20.9692	19.1763	17.9973	17.0958	15.7901
425	C2FBD0	GSF FLOW BED HEIGHT	FT	12.7068	14.4107	16.6673	16.0027	17.2844
514	C0801	GASIFIER BED VOLUME	FT3	96.4670	108.510	124.470	131.110	128.830
407	C2510	GSF SOLIDS INVENTORY	LB	2025.00	2081.00	2140.00	2244.00	2834.00
408	C2510	GSF SOLIDS FEED TIME	MIN	28.9014	28.9962	42.0542	43.1012	39.0948
428	C25000	GSF COAL FEED	PPH	472.832	472.832	472.832	473.822	473.832
428	C25000	GSF COAL FEED	PPH	34.7269	38.8727	26.9141	25.5511	26.0833
526	C2600	GSF PRESS DROP	INCH/FTBD	4.04197	3.69203	3.46598	3.29237	3.04090
410	C1250	GSF SUR VEL-OUT BED	FPS	0.498262	0.506069	0.510745	0.530137	0.560622
400	C2500	GSF SUR VEL-OUTLET	FPS	0.456194	0.282832	0.261080	0.216921	0.259746
421	C0801	GSF SUR VEL-700 BED	FPS	0.230120	0.279627	0.420672	0.310127	0.358601
401	C0801	GSF SUR VEL-MEAN BED	FPS	0.444192	0.442862	0.465709	0.420132	0.439651
384	C03F00	GSF OL-PAN COAL	SCF LB	0.46056	2.16910	2.05052	1.90426	1.92211
400	C2500	GSF OL-PAN COAL	SCF LB	0.64056	2.22736	2.20911	2.04356	2.06272

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

ATIC	NAME	DESCRIPTION	3	1	5	4	7
477	005004	GASF 02 MAF COAL SCF LB	2 97889	2 62610	2 49216	2 30540	2 32701
478	005005	GASF 02 MAF COAL LB LB	0 207472	0 162906	0 173377	0 160570	0 162075
479	005006	GASF 02 MAF COAL LB LB	0 222636	0 136289	0 186275	0 172316	0 173932
484	025002	GASF 02 MAF COAL LB LB	0 251184	0 221439	0 210142	0 194395	0 196217
577	005007	GASF 02 MAF COAL SCF LB	59 4167	40 8850	40 6067	41 7729	41 5065
407	005008	GASF 02 MAF COAL SCF LB	42 5001	43 8770	43 5772	44 8287	44 6502
409	025004	GASF 02 MAF COAL SCF LB	47 7200	49 4989	49 1607	50 5726	50 3711
527	005009	GASF 02 MAF COAL LB LB	1 87123	1 94096	1 92772	1 98309	1 97519
476	025001	GASF 02 MAF COAL LB/LB	2 00821	2 08297	2 06874	2 12815	2 11968
479	025002	GASF 02 MAF COAL LB/LB	2 26541	2 34986	2 33381	2 40093	2 39127
540	F255	NATURAL WATER FLOW GPM	16 0000	16 0000	16 0000	14 4500	12 6460
540	F231	TAF FLOW THERM O LZR GPM	0 000000	0 000000	0 000000	0 000000	0 000000
547	F204	PAUL SCFEE CA 1000-2000	75 0000	75 0000	75 0000	52 3030	101 952
577	005007	GASF 02 MAF COAL SCF LB	197070	197070	197070	159517	191876
578	005008	GASF 02 MAF COAL SCF LB	187416	187416	187416	149863	182222
477	005004	GASF 02 MAF COAL SCF LB	1435 72	1496 24	1524 40	1537 14	1326 17
551	005009	GASF 02 MAF COAL SCF LB	299 111	180 147	937 474	837 474	1103 67
577	005007	GASF 02 MAF COAL SCF LB	1 10791	1 66019	6 72832	6 38757	9 18786
595	005002	GASF 02 MAF COAL SCF LB	0 203822	0 120480	0 545739	0 544826	0 892551
477	005004	GASF 02 MAF COAL SCF LB	41 7459	43 1457	57 9212	38 1285	56 9201
478	005005	GASF 02 MAF COAL LB LB	0 21153E-01	0 112698	0 148594	0 102823	0 180965

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	3	4	5	6	7
451	C20G1	CARBON CONVERSION (CHAR) %	14.3884	8.64556	40.1917	40.1917	56.8063
452	C20G12	CARBON CONVERSION (GAS) %	25.5544	25.9155	37.9391	34.7726	46.4717
586	C00TUG	% CONVERTED TO USEFUL GAS %	12.4189	16.4486	20.2577	14.0443	25.9425
592	CECH4R	EQUIV CH4 SCF/LB-RAW	1.27073	1.78185	2.31553	1.60531	2.46867
591	CECH4M	EQUIV CH4 SCF/LB-MF	1.35275	1.91134	2.48492	1.72275	2.64926
579	CECH4C	EQUIV CH4 SCF/LB-MAF	1.55848	2.15624	2.80331	1.94348	2.98870
465	C2MYG4	BSF CH4 VLT-MAF CF/HR-LB	1.44394	1.92722	2.60587	1.80660	2.74319
577	CTUCH4	TOTAL ULT RATE CH4 SCFH	6124.29	6275.68	11029.8	7646.73	12250.0
568	CUCH4R	ULT CH4/RAW COAL SCF/LB	1.82815	2.50020	3.29247	2.28260	3.68657
561	CUCH4M	ULT CH4/MF COAL SCF/LB	1.96188	2.68310	3.53333	2.44958	3.95626
562	CUCH4C	ULT CH4/MAF COAL SCF/LB	2.21325	3.02688	3.98605	2.76344	4.46317
450	C25G6	STM CONV - H2O BALANCE %	1.74153	7.39574	2.19598	13.7788	22.5679
598	C5C42	STM CONV - H2O BALANCE %	3.58493	4.89516	4.35432	0.44388	8.79701

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

STID NAME RESERVE ICH

CHAR COOLERS CALCULATIONS

STID	NAME	RESERVE ICH	3	4	5	6	7
170	F205	CHP CLR EFF FERR	1635.03	1707.07	1663.41	1700.84	2263.49
224	F230	H2O FLW TO CHAF CLR GFH	0.000000	0.000000	0.000000	0.000000	0.000000
225	F231	H2O FLW TO CHAF CLR GFH	143.445	152.324	150.471	149.150	90.6038
229	G25524	CHAF FEED TO CHAF CLR GFH	2516.06	1647.50	1819.31	1819.31	1180.41
241	F254	STN FLW FR CHAF CLR GFH	1500.00	1500.00	1500.00	1500.00	1500.00
272	F225	CHAF TRANSFER TO STEAM FFH	0.000000	0.000000	0.000000	0.000000	0.000000
224	F256	CHAF COOLER FRESS PSIG	348.306	359.700	341.419	341.614	349.357
210	T202	CHP CLR UPPER ED THP DEGF	351.128	347.873	681.481	585.275	563.481
255	T20004	CHP CLR BE AT ISF-CHP DEGF	327.035	304.445	520.563	491.915	555.493
487	F25200	IC FLW BEED DRYER LB FT3	18.1000	20.6700	27.1800	24.0600	28.0200
468	G25500	IC FLW TO DRYER LB FT3	5.14000	5.01000	6.00000	5.73000	7.69000
577	G25500	IC FLW TO DRYER LB FT3	14.9700	15.6600	17.1800	16.3300	21.7000
430	G25510	IC FLW TO DRYER LB FT3	270.969	216.710	475.110	397.710	608.030
499	G25510	IC FLW TO DRYER LB FT3	6.46127	7.22262	15.6666	13.1141	26.4304
528	G25500	IC FLW TO DRYER LB FT3	953.054	1002.24	689.131	639.131	522.832
129	G25500	IC FLW TO DRYER LB FT3	160.074	171.690	104.079	110.061	63.6133
574	G25500	IC FLW TO DRYER LB FT3	3.43000	3.97400	5.22500	4.62500	5.38600
474	G25500	IC FLW TO DRYER LB FT3	0.195072	0.190411	0.209775	0.196388	0.258022
475	G25500	IC FLW TO DRYER LB FT3	0.000000	0.000000	0.000000	0.000000	0.000000
230	G25500	IC FLW TO DRYER LB FT3	0.153039E-01	0.160065E-01	0.161434E-01	0.382280E-01	0.100751E-01
231	G25500	IC FLW TO DRYER LB FT3	0.211176	0.206132	0.225321	0.234616	0.261397

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	3	4	5	6	7
521	C25DC3	CC NF CHP/RAW COAL LB/LB	0.731064	0.790298	0.543077	0.543077	0.412062
493	C25SC7	CC STM/NF CHAR LB/LB	0.669715	0.644787	0.914307	0.934883	1.71217
588	C01STM	CC STM/RAW COAL LB/LB	0.502999	0.302574	0.496539	0.507713	0.785319
494	C25SC4	CC STM/NF COAL LB/LB	0.539795	0.546851	0.532063	0.544854	0.757130
599	C01STM	CC STM/NF COAL LB/LB	0.608958	0.616918	0.601137	0.614666	0.854140
497	C25NC3	CC H2O/NF CHAR LB/LB	0.000000	0.000000	0.000000	0.000000	0.000000
498	C25NC4	CC H2O/RAW COAL LB/LB	0.000000	0.000000	0.000000	0.000000	0.000000

UPDATED AVERAGE GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	3		4		5		6		7	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL% - H2	13.56	12.40	13.02	19.60	21.59	19.45	21.59	18.34	32.51	27.73
MOL% - CO	0.92	2.49	0.77	0.21	5.11	4.34	5.11	4.34	4.69	4.00
MOL% - CO2	1.17	20.56	64.00	54.77	61.59	53.62	61.59	52.22	53.67	45.79
MOL% - CH4	6.02	5.03	6.02	0.11	11.25	9.61	11.25	9.56	8.72	7.45
MOL% - C2H6	0.19	0.16	0.49	0.41	0.42	0.35	0.42	0.35	0.38	0.33
MOL% - N2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MOL% - H2O	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - H2O	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - H2O	0.00	15.00	0.00	14.56	0.00	14.56	0.00	15.07	0.00	14.66
MOL% - O2	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
MOL% - C2H4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - C2H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - C2H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - C2H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% - C2H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

WATER FROZEN - FLOW - F210	577.15	560.59	595.90	575.50	591.11
FLUX FLOW - F210 - LEGF	320.00	320.00	320.00	320.00	320.00
MOL WT WET	21.13	29.34	29.02	28.36	25.76
DRY DRY FLOW - F210 - LEGF	0.00	63.85	64.00	44.42	86.39
WET FLOW FLOW - F210 - LEGF	75.40	75.00	75.00	53.10	101.95

FOR STEADY STATE PERIOD #8 RUN 1-D
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 8 14 7/21/76
ENDING TIME 8 44 7/21/76

FOR STEADY STATE PERIOD #9 RUN 1-D
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 2 2 7/21/76
ENDING TIME 2 38 7/21/76

FOR STEADY STATE PERIOD #10 RUN 1-D
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 4 26 7/21/76
ENDING TIME 4 54 7/21/76

FOR STEADY STATE PERIOD #11 RUN 1-D
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 14 7/21/76
ENDING TIME 14 21 7/21/76

FOR STEADY STATE PERIOD #12 RUN 1-D
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 3 20 7/21/76
ENDING TIME 3 50 7/21/76

STEADY STATE PERIOD NO. 8

GAS STREAMS

	2	3	9	10	11	14
SO ₂ H	12159.0	78633.0	105784.3	10518.0	31625.0	48091.2
MM	44	25.29	18	32	18	18
LB/HR	1408.7	5240.7	5017.4	886.9	1500.0	2280.5

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	2850.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	2686.		1156.

LB STEAM/LB MF COAL	1.35
LB OXYGEN/LB MF COAL	0.33
SO ₂ ULTIMATE CH ₄ /LB MF COAL	3.15
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.25
GAS BASIS	36.88
GASIFIER TOP SURFOL VEL, FPS	0.377
VOL PCT O ₂ IN PLENUM	9.04

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	29.91
MOL PCT-CO	4.65
MOL PCT-CO ₂	45.05
MOL PCT-CH ₄	5.74
MOL PCT-C ₂ H ₆	0.11
MOL PCT-N ₂	0.00
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	14.54
MOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 9

GAS STREAMS

	2	3	9	10	11	14
SOF-M	12107.0	65680.0	108065.5	8172.4	34004.9	48167.6
MF	44	26.00	19	32	19	18
LB/HR	1403.7	4500.5	5125.6	773.4	1612.9	2284.6

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	2850.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	2656.		1156.

STREAM NO. 3

LB STEAM/LB MF COAL	1.62	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.29	MOLE PERCENT - WET BASIS	
SOF ULTIMATE CHA/LB MF COAL	2.07		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	29.23
CHAR BASIS	58.25	MOL PCT-CO	3.29
GAS BASIS	27.85	MOL PCT-CO2	47.79
GASIFIER TOP SUPPLIF VEL, FPS	0.368	MOL PCT-CH4	4.79
VOL PCT O2 IN PLENUM	7.82	MOL PCT-C2H6	0.13
		MOL PCT-N2	0.00
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	14.77
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 100.

GAS STREAMS

	2	3	9	10	11	14
SOFH	12184.0	43485.0	112695.7	8675.2	31825.0	47847.9
MW	44	26.08	18	32	18	18
LB/HR	1410.3	2888.6	5345.2	731.5	1500.0	2274.2

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR				0.0

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	2850		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	2656.		1156.

LB STEAM/LB MF COAL	1.61
LB OXYGEN/LB MF COAL	0.28
SOF ULTIMATE CH/LB MF COAL	1.46
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.25
GAS BASIS	10.08
GASIFIER TOP SURF. VEL., FPS	0.319
VOL PCT O2 IN PLENUM	7.15

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
VOL PCT-H2	28.75
VOL PCT-CO	2.76
VOL PCT-CO2	47.82
VOL PCT-CH4	5.30
VOL PCT-C2H6	0.42
VOL PCT-N2	0.00
VOL PCT-NH3	0.00
VOL PCT-H2S	0.00
VOL PCT-H2O	14.84
VOL PCT-O2	0.00

STEADY STATE PERIOD NO. 11

GAS STREAMS

	2	3	9	10	11	14
SCFH	12105.0	60000.0	109014.5	8804.7	31625.0	47588.1
MM	44	24.07	18	32	18	18
LB/HR	1403.5	3806.1	5123.2	742.4	1500.0	2275.2

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	2650.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	2536.		1136.

LB STEAM/LB MF COAL	1.64
LB OXYGEN/LB MF COAL	0.28
SCF ULTIMATE CH4/LB MF COAL	1.78
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.25
GAS BASIS	14.11
GASIFIER TOP SURFCL VEL, FPS	0.354
VOL PCT O2 IN PLENUM	7.54

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	34.39
MOL PCT-CO	2.77
MOL PCT-CO2	43.56
MOL PCT-CH4	4.22
MOL PCT-C2H6	0.44
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.00
MOL PCT-H2O	14.58
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 12

GAS STREAMS

	2	3	9	10	11	14
SCFH	12075.0	60000.0	95508.5	6817.3	25300.0	30400.7
MM	44	25.33	18	32	18	18
LB/HR	1400.0	4004.0	4530.0	574.8	1200.0	1441.9

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	2850.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	2656.		1156.

LB STEAM/LB MF COAL	1.37
LB OXYGEN/LB MF COAL	0.22
SCF ULTIMATE CH4/LB MF COAL	2.01
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.25
GAS BASIS	25.34
GASIFIER TOP SURFCL VEL, FPS	0.338
VOL PCT O2 IN FLENUM	6.66

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	30.48
MOL PCT-CO	3.37
MOL PCT-CO2	45.92
MOL PCT-CH4	5.11
MOL PCT-C2H6	0.20
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.00
MOL PCT-H2O	14.90
MOL PCT-O2	0.01

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STEADY STATE PERIOD

10

9

34

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BASEFICATION CALCULATIONS

NO	UNIT	DESCRIPTION	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
1	1000	COAL FEED RATE	PPH	2850 00	2850 00	2850 00	2850 00	2850 00
2	1000	COAL FEED RATE	PPH	352 057	345 122	352 378	350 417	351 328
3	1000	AFTER FEED RATE	PPH	0 000000	0 000000	0 000000	0 000000	0 000000
4	1000	TEMP IN TO COAL FEED	°F	4140 24	4283 51	4275 25	4056 87	3641 82
5	1000	COAL FEED RATE	PPH	10515 0	9472 41	8675 17	6604 71	6817 34
6	1000	TEMP IN TO COAL FEED	°F	730 518	671 754	774 111	775 173	241 935
7	1000	COAL FEED RATE	PPH	1604 00	1610 00	1600 00	1671 00	1562 00
8	1000	COAL FEED RATE	PPH	16 8155	16 4452	17 4024	18 3842	18 7865
9	1000	COAL FEED RATE	PPH	15 0032	13 8538	17 1182	14 5255	16 8496
10	1000	COAL FEED RATE	PPH	114 701	104 787	100 790	109 523	139 898
11	1000	COAL FEED RATE	PPH	1635 00	1721 00	1734 00	2075 00	1628 00
12	1000	COAL FEED RATE	PPH	42 8132	38 3272	39 6176	46 8793	59 1736
13	1000	COAL FEED RATE	PPH	400 111	400 111	400 111	400 111	400 111
14	1000	COAL FEED RATE	PPH	28 1877	27 1380	28 2766	26 0691	20 3720
15	1000	COAL FEED RATE	PPH	0 16708	0 16708	0 15141	3 65005	3 61798
16	1000	COAL FEED RATE	PPH	0 169545	0 139276	0 191090	0 400323	0 285612
17	1000	COAL FEED RATE	PPH	0 270310	0 256579	0 209109	0 214475	0 243098
18	1000	COAL FEED RATE	PPH	0 177081	0 187597	0 119024	0 154472	0 137944
19	1000	COAL FEED RATE	PPH	0 163450	0 179937	0 155153	0 177588	0 111878
20	1000	COAL FEED RATE	PPH	0 169074	0 118339	0 041091	0 019217	2 139105
21	1000	COAL FEED RATE	PPH	0 169074	0 118339	0 041091	0 019217	2 139105

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

FILE NAME (DESCRIPTION)	1	2	3	4	5
425 C25004 GAS VENTIL COAL SCF LB	4 46796	2 89606	3 68513	3 74016	2 29594
555 C25002 GAS O2 FAN COAL LB LB	0 011191	0 271379	0 256666	0 260500	0 201701
413 C25001 GAS O2 HF COAL LB LB	0 033356	0 291232	0 275444	0 279551	0 216456
424 C25003 GAS O2 HF COAL LB/LB	0 376745	0 328547	0 310736	0 315376	0 244190
416 C25001 GAS STN FAN COAL SCF LB	30 6204	21 7041	11 6032	32 2005	26 9171
417 C25002 GAS STN HF COAL SCF LB	32 8636	14 8214	13 9151	34 5561	28 8662
419 C25004 GAS STN HF COAL SCF LB	37 0740	18 3627	18 2606	38 9837	22 5873
556 C25001 GAS STN FAN COAL LB LB	1 45378	1 50309	1 50030	1 52865	1 27784
415 C25001 GAS STN HF COAL LB/LB	1 56013	1 61519	1 61005	1 64048	1 37132
423 C25003 GAS STN HF COAL LB LB	1 76003	1 82214	1 81634	1 85067	1 54702
142 F255 WATER FLOW GPM	16 0000	16 0000	16 0000	16 0000	16 0000
341 F271 TAR FLOW THINL Q DZF GPM	0 000000	0 000000	0 000000	0 000000	0 000000
445 F205 1000-2CFH	78 6330	63 6900	43 4850	60 0000	60 0000
414 F205 1000-2CFH	200705	167760	165555	182070	182070
415 F205 1000-2CFH	191049	175100	155981	172416	172416
411 F205 1000-2CFH	1212 80	1102 70	1122 56	1328 80	1681 92
551 F205 1000-2CFH	1032 62	1032 62	1032 62	1032 62	1032 62
414 F205 1000-2CFH	3 16226	3 35443	10 2452	9 44538	7 38121
535 F205 1000-2CFH	0 851422	0 906427	0 919877	0 777575	0 613951
415 F205 1000-2CFH	40 0176	10 0174	22 8596	23 1541	21 9035
414 F205 1000-2CFH	0 117646	0 001809E-01	0 646989E-01	0 602713E-01	0 576079E-01

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PTIC	NAME	DESCRIPTION	8	9	10	11	12
451	C2CG1	CAFEON CONVERSION CHAP	55 2511	52 2511	53 2511	56 2511	58 2511
452	C2CG2	CAFEON CONVERSION GAS	32 2760	27 6534	10 0759	14 1126	25 3409
55F	C2CTUG	CONVERSION TO USEFUL GAS	21 3355	15 3285	10 6606	14 6128	14 9802
55T	CECH4F	EQUIV CH4 SCF LB-RAN	1 64930	1 16636	0 940312	1 07663	1 16186
551	CECH4M	EQUIV CH4 SCF LB-MF	1 72395	1 25169	1 00910	1 15539	1 24685
552	CECH4C	EQUIV CH4 SCF LB-MAF	1 33877	1 41206	1 13039	1 20143	1 40661
45F	C2IVC4	GSE CH4 YLD-MAF OF HR-LB	1 31681	1 22615	0 970724	1 07528	1 20167
55T	CUCH4	TOTAL ULTIMATE CH4 SURF	5355 01	5455 49	3879 08	4730 26	5228 39
550	CUCH4P	ULT CH4 FAN COAL SCF LB	2 93086	1 32472	1 36106	1 65974	1 87031
561	CUCH4M	ULT CH4 MF COAL SCF LB	3 14528	2 06554	1 46065	1 78116	2 00713
562	CUCH4R	ULT CH4 MAF COAL SCF LB	3 54826	2 33019	1 64780	2 00937	2 26430
450	C2SCG	ETH CON - H2O BALANCE %	-19 4718	-18 1413	-11 8918	-16 3453	-37 1354
55E	CECH4	EQUIV CH4 - H2O BALANCE %	2 11057	2 39172	-0 644996	3 45639	2 70223

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

RTID	NAME	DESCRIPTION	8	9	10	11	12
CHAP COOLER CALCULATIONS							
213	F205	CHL CLR STM FEED PPM	2260 53	2264 63	2274 21	2275 17	1441 93
224	F230	H2O FLW TO CHL CLR GFH	0 000000	0 000000	0 000000	0 000000	0 000000
225	F252	HT STM TO CHL CLR PPM	0 000000	0 000000	0 000000	0 000000	0 000000
229	F255F	CHL REMOVAL RATE PPM	1156 38	1156 38	1156 38	1156 38	1156 38
241	F254	STM FLW FR CHL CLR PPM	1500 00	1512 88	1500 00	1500 00	1200 00
272	F219	CHL TRANSPORT STEAM PPM	0 000000	0 000000	0 000000	0 000000	0 000000
224	F253	CHL COOLER PRESS PSIG	553 001	553 593	556 875	555 005	547 006
246	T202	CHL CLR UPPER BD TMP DEGF	574 969	561 495	567 247	570 453	524 272
22	T20004	C C BD AT 19FT-2IN DEGF	486 747	492 934	388 829	536 802	510 122
487	C2FB00	CC FLD BED INSTY LB/FT3	30 6138	31 4045	0 297286E+07	30 2566	33 1575
438	C2FB00	CC FLD BED HEIGHT FT	6 55060	6 17910	6 45780	6 32540	5 85640
511	C2FB00	CC FLD BED VOLUME FT3	18 6340	17 7130	18 4960	18 0990	16 8610
420	C2SIN	CC SOLIDS INVENTORY LB	572 200	556 270	542 860	547 610	559 970
488	C2SRT	CC SOLIDS RES TIME MIN	29 6924	28 8523	0 284569E+07	28 4136	29 0077
520	C2SC02	CC MP CHL FB LB/HR-FT2	438 022	438 022	438 022	438 022	438 022
489	C2SC01	CC MP CHL FB LB/HR-FT2	61 8582	65 2842	62 5205	63 8919	68 5830
504	C2CP0	CC PRESS DROP H2O/FTBD	5 88500	6 03700	5 71500	5 81600	6 37400
494	C2S2	CC FLD SUP VEL FPS	0 262678	0 258773	0 260063	0 261221	0 160850
495	C2US	CC FLD W/O SUP VEL FPS	0 000000	0 000000	0 000000	0 000000	0 000000
550	C2ATEM	CC ATH STM SUP VEL FPS	-0 119209E-06	0 000000	-0 119209E-06	0 357628E-06	0 119209E-06
496	C2S1	CC TOT FLD SUP VEL FPS	0 262678	0 258773	0 260063	0 261221	0 160850

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	8	9	10	11	12
521	025003	CC MF CHR/RAW COAL LB/LB	0.405747	0.405747	0.405747	0.405747	0.405747
493	025503	CC STM/MF CHAR LB/LB	1.97213	1.97568	1.96666	1.96749	1.24694
585	0005TH	CC STM/RAW COAL LB/LB	0.800187	0.801624	0.797968	0.798305	0.505941
494	025504	CC STM/MF COAL LB/LB	0.858723	0.860266	0.856342	0.856704	0.542952
589	0005TH	CC STM/MF COAL LB/LB	0.968750	0.970490	0.966063	0.966472	0.612520
497	025002	CC H2O/MF CHAR LB/LB	0.000000	0.000000	0.000000	0.000000	0.000000
498	025004	CC H2O/RAW COAL LB/LB	0.000000	0.000000	0.000000	0.000000	0.000000

UPDATED AVERAGE GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	8		9		10		11		12	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL % H ₂	25.00	29.91	34.29	29.23	33.76	28.75	40.27	34.39	25.02	30.48
MOL % CO	0.44	4.65	1.86	3.29	1.24	2.76	3.24	2.77	3.95	3.37
MOL % CO ₂	52.71	45.05	56.07	47.79	56.27	47.92	51.01	43.56	53.96	45.92
MOL % CH ₄	6.71	5.74	5.62	4.79	6.22	5.30	4.94	4.22	6.00	5.11
MOL % C ₂ H ₆	0.13	0.11	0.15	0.13	0.50	0.42	0.52	0.44	0.23	0.20
MOL % N ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
MOL % NH ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % H ₂ S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % H ₂ O	0.00	14.54	0.00	14.77	0.00	14.04	0.00	14.59	0.00	14.90
MOL % O ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
MOL % C ₃ H ₈	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % C ₄ H ₁₀	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % C ₄ H ₈	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % C ₄ H ₆	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL % C ₄ H ₂	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UPSTE PRESS - F2274 F51G	596.91	587.50	584.65	594.86	582.36
FLOW TEMP - (T130010) DEG F	320.00	320.00	320.00	320.00	320.00
MOL LT WET	25.19	26.00	26.06	24.07	25.13
DRY GAS RATE 1000 SCFH	67.20	55.39	57.80	51.25	51.06
WET GAS RATE 1000 SCFH	78.62	65.62	42.49	60.00	60.00

FOR STEADY STATE PERIOD 13 RUN 1-I
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 8 13 8/15/76
ENDING TIME 8 43 8/15/76

FOR STEADY STATE PERIOD 14 RUN 1-J
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 22 42 8/15/76
ENDING TIME 23 13 8/15/76

STEADY STATE PERIOD NO. 13

GAS STREAMS

	2	3	9	10	11	14
SOPH	12490.0	107136.0	117905.4	9948.1	31625.0	38969.2
MF	44	27.17	19	32	18	18
LB/HR	1562.9	7670.9	5592.4	938.9	1500.0	1848.3

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7735.			79.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3650.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3401.		2280.

LB STREAM/LB MF COAL	1.64
LB OXYGEN/LB MF COAL	0.25
SOP ULTIMATE CH ₄ /LB MF COAL	4.68
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	25.52
GAS BASIS	52.18
GASIFIER TOP SUPERF. VEL., FPS	0.477
VOL PCT O ₂ IN PLENUM	7.78

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	23.07
MOL PCT-CO	6.11
MOL PCT-CO ₂	47.51
MOL PCT-CH ₄	8.08
MOL PCT-C ₂ H ₆	0.34
MOL PCT-H ₂	0.17
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	14.73
MOL PCT-O ₂	0.01

STEADY STATE PERIOD NO. 14

GAS STREAMS

	2	3	9	10	11	14
SOPH	13394.0	129900.0	141084.6	10476.0	31625.0	35849.6
MW	44	27.62	18	32	18	18
LB/HR	1552.9	9408.8	6690.8	883.4	1500.0	1700.4

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			198.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4950.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4613.		1963.

STREAM NO. 3

LB STEAM/LB MF COAL	1.45	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.19	MOLE PERCENT - WET BASIS	
SOF ULTIMATE CH/LB MF COAL	4.65		
AVERAGE CARBON CONW WEIGHT PCT			
CHAR BASIS	57.47	MOL PCT-H2	20.62
GAS BASIS	52.24	MOL PCT-CO	4.40
GASIFIER TOP SUPRFL VEL, FPS	0.479	MOL PCT-CO2	48.61
VOL PCT O2 IN PLENUM	6.91	MOL PCT-CH4	11.22
		MOL PCT-C2H6	0.47
		MOL PCT-H2	0.01
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	14.65
		MOL PCT-O2	0.01

UPDATED "CALCULATION" VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	13	14
GASIFICATION CALCULATIONS				
84	Q001	COAL FEED RATE	PPH	3650 00
550	C5FTQ	STEAM FLOW TO GASF LE	HR	5592 35
227	F202	GSEF Q2 FEED RATE	SCFH	9949 12
591	C5CCTG	STRAIFE STH TO GSEF	PPH	430 650
545	T205	GSEF BOTTOM EQ TEMP DEGF		1520 00
424	C2E000	GSE FLD BED DENSITY LB/FT3		12 7263
425	C2EPHQ	GSE FLD BED HEIGHT	FT	19 5852
572	C06V	GASIFIER BED VOLUME	FT3	145 100
427	C25JG	GSE SOLIDS INVENTORY	LB	2870 00
426	C25RTG	GSE SOLIDS RES TIME	MIN	50 6257
429	C25CG2	GASF COAL FEED	PPH/FT2	516 266
428	C25C01	GASF COAL FEED	PPH/FT3	25 1551
516	C2GPD	GSE FEEDS DFCR HCD FTSD		3 80852
420	C25V8G	GSE SUP VEL-BOT BED	FPS	0 487843
423	C25V0G	GSE SUP VEL-OUTLET	FPS	0 392616
421	C25V7G	GSE SUP VEL-TOP BED	FPS	0 476521
422	C25V1G	GSE SUP VEL-MEAN BED	FPS	0 441784
534	C05EQ2	GSE Q2 FBL COAL	SCF/LB	2 72579
430	C25000	GSEF Q1 MF COAL	SCF LE	2 32490
435	C250G4	GSEF Q1 MAF COAL	SCF/LB	2 39990
565	C05ED1	GSEF Q2 PAU COAL	LB LB	0 229642

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	13	14
432	C2S0G1	GASF O2-MF COAL LB/LB	0 246619	0 191496
434	C2S0G2	GASF O2-HAF COAL LB/LB	0 278260	0 216047
536	CGSM5N	GASF STM-PAW COAL SCF/LB	32 2742	28 4726
437	C2S5G2	GASF STM-MF COAL SCF/LB	24 6327	30 5533
439	C2S5G4	GASF STM-HAF COAL SCF/LB	29 0728	24 4785
587	CGSSTM	GASF STM-RAW COAL LB/LB	1 52215	1 25160
436	C2S5G1	GASF STM-MF COAL LB/LB	1 64412	1 45046
438	C2S5G3	GASF STM-HAF COAL LB/LB	1 85490	1 62642
342	F235	WASTE WATER FLOW GPM	17 0000	17 0000
242	F221	TAR FLOW THRL OXDR GPM	0 000000	0 000000
245	F209	RAW GS SCRSR+EF 1000-SCFH	107 126	129 200
574	CNR00	RAW GAS FROM GASF SCFH	238790	260954
575	CTQFB	TOTAL GAS FROM BED SCFH	229157	251301
475	C1C1	GASF CARBON INVENTORY LB	2146 76	2039 70
551	CGGPPH	CARBON GASIFIED PPH	579 492	1769 37
594	C2GR4	GASF RATE LBC/HR-FTIBD	3 99174	12 1507
595	C2GP3	GASF RATE LBC/HR-LBCBD	0 269938	0 859043
455	C2MR02	CH4 PROD GAS SCFH FTIBD	59 4760	101 225
454	C2MR01	CH4 IN PAN GAS LBC/LBCBD	0 127112	0 226620
451	C2CG1	CARBON CONVP5N -CHAF %	25 5249	57 4676
452	C2CG12	CARBON CONVP5N -GASF %	38 4555	39 5464

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	13	14
592	CCCTUG	C CHVRTO TO USEFUL GAS %	27 9597	26 6038
592	CECH4R	EQUIV CH4 SCF-LB-RAW	2 56382	2 17686
591	CECH4M	EQUIV CH4 SCF-LB-MF	2 75761	3 41117
579	CECH4C	EQUIV CH4 SCF-LB-MAF	3 11116	2 84851
465	C2MYG4	GSF CH4 YLD-MAF CF. MF-LB	2 86244	3 54672
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	15325 6	11429 0
560	CUCH4R	ULT CH4 RAW COAL SCF-LB	4 36018	4 32915
561	CUCH4M	ULT CH4/MF COAL SCF-LB	4 68103	4 64551
562	CUCH4A	ULT CH4/MAF COAL SCF-LB	5 28231	5 24110
450	C2SCG	STM COMB - H2O BALANCE %	-20 0789	-8 47862
598	CSCH2	STM COMB - H2 BALANCE %	15 6368	15 1892

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		13	14
CHAR COOLER CALCULATIONS					
230	F205	CHR CLR STM FEED	PPH	1048 34	1700 38
234	F250	H2O FLW TO CHAR CLR	GPH	10 3459	26 2267
236	F251	HP STM TO CHAR CLR	PPH	0 000000	0 000000
487	C2FBD0	CC FLD BED DENSITY	LB/FT3	28 1519	25 0758
486	C2FBD0	CC FLD BED HEIGHT	FT	6 61360	10 4020
571	CCCBV	CHAR CLR BED VOLUME	FT3	18 8600	28 8600
490	C2SIC	CC SOLIDS INVENTORY	LB	530 940	723 690
489	C2SRTC	CC SOLIDS RES TIME	MIN	14 0931	22 1170
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	856 227	743 679
499	C2SCC1	CC MF CHAR FD	LB/HR-FT3	119 854	68 0289
514	C2CPD	CC PRESS DPOF H2O FTD		5 41180	4 82040
464	C2SSV	CC STEAM SUP VEL	FPS	0 226003	0 194562
485	C2WSV	CC WAP H2O SUP VEL	FPS	0 804600E-02	0 211560E-01
590	CCATSM	CC ATM STM SUP VEL	FPS	0 417233E-06	-0 208419E-06
486	C2TSV	CC TOT STM SUP VEL	FPS	0 235149	0 215718
521	C2SCC3	CC MF CHR PAN COAL	LB/LB	0 619298	0 396629
430	C2SSC3	CC STM MF CHAR	LB/LB	0 817693	0 866075
588	CCCSM	CC STM PAN COAL	LB/LB	0 506395	0 343511
494	C2SSC4	CC STM MF COAL	LB/LB	0 543401	0 368612
523	CCSTM	CC STM WAF COAL	LB/LB	0 617070	0 415870
497	C2SWC2	CC H2O MF CHAR	LB/LB	0 381768E-01	0 111424

UPDATED CALCULATION VALUES PAGE 7

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		13	14
498	C25WC4	CC H2O/RAW COAL	LB/LB	0.256423E-01	0.441948E-01
599	CFRPPH	CHAR REMOVAL RATE	PFH	2260.44	1967.21

UPDATED GAS SAMPLE COMPOSITIONS PAGE 1

STEADY STATE PERIOD

COMPONENT	13		14							
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL%-H2	27.06	23.07	24.17	20.62						
MOL%-CO	7.17	6.11	5.16	4.48						
MOL%-CO2	55.72	47.51	56.95	48.61						
MOL%-CH4	9.45	8.06	13.14	11.22						
MOL%-C2H6	0.40	0.34	0.55	0.47						
MOL%-H2	0.19	0.17	0.01	0.01						
MOL%-NH3	0.00	0.00	0.00	0.00						
MOL%-H2S	0.00	0.00	0.00	0.00						
MOL%-H2O	0.00	14.71	0.00	14.55						
MOL%-O2	0.01	0.01	0.01	0.01						
MOL%-C2H4	0.00	0.00	0.00	0.00						
MOL%-C2H6	0.00	0.00	0.00	0.00						
MOL%-C3H8	0.00	0.00	0.00	0.00						
MOL%-C4H8	0.00	0.00	0.00	0.00						
MOL%-C4H10	0.00	0.00	0.00	0.00						

UPSTR PRESS-(P227) PSIG	589.03	592.39
FLOW TEMP-(TI20010) DEGF	320.00	320.00
MOL WT (WET)	27.17	27.61
DRY GAS MALE 1000-SCFH	91.35	110.26
WET GAS MALE 1000-SCFH	107.14	129.30

FOR STEADY STATE PERIOD 15 RUN 1-K
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 10:47 9/15/76
ENDING TIME 11:17 9/15/76

FOR STEADY STATE PERIOD 16 RUN 1-L
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 23:56 9/30/76
ENDING TIME 0:26 10/1/76

STEADY STATE PERIOD NO. 15

GAS STREAMS

	2	3	9	10	11	14
SCFH	14500.0	127591.0	98534.4	11128.0	52349.9	58717.1
MM	44	28.60	18	32	18	18
LB/HR	1661.2	9617.2	4721.0	936.9	2483.0	2785.0

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	6587.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	3870.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3606.		1846.

STREAM NO. 3

LB STEAM/LB MF COAL	1.31	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.26	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH ₄ /LB MF COAL	4.23		
AVERAGE CARBON CONW WEIGHT PCT		VOL PCT-H ₂	23.65
CHAR BASIS	52.30	VOL PCT-CO	5.16
GAS BASIS	39.40	VOL PCT-CO ₂	53.34
GASIFIER TOP SUPPLY VEL, FPS	0.796	VOL PCT-CH ₄	6.04
VOL PCT O ₂ IN PLENUM	10.06	VOL PCT-C ₂ H ₆	0.44
		VOL PCT-N ₂	0.27
		VOL PCT-NH ₃	0.00
		VOL PCT-H ₂ S	0.09
		VOL PCT-H ₂ O	11.01
		VOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 16

GAS STREAMS

	2	3	9	10	11	14
SCFH	14600.0	111914.0	95887.0	9737.0	44148.5	48133.2
MW	44	29.33	18	32	19	18
LB/HR	1692.8	8650.7	4548.0	821.0	2094.0	2283.0

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	6825.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6000.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	9391.		1758.

LB STEAM/LB MF COAL	0.81
LB OXYGEN/LB MF COAL	0.15
SCF ULTIMATE CH ₄ /LB MF COAL	3.04
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	74.30
GAS BASIS	81.30
GASIFIER TOP SURF. VEL. FPS	0.703
VOL PCT O ₂ IN PLENUM	9.22

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	18.81
MOL PCT-CO	7.68
MOL PCT-CO ₂	52.58
MOL PCT-CH ₄	9.16
MOL PCT-C ₂ H ₆	0.49
MOL PCT-H ₂	0.27
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	11.01
MOL PCT-O ₂	0.01

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	15	16
GASIFICATION CALCULATIONS				
84	X0001	COAL FEED RATE PPH	3970 00	6000 00
550	CSFTG	STEAM FLOW TO GASF LB/HR	4721 00	4548 00
227	F203	GSFR O2 FEED RATE SCFH	11128 0	9727 00
581	CSCCTG	STNPIPE STM TO GSFR PPH	302 000	189 000
245	T205	GSFR BOTTOM BD TEMP DEG F	1490 00	1340 00
424	C2FBOG	GSF FLD BED INSTY LB/FT	17 3400	17 3000
425	C2FBHG	GSF FLD BED HEIGHT FT	23 7000	17 5600
572	C08V	GASIFIER BED VOLUME FT3	167 600	124 400
427	C2SIG	GSF SOLIDS INVENTORY LB	3021 00	2333 00
426	C2SPTG	GSF SOLIDS RES TIME MIN	50 3000	25 4000
429	C2SCG2	GASF COAL FEED PPH/FT2	547 700	640 700
428	C2SCG1	GASF COAL FEED PPH/FT2	23 1100	40 2000
526	C2GPD	GSF PRESS DROP "H2O/FTBD	3 33000	3 42000
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 367000	0 373000
423	C2SVOG	GSF SUP VEL-OUTLET FPS	0 394000	0 363000
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 799000	0 703000
422	C2SVNG	GSF SUP VEL-MEAN BED FPS	0 501000	0 538000
564	C0SF01	GSF O2 RAW COAL SCF/LB	2 87500	1 62300
422	C2S0G2	GASF O2/MF COAL SCF/LB	0 08500	1 74100
425	C2S0G4	GASF O2/MF COAL SCF/LB	0 40100	1 96500
505	C0SF02	GASF O2 RAW COAL LB/LB	0 242000	0 107000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

FTID	NAME	DESCRIPTION	15	16
432	C2S001	GASF O2/MF COAL LB/LB	0 260000	0 147000
434	C2S002	GASF O2/MAF COAL LB/LB	0 293000	0 166000
586	CGSMEM	GASF STM/RAW COAL SCF/LB	25 7000	16 0000
437	C2SS02	GASF STM/MF COAL SCF/LB	17 6000	17 2000
439	C2SS04	GASF STM/MAF COAL SCF/LB	21 1000	19 4000
587	CGSSTM	GASF STM/RAW COAL LB/LB	1 22000	0 758000
436	C2SS01	GASF STM/MF COAL LB/LB	1 30900	0 815000
438	C2SS03	GASF STM/MAF COAL LB/LB	1 47700	0 912000
342	F255	WASTE WATER FLOW GPM	14 5000	15 0000
243	F221	TAR FLOW THRL OXDR GPM	0 000000	0 000000
245	F209	RAW GS SCRBR EF 1000-SCFH	127 591	111 914
574	C1RGG	RAW GAS FROM GASF SCFH	235285	224406
575	CTGFB	TOTAL GAS FROM BED SCFH	225635	214750
475	C2C1	GASF CARBON INVENTORY LB	2078 00	1262 00
551	CCGPPH	CARBON GASIFIED PPH	1241 00	2969 00
594	C2GR4	GASF RATE LBC/HF-FTCB0	7 12000	22 6500
595	C2GR1	GASF RATE LBC HR-LBCBE0	0 597000	2 18000
455	C2MR01	CH4 PROD GAS SCFH FTCB0	51 8000	80 7000
454	C2MR01	CH4 IN RAW GAS LBC/LBCBE0	0 132000	0 212000
451	C2CG1	CARBON CONVPEN (CHAR) %	52 2000	74 2000
452	C2CG12	CARBON CONVPEN (GAS) %	39 4000	81 3000

UPDATED CALCULATION VALUES

PAGE 5

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	15	16
596	C0CTUG	C CONVRTD TO USEFUL GAS %	13 6000	16 0000
592	CECH4R	EQUIV CH4 SCF/LB-RAW	2 31500	1 72900
591	CECH4M	EQUIV CH4 SCF/LB-MF	2 48400	1 85500
579	CECH4C	EQUIV CH4 SCF/LB-MAF	2 80300	2 09300
466	C2MYG4	GSE CH4 VLO-MAF CF-HR-LB	2 40600	1 86100
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	15617 0	17021 0
560	CUCH4R	ULT CH4-RAW COAL SCF LB	4 03600	2 83700
561	CUCH4M	ULT CH4-MF COAL SCF LB	4 33100	3 04400
562	CUCH4A	ULT CH4-MAF COAL SCF LB	4 88600	3 43300
450	C2SCG	STM CONV - H2O BALANCE %	-5 10000	104 000
598	C5CH2	STM CONV - H2 BALANCE %	-18 0000	-2 20000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		15	16
CHAR COOLER CALCULATIONS					
230	F205	CHR CLR STM FEED	FBH	2735 00	2203 00
234	F230	H2O FLW TO CHAR CLR	GPH	0 000000	0 000000
336	F253	HP STM TO CHAR CLR	FBH	85 2000	396 500
467	C2FBDL	CC FLD BED DNSTY	LB/FT3	21 6000	17 6000
488	C2FBHC	CC FLD BED HEIGHT	FT	1 44000	4 20000
572	CCCBV	CHAR CLP BED VOLUME	FT3	5 20000	12 4300
490	C25IC	CC SOLIDS INVENTORY	LB	112 800	219 800
489	C2SRTC	CC SOLIDS RES TIME	MIN	4 10000	7 50000
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	621 500	666 500
499	C2SCC1	CC MF CHAR FD	LB/HR-FT3	316 500	140 800
534	C2CPD	CC PRESS DROP	"H2O, FTBD	4 16700	5 53000
484	C2SSV	CC STEAM SUP VEL	FPS	0 226000	0 220000
485	C2WSV	CC WAF H2O SUP VEL	FPS	0 000000	0 000000
590	CCATSM	CC ATM STM SUP VEL	FPS	0 700000E-02	0 400000E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 233000	0 260000
521	C2SCC3	CC MF CHR/RAW COAL	LB/LB	0 425000	0 295000
493	C2SSC3	CC STM MF CHAR	LB/LB	1 69000	1 50000
588	CCSTM	CC STM RAW COAL	LB/LB	0 719000	0 580000
494	C2SSC4	CC STM/MF COAL	LB/LB	0 772000	0 405000
589	CCSTM	CC STM MAF COAL	LB/LB	0 870000	0 460000
497	C2SHC3	CC H2O MF CHAR	LB/LB	0 000000	0 000000

UPDATED CALCULATION VALUES PAGE 7

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		15	16
496	C2SUC4	CC H2O/RAW COAL	LB/LB	0.000000	0.000000
599	CFRPPH	CHAF REMOVAL RATE	PFH	1646.00	1753.00

UPDATED GAS SAMPLE COMPOSITIONS PAGE 1

STEADY STATE PERIOD

COMPONENT	15		16		DRY	WET	DRY	WET	DRY	WET
	DRY	WET	DRY	WET						
MOL-%H ₂	26 57	23 65	21 13	18 81						
MOL-%CO	5 79	5 16	8 63	7 68						
MOL-%CO ₂	59 94	52 24	59 06	52 58						
MOL-%CH ₄	6 79	6 84	10 29	9 16						
MOL-%C ₂ H ₆	0 58	0 44	0 55	0 49						
MOL-%N ₂	0 30	0 27	0 30	0 27						
MOL-%H ₂ O	0 00	0 00	0 00	0 00						
MOL-%H ₂ S	0 10	0 09	0 00	0 00						
MOL-%H ₂ O	0 00	11 01	0 00	11 81						
MOL-%H ₂	0 00	0 00	0 01	0 01						
MOL-%C ₂ H ₄	0 00	0 00	0 00	0 00						
MOL-%C ₂ H ₂	0 00	0 00	0 00	0 00						
MOL-%C ₂ H ₆	0 00	0 00	0 00	0 00						
MOL-%C ₃ H ₈	0 00	0 00	0 00	0 00						
MOL-%C ₄ H ₁₀	0 00	0 00	0 00	0 00						

UPSTR PRESS-(P227) PSIG	590 00	590 00
FLOW TEMP-(TI20010) DEGF	100 00	100 00
MOL WT (NET)	28 57	29 33
DRY GAS MAKE 1000-SCFH	113 54	99 59
NET GAS MAKE 1000-SCFH	127 59	111 91

FOR STEADY STATE PERIOD 17 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 18 45 10/10/76
ENDING TIME 19 15 10/10/76

FOR STEADY STATE PERIOD 18 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 20 45 10/10/76
ENDING TIME 21 15 10/10/76

FOR STEADY STATE PERIOD 19 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 22 45 10/10/76
ENDING TIME 0 15 10/11/76

FOR STEADY STATE PERIOD 20 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 1 15 10/11/76
ENDING TIME 1 45 10/11/76

FOR STEADY STATE PERIOD 21 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 2 45 10/11/76
ENDING TIME 3 15 10/11/76

STEADY STATE PERIOD NO. 17

GAS STREAMS

	2	3	9	10	11	14
SCFH	12175.0	97873.0	93229.7	11036.3	52708.3	59335.1
MM	44	29.66	18	32	19	18
LB/HR	1411.6	6643.4	4422.0	930.6	2500.0	2814.3

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8190.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4110.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3890.		2083.

STREAM NO. 3

LB STEAM/LB MF COAL	1.15	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.24	MOLE PERCENT - WET BASIS	
DOF ULTIMATE CH/LB MF COAL	4.14		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H ₂	17.77
CHAR BASIS	40.90	MOL PCT-CO	7.32
GAS BASIS	27.37	MOL PCT-CO ₂	48.67
GASIFIER TOP SUPPLY VEL, FPS	0.458	MOL PCT-CH ₄	10.63
VEL PCT O ₂ IN PLENUM	10.58	MOL PCT-C ₂ H ₆	0.63
		MOL PCT-H ₂	0.27
		MOL PCT-NH ₃	0.00
		MOL PCT-H ₂ S	0.45
		MOL PCT-H ₂ O	14.25
		MOL PCT-O ₂	0.01

STEADY STATE PERIOD NO. 18

GAS STREAMS						
	2	3	9	10	11	14
SCFH	11972.0	98816.0	92110.1	11427.8	52708.3	58736.1
MM	44	28.53	18	32	18	18
LB/HR	1389.1	7427.9	4368.8	953.6	2500.0	2785.8

LIQUID STREAMS				
LB/HR	4	5	6	13
H2O	8190.			0.
OIL				
TAR			0.0	

SOLID STREAMS		
	1	15
LB/HR (AS RECEIVED)	4110.	
PERCENT MOISTURE	6.8	
LB/HR (MOISTURE FREE)	3890.	2093.

STREAM NO. 3	
LB STEAM/LB WF COAL	1.14
LB OXYGEN/LB WF COAL	0.25
SCF ULTIMATE CH4/LB WF COAL	4.70
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	40.90
GAS BASIS	27.97
GASIFIER TOP SUPPLY VEL. FPS	0.504
VOL PCT O2 IN FLENUM	11.04
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	17.72
MOL PCT-CO	7.95
MOL PCT-CO2	48.25
MOL PCT-CH4	10.60
MOL PCT-C2H6	0.72
MOL PCT-H2	0.18
MOL PCT-NH3	0.00
MOL PCT-H2S	0.36
MOL PCT-H2O	14.35
MOL PCT-DE	0.03

STEADY STATE PERIOD NO. 19

	GAS STREAMS					
	2	3	9	10	11	14
SCFH	12301.0	84970.0	95767.2	10743.4	52708.3	54689.2
MM	44	28.60	18	32	18	18
LB/HR	1426.2	8403.3	4542.3	905.9	2500.0	2584.0

	LIQUID STREAMS			
	4	5	6	13
LB/HR				
H2O	8190.			0.
OIL				
TAR			0.0	

	SOLID STREAMS	
	1	15
LB/HR (AS RECEIVED)	4110.	
PERCENT MOISTURE	6.8	
LB/HR (MOISTURE FREE)	3830.	1131.

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
LB STEAM/LB MF COAL	1.19
LB OXYGEN/LB MF COAL	0.24
SCF ULTIMATE CH4/LB MF COAL	4.12
AVERAGE CARBON CONW WEIGHT PCT	
CHW BASIS	75.63
GAS BASIS	26.30
GASIFIER TOP SUPPLD VEL, FPS	0.453
VEL PCT O2 IN PLENUM	10.09
MOL PCT-H2	17.91
MOL PCT-CO	6.95
MOL PCT-CO2	48.53
MOL PCT-CH4	11.06
MOL PCT-C2H6	0.73
MOL PCT-H2	0.09
MOL PCT-NH3	0.00
MOL PCT-H2S	0.55
MOL PCT-H2O	14.17
MOL PCT-N2	0.01

STEADY STATE PERIOD NO. 20

GAS STREAMS

	2	3	9	10	11	14
SCFH	11923.0	66943.0	99031.0	10863.8	52708.3	60004.4
MF	44	29.70	18	32	18	18
LB/HR	1382.4	5394.8	4354.8	916.1	2500.0	2846.1

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	9090.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4110.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3830.		1131.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, DEG F	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/CU. FT.	Rectangle

LB STEAM/LB MF COAL	1.18
LB OXYGEN/LB MF COAL	0.24
SCF ULTIMATE CH4/LB MF COAL	2.89
AVERAGE CARBON CONN WEIGHT PCT	
CHAR BASIS	75.63
GAS BASIS	25.55
GASIFIER TOP SURF. VEL, FPS	0.440
VEL PCT O2 IN PLENUM	10.16

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOLE PCT-H2	16.78
MOLE PCT-CO	9.26
MOLE PCT-CO2	53.16
MOLE PCT-CH4	10.16
MOLE PCT-C2H6	0.82
MOLE PCT-N2	0.08
MOLE PCT-H2O	0.00
MOLE PCT-H2S	0.45
MOLE PCT-H2O	14.26
MOLE PCT-O2	0.01

STEADY STATE PERIOD NO. 21

GAS STREAMS

	2	3	9	10	11	14
SCFH	12063.0	91470.0	95277.0	10847.3	52708.3	59831.1
MM	44	26.62	18	32	18	18
LB/HR	1398.6	6144.8	4519.1	914.7	2500.0	2837.8

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	9181.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4110.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3830.		1131.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE (DEG F)	Square
PRESSURE (PSIG)	Circle
BED LEVEL (FEET)	Diamond
DENSITY (LB/CU FT)	Rectangle

LB STEAM/LB MF COAL	1.18
LB OXYGEN/LB MF COAL	0.24
SCF ULTIMATE CH4/LB MF COAL	3.65
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	75.63
GAS BASIS	23.92
GASIFIER TOP SURF. VEL. FPS	0.524
VEL PCT O2 IN PLENUM	10.22

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	18.01
MOL PCT-CO	7.40
MOL PCT-CO2	48.91
MOL PCT-CH4	10.79
MOL PCT-C2H6	0.00
MOL PCT-N2	0.09
MOL PCT-NH3	0.68
MOL PCT-H2S	0.27
MOL PCT-H2O	14.51
MOL PCT-O2	0.01

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	17	18 8	19 8	20 8	21 8
GASIFICATION CALCULATIONS							
84	X0001	COAL FEED RATE PPH	4110 00	4110 00	4110 00	4110 00	4110 00
550	CSFTG	STEAM FLOW TO GASIF LB./HR	4421 96	4368 86	4542 32	4554 83	4519 07
227	F203	GSFR O2 FEED RATE SCFH	11036 2	11427 8	10740 4	10863 8	10847 2
381	CSCCTG	STNPIPE STM TO GSFR PPH	704 230	669 097	480 419	725 739	770 053
345	T205	GSFR BOTTOM BD TEMP DEGF	1557 38	1507 46	1518 66	1455 21	1535 62
424	C2FBOG	GSF FLD BED INSTRY LB. FT2	10 6307	11 1042	11 7475	16 9874	15 8689
425	C2FBHG	GSF FLD BED HEIGHT FT	17 6915	22 7127	21 1665	17 0609	20 4494
572	CGBV	GASIFIER BED VOLUME FT3	131 700	167 200	156 500	127 300	151 200
427	C2S1G	GSF SOLIDS INVENTORY LB	2454 00	1857 00	1836 00	2163 00	2399 00
426	C2SRTG	GSF SOLIDS RES TIME MIN	28 4428	29 0906	28 7616	33 8842	37 5812
429	C2SCG2	GASF COAL FEED PPH/FT2	581 329	581 329	581 329	581 329	581 329
428	C2SCG1	GASF COAL FEED PPH/FT3	21 2077	24 5810	26 2956	22 2859	27 1825
526	C2GPD	GSF PRESS DROP "H2O FTBD	2 58796	2 13849	2 36237	3 27148	3 05609
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 439955	0 420494	0 419326	0 418157	0 434768
423	C2SVOG	GSF SUP VEL-OUTLET FPS	0 400727	0 394256	0 394614	0 418061	0 428188
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 457881	0 504175	0 452720	0 440308	0 523848
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0 448418	0 482505	0 436023	0 429220	0 479308
584	CGSF02	GSF O2/RAW COAL SCF/LB	2 68520	2 78050	2 61197	2 64326	2 62926
430	C2SOG3	GASF O2/MAF COAL SCF/LB	2 88140	2 98769	2 80500	2 83643	2 81213
435	C2SOG4	GASF O2/MAF COAL SCF/LB	2 25089	2 36622	2 16462	2 20008	2 19520
585	CGSF03	GASF O2/RAW COAL LB. LB	0 226420	0 334456	0 220414	0 222884	0 212546

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	17	18	19	20	21
			#	#	#	#	#
422	C2SDG1	GASF O2/MF COAL LB/LB	0 242969	0 251589	0 216521	0 239172	0 238889
424	C2SDG2	GASF O2/MF COAL LB/LB	0 274120	0 282845	0 266845	0 269835	0 269426
586	CGSM5M	GASF STM RAW COAL SCF/LB	22 6638	22 3913	23 2803	23 3445	23 1612
437	C2SSG2	GASF STM MF COAL SCF/LB	24 3197	24 8276	24 9816	25 8584	24 8537
429	C2SSG4	GASF STM MF COAL SCF/LB	27 4176	27 1862	28 1844	28 2621	28 0402
587	CGS5TH	GASF STM RAW COAL LB/LB	1 07590	1 06298	1 10519	1 10823	1 09953
426	C2SSG1	GASF STM MF COAL LB/LB	1 15452	1 14066	1 18595	1 18922	1 17988
428	C2SSG2	GASF STM MF COAL LB/LB	1 10655	1 28691	1 11800	1 34168	1 13115
342	F255	WASTE WATER FLOW GPM	18 0000	18 0000	18 0000	19 9779	20 1779
243	F221	TAR FLOW THRL DNGZR GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RM GS SCRBR EF 1000-SEFH	87 9730	98 8150	84 9700	63 9430	81 4700
574	CHRG6	RAW GAS FROM GASF SCFH	229212	240055	226209	229139	242583
575	CTGFB	TOTAL GAS FROM BED SCFH	219556	210401	216535	219483	210929
475	C2C1	GASF CARBON INVENTORY LB	1771 79	1140 75	1811 64	1191 81	1321 85
551	CCGFFH	CARBON GASIFIED AFH	1045 60	1045 60	1933 50	1933 50	1933 50
594	C2GR4	GASF RATE LBC/HR-FT3BD	7 93929	6 25361	12 5705	15 1386	12 7877
595	C2GR3	GASF RATE LBC/HR-LBCBD	0 590140	0 779862	1 91126	1 62232	1 46271
455	C2MPG2	CH4 PROD GAS SCFH FT3BD	70 9878	62 6547	60 1199	55 0278	58 1231
454	C2MPG1	CH4 IN RAW GAS LBC/LBCBD	0 166848	0 247060	0 293707	0 185851	0 210220
451	C2CG1	CARBON CONVRSN (CHAR) %	48 9011	48 9011	75 6332	75 6332	75 6333
452	C2CG12	CARBON CONVRSN (GAS) %	27 2734	27 9631	26 9046	25 5461	25 9167

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	17	18	19	20	21
396	CCCTUG	C CONVTD TO USEFUL GAS %	24 1591	27 6115	20 6402	16 1089	21 1979
592	CECH4R	EQUIV CH4 SCF LB-RAW	2 54529	2 89794	2 59166	1 98074	2 14151
591	CECH4M	EQUIV CH4 SCF LB-MF	2 73140	2 10971	2 78105	2 12549	2 29801
579	CECH4C	EQUIV CH4 SCF LB-MAF	2 88159	2 50840	2 13760	2 39799	2 59263
468	C2MYG4	GSE CH4 YLD-MAF CF HR-LB	2 78190	2 83521	2 76791	2 86343	2 58868
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	15840 4	17988 7	15774 5	11080 5	13974 9
560	CUCH4R	ULT CH4/RAW COAL SCF LB	2 85412	4 37682	2 82807	2 69598	2 40022
561	CUCH4M	ULT CH4/MF COAL SCF LB	4 10577	4 69667	4 11855	2 89299	2 64870
562	CUCH4A	ULT CH4/MAF COAL SCF LB	4 66600	3 29882	4 64638	3 26390	4 11658
450	C2SCG	STM CONV - H2O BALANCE %	-32 1353	-24 5189	-32 4578	-38 5909	-48 5674
398	CSCHE2	STM CONV - H2 BALANCE %	7 26313	11 1909	3 82153	-4 19571	-8 240282

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

FTID	NAME	DESCRIPTION		17	18	19	20	21
					0	2	0	0
CHAR COOLER CALCULATIONS								
220	F205	CHP CLR STM FEED	PPH	2814 31	2785 90	2593 95	2846 06	2837 84
224	F230	H2O FLW TO CHAR CLP	GPH	0 000000	0 000000	0 000000	0 000000	0 000000
316	F251	MF STM TO CHAR CLP	PPH	389 913	381 163	386 462	379 675	422 211
487	C2F8DC	CC FLO BED DNSTY	LB/FT3	25 0631	20 2177	20 8080	20 8080	20 8080
488	C2F8HC	CC FLO BED HEIGHT	FT	10 7727	9 97321	0 200000	0 200000	0 200000
571	C00BV	CHAR CLR BED VOLUME	FT3	10 0400	27 7500	1 92800	1 92800	1 92800
490	C251C	CC SOLIDS INVENTORY	LB	752 900	561 000	40 1000	40 1000	40 1000
489	C25PTC	CC SOLIDS RES TIME	MIN	21 4443	16 0640	2 12918	2 12918	2 12918
520	C25CC2	CC MF CHAR FD	LB/HR-FT2	792 629	792 629	428 226	428 226	428 226
499	C25CC1	CC MF CHAR FD	LB/HR-FT3	69 6585	75 4069	586 367	586 367	586 367
534	C2CPD	CC PRESS DROP "H2O, FT60"		4 82675	3 89159	4 00000	4 00000	4 00000
484	C2SSV	CC STEAM SUP VEL	FPS	0 124711	0 141127	0 111119	0 321452	0 316864
485	C2WSV	CC VAP H2O SUP VEL	FPS	0 000000	0 000000	0 000000	0 000000	0 000000
590	C0ATSM	CC ATM STM SUP VEL	FPS	0 872087E-01	0 943859E-01	0 956497E-01	0 806619E-01	0 987422E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 411920	0 425711	0 426769	0 402114	0 435607
521	C25CC3	CC MF CHR RAW COAL	LB/LB	0 509114	0 509114	0 275065	0 275065	0 275065
495	C25SC3	CC STM MF CHAR	LB/LB	1 34495	1 35115	2 29449	2 51749	2 51021
588	C0CSTM	CC STM FAN COAL	LB, LB	0 684748	0 677825	0 631132	0 692472	0 690472
494	C25SC4	CC STM MF COAL	LB, LB	0 734787	0 727370	0 677254	0 743076	0 740929
589	C0CSTM	CC STM FAN COAL	LB, LB	0 828993	0 820625	0 764083	0 838344	0 835922
497	C25NC3	CC H2O MF CHAR	LB/LB	0 000000	0 000000	0 000000	0 000000	0 000000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		17	18	19	20	21
498	C2SWC4	CC H2O-RAW COAL	LB, LB	0 000000	0 000000	0 000000	0 000000	0 000000
599	CFPPFH	CHAR REMOVAL RATE	PPH	2092 54	2092 54	1170 52	1170 52	1170 52

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	17		18		19		20		21	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOLX-H2	20 73	17 77	20 82	17 79	20 87	17 91	19 57	16 78	20 92	16 81
MOLX-CO	8 54	7 36	8 83	7 55	8 89	6 95	4 97	4 26	8 60	7 40
MOLX-CO2	56 76	48 67	56 46	48 25	56 54	48 53	62 00	53 16	56 82	48 91
MOLX-CH4	12 39	10 63	12 41	10 60	12 88	11 06	11 65	10 16	12 53	10 79
MOLX-C2H6	0 73	0 63	0 84	0 72	0 85	0 73	0 95	0 82	0 00	0 00
MOLX-N2	0 31	0 27	0 21	0 18	0 11	0 09	0 11	0 09	0 11	0 09
MOLX-NH3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 68	0 68
MOLX-H2S	0 57	0 45	0 42	0 36	0 64	0 55	0 53	0 45	0 32	0 27
MOLX-H2O	0 00	14 25	0 00	14 55	0 00	14 17	0 00	14 26	0 00	14 51
MOLX-O2	0 01	0 01	0 01	0 01	0 01	0 01	0 01	0 01	0 01	0 01
MOLX-C2H4	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C3H6	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C3H8	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C4H8	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C4H10	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00

UFSTR PRESS-(P227) PSIG	609 21	596 68	613 12	609 13	599 14
FLOW TEMP-(TI20010) DEGF	320 00	320 00	320 00	320 00	320 00
MOL WT (WET)	26 51	28 48	28 41	29 54	28 53
DRY GAS MAKE-1000-SCFH	75 45	64 44	72 93	59 11	69 65
WET GAS MAKE-1000-SCFH	67 97	98 82	84 97	68 94	81 47

FOR STEADY STATE PERIOD 22 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 6:45 10/11/76
ENDING TIME 7:15 10/11/76

FOR STEADY STATE PERIOD 23 RUN 1-M
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 8:45 10/11/76
ENDING TIME 9:15 10/11/76

STEADY STATE PERIOD NO.22

GAS STREAMS

	2	3	9	10	11	14
SCFH	9556.0	90967.0	88865.3	11236.3	52708.3	58853.2
MF	44	28.35	18	32	18	18
LB/HR	1107.9	6795.7	4267.1	947.5	2500.0	2838.9

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8190.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4110.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3830.		1131.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, DEG F	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/CU. FT.	Rectangle

LB STEAM/LB MF COAL	1.11
LB OXYGEN/LB MF COAL	0.25
SCF ULTIMATE CH4/LB MF COAL	4.95
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	75.63
GAS BASIS	31.89
GASIFIER TOP SURF. VEL., FPS	0.449
VOL PCT O2 IN FLENUM	11.10

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	16.03
MOL PCT-CO	8.49
MOL PCT-CO2	46.26
MOL PCT-CH4	13.34
MOL PCT-C2-6	0.78
MOL PCT-N2	0.35
MOL PCT-NH3	0.00
MOL PCT-H2S	0.35
MOL PCT-H2O	14.38
MOL PCT-O2	0.01

STEADY STATE PERIOD NO.23

GAS STREAMS

	2	3	9	10	11	14
SCFH	12036.0	70412.0	80309.4	9663.5	52708.3	58952.0
MM	44	29.98	18	32	18	18
LB/HR	1395.5	5561.9	4425.7	814.8	2500.0	2845.5

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8190.			122.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4110.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3830.		988.

LB STEAM/LB MF COAL	1.16
LB OXYGEN/LB MF COAL	0.21
SCF ULTIMATE CH4/LB MF COAL	3.61
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	79.66
GAS BASIS	22.44
GASIFIER TOP SURFCL VEL, FPS	0.428
VOL PCT O2 IN PLENUM	9.38

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	13.67
MOL PCT-CO	5.31
MOL PCT-CO2	51.29
MOL PCT-CH4	12.89
MOL PCT-C2H6	1.13
MOL PCT-H2	0.70
MOL PCT-NH3	0.00
MOL PCT-H2S	0.70
MOL PCT-H2O	14.30
MOL PCT-O2	0.01

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

FTID	NAME	DESCRIPTION	22 #	23
GASIFICATION CALCULATIONS				
64	X0001	COAL FEED RATE PPH	4110 00	4110 00
550	CSFTG	STEAM FLOW TO GASF LB/HR	4267 13	4425 74
327	F203	GSFP O2 FEED RATE SCFH	11236 3	9663 51
581	CSOCTG	SINPIPE STM TO GSFP PPH	779 892	892 415
145	T205	GSFR BOTTOM BD TEMP DEG F	1516 58	1528 54
424	C2FBDG	GSF FLD BED DASTY LB/FT3	17 1564	20 1050
425	C2FBHG	GSF FLD BED HEIGHT FT	16 1253	21 3461
572	CGBV	GASIFIER BED VOLUME FT3	134 800	137 500
427	C2S1G	GSF SOLIDS INVENTORY LB	2513 00	3167 00
426	C2SRTG	GSF SOLIDS RES TIME MIN	35 2340	49 6122
429	C2SOG2	GASF COAL FEED PPH/FT2	561 329	561 329
428	C2SOG1	GASF COAL FEED PPH/FT3	30 4896	26 0952
526	C2GPD	GSF PRESS DPOP "H2O/FTBD	2 30403	2 07188
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 417606	0 445237
423	C2SVOG	GSF SUP VEL-OUTLET FPS	0 380463	0 049535
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 448343	0 428490
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0 432240	0 436863
594	C0SF02	GSF O2/RAW COAL SCF/LB	2 72090	2 25122
421	C2SOG2	GASF O2 INF COAL SCF/LB	2 97368	0 50304
425	C2SOG4	GASF O2 INF COAL SCF/LB	2 38380	2 84851
585	C0SF03	GASF O3/RAW COAL LB/LB	0 220526	0 198250

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	22	23
432	C2SOG1	GASF 02. MF COAL LB LB	0 247372	0 212746
434	C2SOG2	GASF 02. MAF COAL LB LB	0 279069	0 240022
586	CGSM5M	GASF STM RAW COAL SCF/LB	21 8699	22 6829
437	C2SSG2	GASF STM MF COAL SCF LB	23 4681	24 2405
429	C2SSG4	GASF STM MAF COAL SCF LB	26 4769	27 4611
587	CGSETM	GASF STM RAW COAL LB LB	1 07332	1 07632
436	C2SSG1	GASF STM MF COAL LB LB	1 11410	1 15551
438	C2SSG3	GASF STM MAF COAL LB LB	1 23694	1 30366
342	F255	WASTE WATER FLOW GPM	18 0000	18 0000
243	F221	TAR FLOW THRU OXIDR GPM	0 000000	0 000000
245	F209	RAW GS SCRBR EF 1000-SCFH	90 9670	70 4120
574	CNRG6	RAW GAS FROM GASF SCFH	232206	211651
575	CTGFE	TOTAL GAS FROM SED SCFH	222552	201997
475	C2C1	GASF CARBON INVENTORY LB	1274 46	1650 01
551	CCGPPH	CARBON GASIFIED PPH	1932 50	2036 32
594	C2GR4	GASF RATE LBC HR-FT2BD	14 3435	12 9290
595	C2GR5	GASF RATE LBC HR-LBCBD	1 51711	1 23413
455	C2MRG2	CH4 PROD GAS SCFH FT2BD	90 0767	97 6124
454	C2MRG1	CH4 IN RAW GAS LBC LBCBD	0 301122	0 173892
451	C2CG1	CARBON CONVRSN CHAP X	75 6323	79 6550
452	C2CG12	CARBON CONVRSN GAS X	51 9866	22 4400

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	22 8	23
595	CCCTUG	C CONVRTD TO USEFUL GAS %	29 3719	19 8367
592	CECH4R	EQUITV CH4 SCF/LB-RAW	3 30125	2 59006
591	CECH4M	EQUITV CH4 SCF/LB-MF	2 54250	2 78792
579	CECH4C	EQUITV CH4 SCF/LB-MAF	2 99668	3 14535
466	COMV64	GSP CH4 YLD-MAF CF/HR-LB	3 57510	2 67290
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	13964 0	13818 1
560	CUCH4R	ULT CH4 RAW COAL SCF/LB	4 61410	3 36207
561	CUCH4M	ULT CH4 MF COAL SCF/LB	4 95129	3 60776
562	CUCH4A	ULT CH4 MAF COAL SCF/LB	5 59688	4 07030
450	C2SUG	STM CONV - H2O BALANCE %	-33 6633	-29 8131
590	CSCH2	STM CONV - H2 BALANCE %	7 17884	-2 52370

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		22 0	23
CHAR COOLER CALCULATIONS					
230	F205	CHR CLR STM FEED	PPH	2038 89	2045 47
224	F230	H2O FLW TO CHR CLR	GPH	0 000000	16 0642
226	F232	MF STM TO CHR CLR	PPH	440 999	419 143
487	C2FEDC	CC FLD BED DYSTY	LB/FT3	20 8000	20 8000
488	C2FBHC	CC FLD BED HEIGHT	FT	0 200000	2 43000
572	CCCBV	CHAR CLF BED VOLUME	FT3	1 92800	7 21500
490	C2SIC	CC SOLIDS INVENTORY	LB	40 1000	162 600
489	C2SRTC	CC SOLIDS RES TIME	MIN	2 12918	9 77296
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	428 226	378 135
499	C2SCC1	CC MF CHAR FD	LB/HR-FT3	586 357	127 739
534	C2CPD	CC PRESS DROP	"H2O/FTBD	4 00000	4 00000
484	C2SSV	CC STEAM SUP VEL	FPS	0 314072	0 342849
485	C2NSV	CC VAP H2O SUP VEL	FPS	0 000000	0 289416E-03
590	CCRTSM	CC ATM STM SUP VEL	FPS	0 918722E-01	0 107349
486	C2TSV	CC TOT STM SUP VEL	FPS	0 405944	0 450487
521	C2SCC1	CC MF CHR/RAW COAL	LB/LB	0 275065	0 242830
493	C2SSC3	CC STM MF CHAR	LB/LB	2 51115	2 85038
588	CCOSTM	CC STM RAW COAL	LB/LB	0 690727	0 692328
494	C2SSC4	CC STM MF COAL	LB/LB	0 741204	0 742923
589	CCOSTM	CC STM MAF COAL	LB/LB	0 826212	0 818171
497	C23WC1	CC H2O/MF CHAR	LB/LB	0 000000	0 154225

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		22 9	23
498	C2SMC4	CC H2O/PAW COAL	LB/LB	0 000000	0 326018E-01
539	CFRPPH	CHAP REMOVAL RATE	PPH	1130 52	998 277

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	22		23		DRY	WET	DRY	WET	DRY	WET	DRY	WET
	DRY	WET	DRY	WET								
MOL% H_2	18.72	18.85	15.95	15.67								
MOL% CO	9.92	8.49	6.20	5.31								
MOL% CO_2	54.84	46.26	59.85	51.29								
MOL% CH_4	15.58	15.34	15.04	12.89								
MOL% C_2H_6	0.91	0.78	1.32	1.13								
MOL% N_2	0.48	0.35	0.81	0.70								
MOL% NH_3	0.00	0.00	0.00	0.00								
MOL% H_2S	0.48	0.35	0.81	0.70								
MOL% H_2O	0.00	14.29	0.00	14.28								
MOL% O_2	0.01	0.01	0.01	0.01								
MOL% C_2H_4	0.00	0.00	0.00	0.00								
MOL% C_3H_6	0.00	0.00	0.00	0.00								
MOL% C_3H_8	0.00	0.00	0.00	0.00								
MOL% C_4H_8	0.00	0.00	0.00	0.00								
MOL% C_4H_{10}	0.00	0.00	0.00	0.00								

UPSTR PRESS-(P227) PSIG	600.15	607.81
FLOW TEMP-(TI20018) DEGF	320.00	320.00
MOL WT (WET)	28.23	29.74
DRY GAS MAKE-1000-SCFH	77.88	68.14
WET GAS MAKE-1000-SCFH	90.97	78.41

FOR STEADY STATE PERIOD 24 RUN 1-N
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 13:45 10/29/76
ENDING TIME 14:15 10/29/76

FOR STEADY STATE PERIOD 25 RUN 1-N
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 14:45 10/29/76
ENDING TIME 15:15 10/29/76

FOR STEADY STATE PERIOD 26 RUN 1-N
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 16:45 10/29/76
ENDING TIME 17:15 10/29/76

FOR STEADY STATE PERIOD 27 RUN 1-N
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 18:45 10/29/76
ENDING TIME 19:15 10/29/76

FOR STEADY STATE PERIOD 28 RUN 1-N
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 20:45 10/29/76
ENDING TIME 21:15 10/29/76

STEADY STATE PERIOD NO.24

GAS STREAMS

	2	3	9	10	11	14
SOPH	14000.0	116300.0	130210.7	11430.0	51274.7	53846.8
MM	44	28.78	18	32	18	18
LB/HR	1623.2	8820.7	6176.0	963.8	2432.0	2554.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			120.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6575.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6127.		3320.

LB STEAM/LB MF COAL	1.01
LB OXYGEN/LB MF COAL	0.16
SOP ULTIMATE CH4/LB MF COAL	.2.98
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	41.40
GAS BASIS	35.80
GASIFIER TOP SUPPFL VEL, FPS	0.732
VOL PCT O2 IN FLENUM	8.07

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	21.61
MOL PCT-CO	3.50
MOL PCT-CO2	52.75
MOL PCT-CH4	10.03
MOL PCT-C2H6	0.58
MOL PCT-N2	0.10
MOL PCT-H2O	0.00
MOL PCT-H2S	0.58
MOL PCT-H2O	10.83
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 25

GAS STREAMS

	2	3	9	10	11	14
SOPH	14000.0	105600.0	130210.7	10880.0	50304.8	53846.8
MW	44	28.58	18	32	19	18
LB/HR	1623.2	7855.5	6176.0	926.7	2386.0	2554.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			121.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6575.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6127.		3320.

LB STEAM/LB MF COAL	1.01
LB OXYGEN/LB MF COAL	0.15
SOF ULTIMATE CHA/LB MF COAL	2.76
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	45.40
GAS BASIS	32.70
GASIFIER TOP SUPPLY VEL. FPS	0.689
VOL PCT O2 IN PLENUM	7.78

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	22.08
MOL PCT-CO	4.01
MOL PCT-CO2	51.81
MOL PCT-CH4	9.68
MOL PCT-C2H6	0.68
MOL PCT-N2	0.20
MOL PCT-NH3	0.00
MOL PCT-H2S	0.68
MOL PCT-H2O	10.83
MOL PCT-O2	0.01

STEADY STATE PERIOD NO.26

	GAS STREAMS					
	2	3	9	10	11	14
SCFH	14000.0	102000.0	130210.7	9653.0	48027.8	54732.3
MM	44	27.96	18	32	18	18
LB/HR	1623.2	7514.4	6176.0	814.0	2278.0	2596.0

	LIQUID STREAMS			
	4	5	6	13
LB/HR				
H2O	7735.			129.
OIL				
TAR			0.0	

	SOLID STREAMS		
	1	7	15
LB/HR (AS RECEIVED)	6575.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6127.		2970.

		STREAM NO. 3	
LB STEAM/LB MF COAL	1.01	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.13	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB MF COAL	2.66		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	19.00
CHAR BASIS	49.00	MOL PCT-CO	3.84
GAS BASIS	53.60	MOL PCT-CO2	47.69
GASIFIER TOP SUPPCL VEL, FPS	0.688	MOL PCT-CH4	9.14
VOL PCT O2 IN FLENUM	6.90	MOL PCT-C2H6	0.64
		MOL PCT-H2	0.00
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.64
		MOL PCT-H2O	19.06
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 27

GAS STREAMS

	2	3	9	10	11	14
SCFH	14000.0	103800.0	128587.2	10400.0	50220.5	54732.3
MW	44	26.06	18	32	19	16
LB/HR	1623.2	7127.2	6088.0	876.8	2362.0	2596.0

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7735.			132.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6575.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6127.		3030.

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
VOL PCT-H ₂	16.15
VOL PCT-CO	3.39
VOL PCT-CO ₂	40.26
VOL PCT-CH ₄	8.43
VOL PCT-C ₂ H ₆	0.00
VOL PCT-N ₂	0.01
VOL PCT-NH ₃	0.00
VOL PCT-H ₂ S	0.00
VOL PCT-H ₂ O	31.75
VOL PCT-O ₂	0.01

STEADY STATE PERIOD NO. 28

GAS STREAMS

	2	3	9	10	11	14
SOPH	14000.0	98700.0	128587.2	9356.0	52855.9	54732.3
MW	44	27.05	18	32	18	18
LB/HR	1823.2	7036.2	6089.0	768.8	2507.0	2586.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			145.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6575.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6127.		2630.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, DEGF	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/CU.FT.	Rectangle

LB STEAM/LB MF COAL	1.00
LB OXYGEN/LB MF COAL	0.13
SOP ULTIMATE CH4/LB MF COAL	2.21
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	52.00
GAS BASIS	49.40
GASIFIER TOP SUPRFOL VEL, FPS	0.678
VOL PCT O2 IN PLENUM	6.78

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	13.81
MOL PCT-CO	3.35
MOL PCT-CO2	41.43
MOL PCT-CH4	8.90
MOL PCT-C2H6	0.65
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.49
MOL PCT-H2O	31.75
MOL PCT-O2	0.01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	24 #	25	26 #	27 #	28 #
GASIFICATION CALCULATIONS							
34	V0801	COAL FEED RATE PPH	6575.00	6575.00	6575.00	6575.00	6575.00
550	CSFTG	STEAM FLOW TO GASIF LB/HR	6176.00	6176.00	6176.00	6099.00	6099.00
227	F201	GSRF O2 FEED RATE SCFH	11470.0	10990.0	9653.00	10400.0	9356.00
581	CSOCTG	STNPIPE STM TO GSFR PPH	122.000	168.000	113.000	214.000	89.0000
245	T205	GSFR BOTTOM BD TEMP DEG F	1165.00	1430.00	1425.00	1435.00	1415.00
424	C2FBDG	GSF FLD BED DENSITY LB/FT3	21.7000	19.5000	17.8000	13.0000	13.5000
425	C2FCHG	GSF FLD BED HEIGHT FT	13.4000	14.9000	16.4000	17.2000	14.9000
572	CGBW	GASIFIED BED VOLUME FT3	116.000	112.000	122.000	128.000	112.000
427	C2STG	GSF SOLIDS INVENTORY LB	2520.00	2130.00	2190.00	1660.00	2100.00
426	C2SRTG	GSF SOLIDS RES TIME MIN	24.4000	21.7000	21.3000	16.2000	21.2000
429	C2SCG2	GASF COAL FEED PPH/FT2	930.000	930.000	930.000	930.000	930.000
428	C2SCG1	GASF COAL FEED PPH/FT2	56.7000	58.7000	53.5000	51.4000	50.7000
525	C2OPD	GSF PRESS DROP H2O FT/D	4.17000	3.75000	3.42000	2.50000	2.75000
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0.448000	0.446000	0.439000	0.455000	0.445000
421	C2SVOG	GSF SUP VEL-OUTLET FPS	0.395000	0.378000	0.271000	0.375000	0.267000
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0.702000	0.699000	0.688000	0.690000	0.678000
422	C2SVUG	GSF SUP VEL-MEAN BED FPS	0.590000	0.573000	0.564000	0.574000	0.562000
584	CSGF02	GSF O2 RAW COAL SCF/LB	1.74000	1.67000	1.47000	1.58000	1.42000
417	C2SGG2	GASF O2 HF COAL SCF/LB	1.85700	1.79200	1.57700	1.69500	1.52400
415	C2SGG4	GASF O2 MAF COAL SCF/LB	2.13700	2.02200	1.78000	1.91300	1.71900
555	CGSF01	GASF O2 RAW COAL LB/LB	0.147000	0.141000	0.124000	0.132000	0.120000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	24 H	25	26 H	27 H	28 H
422	C2S0G1	GASF O2 MF COAL LB/LB	0 158000	0 151000	0 133000	0 141000	0 129000
424	C2S0G2	GASF O2/MAF COAL LB/LB	0 178000	0 171000	0 150000	0 161000	0 145000
506	C0SM50	GASF STM/RAW COAL SCF/LB	19 8000	19 8000	19 8000	19 5000	19 5000
437	C2S0G2	GASF STM MF COAL SCF/LB	21 2500	21 2500	21 2500	20 9200	20 9200
429	C2S0G4	GASF STM MAF COAL SCF/LB	22 9700	22 9700	22 9700	22 6100	22 6100
567	C0S5TH	GASF STM/RAW COAL LB/LB	0 939000	0 939000	0 939000	0 928000	0 928000
426	C2S0G1	GASF STM MF COAL LB/LB	1 00200	1 00800	1 00800	0 995000	0 995000
426	C2SEGL	GASF STM MAF COAL LB/LB	1 11700	1 11700	1 11700	1 11700	1 11700
242	F255	WASTE WATER FLOW GPM	17 0000	17 0000	17 0000	17 0000	17 0000
243	F221	TAR FLOW THRU ORDER GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RAW GS SCF/ER EF 1000-SCFH	116 290	105 600	102 000	101 800	99 7000
574	CHRG6	RAW GAS FROM GASF SCFH	247955	227255	222655	225455	230355
575	CTGFE	TOTAL GAS FROM BED SCFH	208301	227601	224001	225801	220701
475	C2C1	GASF CARBON INVENTORY LB	1790 00	1550 00	1520 00	1160 00	1490 00
551	C0GPPH	CARBON GASIFIED PPH	1670 00	1670 00	1980 00	1920 00	2100 00
534	C2GR4	GASF RATE LBC/HR-FT3BD	14 4000	14 9000	16 1000	0 424000	18 6000
595	C2GR2	GASF RATE LBC/HR-LBCBD	0 930000	1 00000	1 30000	1 66000	1 41000
455	C2MRG2	CH4 PROD GAS SCFH/FT3BD	100 000	90 5000	68 8000	67 5000	74 0000
454	C2MRG1	CH4 IN RAW GAS LBC/LBCBD	0 202000	0 216000	0 212000	0 283000	0 210000
451	C2CG1	CARBON COMPSN (CHAR) %	41 4000	41 4000	49 0000	47 6000	52 0000
452	C2CG12	CARBON COMPSN (GAS) %	16 8000	22 7000	52 6000	68 2000	49 4000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	24	25	26	27	28
596	COCTUG	C CNVRTD TO USEFUL GAS A	17 6000	16 3000	12 8000	13 1000	12 4000
592	CECH4P	EQUIV CH4 SCF/LB-RAW	2 15800	1 92700	1 86200	1 59400	1 56100
591	CECH4M	EQUIV CH4 SCF/LB-MF	2 31600	2 06800	1 99800	1 71100	1 67500
579	CECH4C	EQUIV CH4 SCF/LB-MAF	2 61000	2 33300	2 25400	1 93000	1 89800
466	C2NYG4	GSE CH4 YLD-HAF CP HR-LB	2 14100	1 36700	1 20200	1 52600	1 32700
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	16250 0	16896 0	16220 0	13908 0	12522 0
560	CUCH4R	ULT CH4 RAW COAL SCF/LB	2 77700	2 57000	2 48200	2 11500	2 05700
561	CUCH4M	ULT CH4 MF COAL SCF/LB	2 98800	2 75800	2 66400	2 27000	2 20700
562	CUCH4R	ULT CH4 MAF COAL SCF/LB	3 36200	3 11100	3 00500	2 56100	2 49000
450	C2SCG	STM CONV - H2O BALANCE %	-8 30000	-21 3000	-2 10000	-19 7000	-17 6000
590	CSCH2	STM CONV - H2 BALANCE %	-4 10000	-5 30000	-3 20000	-0 600000	-10 3000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		24	25	26	27	28
				9		9	4	9
CHAR COOLER CALCULATIONS								
230	F205	CHF CLP STM FEED	PPH	2554.00	2554.00	2596.00	2596.00	2596.00
234	F230	H2O FLW TO CHAR CLR	GPM	15.2000	16.0000	17.0000	17.4000	19.1000
236	F251	HF STM TO CHAR CLR	PPH	312.000	261.000	360.000	365.000	261.000
487	C2F8HC	CC FLD BED DENSITY	LB/FT3	30.0000	22.5000	24.3000	23.8000	24.7000
488	C2F8HC	CC FLD BED HEIGHT	FT	15.1000	5.50000	9.90000	8.70000	12.4000
570	C008H	CHAR CLR BED VOLUME	FT3	41.0000	15.9000	27.5000	24.4000	34.1000
490	C25IC	CC SOLIDS INVENTORY	LB	1250.00	356.000	669.000	591.000	942.000
499	C25PTC	CC SOLIDS RES TIME	MIN	22.6000	6.50000	13.5000	11.5000	17.9000
520	C25CC2	CC MF CHAR FD	LB/HR-FT2	1260.00	1260.00	1150.00	1150.00	1070.00
499	C25CC1	CC MF CHAR FD	LB/HR-FT2	80.4000	209.000	193.000	124.000	83.0000
534	C20PM	CC PRESS DROP	410 FTBD	5.83000	4.32000	4.67000	4.58000	4.75000
494	C25SH	CC STEAM SUP VEL	FFS	0.228000	0.304000	0.310000	0.320000	0.372000
485	C2USV	CC WAP H2O SUP VEL	FPS	0.160000E-01	0.150000E-01	0.160000E-01	0.170000E-01	0.160000E-01
590	C0ATSM	CC ATM STM SUP VEL	FPS	0.430000E-01	0.400000E-01	0.420000E-01	0.450000E-01	0.380000E-01
496	C2TSV	CC TOT STM SUP VEL	FPS	0.387000	0.362000	0.368000	0.382000	0.327000
521	C25CC3	CC MF CHF FAN COAL	LB/HR	0.505000	0.505000	0.452000	0.461000	0.400000
491	C25SC3	CC STM MF CHAR	LB/HR	0.769000	0.769000	0.874000	0.857000	0.917000
588	C0CSTM	CC STM FAN COAL	LB/HR	0.388000	0.388000	0.395000	0.395000	0.295000
494	C25SC4	CC STM MF COAL	LB/HR	0.416000	0.416000	0.424000	0.424000	0.424000
589	C0CSTM	CC STM FAN COAL	LB/HR	0.470000	0.470000	0.478000	0.478000	0.472000
497	C0SLUC3	CC H2O/MF CHAR	LB/HR	0.379000E-01	0.384000E-01	0.456000E-01	0.457000E-01	0.537000E-01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	24 #	25	26 #	27 #	28 #
438	C2SMC4	CC H2O RAW COAL LB/LB	0 191000E-01	0 194000E-01	0 206000E-01	0 211000E-01	0 231000E-01
599	CFFFP4	CHAR REMOVAL RATE FPH	3320 00	3320 00	2970 00	3030 00	2630 00

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	24		25		26		27		28	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL%-H2	24.23	21.61	24.78	22.09	25.47	13.00	23.66	16.15	20.23	13.81
MOL%-CO	7.37	7.50	4.49	4.01	4.74	3.84	4.96	3.39	4.91	3.35
MOL%-CO2	59.16	52.75	58.10	51.81	56.91	47.69	56.99	40.26	60.70	41.43
MOL%-CH4	11.24	10.03	10.85	9.60	11.29	9.14	12.35	8.42	12.45	8.50
MOL%-C2H6	0.65	0.56	0.77	0.68	0.79	0.64	0.00	0.00	0.96	0.65
MOL%-N2	0.11	0.10	0.22	0.20	0.00	0.00	0.01	0.01	0.01	0.01
MOL%-NH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-H2S	0.65	0.52	0.77	0.68	0.79	0.64	0.00	0.00	0.72	0.49
MOL%-H2O	0.00	10.63	0.00	10.87	0.00	12.05	0.00	31.75	0.00	31.75
MOL%-O2	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01
MOL%-C2H4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C3H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C3H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C4H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C4H10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UPSTR PRESS--(P227) PSIG	600.00	600.00	600.00	600.00
FLOW TEMP--(T120010) DEGF	300.00	200.00	340.00	380.00
MOL WT (WET)	26.58	22.36	17.74	26.06
GRV GAS MAKE 1000-SCFH	105.70	94.16	12.57	70.85
WET GAS MAKE 1000-SCFH	116.30	105.60	102.00	103.80

FOR STEADY STATE PERIOD 29 RUN 1-0
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 13:45 10/30/76
ENDING TIME 14:15 10/30/76

FOR STEADY STATE PERIOD 30 RUN 1-0
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 14:45 10/30/76
ENDING TIME 15:15 10/30/76

FOR STEADY STATE PERIOD 31 RUN 1-0
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 18:45 10/30/76
ENDING TIME 19:15 10/30/76

FOR STEADY STATE PERIOD 32 RUN 1-0
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 22:45 10/30/76
ENDING TIME 23:15 10/30/76

GAS STREAMS

	2	3	9	10	11	14
SCFH	13750.0	113800.0	142544.4	9653.0	41386.6	44236.1
MW	44	26.73	18	32	18	18
LB/HR	1594.2	8034.8	6761.0	814.0	1963.0	2101.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			126.
OIL				
TAR			0.0	

SOLID STREAMS

LB/HR (AS RECEIVED)	4000.	
PERCENT MOISTURE	6.8	
LB/HR (MOISTURE FREE)	3728.	1955.

LEGEND

LB STEAM/LB MF COAL	1.81
LB OXYGEN/LB MF COAL	0.22
SOF ULTIMATE CH4/LB MF COAL	2.78
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	43.30
GAS BASIS	27.30
GASIFIER TOP SUPRFL VEL, FPS	0.724
VOL PCT O2 IN FLENUM	6.34

STREAM NO. 3

AVERAGE GAS COMPOSITION
MOLE PERCENT - WET BASIS

MOL PCT-H	18.00
MOL PCT-OO	2.52
MOL PCT-OOE	43.63
MOL PCT-CH4	5.42
MOL PCT-C2H6	0.24
MOL PCT-N2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.31
MOL PCT-H2O	29.86
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 30

GAS STREAMS

	2	3	9	10	11	14
SCFH	13750.0	91600.0	131138.3	8910.0	43136.5	47753.7
MW	44	28.23	18	32	18	18
LB/HR	1594.2	6837.3	6220.0	751.3	2046.0	2265.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			127
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4000.		
PERCENT MOISTURE	6.0		
LB/HR (MOISTURE FREE)	3728.		1965.

LB STEAM/LB MF COAL	1.67
LB OXYGEN/LB MF COAL	0.26
SCF ULTIMATE CH4/LB MF COAL	1.97
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	43.30
GAS BASIS	31.60
GASIFIER TOP SURFCL VEL. FPS	0.656
VOL PCT O2 IN FLENUM	6.36

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	17.09
MOL PCT-CO	2.26
MOL PCT-CO2	48.77
MOL PCT-CH4	4.43
MOL PCT-C2H6	0.30
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.40
MOL PCT-H2O	28.70
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 31

GAS STREAMS

	2	3	9	10	11	14
SCFH	13750.0	134200.0	132761.7	9653.0	34513.4	46889.3
MW	44	27.36	18	32	18	18
LB/HR	1584.2	9574.7	6287.0	814.0	1637.0	2224.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			126.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4000.		
PERCENT MOISTURE	6.0		
LB/HR (MOISTURE FREE)	3728.		1846.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, °C/°F	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/QU, FT	Rectangle

LB STEAM/LB MF COAL	1.68
LB OXYGEN/LB MF COAL	0.22
SCF ULTIMATE CH4/LB MF COAL	3.64
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	52.00
GAS BASIS	67.80
GASIFIER TOP SUPPLY VEL, FPS	0.787
VOL PCT O2 IN PLENUM	6.78

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	15.01
MOL PCT-CO	1.89
MOL PCT-CO2	43.73
MOL PCT-CH4	6.45
MOL PCT-C2H6	0.51
MOL PCT-H2	0.15
MOL PCT-NH3	0.00
MOL PCT-H2S	0.51
MOL PCT-H2O	31.75
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 32

GAS STREAMS

	2	3	9	10	11	14
SOPH	13750.0	111100.0	134365.1	9653.0	45455.7	47753.7
MM	44	26.50	18	32	18	18
LB/HR	1594.2	7757.4	6374.0	814.0	2156.0	2265.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7735.			141.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4000		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3729.		1742.

LB STEAM/LB MF COAL	1.71
LB OXYGEN/LB MF COAL	0.22
SCF ULTIMATE CH4/LB MF COAL	3.31
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	51.50
GAS BASIS	70.20
GASIFIER TOP SURF CL VEL, FPS	0.716
VOL PCT O2 IN PLENUM	6.70

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	16.58
MOL PCT-CO	2.56
MOL PCT-CO2	41.18
MOL PCT-CH4	6.90
MOL PCT-C2H6	0.47
MOL PCT-N2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.54
MOL PCT-H2O	31.15
MOL PCT-O2	0.60

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	29 °	30 °	31	32 °
GASIFICATION CALCULATIONS						
84	Y0001	COAL FEED RATE PPH	4000 00	4000 00	4000 00	4000 00
550	CSFTG	STEAM FLOW TO GASF LB/HR	6761 00	6220 00	6297 00	6374 00
227	F203	GSFA O2 FEED RATE SCFH	9653 00	8910 00	9653 00	9653 00
581	CSOCTG	STNPIPE STN TO GSFA PPH	138 000	219 000	567 000	109 000
345	T205	GSFR BOTTOM BD TEMP DEGF	1355 00	1365 00	1390 00	1400 00
424	C2FBDG	GSF FLD BED INSTY LB FTS	12 1400	18 2100	8 67000	13 4400
425	C2FBDG	GSF FLD BED HEIGHT FT	18 0000	12 0000	27 6000	15 4800
572	C0BV	GASIFIER BED VOLUME FTS	123 890	91 4700	201 760	116 070
427	C2SIG	GSF SOLIDS INVENTORY LB	1622 00	1666 00	1749 00	1560 00
426	C2SRTG	GSF SOLIDS RES TIME MIN	25 9000	26 6000	27 9000	24 9000
429	C2SCG2	GASF COAL FEED PPH/FT2	565 800	565 800	565 800	565 800
428	C2SCG1	GASF COAL FEED PPH FTD	29 8800	42 7200	19 8200	34 4600
526	C2GPD	GSF PRESS DROP "H2O FTBD	2 33000	3 50000	1 67000	2 58000
420	C2SMBG	GSF SUP VEL-BOT BED FPS	0 462000	0 428000	0 436000	0 452000
423	C2SV0G	GSF SUP VEL-OUTLET FPS	0 391000	0 356000	0 423000	0 387000
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 724000	0 656000	0 787000	0 716000
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0 593000	0 542000	0 612000	0 564000
584	CGSF02	GSF O2/RAW COAL SCF/LB	2 41000	2 33000	2 41000	2 41000
423	C2SQ02	GASF O2/MF COAL SCF/LB	2 58600	2 50000	2 58600	2 58600
455	C2SQ04	GASF O2-MAF COAL SCF/LB	2 91800	2 82100	2 91800	2 91800
585	CGSF03	GASF O2/RAW COAL LB/LB	0 202500	0 187000	0 202500	0 203500

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	29 #	30 #	31	32 #
432	C2S0G1	GASF 02/MF COAL LB/LB	0 218400	0 201500	0 218400	0 218400
434	C2S0G3	GASF 02/MAF COAL LB/LB	0 246400	0 227400	0 246400	0 246400
536	CG5SM	GASF STM/RAW COAL SCF/LB	35 6000	32 7500	33 1600	33 5600
437	C2SSG2	GASF STM/MF COAL SCF/LB	30 2000	35 1400	35 5000	26 0100
439	C2SSG4	GASF STM/MAF COAL SCF/LB	43 1000	33 6500	40 1500	40 6300
587	CG5STM	GASF STM/RAW COAL LB/LB	1 69030	1 55500	1 57430	1 59360
426	C2SSG1	GASF STM/MF COAL LB/LB	1 81400	1 66900	1 68900	1 71000
438	C2SSG3	GASF STM/MAF COAL LB/LB	2 04600	1 88300	1 90600	1 92900
342	F255	WASTE WATER FLOW GPM	17 0000	17 0000	17 0000	17 0000
243	F221	TAR FLOW THRL D/D3R GPM	0 000000	0 000000	0 000000	0 000000
245	F209	RM GS SCRBR EF 1000-SCFH	113 800	91 6000	134 200	111 100
574	CHRG6	RAW GAS FROM GASF SCFH	245455	223255	265855	242755
575	CTGFB	TOTAL GAS FROM BED SCFH	235811	213611	256211	233111
475	C2C1	GASF CARBON INVENTORY LB	1155 00	1186 00	1118 00	1067 00
551	CGPPH	CARBON GASTIFIED FPH	1064 00	1064 00	1276 00	1265 00
594	C2GR4	GASF RATE LBC/HR-FT3B0	7 25000	11 6000	6 32000	10 9000
595	C2GR2	GASF RATE LBC HR-LBC50	1 00500	0 978000	1 11800	1 24100
455	C2MRG2	CH4 PROD GAS SCFH/FT3B0	45 9000	44 0000	42 6000	65 1000
454	C2MRG1	CH4 IN RAW GAS LBC-LBCB0	0 194000	0 117000	0 238000	0 215000
451	C2CG1	CARBON CON/RSN (CHAR) %	42 1000	42 2000	52 0000	51 5000
452	C2CG12	CARBON CON/RSN (GAS) %	27 0000	21 6000	67 8000	70 2000

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	29 #	30 #	31	32 #
596	COCTU0	C CNVRTD TO USEFUL GAS %	17 8000	12 8000	21 8000	19 9000
592	CECH4R	EQUIV CH4 SCF/LB-RAW	1 87800	1 32800	2 75200	2 38900
591	CECH4M	EQUIV CH4 SCF/LB-MF	2 81500	1 42500	2 95300	2 56400
579	CECH4C	EQUIV CH4 SCF/LB-MAF	2 27400	1 68800	3 33200	2 89200
466	C2MYG4	GSE CH4 YLD-MAF CF/HR-LB	1 64900	1 08100	2 20400	2 82700
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	10356 0	7324 00	13556 0	12333 0
560	CUCH4P	ULT CH4-RAW COAL SCF/LB	2 58900	1 83100	3 38900	3 08300
561	CUCH4M	ULT CH4-MF COAL SCF/LB	2 77900	1 96500	3 63700	3 38800
562	CUCH4A	ULT CH4-MAF COAL SCF/LB	3 13400	2 21700	4 10300	3 73200
450	C2SCG	STM CONV - H2O BALANCE %	78 7000	16 7000	43 3000	-8 30000
598	CSCH2	STM CONV - H2 BALANCE %	24 5000	19 6000	31 3000	26 9000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		29 #	30 #	31	32 #
CHAR COOLER CALCULATIONS							
230	F205	CHR CLR STM FEED	PPH	2101 00	2265 00	2224 00	2265 00
234	F230	H2O FLW TO CHAR CLR	GPH	16 6600	16 7100	16 5600	18 6300
336	F253	HF STM TO CHAR CLR	PPH	365 000	392 000	364 000	388 000
467	C2F60C	CC FLD BED DNSTY	LB/FT3	29 5000	29 5000	29 5000	29 5000
468	C2F60C	CC FLD BED HEIGHT	FT	8 10000	1 30000	2 50000	5 10000
573	CCCBV	CHAR CLR BED VOLUME	FT3	22 8000	4 73000	10 7000	14 9000
490	C2SIC	CC SOLIDS INVENTORY	LB	673 000	140 000	316 000	440 000
489	C2SRTC	CC SOLIDS RES TIME	MIN	20 7000	4 30000	10 3000	15 2000
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	740 500	740 500	699 200	659 900
499	C2SCC1	CC MF CHAR FD	LB/HR-FT3	65 6000	411 600	172 000	116 800
534	C2CPC	CC PRESS DROP	"H2O, FT30	5 67000	5 67000	5 67000	5 67000
484	C2SSV	CC STEAM SUP VEL	FFS	0 236000	0 207000	0 300000	0 305000
485	C2WSV	CC WAP H2O SUP VEL	FFS	0 140000E-01	0 120000E-01	0 210000E-01	0 200000E-01
590	CCATSM	CC ATM STM SUP VEL	FFS	0 410000E-01	0 260000E-01	0 450000E-01	0 520000E-01
486	C2TSV	CC TOT STM SUP VEL	FFS	0 291000	0 255000	0 366000	0 377000
521	C2SCC3	CC MF CHP-RAN COAL	LB/LB	0 489000	0 489000	0 462000	0 436000
493	C2SSC3	CC STM MF CHAR	LB/LB	1 07500	1 15900	1 30500	1 30000
588	CCOSTM	CC STM-RAN COAL	LB, LB	0 525000	0 566000	0 556000	0 566000
494	C2SSC4	CC STM MF COAL	LB/LB	0 563000	0 607000	0 597000	0 607000
589	CCOSTM	CC STM MF COAL	LB/LB	0 626000	0 685000	0 673000	0 685000
497	C2SUC3	CC H2O MF CHAR	LB, LB	0 679000E-01	0 660000E-01	0 714000E-01	0 851000E-01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	29 #	30 #	31	32 #
498	C2SUC4	CC H2O TRAN COAL LB/LB	0 112000E-01	0 132000E-01	0 150000E-01	0 171000E-01
538	CRRPH	CHAP REMOVAL RATE PPH	1955 00	1955 00	1846 00	1742 00

UPDATED GAS SAMPLE COMPOSITIONS PAGE 1

STEADY STATE PERIOD

COMPONENT	29		30		31		32		DRY	WET
	DRY	WET	DRY	WET	DRY	WET	DRY	WET		
MOL%-H2	25.67	16.00	23.32	17.09	21.99	15.01	24.31	16.59		
MOL%-CO	3.59	2.52	3.09	2.26	2.76	1.89	3.75	2.56		
MOL%-CO2	62.20	43.63	66.54	48.77	64.07	43.73	60.32	41.18		
MOL%-CH4	7.73	3.42	6.03	4.43	9.46	6.45	10.11	6.98		
MOL%-C2H6	0.34	0.24	0.44	0.32	0.74	0.51	0.68	0.47		
MOL%-N2	0.01	0.01	0.01	0.01	0.21	0.13	0.01	0.01		
MOL%-NH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MOL%-H2O	0.45	0.31	0.53	0.40	0.74	0.51	0.60	0.54		
MOL%-H2O	0.00	29.35	0.00	26.70	0.00	31.75	0.00	31.75		
MOL%-C2H4	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00		
MOL%-C2H2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MOL%-C3H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MOL%-C3H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MOL%-C4H10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

UPSTR PRESS-(P227) PSIG 600.00 600.00 600.00 600.00

FLOW TEMP-(T120010) DEGF 375.00 366.00 380.00 380.00

MOL HT (WET) 26.69 26.19 27.19 26.31

DRY GAS MAKE 1000-SCFH 79.02 67.14 91.59 73.83

WET GAS MAKE 1000-SCFH 113.80 91.60 124.20 111.10

\$ASE 50 DDG 50 GDD ST CR

\$REM 50

\$EME FR. LO

FOR STEADY STATE PERIOD 33 RUN 1-P
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 15:15 10/31/76
ENDING TIME 15:45 10/31/76

FOR STEADY STATE PERIOD 34 RUN 1-P
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 17:45 10/31/76
ENDING TIME 18:15 10/31/76

FOR STEADY STATE PERIOD 35 RUN 1-P
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 22:45 10/31/76
ENDING TIME 23:15 10/31/76

FOR STEADY STATE PERIOD 36 RUN 1-P
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 2:45 11/1/76
ENDING TIME 3:15 11/1/76

STEADY STATE PERIOD NO. 33

GAS STREAMS

	2	3	9	10	11	14
SCFH	13800.0	153700.0	136009.5	11138.0	47521.9	52118.0
MM	44	25.42	18	32	18	18
LB/HR	1611.6	10294.6	6451.0	939.2	2254.0	2472.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	5947.			121.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6104.		3789.

STREAM NO. 3

LB STEAM/LB MF COAL	1.06	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.15	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB MF COAL	2.62		
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS	29.90	MOL PCT-H2	11.11
GAS BASIS	19.60	MOL PCT-CO	1.89
GASIFIER TOP SUPP'G VEL. FPS	0.731	MOL PCT-CO2	34.15
VOL PCT O2 IN PLENUM	7.57	MOL PCT-CH4	6.85
		MOL PCT-C2H6	0.47
		MOL PCT-N2	0.30
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.35
		MOL PCT-H2O	44.87
		MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 34

GAS STREAMS

	2	3	9	10	11	14
SCFH	13900.0	151000.0	136008.5	11435.0	46425.5	52992.4
MW	44	27.22	18	32	18	18
LB/HR	1611.6	10629.4	6451.0	964.2	2202.0	2513.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7289.			123.
OIL				
TAR			0.0	

SOLID STREAMS

LB/HR (AS RECEIVED)	1	7	15
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6104.		3321.

STREAM NO. 3	
LB STEAM/LB MF COAL	1.06
LB OXYGEN/LB MF COAL	0.16
SCF ULTIMATE CH4/LB MF COAL	3.29
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	39.90
GAS BASIS	29.90
GASIFIER TOP SURFCL VEL., FPS	0.809
VOL PCT O2 IN PLENUM	7.76
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	14.33
MOL PCT-CO	2.68
MOL PCT-CO2	42.28
MOL PCT-CH4	8.43
MOL PCT-C2H6	0.68
MOL PCT-N2	0.23
MOL PCT-NH3	0.00
MOL PCT-H2S	0.61
MOL PCT-H2O	30.73
MOL PCT-O2	0.01

LEGEND

STREAM NUMBER

TEMPERATURE, DEGF

PRESSURE, PSIG

BED LEVEL, FEET

DENSITY, LB/CU.FT

STEADY STATE PERIOD NO. 36

GAS STREAMS

	2	3	9	10	11	14
SCFH	13900.0	152700.0	129493.8	10692.0	45223.7	53946.8
MM	44	26.80	18	32	18	18
LB/HR	1611.6	10702.4	6142.0	901.6	2145.0	2834.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	4723.			169.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6104.		3903.

LB STEAM/LB MF COAL	1.01
LB OXYGEN/LB MF COAL	0.15
SCF ULTIMATE CH4/LB MF COAL	3.78
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	29.90
GAS BASIS	33.30
GASIFIER TOP SUPRFCL VEL., FPS	0.648
VOL PCT O2 IN PLENUM	7.63

STREAM NO. 3

AVERAGE GAS COMPOSITION
MOLE PERCENT - WET BASIS

MOL PCT-H2	13.02
MOL PCT-CO	2.72
MOL PCT-CO2	39.42
MOL PCT-CH4	8.94
MOL PCT-C2H6	0.79
MOL PCT-N2	0.14
MOL PCT-NH3	0.00
MOL PCT-H2S	0.50
MOL PCT-H2O	33.47
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 36

GAS STREAMS

	2	3	9	10	11	14
SCFH	14250.0	150400.0	126204.8	11732.0	49154.3	53967.9
MM	44	27.21	18	32	18	18
LB/HR	1652.2	10781.9	5986.0	989.3	2284.0	2555.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6711.			136.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	5000.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4660.		2358.

LB STEAM/LB MF COAL	1.28
LB OXYGEN/LB MF COAL	0.21
SCF ULTIMATE CH4/LB MF COAL	3.78
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	47.60
GAS BASIS	51.20
GASIFIER TOP SURF VEL. FPS	0.770
VOL PCT O2 IN PLENUM	8.51

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	11.66
MOL PCT-CO	2.35
MOL PCT-CO2	40.80
MOL PCT-CH4	7.52
MOL PCT-C2H6	0.62
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.55
MOL PCT-H2O	36.39
MOL PCT-O2	0.00

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	33 #	34 #	35	36 #
GASIFICATION CALCULATIONS						
84	W0001	COAL FEED RATE	PPH	6550 00	6550 00	5800 00
550	CSFTG	STEAM FLOW TO GASF	LB/HR	6451 00	6451 00	5986 00
227	F203	GSFR O2 FEED RATE	SCFH	11138 0	11435 0	10692 0
581	CSCCTG	STNPIPE STN TO GSFR	PPH	218 000	511 000	409 000
345	T205	GSFR BOTTOM BD TEMP	DEGF	1270 00	1405 00	1295 00
424	C2FB0G	GSF FLD BED DNSTY	LB/FT3	11 6800	13 0700	16 4700
425	C2FB0G	GSF FLD BED HEIGHT	FT	16 3200	18 0000	19 5000
572	C08V	GASIFIER BED VOLUME	FT3	122 010	137 890	145 060
427	C2S1G	GSF SOLIDS INVENTORY	LB	2645 00	2553 00	2389 00
426	C2SRTG	GSF SOLIDS RES TIME	MIN	25 0000	24 9000	23 3000
429	C2SC03	GASF COAL FEED	PPH/FT2	926 500	926 500	926 500
428	C2SC01	GASF COAL FEED	PPH/FT3	53 6800	48 9200	45 1500
526	C2GPD	GSF PRESS DROP	"H2O/FTBD	4 17000	3 67000	2 17000
420	C2SVB0	GSF SUP VEL-BOT BED	FPS	0 439000	0 477000	0 451000
423	C2SV00	GSF SUP VEL-OUTLET	FPS	0 395000	0 435000	0 352000
421	C2SMTG	GSF SUP VEL-TOP BED	FPS	0 731000	0 809000	0 649000
422	C2SMMG	GSF SUP VEL-MEAN BED	FPS	0 595000	0 643000	0 550000
584	C2SF02	GSF O2/FAN COAL	SCF/LB	1 70000	1 74600	1 62200
423	C2S002	GASF O2/FAN COAL	SCF/LB	1 82400	1 87400	1 75100
425	C2S004	GASF O2/FAN COAL	SCF/LB	2 05900	2 11400	1 97600
585	C0SF00	GASF O2/FAN COAL	LB/LB	0 143300	0 147200	0 130600

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	33 #	34 #	35	36 #
422	C250G1	GASF O2-MF COAL LB-LB	0 153900	0 159000	0 147700	0 213000
424	C250G3	GASF O2-MAF COAL LB-LB	0 172500	0 176200	0 166600	0 240000
586	CGSM5H	GASF STM PAN COAL SCF/LB	20 7400	20 7400	19 7500	25 2100
427	C255G2	GASF STM-MF COAL SCF-LB	22 2600	22 2600	21 1900	27 0500
429	C255G4	GASF STM-MAF COAL SCF-LB	25 1100	25 1100	25 9100	30 5200
587	CGSSTM	GASF STM PAN COAL LB-LB	0 905000	0 965000	0 938000	1 19720
426	C255G1	GASF STM MF COAL LB-LB	1 05700	1 05700	1 00700	1 20500
428	C255G3	GASF STM MAF COAL LB-LB	1 19200	1 13200	1 13600	1 44900
542	F255	WASTE WATER FLOW GPM	17 0700	16 0200	10 3800	14 7500
243	F221	TAR FLOW THRL DNDZ GPM	0 000000	0 000000	0 000000	0 000000
245	F209	RAW GS SCRSF EF 1000-SCFH	152 700	151 000	152 700	150 400
574	CHRG6	RAW GAS FROM GASF SCFH	247686	273262	220906	260490
575	CTGFE	TOTAL GAS FROM SED SCFH	238044	263616	211262	250646
475	C2C1	GASF CARBON INVENTORY LB	1371 00	1353 00	1770 00	2007 00
551	CCGFPH	CARBON GASIFIED PPH	1203 00	1624 00	1203 00	1508 00
594	C2GR4	GASF RATE LBC HR-FT3BC	9 66000	12 0000	8 30000	7 07000
595	C2GR2	GASF RATE LBC HR-LBCBC	0 611000	0 662000	0 680000	0 720000
453	C2MPG2	CH4 FROM GASF SCFH FT3BC	86 9000	94 7000	105 000	52 2000
454	C2MPG1	CH4 IN RAW GAS LBC LBCBC	0 170000	0 116000	0 273000	0 172000
451	C2CG1	CARBON CONFSN (MAF %)	29 2000	22 2000	29 2000	47 6000
452	C2CG12	CARBON CONFSN (GAS %)	12 6000	23 2000	21 2000	51 2000

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	33 #	34 #	35 #	36 #
586	CCCTUG	C CONVERT TO USEFUL GAS ::	14 9000	18 7000	20 8000	20 0000
592	CECH4R	EQUIV CH4 SCF/LB-RAU	1 99400	2 44400	2 89200	2 79700
591	CECH4M	EQUIV CH4 SCF/LB-MAF	2 14000	2 62300	3 10200	3 00100
579	CECH4C	EQUIV CH4 SCF/LB-MAF	2 41400	2 95900	3 50100	3 38600
466	C2MYG4	GSE CH4 YLG-MAF CF. HR-LB	1 72700	2 07800	2 50200	2 42000
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	15982 0	20083 0	23064 0	17593 0
560	CUCH4R	ULT CH4-RAU COAL SCF/LB	2 44000	2 86600	3 52100	3 51900
561	CUCH4M	ULT CH4-MAF COAL SCF/LB	2 61800	2 39000	3 77900	3 77600
562	CUCH4A	ULT CH4-MAF COAL SCF/LB	2 95400	3 71200	4 26300	4 26000
450	C2SCG	STM CONV - H2O BALANCE ::	-13 5000	-19 6000	15 4000	4 60000
593	CSCH2	STM CONV - H2 BALANCE ::	-0 700000	-4 30000	-1 50000	-3 90000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		33 0	34 0	35	36 0
CHAR COOLER CALCULATIONS							
220	F205	CHR CLR STM FEED	PPH	2472 00	2513 00	2554 00	2555 00
224	F210	H2O FLW TO CHAR CLR	GPH	16 0200	16 2400	22 2300	18 0000
226	F210	HF STM TO CHAR CLR	PPH	244 400	301 200	359 200	255 100
487	C2F80C	CC FLD BED DENSITY	LB/FT3	25 1000	25 1000	25 1000	21 7000
488	C2F80C	CC FLD BED HEIGHT	FT	3 10000	3 30000	2 30000	0 100000
573	C000V	CHAR CLR BED VOLUME	FT3	9 50000	16 7000	10 1000	1 66000
420	C25TC	CC SOLIDS INVENTORY	LB	240 000	419 000	254 000	36 0000
489	C25PTC	CC SOLIDS RES TIME	MIN	1 80000	7 60000	4 00000	0 920000
520	C250C2	CC HF CHAR FD	LB/HF-FT3	1433 00	1258 00	1441 00	890 000
499	C250C1	CC HF CHAR FD	LB/HR-FT3	395 000	199 000	377 000	1420 00
534	C20P0	CC PRESS DROP H2O/FT3D		4 63000	4 63000	4 63000	4 17000
484	C25SV	CC STEAM SUP VEL	FPS	0 242000	0 277000	0 342000	0 312000
485	C21SV	CC WAF H2O SUP VEL	FPS	0 130000E-01	0 140000E-01	0 240000E-01	0 180000E-01
590	C0ATSM	CC ATM STM SUP VEL	FPS	0 340000E-01	0 560000E-01	0 480000E-01	0 440000E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 290000	0 347000	0 414000	0 374000
521	C250C3	CC HF CHAR RAW COAL	LB/LB	0 370000	0 307000	0 581000	0 472000
493	C253C3	CC STM HF CHAR	LB/LB	0 650000	0 757000	0 672000	1 08400
588	C0CSTM	CC STM RAW COAL	LB/LB	0 377000	0 384000	0 390000	0 311000
494	C233C4	CC STM HF COAL	LB/LB	0 405000	0 412000	0 418000	0 348000
589	C0CSTM	CC STM WAF COAL	LB/LB	0 450000	0 465000	0 472000	0 619000
487	C230C2	CC H2O HF CHAR	LB/LB	0 340000E-01	0 392000E-01	0 463000E-01	0 640000E-01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		33 #	34 #	35	36 #
498	C2SINC4	CC H2O RAW COAL	LS/LB	0.196000E-01	0.199000E-01	0.272000E-01	0.300000E-01
599	CFRPPH	CHAR REMOVAL RATE	PPH	2783.00	3121.00	3803.00	2252.00

UPDATED GAS SAMPLE COMPOSITIONS PAGE 1

STEADY STATE PERIOD

COMPONENT

	33		34		35		36		DRY	WET
	DRY	WET	DRY	WET	DRY	WET	DRY	WET		
MOL-%H ₂	20 15	11 11	20 68	14 33	19 57	13 02	19 23	11 66		
MOL-%CO	0 40	1 89	1 87	2 68	4 09	3 72	2 69	2 38		
MOL-%CO ₂	61 94	24 15	61 05	42 29	59 24	39 42	64 51	40 98		
MOL-%CH ₄	12 43	6 85	12 17	8 43	14 95	9 94	11 02	7 52		
MOL-%C ₂ H ₆	0 66	0 47	1 00	0 69	1 10	0 79	0 90	0 62		
MOL-%H ₂	0 54	0 30	0 33	0 23	0 22	0 14	0 01	0 01		
MOL-%H ₂	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		
MOL-%H ₂	0 64	0 25	0 38	0 61	0 75	0 50	0 87	0 55		
MOL-%H ₂	0 00	44 37	0 00	30 72	0 00	23 47	0 00	36 39		
MOL-%O ₂	0 01	0 01	0 01	0 01	0 00	0 00	0 00	0 00		
MOL-%C ₂ H ₄	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		
MOL-%C ₂ H ₆	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		
MOL-%C ₂ H ₆	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		
MOL-%C ₂ H ₆	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		
MOL-%C ₂ H ₆	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00		

UPSTR PRESS-(P227) PSIG	590 00	590 00	590 00	590 00
FLOW TEMP-(T120010) DEGF	405 00	376 00	363 00	390 00
MOL WT (WET)	25 10	27 01	26 40	27 02
DRY GAS RATE, 1000-SCFH	64 73	104 59	101 59	95 66
WET GAS RATE, 1000-SCFH	153 70	151 00	152 70	150 40

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STEADY STATE PERIOD NO. 37

GAS STREAMS

	2	3	9	10	11	14
SCFH	9757.3	115540.8	144547.3	10082.1	9646.6	57315.7
MF	44	26.85	18	32	18	18
LB/HR	1131.3	8244.6	6856.0	650.1	457.5	2718.5

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8190.			134.
OIL				
TAR			0.0	

SOLID STREAMS

LB/HR (AS RECEIVED)	1	7	15
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4823.		2447.

LB STEAM/LB MF COAL	1.42
LB OXYGEN/LB MF COAL	0.18
SCF ULTIMATE CH4/LB MF COAL	4.38
AVERAGE CARBON CONV WEIGHT PCT	
CH4R BASIS	47.10
OAS BASIS	36.67
GASIFIER TOP SUPERFOL VEL + FPS	0.584
VOL PCT O2 IN PLENUM	6.52

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	24.15
MOL PCT-CO	5.48
MOL PCT-CO2	46.37
MOL PCT-CH4	11.25
MOL PCT-C2H6	0.91
MOL PCT-N2	0.19
MOL PCT-NH3	0.00
MOL PCT-H2S	0.37
MOL PCT-H2O	11.10
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 38

GAS STREAMS

	2	3	9	10	11	14
SCFH	9527.4	119153.3	144547.3	10234.2	13751.2	57201.7
MM	44	27.34	18	32	18	18
LB/HR	1104.6	8583.6	6856.0	863.0	652.2	2713.1

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	8190.			129.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	5175.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4823.		2237.

STREAM NO. 3

LB STEAM/LB MF COAL	1.42	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.16	MOLE PERCENT - NET BASIS	
SCF ULTIMATE CH ₄ /LB MF COAL	4.70		
AVERAGE CARBON CONW WEIGHT PCT		W ₂ PCT-H ₂	23.03
CHAR BASIS	51.63	MOL PCT-CO	5.32
GAS BASIS	40.11	MOL PCT-CO ₂	47.47
GASIFIER TOP SUPERFOL VEL. FPS	0.734	MOL PCT-CH ₄	11.28
VOL PCT O ₂ IN PLENUM	6.61	MOL PCT-C ₂ H ₆	1.03
		MOL PCT-H ₂	0.00
		MOL PCT-NH ₃	0.00
		MOL PCT-H ₂ S	0.47
		MOL PCT-H ₂ O	11.21
		MOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 39

GAS STREAMS

	2	3	9	10	11	14
SCFH	10251.7	144389.6	145791.2	9937.6	26303.6	57064.6
MM	44	26.08	18	32	18	18
LB/HR	1188.6	5923.2	5915.0	538.0	1247.6	2706.6

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7668.			139.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4100.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3821.		2491.

STREAM NO. 3

LB STEAM/LB MF COAL	1.81	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.22	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH ₄ /LB MF COAL	6.34		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H ₂	25.17
CHAR BASIS	27.9.	MOL PCT-CO	5.82
GAS BASIS	58.47	MOL PCT-CO ₂	44.07
GASIFIER TOP SUPERFCL VEL, FPS	0.776	MOL PCT-CH ₄	9.14
VOL PCT O ₂ IN PLENUM	6.38	MOL PCT-C ₂ H ₆	0.72
		MOL PCT-N ₂	0.09
		MOL PCT-H ₂ O	0.00
		MOL PCT-H ₂ S	0.27
		MOL PCT-H ₂ O	14.54
		MOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 40.

GAS STREAMS

	2	3	9	10	11	14
SOFH	10348.2	111353.1	140884.2	9376.9	31625.0	57072.0
MF	44	26.33	18	32	18	18
LB/HR	1199.8	7724.6	6687.0	790.7	1500.0	2707.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	3540.			118.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4100.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3821.		1779.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE (°F)	Square
PRESSURE (PSIG)	Circle
BED LEVEL (FEET)	Diamond
DENSITY (LB/DU, FT)	Rectangle

STREAM NO. 3

LB STEAM/LB MF COAL	1.75	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.21	MOLE PERCENT - WET BASIS	
SOF ULTIMATE CH/LB MF COAL	2.78		
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS	51.71	MOL PCT-H2	28.02
GAS BASIS	28.98	MOL PCT-CO	4.27
GASIFIER TOP SUPPLCD VEL, FPS	0.425	MOL PCT-CO2	47.94
VOL PCT O2 IN FLENUM	6.24	MOL PCT-CH4	5.07
		MOL PCT-C2H6	0.09
		MOL PCT-H2	0.06
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	14.55
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 41

GAS STREAMS

	2	3	9	10	11	14
SCFH	11883.4	132221.4	140884.2	8941.3	31319.5	57315.6
MR	44	27.13	18	32	18	18
LB/HR	1388.4	9502.4	6687.0	753.9	1485.5	2718.5

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	4294.			123.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4100.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	3821.		1779.

LB STEAM/LB MF COAL	1.75
LB OXYGEN/LB MF COAL	0.20
SCF ULTIMATE CH ₄ /LB MF COAL	5.36
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	51.71
GAS BASIS	55.87
GASIFIER TOP SURFCL VEL, FPS	0.534
VOL PCT O ₂ IN PLENUM	5.96

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	23.26
MOL PCT-CO	5.10
MOL PCT-CO ₂	47.65
MOL PCT-CH ₄	8.39
MOL PCT-C ₂ H ₆	0.78
MOL PCT-H ₂	0.08
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	14.56
MOL PCT-O ₂	0.00

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	37 0	38 0	39	40	41 0
GASIFICATION CALCULATIONS							
84	KQ001	COAL FEED RATE PPH	5175 00	5175 00	4100 00	4100 00	4100 00
550	CSFTG	STEAM FLOW TO GASIF LB/HR	6256 00	6256 00	6915 00	6687 00	6697 00
127	F207	GSFR O2 FEED RATE SCFH	10082 1	10234 2	9937 60	9376 91	9941 26
581	CSCTG	STNPIPE STM TO GSFR PPH	2647 80	2451 70	1818 69	1579 44	1603 70
345	T205	GSFR BOTTOM BD TEMP DEGF	1023 05	1390 19	1404 34	1411 02	1411 54
424	C2FBDG	GSF FLD BED DENSITY LB/FT3	17 8513	12 5513	20 6308	19 1951	17 7949
425	C2FBHG	GSF FLD BED HEIGHT FT	14 3850	17 5153	11 9645	14 1057	12 0504
572	CGBV	GASIFIER BED VOLUME FT3	106 415	136 810	87 9964	115 426	93 5037
427	C2SIB	GSF SOLIDS INVENTORY LB	1895 49	1592 44	1805 92	2230 34	1666 64
426	C2SRTG	GSF SOLIDS RES TIME MIN	23 5826	19 8123	28 3594	35 0242	26 1722
429	C2SCG2	GASF COAL FEED PPH/FT2	721 966	721 966	579 915	579 915	579 915
428	C2SCG1	GASF COAL FEED PPH/FT2	43 8305	27 8263	45 5926	25 5205	43 9425
516	C2GPD	GSF PRESS GPOF "H2O FTBD	3 49595	2 16586	4 24493	2 45763	2 41953
420	C2SWBG	GSF SUP VEL-BOT BED FPS	0 678425	0 672716	0 629027	0 604951	0 601832
423	C2SWOG	GSF SUP VEL-OUTLET FPS	0 423967	0 430838	0 460105	0 278842	0 328882
421	C2SWTG	GSF SUP VEL-TOP BED FPS	0 582986	0 734372	0 775627	0 424690	0 534114
422	C2SWMG	GSF SUP VEL-MEAN BED FPS	0 621306	0 705544	0 702327	0 514922	0 566973
584	CGSF02	GSF O2 RAW COAL SCF/LB	1 34622	1 97762	2 42380	2 28706	2 18079
400	C2SOG2	GASF O2/MF COAL SCF/LB	2 09060	2 12214	2 68093	2 45419	2 34016
415	C2SOG4	GASF O2/MAF COAL SCF/LB	2 15362	2 29422	2 92439	2 76683	2 64019
585	CGSF03	GASF O2 RAW COAL LB/LB	0 164278	0 166756	0 284179	0 192849	0 152886

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	37 #	38 #	39	40	41 #
422	C2S0G1	GASF Q2/MF COAL LB/LB	0 176283	0 170942	0 219314	0 206941	0 197326
424	C2S0G3	GASF Q2/MAF COAL LB/LB	0 198884	0 201884	0 247432	0 223472	0 222624
386	CGSM5M	GASF STM/RAW COAL SCF/LB	27 9071	27 9071	35 5273	34 3559	34 3559
427	C2S0G2	GASF STM/MF COAL SCF/LB	29 9464	29 9464	38 1235	36 8665	36 8665
429	C2S0G4	GASF STM/MAF COAL SCF/LB	32 7858	32 7858	43 8112	41 5930	41 5930
587	CGS5TH	GASF STM/RAW COAL LB/LB	1 32483	1 32483	1 60656	1 63098	1 63098
436	C2S0G1	GASF STM/MF COAL LB/LB	1 42165	1 42165	1 80984	1 75016	1 75016
428	C2S0G1	GASF STM/MAF COAL LB/LB	1 60391	1 60391	2 04187	1 97455	1 97455
342	F255	WASTE WATER FLOW GPM	16 0000	16 0000	16 8523	7 78891	9 43766
243	F221	TAR FLOW THERM OYDER GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RAW GS SCRBR EF 1000-SCFH	116 541	119 153	144 400	111 353	132 921
374	CHRG6	RAW GAS FROM GASF SCFH	257779	260392	274638	154648	192095
375	CTGFB	TOTAL GAS FROM BED SCFH	248126	250728	264985	144994	182442
475	C2CI	GASF CARBON INVENTORY LB	1319 26	1108 34	1328 19	1543 39	1155 32
551	COGPPH	CARBON GASIFIED PPH	1516 83	1661 99	711 715	1318 81	1318 81
584	C2GR4	GASF RATE LBC/HR-FT380	14 2465	12 1482	8 08801	11 4255	14 1346
585	C2GR3	GASF RATE LBC/HR-LBC60	1 14916	1 49953	0 551849	0 834485	1 14349
455	C2MR02	CH4 PROD GAS SCFH FT380	123 200	98 2798	149 934	48 9083	119 509
454	C2MF01	CH4 IN RAW GAS LBC/LBC60	0 114228	0 383592	0 111752	0 115657	0 105711
451	C2CG1	CARBON CONVRSN (CHAP) %	47 0886	51 6320	27 9082	51 7139	51 7139
452	C2CG12	CARBON CONVRSN (GAS) %	16 6743	40 1093	58 4693	28 9776	55 8664

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	37 1	38 2	39	40	41 3
596	CCCTUG	C CNVRTD TO USEFUL GAS %	25 9172	26 3799	36 9460	19 6496	31 2632
592	CECH4R	EQUIV CH4 SCF/LB-RAW	2 02059	2 15948	3 85335	1 42908	3 24041
591	CECH4M	EQUIV CH4 SCF/LB-MF	3 25286	3 09037	4 13494	1 53351	3 58452
579	CECH4C	EQUIV CH4 SCF/LB-MAF	3 66988	3 82504	4 66507	1 73012	4 04408
466	C2NYG4	GSP CH4 YLD-MAF CF-HR-LB	0 06706	2 14551	3 89584	1 66696	2 29256
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	22078 6	22604 2	24206 4	10613 2	20478 0
560	CUCH4R	ULT CH4/RAW COAL SCF/LB	4 26639	4 38342	5 90401	2 58858	4 39463
561	CUCH4M	ULT CH4/MF COAL SCF/LB	4 57817	4 70275	6 22545	2 77775	5 05962
562	CUCH4A	ULT CH4/MAF COAL SCF/LB	5 16312	5 30661	7 14771	3 13388	6 04677
450	C2SOCG	STM CONV - H2O BALANCE %	13 9166	11 9775	7 62377	44 3041	35 9832
598	CSCH2	STM CONV - H2 BALANCE %	10 0866	9 23773	21 8720	6 67291	13 8938

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		37 #	38 #	39	40	41 #
CHAR COOLER CALCULATIONS								
230	F205	CHR CLR STM FEED	PPH	2718 53	2713 13	2706 62	2706 97	2718 53
234	F230	H2O FLW TO CHR CLR	GPH	17 6849	16 9896	18 3095	13 6195	16 2332
336	F252	HP STM TO CHR CLR	PPH	246 127	255 646	234 018	248 209	241 322
487	C2FBDC	CC FLD BED DNSTY	LB/FT3	24 2760	22 5420	26 5938	21 8305	21 6750
488	C2FBHC	CC FLD BED HEIGHT	FT	1 65000	0 250000	14 2090	5 88080	2 50000
573	CCCBV	CHAR CLR BED VOLUME	FT3	6 29400	2 06000	28 9120	16 9250	8 00000
490	C2SIC	CC SOLIDS INVENTORY	LB	152 980	46 9200	1034 80	369 480	173 400
489	C2SRTC	CC SOLIDS RES TIME	MIN	3 74116	1 24550	25 0240	12 4584	5 84669
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	926 732	847 298	939 805	674 040	674 040
499	C2SCC1	CC MF CHAR FD	LB/HR-FT2	389 323	4085 86	63 7614	105 076	222 433
534	C2CPD	CC PRESS DRDP	"H2O, FTBD	4 66000	4 33000	5 12152	4 20419	4 16700
464	C2SSV	CC STEAM SUP VEL	FPS	0 386476	0 493650	0 401316	0 404169	0 400385
485	C2NSV	CC VAP H2O SUP VEL	FPS	0 246017E-03	0 137854E-03	0 256248E-03	0 218900E-03	0 228882E-03
590	CCATSM	CC ATM STM SUP VEL	FPS	0 571940E-01	0 560046E-01	0 574508E-01	0 552762E-01	0 555985E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 443916	0 549892	0 538923	0 559664	0 544213
521	C2SCC3	CC MF CHR RAW COAL	LB/LB	0 472767	0 472245	0 605143	0 424016	0 434016
493	C2SSC3	CC STM/MF CHAR	LB/LB	1 11116	1 21291	1 09090	1 52123	1 52772
588	CCSTM	CC STM/RAW COAL	LB/LB	0 525320	0 524276	0 660152	0 660237	0 663056
494	C2SSC4	CC STM/MF COAL	LB/LB	0 561709	0 562580	0 708392	0 708485	0 711509
589	CCSTM	CC STM/MF COAL	LB/LB	0 635981	0 634717	0 799215	0 799219	0 802721
497	C2SHC3	CC H2O/MF CHAR	LB/LB	0 603933E-01	0 633532E-01	0 615545E-01	0 752153E-01	0 761956E-01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		37 #	38 #	39	40	41 #
498	C2SHC4	CC H2O RAW COAL	LB/LB	0 285047E-01	0 273841E-01	0 372493E-01	0 317766E-01	0 330701E-01
599	CERPPH	CHAR REMOVAL RATE	PPH	2446 57	2226 87	2481 08	1779 47	1779 47

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	37		38		39		40		41	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL%-H2	27.16	24.15	25.94	22.03	29.45	25.17	32.79	28.02	27.23	23.26
MOL%-CO	6.17	5.49	5.99	5.22	6.81	5.82	5.00	4.27	5.97	5.10
MOL%-CO2	52.16	46.37	53.46	47.47	51.57	44.07	56.10	47.94	55.77	47.65
MOL%-CH4	12.65	11.25	12.71	11.20	10.69	9.14	8.93	5.07	9.82	8.39
MOL%-C2H6	1.03	0.91	1.16	1.03	0.94	0.72	0.10	0.09	0.91	0.78
MOL%-N2	0.21	0.10	0.00	0.00	0.10	0.09	0.07	0.06	0.09	0.08
MOL%-H2S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-H2O	0.41	0.37	0.53	0.47	0.31	0.27	0.00	0.00	0.00	0.00
MOL%-O2	0.00	11.10	0.00	11.21	0.00	14.54	0.00	14.55	0.00	14.56
MOL%-C2H4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C3H6	0.21	0.12	0.21	0.19	0.21	0.18	0.00	0.00	0.20	0.17
MOL%-C3H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C2H8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C4H6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL%-C4H10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

UPSTR PRESS-(P227) PSIG	596.03	596.68	597.01	596.66	596.19
FLOW TEMP-(T120010) DEG F	301.20	301.97	320.00	320.00	320.00
MOL WT (WET)	26.72	27.18	25.99	26.33	27.13
DRY GAS MAKE, 1000-SCFH	103.61	105.79	123.41	95.16	113.57
WET GAS MAKE, 1000-SCFH	116.54	119.15	144.40	111.35	132.92

STEADY STATE PERIOD NO. 42

GAS STREAMS

	2	3	9	10	11	14
SCFH	9846.6	134881.6	142756.9	10522.3	25142.9	61675.6
MW	44	25.52	18	32	18	18
LB/HR	1141.6	9069.5	6771.1	997.3	1240.0	2925.3

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7842.			126.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4240.		2033.

LB STEAM/LB MF COAL	1.60
LB OXYGEN/LB MF COAL	0.21
SCF ULTIMATE CH ₄ /LB MF COAL	4.31
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	50.43
GAS BASIS	33.78
GASIFIER TOP SUPPLQ VEL, FPS	0.554
VEL PCT O ₂ IN PLENUM	6.66

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	21.63
MOL PCT-CO	3.65
MOL PCT-CO ₂	40.67
MOL PCT-CH ₄	8.43
MOL PCT-C ₂ H ₆	0.65
MOL PCT-N ₂	0.00
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.24
MOL PCT-H ₂ O	24.65
MOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 43

GAS STREAMS

	2	3	9	10	11	14
SCFH	14014.1	142573.4	139387.5	10286.6	7928.4	57506.5
MM	44	26.77	18	32	18	18
LB/HR	1624.8	10056.8	6611.3	865.7	376.1	2727.6

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6750.			132.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4240.		2033.

STREAM NO. 3		AVERAGE GAS COMPOSITION	
LB STEAM/LB MF COAL		MOLE PERCENT - WET BASIS	
LB OXYGEN/LB MF COAL			
SCF ULTIMATE CH4/LB MF COAL			
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS		MOL PCT-H2	20.11
GAS BASIS		MOL PCT-CO	3.96
GASIFIER TOP SUPPPL VEL, FPS		MOL PCT-CO2	44.74
VOL PCT O2 IN PLENUM		MOL PCT-CH4	7.13
		MOL PCT-C2H6	0.63
		MOL PCT-N2	0.16
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.00
		MOL PCT-H2O	23.18
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO.49

GAS STREAMS

	2	3	9	10	11	14
SCFH	12600.3	121267.7	141453.7	9455.8	17062.6	62152.7
MW	44	25.71	18	32	18	18
LB/HR	1460.9	8218.3	6709.3	797.3	810.2	2948.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6416.			125.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4240.		1888.

STREAM NO. 3

LB STEAM/LB MF COAL	1.58	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.19	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB MF COAL	3.68		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	22.48
CHAR BASIS	56.38	MOL PCT-CO	4.17
GAS BASIS	24.75	MOL PCT-CO2	41.90
GASIFIER TOP SUPERF. VEL. FPS	0.456	MOL PCT-CH4	7.22
VOL PCT O2 IN FLENUM	6.27	MOL PCT-C2H6	0.64
		MOL PCT-N2	0.00
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.32
		MOL PCT-H2O	23.57
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 45

GAS STREAMS

	2	3	9	10	11	14
SCFH	12574.0	146019.3	141190.6	10604.8	37052.9	63010.7
MM	44	25.83	18	32	18	18
LB/HR	1457.9	9838.6	6636.8	894.2	1757.4	2988.6

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	2490.			134.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4240.		1669.

LB STEAM/LB MF COAL	1.58
LB OXYGEN/LB MF COAL	0.21
SCF ULTIMATE CH4/LB MF COAL	4.89
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	56.38
GAS BASIS	32.81
GASIFIER TOP SUPRFCL VEL, FPS	0.388
VEL PCT O2 IN PLENUM	6.99

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	21.82
MOL PCT-CO	4.15
MOL PCT-CO2	41.39
MOL PCT-CH4	8.38
MOL PCT-C2H6	0.71
MOL PCT-N2	0.06
MOL PCT-NH3	0.00
MOL PCT-H2S	0.41
MOL PCT-H2O	22.96
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 46

GAS STREAMS

	2	3	9	10	11	14
SOPH	12214.9	143509.7	140131.2	9824.5	31525.0	62246.9
MM	44	26.22	18	32	18	18
LB/HR	1416.2	9915.2	6646.5	826.4	1500.0	2952.4

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8190.			129.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4550.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4240.		1890.

STREAM NO. 3

LB STEAM/LB MF COAL	1.57	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.20	MOLE PERCENT - WET BASIS	
SOF ULTIMATE CHA/LB MF COAL	4.91		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	20.42
CHAR BASIS	54.66	MOL PCT-CO	4.70
GAS BASIS	29.69	MOL PCT-CO2	41.40
GASIFIER TOP SUPPLY VEL, FPS	0.564	MOL PCT-CH4	8.35
VOL PCT O2 IN FLENUM	6.55	MOL PCT-C2H6	0.65
		MOL PCT-H2	0.08
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.65
		MOL PCT-H2O	23.67
		MOL PCT-O2	0.00

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	42	43	44	45	46
GASIFICATION CALCULATIONS							

84	X0001	COAL FEED RATE PPH	4550 00	4550 00	4550 00	4550 00	4550 00
550	CSFTG	STEAM FLOW TO GASF LB./HR	6771 08	6611 27	6709 27	6696 79	6646 54
227	F203	GSFR O2 FEED RATE SCFH	10522 3	10266 6	9455 83	10604 8	9824 58
581	CSCCTG	STNPIPE STM TO GSFR PPH	2049 68	2692 45	2481 11	1582 98	1882 94
345	T205	GSFR BOTTOM BD TEMP DEGF	1376 87	1390 88	1411 20	1415 18	1405 42
424	C2FB00	GSF FLD BED DUSTY LB./FT3	19 2720	17 9170	18 7058	13 3532	16 1657
425	C2FBH0	GSF FLD BED HEIGHT FT	13 2260	9 76690	14 8349	14 8699	13 0243
572	C0BV	GASIFIER BED VOLUME FT3	99 7994	77 4948	112 986	113 228	100 952
427	C2S10	GSF SOLIDS INVENTORY LB	1622 27	1388 22	2025 71	1505 37	1629 67
426	C2SRTG	GSF SOLIDS RES TIME MIN	22 9559	19 6454	28 6648	21 3016	23 0606
429	C2SCG2	GASF COAL FEED PPH/FT2	643 564	643 564	643 564	643 564	643 564
428	C2SCG1	GASF COAL FEED PPH/FT2	45 5914	55 7142	40 2786	48 1845	45 0709
526	C2GPD	GSF PRESS DROP "H2O/FTBD	3 64904	3 45092	3 79023	2 58938	3 09503
420	C2SVB0	GSF SUP VEL-BOT BED FPS	0 630460	0 671365	0 661721	0 608452	0 613987
423	C2SV00	GSF SUP VEL-OUTLET FPS	0 439010	0 405070	0 395660	0 275269	0 476536
421	C2SVT0	GSF SUP VEL-TOP BED FPS	0 553581	0 528912	0 455975	0 788124	0 564119
422	C2SUM0	GSF SUP VEL-MEAN BED FPS	0 592021	0 606128	0 558247	0 498288	0 589017
584	C0SF02	GSF O2 RAW COAL SCF/LB	2 31259	2 25639	2 07620	2 33074	2 15923
411	C2S0G2	GASF O2 NF COAL SCF/LB	2 48159	2 42128	2 30807	2 50106	2 31702
435	C2S0G4	GASF O2 NAF COAL SCF/LB	2 79975	2 72171	2 51529	2 22171	2 61488
585	C0SF03	GASF O2/RAW COAL LB/LB	0 195001	0 190262	0 175237	0 196521	0 182070

UPDATED CALCULATION VALUES

PAGE 4

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	42 2	43 2	44 2	45 2	46 2
432	C250G1	GASF O2/MF COAL LB/LB	0 209251	0 204166	0 188043	0 218893	0 195375
434	C250G3	GASF O2/MAF COAL LB/LB	0 236079	0 230242	0 212152	0 227931	0 220423
586	CGSM5M	GASF STM/PAW COAL SCF/LB	31 3473	30 6874	31 0611	31 0032	30 7707
437	C255G2	GASF STM/MF COAL SCF/LB	33 6380	32 8441	33 3310	33 2690	32 0194
439	C255G4	GASF STM MAF COAL SCF/LB	37 9507	37 0550	37 6042	37 5343	37 2527
587	CGSSTM	GASF STM/PAW COAL LB/LB	1 48815	1 45203	1 47456	1 47182	1 46078
436	C255G1	GASF STM/MF COAL LB/LB	1 59690	1 55921	1 58232	1 57938	1 56753
438	C255G3	GASF STM/MAF COAL LB/LB	1 80162	1 75911	1 78519	1 78187	1 76850
342	F255	WASTE WATER FLOW GPM	17 2354	14 8358	14 1000	5 47172	18 0000
243	F221	TAR FLOW THRL UNDER GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RM GS SCFBR EF 1000-SCFH	134 882	142 573	121 288	146 019	143 518
574	CNRGG	RAW GAS FROM GASF SCFH	268792	253486	225147	167182	284749
575	CTGFB	TOTAL GAS FROM BED SCFH	259138	243832	215494	157528	275095
435	C201	GASF CARBON INVENTORY LB	1119 27	957 340	1339 00	995 048	1106 55
551	CCGPPH	CARBON GASIFIED PPH	1427 26	1427 26	1595 60	1595 60	1547 07
594	C2GR4	GASF RATE LBC/HR-FT3BD	14 3012	15 4177	14 1222	14 0920	15 3248
595	C2GR3	GASF RATE LBC/HR-LBCBD	1 27506	1 48992	1 19164	1 60354	1 39811
455	C2MRG2	CH4 PROD GAS SCFH-FT3BD	113 872	131 116	77 5588	108 042	118 601
454	C2MRG1	CH4 IN RAW GAS LBC/LBCBD	0 321023	0 325187	0 206936	0 388743	0 342221
451	C2CG1	CARBON COMPEN (CHAR) %	50 4314	50 4314	56 3798	56 3798	54 6648
452	C2CG12	CARBON COMPEN (GAS) %	33 7774	34 6851	24 7460	32 8878	29 6948

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	42 #	43 #	44 #	45	46 #
596	CCCTUG	C CNVRTD TO USEFUL GAS %	25 6381	25 0766	22 3201	28 7336	28 5132
592	CECH4R	EQUIV CH4 SCF/LB-RAW	2 93332	2 68321	2 51412	3 22478	3 09565
591	CECH4M	EQUIV CH4 SCF/LB-MF	3 14766	2 87929	2 48323	3 46043	3 32188
579	CECH4C	EQUIV CH4 SCF/LB-MAF	3 55124	2 24844	2 80168	3 90409	3 74777
466	C2MYG4	GSE CH4 VLD-MAF CF-HR-LB	2 02281	2 70353	2 33164	3 25582	3 18656
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	18263 9	17853 4	15592 3	20728 9	20829 0
560	CUCH4R	ULT CH4-RAW COAL SCF/LB	4 81484	2 92283	3 42688	4 55579	4 57781
561	CUCH4M	ULT CH4-MF COAL SCF/LB	4 20778	4 21057	3 67731	4 88871	4 91224
562	CUCH4A	ULT CH4-MAF COAL SCF/LB	4 85962	4 75040	4 14877	5 51549	5 54214
450	C25CG	STM CONV - H2O BALANCE %	1 66501	16 6490	20 1911	45 4862	-5 28279
598	CSCH2	STM CONV - H2 BALANCE %	10 9232	0 88609	6 90409	14 2781	11 8946

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		42 \$	43 2	44 0	45	46 8
CHAR COOLER CALCULATIONS								
230	F205	CHR CLR STM FEED	PPH	2925 32	2727 50	2947 96	2988 65	2952 42
234	F230	H2O FLW TO CHAR CLR	GPH	16 6757	17 3503	16 4326	17 6990	16 9520
336	F253	MF STM TO CHAR CLR	PPH	231 676	202 895	212 672	210 982	215 660
487	C2FBDC	CC FLD BED DNSTY	LB/FT3	22 5420	17 3400	19 9410	13 3345	17 3400
488	C2FBHC	CC FLD BED HEIGHT	FT	0 250000	1 00000	0 250000	11 3486	2 50000
571	C0CBV	CHAR CLP BED VOLUME	FT3	2 06000	6 15200	2 06000	21 3600	6 00000
490	C2S1C	CC SOLIDS INVENTORY	LB	46 4400	106 600	41 0800	410 170	138 720
489	C2SRTC	CC SOLIDS RES TIME	MIN	1 37041	2 14916	1 31971	12 4344	4 40477
520	C2SCC2	CC MF CHAR FD	LB/HR-FT2	770 114	770 114	707 430	707 430	715 753
499	C2SCC1	CC MF CHAR FD	LB/HR-FT2	986 942	330 478	986 610	59 5541	236 198
534	C2CPD	CC PRESS DROF	"H2O/FTBD	4 33000	3 33000	3 53300	2 56800	2 33000
484	C2SSV	CC STEAM SUP VEL	FPS	0 183559	0 182532	0 169832	0 421140	0 378712
485	C2NSV	CC VAP H2O SUP VEL	FPS	0 215143E-03	0 242019E-03	0 230871E-03	0 249636E-03	0 237016E-03
590	C0ATSM	CC ATM STM SUP VEL	FPS	0 514440E-01	0 526735E-01	0 484117E-01	0 598941E-01	0 513533E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 437238	0 439451	0 418475	0 491284	0 430283
521	C2SCC3	CC MF CHR/RAW COAL	LB/LB	0 446835	0 446835	0 410465	0 410465	0 415294
493	C2SSC3	CC STM/MF CHAR	LB/LB	1 43885	1 54152	1 57646	1 60025	1 56247
588	C0CSTM	CC STM-RAW COAL	LB/LB	0 642928	0 599469	0 647902	0 656846	0 648884
494	C2SSC4	CC STM/MF COAL	LB/LB	0 689912	0 643276	0 695249	0 704846	0 696202
599	C0CSTM	CC STM/MF COAL	LB/LB	0 778364	0 728749	0 784385	0 795217	0 785574
497	C2SMC3	CC H2O/MF CHAR	LB/LB	0 634147E-01	0 711022E-01	0 712911E-01	0 790472E-01	0 748304E-01

UPDATED CALCULATION VALUES PAGE 7

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		42 #	43 #	44 #	45	46 #
498	C25NC4	CC H2O/PAW COAL	LB/LB	0 305701E-01	0 318067E-01	0 301245E-01	0 324461E-01	0 310766E-01
599	CFRPPH	CHAR REMOVAL RATE	PPH	2033 10	2033 10	1867 62	1867 62	1869 59

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	42		43		44		45		46	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOLX-H2	28 71	21 63	26 18	20 11	29 41	22 48	28 32	21 32	26 75	20 42
MOLX-CO	4 84	3 65	5 15	2 96	5 46	4 17	5 28	4 15	6 16	4 70
MOLX-CO2	53 97	40 67	58 24	44 74	54 30	41 50	53 73	41 39	54 24	41 40
MOLX-CH4	11 18	8 42	9 28	7 13	9 45	7 22	10 87	8 38	10 92	8 35
MOLX-C2H6	0 86	0 65	0 82	0 63	0 84	0 64	0 92	0 71	0 85	0 65
MOLX-N2	0 00	0 00	0 21	0 16	0 00	0 00	0 00	0 06	0 11	0 08
MOLX-NH3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-H2S	0 22	0 24	0 00	0 00	0 42	0 12	0 54	0 41	0 85	0 65
MOLX-H2O	0 00	24 65	0 00	23 19	0 00	22 57	0 00	22 96	0 00	23 67
MOLX-O2	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C2H4	0 11	0 08	0 10	0 08	0 11	0 08	0 16	0 12	0 11	0 03
MOLX-C3H6	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C3H8	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C4H8	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
MOLX-C4H10	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00

UPSTR PRESS-(P227) PSIG	597 99	597 49	588 54	587 56	586 59
FLOW TEMP-(TI20018) DEGF	359 45	354 62	354 75	352 60	354 84
MOL WT (WET)	25 44	26 77	25 61	25 69	26 00
DRY GAS MAKE. 1000-SCFH	101 63	109 52	92 70	112 49	109 53
NET GAS MAKE. 1000-SCFH	134 88	142 57	121 29	146 02	143 51

STEADY STATE PERIOD NO. 47

GAS STREAMS

	2	3	9	10	11	14
SOFM	10051.1	128375.3	123266.4	12300.8	61563.1	65686.7
MW	44	26.25	18	32	18	18
LB/HR	1165.4	8879.1	5846.6	1037.2	2920.0	3115.7

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6520.			29.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6000.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	5591.		2862.

STREAM NO. 3

LB STEAM/LB MF COAL	1.05	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.19	MOLE PERCENT - WET BASIS	
SO2 ULTIMATE CH4/LB MF COAL	4.06		
AVERAGE CARBON CONV WEIGHT PCT			
CHAR BASIS	45.70	MOL PCT-H2	27.23
GAS BASIS	40.16	MOL PCT-CO	5.93
GASIFIER TOP SURFOL VEL, FPS	0.491	MOL PCT-CO2	45.47
MOL PCT O2 IN FLENUM	8.07	MOL PCT-CH4	10.00
		MOL PCT-C2H6	0.65
		MOL PCT-H2	0.46
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.46
		MOL PCT-H2O	9.62
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 48

GAS STREAMS

	2	3	9	10	11	14
SCFH	9696.2	114763.3	122164.6	9584.6	47508.5	65211.3
MF	44	26.32	18	32	19	18
LB/HR	1124.1	7960.3	5794.4	809.0	2253.4	3093.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7216.			3.
OIL				
TAR				0.0

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6000.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	5591.		2862.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, °C/F	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/CU.FT	Rectangle

LB STEAM/LB MF COAL	1.04
LB OXYGEN/LB MF COAL	0.14
SCFH ULTIMATE CH4/LB MF COAL	3.92
AVERAGE CARBON CONW WEIGHT PCT	
CHAR BASIS	45.70
GAS BASIS	29.71
GASIFIER TOP SURFOL VEL., FPS	0.468
VOL PCT O2 IN PLENUM	7.28

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	26.88
MOL PCT-CO	5.58
MOL PCT-CO2	45.87
MOL PCT-CH4	9.96
MOL PCT-C2H6	1.21
MOL PCT-N2	0.09
MOL PCT-NH3	0.00
MOL PCT-H2S	0.19
MOL PCT-H2O	9.83
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 49

GAS STREAMS

	2	3	9	10	11	14
SCFH	10447.1	127300.6	118700.9	11007.9	58373.8	61386.8
MM	44	24.28	18	32	18	18
LB/HR	1211.3	8149.1	5677.5	928.2	2768.7	2811.6

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7888.			27.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		2043.

LB STEAM/LB MF COAL	1.24
LB OXYGEN/LB MF COAL	0.20
SCF ULTIMATE CH4/LB MF COAL	4.85
AVERAGE CARBON CONN WEIGHT PCT	
CHAR BASIS	56.43
GAS BASIS	40.87
GASIFIER TOP SUPPLY VEL, FPS	0.608
VEL PCT O2 IN FLENUM	8.42

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	30.87
MOL PCT-CO	6.31
MOL PCT-CO2	40.99
MOL PCT-CH4	9.52
MOL PCT-C2H6	0.70
MOL PCT-N2	0.30
MOL PCT-H2S	0.00
MOL PCT-H2O	11.00
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 50

GAS STREAMS

	2	3	9	10	11	14
SCFH	10448.0	124106.2	120391.9	10394.8	84172.2	63266.4
MM	44	28.41	18	32	18	18
LB/HR	1211.4	9290.7	5710.3	876.5	3043.7	3000 B

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	8235.			399.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		2317.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE (DEG F)	Rectangle
PRESSURE (PSIG)	Circle
BED LEVEL (FEET)	Diamond
DENSITY (LB/CU. FT.)	Square

LB STEAM/LB MF COAL	1.25
LB OXYGEN/LB MF COAL	0.19
SCF ULTIMATE CH4/LB MF COAL	4.98
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	45.73
GAS BASIS	50.74
GASIFIER TOP SUPERFOL VEL, FPS	0.550
VOL PCT O2 IN PLENUM	7.95

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	21.37
MOL PCT-CO	3.13
MOL PCT-CO2	51.69
MOL PCT-CH4	11.00
MOL PCT-C2H6	1.07
MOL PCT-H2	0.00
MOL PCT-NH3	0.00
MOL PCT-H2S	0.00
MOL PCT-H2O	11.11
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 51

GAS STREAMS

	2	3	9	10	11	14
SOFH	10465.8	128888.9	119820.5	10618.3	20674.8	62626.7
MM	44	25.70	18	32	18	18
LB/HR	1213.4	8728.2	5683.2	895.3	980.6	2970.4

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	5605.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	8.8		
LB/HR (MOISTURE FREE)	4566.		2189.

LB STEAM/LB MF COAL	1.29
LB OXYGEN/LB MF COAL	0.20
SOFT ULTIMATE CH4/LB MF COAL	4.94
AVERAGE CARBON CONW WEIGHT PCT	
CHAR BASIS	49.64
GAS BASIS	47.45
GASIFIER TOP SUPPLY VEL, FPS	0.414
VOL PCT O2 IN PLENUM	9.14

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	28.44
MOL PCT-CO	4.33
MOL PCT-CO2	44.10
MOL PCT-CH4	9.07
MOL PCT-C2H6	0.82
MOL PCT-N2	0.10
MOL PCT-NH3	0.00
MOL PCT-H2S	0.41
MOL PCT-H2O	11.80
MOL PCT-O2	0.00

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTIC	NAME	DESCRIPTION	47 #	48 #	49 #	50 #	51
GASIFICATION CALCULATIONS							
84	XQ801	COAL FEED RATE PPH	6000 00	6000 00	4900 00	4900 00	4900 00
550	CSFTG	STEAM FLOW TO GASIF LB/HR	5846 62	5784 37	5677 52	5710 29	5683 19
227	F10C	GSFR O2 FEED RATE SCFH	12500 8	9594 52	11007 9	10394 8	10618 2
561	CSCCTG	STNPIPE STM TO GSFR FPH	250 316	908 274	355 541	555 075	2167 72
345	T205	GSFR BOTTOM BD TEMP DEGF	1453 04	1392 62	1437 58	1392 36	1399 85
424	C2F800	GSF FLO BED DENSITY LB/FT3	21 2459	21 7084	20 2597	21 4619	19 5486
425	C2F8HG	GSF FLO BED HEIGHT FT	12 0725	11 9700	10 7636	14 6181	15 6490
572	CGRV	GASIFIER BED VOLUME FT3	92 0933	69 4200	88 2609	116 787	108 728
427	C2S1G	GSF SOLIDS INVENTORY LB	1911 72	1941 20	1797 45	2509 54	2069 53
426	C2SRTG	GSF SOLIDS RES TIME MIN	20 5143	20 8306	25 6179	32 9747	27 1930
428	C2SCG2	GASF COAL FEED PPH/FT2	248 656	848 656	693 069	693 069	693 069
418	C2SCG1	GASF COAL FEED FPH/FT2	65 1512	67 0991	55 5172	41 9567	45 0666
526	C2GPM	GSF PRESS DROP "H2O/FTBD	4 06335	2 34638	3 93285	4 15242	2 85175
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 477560	0 489049	0 459900	0 460922	0 574329
421	C2SV0G	GSF SUP VEL-OUTLET FPS	0 240573	0 279430	0 393151	0 378782	0 255448
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 490882	0 466155	0 505226	0 549542	0 413820
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0 424221	0 477602	0 534063	0 505222	0 494074
584	CGEF02	GSF O2 RAW COAL SCF/LB	2 85013	1 59910	2 24651	2 12158	2 16700
452	C2S0G3	GASF O2/HR COAL SCF/LB	2 19995	1 71595	2 41068	2 27641	2 22535
475	C2S0G4	GASF O2/HR COAL SCF/LB	1 48200	1 93595	2 71978	2 56826	2 62348
585	CGSF03	GASF O2 RAW COAL LB/LB	0 172670	0 154606	0 189429	0 178876	0 182724

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	47 L	48 L	49 L	50 L	51
412	C250G1	GASF O2/MF COAL LB/LB	0 185503	0 144692	0 202272	0 191950	0 196077
434	C250G2	GASF O2/MF COAL LB/LB	0 209286	0 162242	0 229332	0 216560	0 221216
586	C05MSM	GASF STM/RAW COAL SCF/LB	20 5262	20 3427	24 4071	24 5400	24 4314
407	C255G2	GASF STM/MF COAL SCF/LB	22 0261	21 8293	26 1907	26 3419	26 2168
419	C255G4	GASF STM/MF COAL SCF/LB	24 8501	24 6200	29 5485	29 7191	29 5780
567	C05STM	GASF STM, RAW COAL LB/LB	0 974439	0 965729	1 15068	1 16537	1 15983
436	C255G1	GASF STM/MF COAL LB/LB	1 04565	1 03630	1 24235	1 25052	1 24499
429	C255G2	GASF STM/MF COAL LB/LB	1 17971	1 16916	1 40276	1 41085	1 40416
342	F255	WASTE WATER FLOW GPM	14 3290	15 0592	17 5564	18 0983	12 3194
343	F221	TAR FLOW THRLD OXDZR GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RM GS SCRBR EF 1000-SCFH	120 375	114 763	127 301	124 106	128 899
574	CNRGG	RAW GAS FROM GASF SCFH	234429	235483	264286	266206	215692
575	CTGFB	TOTAL GAS FROM BED SCFH	224776	225830	254634	256633	206039
475	C2CT	GASF CARBON INVENTORY LB	1253 90	1274 27	1169 14	1791 81	1450 74
551	CCGPFH	CARBON GASIFIED PPH	1705 59	1705 59	1719 00	1392 77	1512 96
594	C2GR4	GASF RATE LBC/HR-FT3BD	18 5202	19 0739	19 4063	11 9343	13 9151
595	C2GR3	GASF RATE LBC/HR-LBCBD	1 26012	1 24100	1 47207	0 777857	1 04289
455	C2MRG2	CH4 PROD GAS SCFH/FT3BD	139 411	127 782	127 319	116 885	107 490
454	C2MRG1	CH4 IN RAW GAS LBC/LBCBD	0 299927	0 262084	0 320014	0 240893	0 254750
451	C2CG1	CARBON CONVRSN (CHAR) %	45 7018	45 7018	56 4102	45 7305	49 6412
452	C2CG12	CARBON CONVRSN (GAS) %	40 1556	40 7054	40 0671	50 7360	47 4489

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	47 2	48 4	49 9	50 4	51
596	CCCTUG	C ONVRTG TO USEFUL GAS %	23 7251	21 8700	29 6562	25 5964	26 8004
592	CECH4R	EQUIV CH4 SCF/LB-RAW	2 51844	2 58195	2 97101	2 82771	3 41533
591	CECH4M	EQUIV CH4 SCF/LB-MF	2 70248	2 77063	3 18812	4 10743	3 66491
579	CECH4C	EQUIV CH4 SCF/LB-MAF	3 04896	3 12585	3 59686	4 63404	4 11479
466	C2MYG4	GSE CH4 YLD-MAF CF-MF-LB	2 52057	2 30555	2 99450	3 37270	2 88779
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	22718 8	21399 0	22595 4	22640 1	22579 2
560	CUCH4R	ULT CH4/RAW COAL SCF/LB	3 78647	3 64983	4 51130	4 62044	4 60799
561	CUCH4M	ULT CH4/MF COAL SCF/LB	4 06318	3 91655	4 94828	4 95888	4 94473
562	CUCH4A	ULT CH4/MAF COAL SCF/LB	4 58411	4 41889	5 58269	5 59375	5 57968
450	C2SCG	STM CONV - H2O BALANCE %	0 536382	-0 378125	-17 3877	-21 1480	24 8970
598	CSCH2	STM CONV - H2 BALANCE %	14 1399	9 53994	20 9576	15 4591	15 2269

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		47 s	48 s	49 s	50 s	51
CHAR COOLER CALCULATIONS								
230	F205	CHR CLR STM FEED	PPH	3115.67	3093.03	2911.63	3000.78	2970.44
234	F220	H2O FLW TO CHAR CLR	GPH	3.80124	0.380208	3.60382	32.6971	0.000000
336	F251	HP STM TO CHAR CLR	PPH	104.392	65.5917	180.960	178.824	177.902
487	C2FBDC	CC FLD BED DNSTY	LB/FT3	17.3000	17.3000	15.2619	19.5813	17.3000
488	C2F8HC	CC FLD BED HEIGHT	FT	0.280000	0.900000	6.63240	7.58991	0.250000
571	C0CBV	CHAR CLR BED VOLUME	FT3	1.99000	5.16000	18.9100	21.4800	3.38000
490	C251C	CC SOLIDS INVENTORY	LB	14.4000	89.2700	288.600	485.126	67.1200
489	C2SRTC	CC SOLIDS RES TIME	MIN	0.699214	1.36941	8.47581	10.8723	0.976609
520	C250C2	CC MF CHAR FD	LB/HR-FT2	1084.15	1084.15	773.845	877.486	829.351
499	C250C1	CC MF CHAR FD	LB/HR-FT3	1438.27	554.682	108.036	107.847	564.302
534	C2CPD	CC PRESS DROP H2O/FTBD		2.33000	2.33000	2.34000	3.77000	3.32000
484	C255V	CC STEAM SUP VEL	FPS	0.396037	0.374954	0.366952	0.376643	0.335553
485	C2NSV	CC VAP H2O SUP VEL	FPS	0.169104E-04	0.598356E-04	0.447512E-04	0.696406E-03	0.000000
590	C0AT3M	CC ATM STM SUP VEL	FPS	0.314174E-01	0.316432E-01	0.475668E-01	0.440885E-01	0.426980E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0.427471	0.406657	0.434564	0.421428	0.378251
521	C250C3	CC MF CHR/RAW COAL	LB/LB	0.477027	0.477027	0.416929	0.472768	0.446835
493	C253C3	CC STM/MF CHAR	LB/LB	1.08857	1.08066	1.42511	1.29576	1.35668
588	C0CSTM	CC STM FAW COAL	LB/LB	0.519279	0.515504	0.594210	0.512404	0.606212
494	C253C4	CC STM/MF COAL	LB/LB	0.557226	0.553173	0.637615	0.637136	0.650512
589	C0CSTM	CC STM/MF COAL	LB/LB	0.628667	0.624097	0.719383	0.741409	0.733915
497	C23INC3	CC H2O MF CHAR	LB/LB	0.110779E-01	0.110803E-02	0.147140E-01	0.189744	0.000000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		47 2	48 3	49 4	50 5	51
498	C2SWC4	CC H2O/RAW COAL	LB/LB	0 529444E-02	0 528560E-03	0 613468E-02	0 897047E-01	0 000000
529	CFRPPH	CHAR REMOVAL RATE	PPH	2862 16	2862 16	2042 95	2216 56	2189 49

UPDATED GAS SAMPLE COMPOSITIONS

PAGE 1

STEADY STATE PERIOD

COMPONENT	47		48		49		50		51	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOLX-H2	30.12	27.23	29.82	26.89	34.80	30.97	24.04	21.37	32.24	26.44
MOLX-CO	6.56	5.93	6.19	5.58	7.09	6.31	3.52	3.13	5.14	4.53
MOLX-CO2	50.31	45.47	50.86	45.87	46.06	40.99	58.15	51.63	50.00	44.10
MOLX-CH4	11.07	10.00	11.04	9.96	10.70	9.52	12.37	11.00	10.28	9.07
MOLX-C2H6	0.72	0.65	1.34	1.21	0.79	0.70	1.21	1.07	0.93	0.82
MOLX-N2	0.51	0.46	0.10	0.09	0.34	0.30	0.00	0.00	0.12	0.10
MOLX-NH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOLX-H2S	0.51	0.46	0.21	0.19	0.00	0.00	0.00	0.00	0.47	0.41
MOLX-H2O	0.00	9.62	0.00	9.83	0.00	11.00	0.00	11.11	0.00	11.80
MOLX-O2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOLX-C2H4	0.10	0.09	0.10	0.09	0.11	0.10	0.10	0.09	0.12	0.10
MOLX-C3H8	0.00	0.00	0.21	0.19	0.11	0.10	0.20	0.18	0.23	0.21
MOLX-C3H6	0.10	0.09	0.00	0.00	0.00	0.00	0.20	0.18	0.23	0.21
MOLX-C4H8	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.09	0.12	0.10
MOLX-C4H10	0.00	0.00	0.10	0.09	0.00	0.00	0.10	0.09	0.12	0.10

UFSTR PRESS-(P227) PSIG	593.82	589.24	581.79	581.05	580.16
FLOW TEMP-(T120010) DEG F	290.33	289.03	299.03	299.60	303.55
MOL WT (WET)	26.09	26.26	24.29	28.41	25.56
DRY GAS MAKE, 1000-SCFH	116.03	103.40	113.30	110.32	112.69
WET GAS MAKE, 1000-SCFH	128.38	114.76	127.30	124.11	120.98

STEADY STATE PERIOD NO. 52

GAS STREAMS

	2	3	9	10	11	14
SCFH	10492.1	147900.7	118274.9	10315.6	48923.7	80294.1
MM	44	23.69	18	32	19	19
LB/HR	1216.5	9215.1	5609.9	869.8	2320.5	2659.8

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	3651.			39.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		1558.

STREAM NO. 3

LB STEAM/LB MF COAL	1.23	AVERAGE GAS COMPOSITION	
LB OXYGEN/LB MF COAL	0.19	MOLE PERCENT - WET BASIS	
SCF ULTIMATE CH4/LB MF COAL	5.73		
AVERAGE CARBON CONV WEIGHT PCT		MOL PCT-H2	32.49
CHAR BASIS	68.81	MOL PCT-CO	6.16
GAS BASIS	42.74	MOL PCT-CO2	38.54
GASIFIER TOP SUPPFL VEL, FPS	0.458	MOL PCT-CH4	8.29
VOL PCT O2 IN FLENUM	8.02	MOL PCT-C2H6	0.64
		MOL PCT-H2	0.11
		MOL PCT-NH3	0.00
		MOL PCT-H2S	0.32
		MOL PCT-H2O	12.83
		MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 54

GAS STREAMS

	2	3	9	10	11	14
SCFH	11932.7	116031.5	113571.3	11119.5	0.0	56393.2
MF	44	24.44	18	32	18	18
LB/HR	1383.5	7472.3	5386.8	937.6	0.0	2817.1

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	6179.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		1829.

LB STEAM/LB MF COAL	1.18
LB OXYGEN/LB MF COAL	0.21
SCF ULTIMATE CH ₄ /LB MF COAL	3.39
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	57.58
GAS BASIS	3.18
GASIFIER TOP SUPPFL VEL, FPS	0.402
VEL PCT O ₂ IN PLENUM	8.92

STREAM NO. 3

AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	18.30
MOL PCT-CO	4.04
MOL PCT-CO ₂	33.93
MOL PCT-CH ₄	6.90
MOL PCT-C ₂ H ₆	0.32
MOL PCT-N ₂	0.20
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.13
MOL PCT-H ₂ O	35.53
MOL PCT-O ₂	0.07

STEADY STATE PERIOD NO.55

GAS STREAMS

	2	3	9	10	11	14
SOPH	12229.0	149898.4	116473.4	11135.3	17991.7	61224.5
MW	44	24.30	18	32	18	18
LB/HR	1417.9	9599.9	5524.4	938.9	853.4	2903.9

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	4004.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		2067.

LB STREAM/LB MF COAL	1.21
LB OXYGEN/LB MF COAL	0.21
SOF ULTIMATE CH4/LB MF COAL	4.33
AVERAGE CARBON CONW WEIGHT PCT	
CHAR BASIS	53.06
GAS BASIS	20.24
GASIFIER TOP SURFCL VEL, FPS	0.425
VOL PCT O2 IN FLENUM	8.73

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	19.64
MOL PCT-CO	3.94
MOL PCT-CO2	34.46
MOL PCT-CH4	6.39
MOL PCT-C2-6	0.61
MOL PCT-H2	0.00
MOL PCT-NH3	0.00
MOL PCT-H2S	0.00
MOL PCT-H2O	34.47
MOL PCT-O2	0.00

STEADY STATE PERIOD NO. 56.

	GAS STREAMS					
	2	3	9	10	11	14
SOFH	12178.6	145000.0	120197.7	11427.4	3504.9	60355.5
MF	44	25.53	18	32	18	18
LB/HR	1412.0	9753.5	5701.1	963.6	450.8	2662.7

	LIQUID STREAMS			
	4	5	6	13
LB/HR				
H ₂ O	5889.			0.
OIL				
TAR			0.0	

	SOLID STREAMS		
	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4565.		2011.

		STREAM NO. 3	
		AVERAGE GAS COMPOSITION	
		MOLE PERCENT - WET BASIS	
LB STEAM/LB MF COAL	1.25	MOL PCT-H ₂	16.63
LB OXYGEN/LB MF COAL	0.21	MOL PCT-CO	3.02
SOF ULTIMATE CH/LB MF COAL	4.12	MOL PCT-CO ₂	34.03
AVERAGE CARBON CONW WEIGHT PCT		MOL PCT-CH ₄	4.75
CHAR BASIS	54.53	MOL PCT-C ₂ H ₆	0.45
GAS BASIS	13.98	MOL PCT-H ₂	4.82
GASIFIER TOP SUPRFOL VEL, FPS	0.479	MOL PCT-NH ₃	0.00
VOL PCT O ₂ IN PLENUM	8.68	MOL PCT-H ₂ S	0.00
		MOL PCT-H ₂ O	33.35
		MOL PCT-O ₂	1.61

STEADY STATE PERIOD NO. 57

GAS STREAMS

	2	3	9	10	11	14
SCFH	11952.2	159163.7	118177.0	11552.6	39828.5	64406.0
MW	44	24.32	18	32	18	19
LB/HR	1385.8	10137.3	5606.2	974.1	1889.1	3054.8

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	4109.			55.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	1900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4566.		1890.

LB STEAM/LB WF COAL	1.23
LB OXYGEN/LB WF COAL	0.21
SCF ULTIMATE CH ₄ /LB WF COAL	4.53
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.61
GAS BASIS	19.54
GASIFIER TOP SURF. VEL, FPS	0.461
VOL PCT O ₂ IN FLENUM	8.91

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
VOL PCT-H ₂	18.64
VOL PCT-CO	4.28
VOL PCT-CO ₂	33.96
VOL PCT-CH ₄	6.00
VOL PCT-C ₂ H ₆	0.70
VOL PCT-N ₂	0.00
VOL PCT-NH ₃	0.00
VOL PCT-H ₂ S	0.19
VOL PCT-H ₂ O	36.28
VOL PCT-O ₂	0.00

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	52 #	54 #	55 #	56 #	57
GASIFICATION CALCULATIONS							
84	X0001	COAL FEED RATE PPH	4900 00	4900 00	4900 00	4900 00	4900 00
550	C5FTG	STEAM FLOW TO GASF LB/HR	5609 00	5586 79	5524 40	5701 08	5605 25
227	F205	GSFF O2 FEED RATE SCFH	10215 6	11112 5	11105 0	11427 4	11551 6
381	C5CCTG	STNPIPE STM TO GSFF PPH	740 462	2948 29	2209 80	2566 91	1201 99
345	T205	GSFR BOTTOM BO TEMP DEGF	1467 71	1419 18	1441 67	1421 18	1449 10
424	C2FBDG	GSF FLD BED DENSITY LB/FT3	18 2020	18 2245	17 6165	18 6706	19 7294
425	C2FBHG	GSF FLD BED HEIGHT FT	15 1035	17 5585	14 1169	11 8354	11 2497
572	CGBV	GASIFIER BED VOLUME FT3	120 866	127 723	104 298	90 0258	86 7519
427	C2SIG	GSF SOLIDS INVENTORY LB	2201 99	2072 85	1904 50	1698 21	1706 06
426	C2SRTG	GSF SOLIDS RES TIME MIN	28 9335	27 2337	25 4190	22 2153	22 4172
429	C2SCG2	GASF COAL FEED PPH/FT2	690 069	690 069	693 069	690 069	690 069
428	C2SCG1	GASF COAL FEED PPH/FT3	40 5407	38 0642	46 9805	54 2480	55 4829
526	C2GPD	GSF PRESS DROP "H2O FT/BO	3 28568	3 64735	2 50995	3 65690	3 32536
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 486152	0 613430	0 578382	0 614645	0 529729
422	C2SVOB	GSF SUP VEL-OUTLET FPS	0 200993	0 128626	0 311185	0 360088	0 149026
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 458282	0 401625	0 474620	0 479050	0 460795
422	C2SVMG	GSF SUP VEL-MEAN BED FPS	0 472217	0 507529	0 501501	0 546877	0 495262
564	C0SF02	GSF O2 FAN COAL SCF/LB	2 10520	2 26928	2 27250	2 00211	2 25767
435	C2SOG2	GASF O2 MF COAL SCF/LB	2 25907	2 40511	2 40887	2 50254	2 52996
435	C2SOG4	GASF O2/MAF COAL SCF/LB	2 54871	2 74712	2 75121	2 82338	2 85400
585	C0SF00	GASF O2 FAN COAL LB/LB	0 177516	0 191049	0 191211	0 196647	0 138902

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	52	54	55	56	57
432	C2S0G1	GASF O2, MF COAL LB./LB	0 190489	0 205533	0 205624	0 211018	0 213330
434	C2S0G3	GASF O2, MAF COAL LB./LB	0 214911	0 231658	0 231987	0 238072	0 240681
586	CGSM5M	GASF STM, RAW COAL SCF/LB	24 1153	23 1572	23 7490	24 5084	24 0963
437	C2SS02	GASF STM, MF COAL SCF/LB	25 8787	24 2495	25 4945	26 2994	25 8572
409	C2SS04	GASF STM, MAF COAL SCF/LB	29 1965	28 0354	28 7518	29 6712	29 1723
587	CGSSTM	GASF STM, RAW COAL LB./LB	1 14487	1 09934	1 12743	1 16349	1 14393
436	C2SS01	GASF STM, MF COAL LB./LB	1 22854	1 17960	1 20982	1 24851	1 22752
438	C2SS03	GASF STM, MAF COAL LB./LB	1 38605	1 33092	1 36493	1 40858	1 38490
242	F255	WASTE WATER FLOW GPM	8 02492	13 5801	8 00055	13 1617	9 02170
243	F221	TAR FLOW THRL ONO2R GPM	0 000000	0 000000	0 000000	0 000000	0 000000
245	F209	RAW GS SCRBR EF 1000-SCFH	147 601	116 032	149 098	145 000	158 164
574	CNRGG	RAW GAS FROM GASF SCFH	193234	214908	202966	239867	213447
575	CTGFB	TOTAL GAS FROM BED SCFH	183581	205254	193312	258213	203793
475	C2C1	GASF CARBON INVENTORY LB	1340 21	1288 66	1338 69	1170 14	1144 77
551	CGGPPH	CARBON GASIFIED RPH	2097 24	1755 35	1617 18	1662 03	1786 25
594	C2GR4	GASF RATE LBC/HR-FT380	17 3518	13 7434	15 5050	18 4004	20 5903
595	C2GR3	GASF RATE LBC/HR-LBC80	1 56136	1 26406	1 20803	1 42037	1 56036
455	C2MRG2	CH4 PROD GAS SCFH/FT380	101 129	62 7077	91 8265	76 2769	109 419
454	C2MRG1	CH4 IN RAW GAS LBC/LBC80	0 267738	0 182372	0 226219	0 186179	0 262191
451	C2CG1	CARBON CONVRSM (CHAR) %	68 8117	57 5939	53 0606	54 5324	58 6077
452	C2CG12	CARBON CONVRSM (GAS) %	42 7356	3 10783	20 2406	12 9827	19 5445

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	52 1	54 2	55 3	56 4	57
596	COCTUG	C CHARTD TO USEFUL GAS %	32 4399	10 1067	23 1170	17 2543	24 0280
592	CECH4R	EQUIV CH4 SCF/LB-RAW	3 48590	2 20355	2 02788	2 94516	2 84399
591	CECH4M	EQUIV CH4 SCF/LB-MF	3 74064	2 06672	2 05453	2 16020	3 05182
579	CECH4C	EQUIV CH4 SCF/LB-MAF	4 22022	2 67016	2 42259	3 56557	3 44300
483	C2MYG4	GSP CH4 YLD-MAF CF HR-LB	0 01396	1 97696	2 36670	1 70227	2 04529
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	26169 9	15491 6	19766 1	18907 2	20701 3
560	CUCH4R	ULT CH4 RAW COAL SCF/LB	5 24079	0 16160	4 02309	0 02021	4 22476
561	CUCH4M	ULT CH4 MF COAL SCF/LB	5 72108	0 09264	4 22067	4 11869	4 53349
562	CUCH4C	ULT CH4 MAF COAL SCF/LB	6 46585	0 62780	4 88365	4 64674	5 11473
450	C2SCG	STM CONV - H2O BALANCE %	27 8399	12 1115	22 9637	9 43587	10 4792
590	C5CH2	STM CONV - H2 BALANCE %	24 3434	0 712564	7 58227	0 743453	0 79451

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	52	54	55	56	57
CHAR COOLER CALCULATIONS							
220	F205	CHAR CLR STM FEED PPH	2059 80	2017 07	2907 93	2062 71	2054 83
234	F220	H2O FLW TO CHAR CLR GPH	5 15002	0 000000	0 000000	0 000000	0 21736
336	F253	HP STM TO CHAR CLR PPH	160 182	151 220	158 228	155 010	158 807
457	C2FBC0	CC FLD BED DNSTY LB/FT3	18 3400	17 3000	17 3000	17 3000	17 3000
488	C2FBC0	CC FLD BED HEIGHT FT	9 15000	1 00000	2 61000	1 00000	2 57000
572	CCC87	CHAR CLR BED VOLUME FT3	35 5600	4 04000	8 29000	4 25000	8 19000
490	C2S10	CC SOLIDS INVENTORY LB	473 810	69 8900	143 420	73 5300	141 690
489	C2SRT0	CC SOLIDS RES TIME MIN	18 2434	2 17390	4 16250	2 19400	4 51879
520	C2SCC2	CC MF CHAR FC LB/HR-FT2	590 260	750 694	783 094	761 848	712 162
499	C2SCC1	CC MF CHAR FC LB/HR-FT3	60 9659	477 493	249 381	473 242	229 562
534	C2CP0	CC FFESS DROP H2O FTED	3 57000	3 23000	3 23000	3 33000	3 35000
464	C2SS7	CC STEAM SUP VEL FPS	0 456640	0 116122	0 376593	0 358027	0 399232
485	C2WSM	CC WAP H2O SUP VEL FPS	0 578040E-04	0 000000	0 000000	0 000000	0 103294E-03
590	CCATSN	CC ATM STM SUP VEL FPS	0 468029E-01	0 151579E-01	0 411019E-01	0 410993E-01	0 421538E-01
456	C2TSM	CC TOT STM SUP VEL FPS	0 483501	0 351179	0 417695	0 399127	0 441489
521	C2SCC3	CC MF CHAR/RAW COAL LB/LB	0 318018	0 293660	0 421912	0 418465	0 383696
492	C2SSC3	CC STM MF CHAR LB/LB	1 83522	1 46025	1 40465	1 42330	1 62482
538	CCCSTM	CC STM/RAW COAL LB/LB	0 592633	0 574912	0 592636	0 564227	0 623405
494	C2SSC4	CC STM MF COAL LB/LB	0 626282	0 616925	0 635947	0 626920	0 668993
589	CCSTM	CC STM/MF COAL LB/LB	0 706578	0 696020	0 717420	0 707297	0 754764
497	C2SMC3	CC H2O MF CHAR LB/LB	0 375668E-01	0 000000	0 000000	0 000000	0 320200E-01

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		S2 ↓	S4 ↓	S5 ↓	S6 ↓	S7
498	C2SUC4	CO H2O/RAN COAL	LB/LB	0.076673E-02	0.000000	0.000000	0.000000	0.122059E-01
539	CFRPPH	CHAR REMOVAL RATE	PPH	1558.29	1929.03	2067.37	2011.28	1020.11

STEADY STATE PERIOD

COMPONENT	52		54		55		56		57	
	DRY	WET	DRY	WET	DRY	WET	DRY	WET	DRY	WET
MOL% H2	27.27	11.43	23.28	18.10	29.98	19.64	24.95	16.63	23.26	18.64
MOL% CO	7.06	6.16	6.26	4.04	6.02	7.34	4.51	7.02	6.71	4.22
MOL% CO2	44.21	18.54	52.63	71.91	52.59	54.44	51.06	54.03	52.58	51.46
MOL% CH4	9.50	8.26	10.71	6.99	9.75	6.39	7.13	4.75	9.42	6.00
MOL% C2H6	0.73	0.64	0.81	0.52	0.92	0.61	0.67	0.45	1.10	0.70
MOL% N2	0.12	0.11	0.30	0.20	0.00	0.00	7.23	4.22	0.00	0.00
MOL% NH3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MOL% H2S	0.17	0.32	0.20	0.11	0.00	0.00	0.00	0.00	0.10	0.19
MOL% H2O	0.00	12.85	0.00	15.51	0.00	14.47	0.00	11.15	0.00	16.18
MOL% O2	0.00	0.00	0.10	0.07	0.00	0.00	2.41	1.51	0.00	0.00
MOL% C2H4	0.12	0.11	0.10	0.07	0.10	0.07	0.10	0.06	0.20	0.11
MOL% C3H8	0.12	0.11	0.10	0.07	0.10	0.07	0.77	0.51	0.10	0.06
MOL% C3H6	0.24	0.21	0.00	0.00	0.10	0.07	0.67	0.45	0.10	0.06
MOL% C4H8	0.11	0.11	0.20	0.11	0.21	0.14	0.19	0.11	0.10	0.06
MOL% C4H10	0.12	0.11	0.20	0.11	0.21	0.14	0.20	0.12	0.20	0.11

UPSTR PRESS-(P227) PSIG	582.84	586.91	592.16	591.19	581.12
FLOW TEMP-(T120610) DEGF	209.64	167.56	194.40	181.61	188.51
MOL WT (NET)	31.56	24.40	24.10	25.51	24.26
DRY GAS MAKE 1000-SCFH	126.66	74.80	93.22	96.64	100.78
NET GAS MAKE 1000-SCFH	147.60	116.07	143.90	145.00	156.16

FOR STEADY STATE PERIOD 53 RUN 1-T
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 4:43 12/18/76
ENDING TIME 5:13 12/18/76

FOR STEADY STATE PERIOD 58 RUN 1-T
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 17:13 12/18/76
ENDING TIME 17:43 12/18/76

FOR STEADY STATE PERIOD 59 RUN 1-T
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 19:13 12/18/76
ENDING TIME 19:43 12/18/76

FOR STEADY STATE PERIOD 60 RUN 1-T
DATA AVERAGED OVER THE FOLLOWING TIME INTERVAL
STARTING TIME 20:43 12/18/76
ENDING TIME 21:13 12/18/76

STEADY STATE PERIOD NO. 53

GAS STREAMS

	2	3	9	10	11	14
BOFH	10500.0	136328.0	117876.9	10900.0	46341.2	60846.5
MM	44	23.84	19	32	18	18
LB/HR	1217.4	8564.4	5591.0	919.1	2198.0	2886.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	7325.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	4900.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4565.		1653.

LEGEND

STREAM NUMBER	Hexagon
TEMPERATURE, °F	Square
PRESSURE, PSIG	Circle
BED LEVEL, FEET	Diamond
DENSITY, LB/CU. FT	Rectangle

LB STEAM/LB MF COAL	1.22
LB OXYGEN/LB MF COAL	0.20
SOF ULTIMATE CH/LB MF COAL	3.43
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	55.60
GAS BASIS	54.60
GASIFIER TOP SURF. VEL., FPS	0.629
VOL PCT O2 IN PLENUM	8.46

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - NET BASIS	
MOL PCT-H2	21.61
MOL PCT-CO	2.32
MOL PCT-CO2	34.45
MOL PCT-CH4	6.60
MOL PCT-C2H6	0.56
MOL PCT-H2	0.01
MOL PCT-NH3	0.00
MOL PCT-H2S	0.14
MOL PCT-H2O	33.87
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 58

GAS STREAMS

	2	3	9	10	11	14
SCFH	11000.0	155070.9	116922.7	12140.0	49346.4	56650.9
MM	44	23.84	18	32	18	18
LB/HR	1275.4	9742.3	5341.0	1023.7	2369.0	2687.0

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	7280.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	5020.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4678.		1855.

LB STEAM/LB MF COAL	1.18
LB OXYGEN/LB MF COAL	0.22
SCF ULTIMATE CH ₄ /LB MF COAL	4.41
AVERAGE CARBON CONW WEIGHT PCT	
CHAR BASIS	61.00
GAS BASIS	48.30
GASIFIER TOP SURFOL VEL, FPS	0.887
VOL PCT O ₂ IN FLENUM	9.41

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	19.37
MOL PCT-CO	4.48
MOL PCT-CO ₂	32.19
MOL PCT-CH ₄	5.62
MOL PCT-C ₂ H ₆	0.50
MOL PCT-H ₂	0.00
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	37.27
MOL PCT-O ₂	0.00

STEADY STATE PERIOD NO. 59

GAS STREAMS

	2	3	9	10	11	14
SCFH	12000.0	145849.9	119500.3	12520.0	51337.9	64177.7
MM	44	23.56	18	32	18	18
LB/HR	1391.3	9054.3	5668.0	1055.7	2435.0	3044.0

LIQUID STREAMS

LB/HR	4	5	6	13
H2O	5869.			96.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	5020.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	4678.		1916.

LB STEAM/LB MF COAL	1.21
LB OXYGEN/LB MF COAL	0.23
SCF ULTIMATE CH4/LB MF COAL	3.00
AVERAGE CARBON CONV WEIGHT PCT	
CHAR BASIS	58.80
GAS BASIS	61.70
GASIFIER TOP SURFCL VEL, FPS	0.758
VOL PCT O2 IN PLENUM	9.48

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H2	23.05
MOL PCT-CO	4.42
MOL PCT-CO2	33.63
MOL PCT-CH4	6.79
MOL PCT-C2H6	0.55
MOL PCT-N2	0.55
MOL PCT-NH3	0.00
MOL PCT-H2S	0.06
MOL PCT-H2O	30.73
MOL PCT-O2	0.01

STEADY STATE PERIOD NO. 604.

GAS STREAMS

	2	3	9	10	11	14
SCFH	13000.0	135460.0	106576.2	11280.0	53867.9	63186.7
Wt	44	25.00	18	32	18	18
LB/HR	1507.2	8522.6	5055.0	851.1	2555.0	2997.0

LIQUID STREAMS

LB/HR	4	5	6	13
H ₂ O	4777.			0.
OIL				
TAR			0.0	

SOLID STREAMS

	1	7	15
LB/HR (AS RECEIVED)	6440.		
PERCENT MOISTURE	6.8		
LB/HR (MOISTURE FREE)	6001.		2632.

LB STEAM/LB MF COAL	0.81
LB OXYGEN/LB MF COAL	0.16
SCF ULTIMATE CH ₄ /LB MF COAL	3.90
AVERAGE CARBON CONN WEIGHT PCT	
CHAR BASIS	57.70
GAS BASIS	71.60
GASIFIER TOP SURFCL VEL, FPS	0.657
VOL PCT O ₂ IN FLENUM	9.57

STREAM NO. 3	
AVERAGE GAS COMPOSITION	
MOLE PERCENT - WET BASIS	
MOL PCT-H ₂	22.93
MOL PCT-CO	6.11
MOL PCT-CO ₂	37.57
MOL PCT-CH ₄	7.44
MOL PCT-C ₂ H ₆	0.55
MOL PCT-N ₂	1.17
MOL PCT-NH ₃	0.00
MOL PCT-H ₂ S	0.00
MOL PCT-H ₂ O	23.28
MOL PCT-O ₂	0.39

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

FTIC	NAME	DESCRIPTION	53 2	58 9	59 9	60 9
GASIFICATION CALCULATIONS						
24	/0001	COAL FEED RATE PPH	4900 00	5020 00	5020 00	5440 00
550	CSFTG	STEAM FLOW TO GASF LB HR	5591 00	5541 00	5668 00	5033 00
227	F200	GSFR O2 FEED RATE SCFH	10900 0	12140 0	12520 0	11280 0
581	CSCCTG	STNPIPE STM TO GSFR PPH	688 000	718 000	689 000	442 000
345	T205	GSFR BOTTOM BD TEMP DEGF	1420 00	1447 00	1441 00	1487 00
404	C2FBDG	GSF FLD BED DNSTY LB/FT3	18 5100	20 0000	19 0900	19 2700
425	C2FBHG	GSF FLD BED HEIGHT FT	21 3700	15 2200	16 6400	13 7900
572	CGBV	GASIFIER BED VOLUME FT3	157 720	114 240	124 270	104 130
427	C2SIG	GSF SOLIDS INVENTORY LB	2920 00	2288 00	2472 00	2007 00
426	C2SRT0	GSF SOLIDS RES TIME MIN	30 4000	29 2000	31 7000	20 1000
428	C2SCG2	GASF COAL FEED PPH/FT2	690 100	710 000	710 000	910 900
428	C2SCG1	GASF COAL FEED PPH/FT3	01 0700	43 9000	40 4000	61 9900
526	C2GPD	GSF PRESS DROP "H2O/FTBD	3 56000	3 85000	3 82000	3 70000
420	C2SVBG	GSF SUP VEL-BOT BED FPS	0 411000	0 417000	0 427000	0 391000
427	C2SV0G	GSF SUP VEL-OUTLET FPS	0 413000	0 467000	0 401000	0 331000
421	C2SVTG	GSF SUP VEL-TOP BED FPS	0 820000	0 887000	0 758000	0 657000
422	C2SVNG	GSF SUP VEL-MEAN BED FPS	0 613000	0 652000	0 592000	0 524000
564	C2SF02	GSF O2 FAN COAL SCF/LB	2 22400	2 41800	2 43400	0 732000
400	C2S0G2	GASF O2 INF COAL SCF/LB	2 38700	2 59300	2 67600	1 88000
405	C2S0G4	GASF O2 INF COAL SCF/LB	2 69200	2 92700	3 01900	2 12100
585	C2FF01	GASF O2 FAN COAL LB LB	0 188000	0 204000	0 210000	0 148000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	53	58	59	60
432	C250G1	GASF O2/MF COAL LB/LB	0 202000	0 319000	0 225000	0 159000
434	C250G3	GASF O2 MAF COAL LB/LB	0 228000	0 247000	0 259000	0 179000
586	CGSM5M	GASF STM/RAW COAL SCF/LB	24 0000	23 1000	23 8000	16 0000
427	C255G2	GASF STM/MF COAL SCF/LB	25 8000	25 0000	25 5000	17 2000
439	C255G4	GASF STM MAF COAL SCF/LB	29 1000	28 2000	28 8000	19 4000
597	CGS5TM	GASF STM RAW COAL LB/LB	1 14100	1 10400	1 12900	0 758000
436	C255G1	GASF STM MF COAL LB/LB	1 22400	1 18500	1 21200	0 013000
438	C255G3	GASF STM MAF COAL LB/LB	1 38100	1 33700	1 36700	0 918000
342	F255	WASTE WATER FLOW GPM	16 1000	16 0000	12 9000	10 5000
243	F221	TAR FLOW THML OXDZR GPM	0 000000	0 000000	0 000000	0 000000
245	F209	RAW GS SCRBR EF 1000-SCFH	136 328	155 071	145 850	125 460
574	CNRGG	RAW GAS FROM GASF SCFH	259357	277141	238209	204816
575	CTGFB	TOTAL GAS FROM BED SCFH	299787	267491	228559	195166
475	C2CI	GASF CARBON INVENTORY LB	1831 00	1463 00	1641 00	1276 00
551	CCGPPH	CARBON GASIFIED PPH	1974 00	1882 00	1812 00	2282 00
594	C2GR4	GASF RATE LBC/HR-FT3BD	12 5200	16 5000	14 6000	21 9000
595	C2GR3	GASF RATE LBC/HR-LBCBD	1 07800	1 26900	1 10400	1 78800
455	C2MRG2	CH4 PPOD GAS SCFH/FT3BD	58 9000	77 4000	76 3000	98 9000
454	C2MRG1	CH4 IN RAW GAS LBC/LBCBD	0 156000	0 189000	0 183000	0 255000
451	C2CG1	CARBON CONVRSN (CHAR) %	65 6000	61 0000	58 8000	57 7000
452	C2CG1.1	CARBON CONVRSN (GAS) %	54 6000	46 5000	64 7000	71 6000

UPDATED CALCULATION VALUES

PAGE 3

STEADY STATE PERIOD

PTID	NAME	DESCRIPTION	53 1	58 2	59 3	60 4
536	CCCTUG	C CNVTD TO USEFUL GAS %	21 1000	25 2000	23 3000	22 5000
532	CECH4P	EQUIV CH4 SCF/LB-RAW	2 55900	2 71800	2 32400	2 31400
521	CECH4M	EQUIV CH4 SCF/LB-MF	2 74600	2 91700	2 49400	2 48300
579	CECH4C	EQUIV CH4 SCF/LB-MAF	3 09800	3 29100	2 81400	2 80100
466	C2MYG4	G3F CH4 YLC-MAF CF. HR-LB	1 97100	1 68900	2 02600	1 71500
577	CTUCH4	TOTAL ULTIMATE CH4 SCFH	15677 0	20622 0	17794 0	23436 0
560	CUCH4P	ULT CH4, RAW COAL SCF/LB	3 19900	4 10800	3 54500	3 63900
561	CUCH4M	ULT CH4, MF COAL SCF/LB	3 45500	4 40200	3 80400	3 90500
562	CUCH4R	ULT CH4, MAF COAL SCF/LB	5 87200	4 97300	4 29200	4 40600
450	C2SC0	STM CONV - H2O BALANCE %	-10 7000	-8 10000	2 60000	21 3000
598	CSCH2	STM CONV - H2 BALANCE %	15 2000	16 7000	15 4000	14 2000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		53	50	59	60
CHAR COOLER CALCULATIONS							
230	F205	CHR CLR STM FEED	PPH	2886 00	2687 00	3044 00	2997 00
234	F230	H2O FLW TO CHR CLR	GPH	0 000000	0 000000	12 6000	0 000000
336	F253	HP STM TO CHAR CLR	PPH	162 900	189 100	160 300	178 900
487	C2FB00	CC FLO BED DNSTY	LB/FT3	22 9300	25 5200	25 5200	25 5200
488	C2FB00	CC FLO BED HEIGHT	FT	0 250000	0 250000	0 250000	7 05000
573	C008V	CHAR CLR BED VOLUME	FT3	2 06000	2 06000	2 06000	20 0100
490	C2510	CC SOLIDS INVENTORY	LB	47 2400	52 5700	52 5700	518 700
489	C25PT0	CC SOLIDS RES TIME	MIN	1 72000	1 70000	1 65000	11 6000
520	C2SC02	CC MF CHAR FD	LB/HR-FT2	625 900	702 100	725 800	997 000
499	C2SC01	CC MF CHAR FD	LB/HR-FT3	802 400	900 500	930 100	131 500
534	C2CP0	CC PRESS DROP	"H2O/FTBD	4 41000	4 91000	4 91000	4 91000
484	C25SV	CC STEAM SUP VEL	FPS	0 289000	0 240000	0 293000	0 336000
485	C2WSV	CC WAP H2O SUP VEL	FPS	0 160000E-01	0 000000	0 100000E-01	0 000000
590	C0ATSM	CC ATM STM SUP VEL	FPS	0 000000	0 100000E-01	0 150000E-01	0 200000E-01
486	C2TSV	CC TOT STM SUP VEL	FPS	0 305000	0 250000	0 310000	0 356000
521	C2SC02	CC MF CHAR RAN COAL	LB/LB	0 337000	0 370000	0 382000	0 409000
493	C2SS03	CC STM MF CHAR	LB/LB	1 74600	1 44900	1 56200	1 13900
588	C00STM	CC STM RAN COAL	LB/LB	0 589000	0 535000	0 606000	0 465000
494	C2SS04	CC STM MF COAL	LB/LB	0 612000	0 574000	0 650000	0 499000
589	C00STM	CC STM HAF COAL	LB/LB	0 712000	0 648000	0 734000	0 563000
497	C2SM02	CC H2O MF CHAR	LB/LB	0 000000	0 000000	0 522000E-01	0 000000

UPDATED CALCULATION VALUES

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STEADY STATE PERIOD

PTID	NAME	DESCRIPTION		S3	S8	S9	S0
498	C2511C4	CC H2O RAW COAL	LB-LB	0 000000	0 000000	0 199000E-01	0 000000
599	CFRPFH	CHAP REMOVAL RATE	FFH	1653 00	1655 00	1316 00	2632 00

UPDATED GAS SAMPLE COMPOSITIONS PAGE 1

STEADY STATE PERIOD

COMPONENT	53		58		59		60		DRY	WET
	DRY	WET	DRY	WET	DRY	WET	DRY	WET		
MOL%-H ₂	22.63	21.61	20.82	19.37	33.28	23.05	29.90	22.93		
MOL%-CO	2.50	2.30	7.14	4.45	6.38	4.42	7.96	6.11		
MOL%-CO ₂	52.10	54.45	51.51	52.19	48.55	53.60	48.98	57.57		
MOL%-CH ₄	9.97	6.60	8.95	5.62	9.80	6.79	9.69	7.44		
MOL%-C ₂ H ₆	0.85	0.56	0.80	0.50	0.80	0.55	0.71	0.55		
MOL%-H ₂ O	0.01	0.01	0.00	0.00	0.00	0.55	1.53	1.17		
MOL%-NH ₃	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
MOL%-H ₂ C	0.21	0.14	0.00	0.00	0.11	0.06	0.00	0.00		
MOL%-H ₂ O	0.00	32.87	0.00	37.27	0.00	50.73	0.00	23.29		
MOL%-O ₂	0.01	0.01	0.00	0.00	0.01	0.01	0.51	0.39		
MOL%-C ₂ H ₄	0.11	0.07	0.00	0.00	0.11	0.08	0.00	0.00		
MOL%-C ₂ H ₂	0.11	0.07	0.20	0.15	0.11	0.06	0.00	0.00		
MOL%-C ₃ H ₈	0.40	0.28	0.30	0.19	0.01	0.01	0.20	0.16		
MOL%-C ₄ H ₁₀	0.01	0.01	0.30	0.19	0.01	0.01	0.00	0.00		
MOL%-C ₄ H ₁₀	0.01	0.01	0.10	0.06	0.01	0.01	0.51	0.39		

UPSTR PRESS-(P227) PSIG	590.00	590.00	590.00	590.00
FLOW TEMP-(T120010) DEGF	384.00	392.00	376.00	354.00
MOL WT (WET)	23.79	23.84	23.53	25.00
DRY GAS MAKE, 1000-SCFH	90.15	97.26	101.03	103.92
WET GAS MAKE, 1000-SCFH	136.33	155.07	145.25	133.46

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 1	C1- 2	C1- 3	C1- 4	C1- 5	C1- 6
TIME	13 0	13 0	15 0	12 0	14 0	16 0
DATE	1/30/76	2/24/76	2/24/76	2/25/76	3/31/76	3/31/76

PROXIMATE ANALYSIS

MOISTURE	15.1	19.3	14.4	18.8	13.9	19.2
VOLATILE MATTER	31.6	0.0+	0.0+	0.0+	32.3	28.7
FIXED CARBON	43.5	0.0+	0.0+	0.0+	44.1	40.6
ASH	10.0	0.0+	0.0+	0.0+	9.7	11.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AIR DRY MOISTURE	15.0	18.7	13.9	14.0	13.3	18.7
TOTAL MOISTURE	30.1	38.3	28.3	32.8	27.2	28.9

ULTIMATE ANALYSIS

HYDROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
ASH	10.0	0.0+	0.0+	0.0+	9.7	11.5
TOTAL	10.0	0.0	0.0	0.0	9.7	11.5
HEAT OF COMBUSTION (BTU/LB)	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
F S I	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	2.2	2.1	2.8	4.2	3.6	2.4
+1/4 MESH	26.4	0.0+	0.0+	0.0+	0.0+	0.0+
-1/4 MESH (WT %)	63.6	100.0	100.0	100.0	100.0	100.0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 7	C1- 8
TIME	12 30	16 0
DATE	4/ 1/76	4/ 2/76
PROXIMATE ANALYSIS		

MOISTURE	14 4	16 0
VOLATILE MATTER	32 3	31 2
FIXED CARBON	43 7	44 0
ASH	9 6	8 8
TOTAL	100 0	100 0

AIR DRY MOISTURE	17 4	0 0+
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TOTAL MOISTURE	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+
CARBON	0 0+	0 0+
NITROGEN	0 0+	0 0+
OXYGEN	0 0	0 0
SULFUR	0 0+	0 0+
ASH	9 6	8 8
TOTAL	9 6	8 8

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +
F S I	0 0+	0 0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	0 0+	0 0+
+1/4 MESH	0 0+	0 0+
-1/4 MESH (WT %)	100 0	100 0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 9	C1- 10	C1- 11	C1- 12	C1- 13	C1- 14	C1- 15
TIME	12 30	10 0	12 0	14 20	8 45	10 30	12 0
DATE	5/ 4/76	6/ 7/76	6/ 7/76	6/ 7/76	6/10/76	6/10/76	6/10/76
PROXIMATE ANALYSIS							
MOISTURE	20 0	21 4	21 0	20 9	19 9	21 0	19 7
VOLATILE MATTER	30 0	28 4	29 0	28 9	27 7	28 6	29 3
FIXED CARBON	40 5	39 9	42 2	40 1	39 6	41 4	41 3
ASH	3 5	10 2	7 8	10 2	12 5	9 0	9 8
TOTAL	100 0	100 0	100 0	100 1	100 0	100 0	100 0
AIR DRY MOISTURE	4 2	9 3	6 4	4 1	8 5	8 3	5 5
TOTAL MOISTURE	22 4	28 7	26 1	24 1	26 7	27 6	24 0
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	9 5	10 3	7 8	10 2	12 5	9 0	9 8
TOTAL	9 5	10 3	7 8	10 2	12 5	9 0	9 8
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
SIEVE SIZE							
+3/4 MESH	4 2	11 0	10 2	12 1	6 2	0 0+	7 2
+1/4 MESH	28 7	28 4	27 0	36 1	34 6	0 0+	28 5
-1/4 MESH (NT %)	71 3	71 6	72 2	63 9	65 2	100 0	61 5
+ = NO ANALYSIS DONE							
* = TRACE							
++ = SUSPECT ANALYSIS							

CUMULATIVE WEIGHT PERCENT

C.1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 16	C1- 17	C1- 18	C1- 19
TIME	14 30	12 0	14 30	16 30
DATE	6/18/76	6/13/76	6/15/76	6/15/76

PROXIMATE ANALYSIS

MOISTURE	21.4	20.6	21.7	16.0
VOLATILE MATTER	29.8	29.6	29.4	32.2
FIXED CARBON	41.2	41.9	41.1	43.1
ASH	8.6	7.9	7.8	8.4
TOTAL	101.0	100.0	100.0	99.7
AIR DRY MOISTURE	5.6	4.3	4.1	7.5
TOTAL MOISTURE	25.0	24.0	24.9	22.4

ULTIMATE ANALYSIS

HYDROGEN	8.0+	8.0+	8.0+	8.0+
CARBON	8.0+	8.0+	8.0+	8.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+
ASH	8.6	7.9	7.8	8.4
TOTAL	8.6	7.9	7.8	8.4

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +
F S I	0.0+	0.0+	0.0+	0.0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	17.0	10.7	10.3	7.7
+1/4 MESH	51.1	32.0	35.5	26.1
-1/4 MESH (WT %)	48.9	67.2	64.5	63.9

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1- 20

TIME 16 30
 DATE 7/ 6/76
 PROXIMATE ANALYSIS

 MOISTURE 19 5
 VOLATILE MATTER 0 0+
 FIXED CARBON 0 0+
 ASH 0 0+
 TOTAL 19 5

AIR DRY MOISTURE 6 4

TOTAL MOISTURE 24 7

ULTIMATE ANALYSIS

HYDROGEN 0 0+
 CARBON 0 0+
 NITROGEN 0 0+
 OXYGEN 0 0
 SULFUR 0 0+
 ASH 0 0+
 TOTAL 0 0

HEAT OF COMBUSTION (BTU LB.) 0 +
 F S I 0 0+

SIEVE SIZE

+3/4 MESH 10 7
 +1/4 MESH 55 6
 -1/4 MESH (WT %) 44 4

CUMULATIVE WEIGHT PERCENT

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1- 21	C1- 22	C1- 23	C1- 24	C1- 25	C1- 26
10 20	13 0	15 0	9 20	9 0	5 30
8/ 5/76	8/ 5/76	8/ 5/76	8/18/76	8/19/76	8/25/76

PROXIMATE ANALYSIS

MOISTURE	0 0+	0 0+	0 0+	14 9	16 1	17 6
VOLATILE MATTER	0 0+	0 0+	0 0+	0 0+	0 0+	31 0
FIXED CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+	14 1
TOTAL	0 0	0 0	0 0	14 9	16 1	60 7
AIR DRY MOISTURE	10 4	10 0	7 9	10 7	8 3	7 5
TOTAL MOISTURE	0 0+	0 0+	0 0+	24 0	23 1	23 8

ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+	14 1
TOTAL	0 0	0 0	0 0	0 0	0 0	14 1
HEAT OF COMBUSTION (BTU LB)	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	15 2	6 1	9 2	13 8	15 5	19 4
+1/4 MESH	46 1	27 8	41 1	48 9	51 6	51 2
-1/4 MESH (WT %)	53 9	62 2	58 9	51 1	63 4	48 8

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 27	C1- 28	C1- 29
TIME	12 45	12 0	14 15
DATE	10/ 6/76	10/ 7/76	10/ 7/76

PROXIMATE ANALYSIS

MOISTURE	18 1	19 0	15 5
VOLATILE MATTER	21 7	21 1	21 6
FIXED CARBON	40 9	40 5	41 9
ASH	9 4	9 4	11 0
TOTAL	100 0	100 0	100 0
AIR DRY MOISTURE	11 5	9 7	6 4
TOTAL MOISTURE	27 5	26 9	20 9

ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+
ASH	9 4	9 4	11 0
TOTAL	9 4	9 4	11 0
TOTAL	9 4	9 4	11 0

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	8 3	10 2	13 1
+1/4 MESH	32 6	42 5	42 9
-1/4 MESH (WT %)	66 4	57 5	56 1

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 30	C1- 31	C1- 32	C1- 33	C1- 34	C1- 35	C1- 36
TIME	10:30	12: 0	15:30	9:15	11:15	14: 0	16: 0
DATE	11/ 2/76	11/ 2/76	11/ 2/76	11/11/76	11/11/76	11/11/76	11/11/76

PROXIMATE ANALYSIS

MOISTURE	16.4	20.4	19.8	20.4	22.6	18.8	18.6
VOLATILE MATTER	31.6	31.6	32.1	30.0	29.4	32.3	31.0
FIXED CARBON	40.4	39.9	41.5	42.2	39.8	38.4	41.9
ASH	11.7	8.2	3.3	7.4	8.3	10.0	8.6
TOTAL	100.0	100.0	96.7	100.0	100.0	99.5	100.0
AIR DRY MOISTURE	5.7	9.6	10.2	10.4	7.6	10.3	12.7
TOTAL MOISTURE	21.1	28.0	27.9	29.1	28.5	27.2	28.9

ULTIMATE ANALYSIS

HYDROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
ASH	11.7	8.2	3.3	7.4	8.3	10.0	8.6
TOTAL	11.7	8.2	3.3	7.4	8.3	10.0	8.6
HEAT OF COMBUSTION (BTU/LB)	0. +	0. +	0. +	0. +	0. +	0. +	0. +
F. S. I.	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	26.6	14.2	26.9	10.9	12.7	8.5	11.2
+1/4 MESH	61.0	51.0	62.2	41.3	49.6	39.7	48.7
-1/4 MESH (WT %)	39.0	49.0	37.8	58.7	50.4	60.3	59.3

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 37	C1- 38	C1- 39	C1- 40	C1- 41	C1- 42	C1- 43
TIME	15 30	17 30	20 0	9 30	11 30	13 30	9 0
DATE	11/22/76	11/22/76	11/22/76	11/22/76	11/23/76	11/23/76	11/24/76
PROXIMATE ANALYSIS							
MOISTURE	20.2	21.1	20.7	17.6	21.8	21.4	19.9
VOLATILE MATTER	10.6	30.6	29.8	31.2	29.8	30.3	30.6
FIXED CARBON	41.3	48.6	40.9	41.1	40.8	40.2	39.3
ASH	8.0	7.7	8.7	10.1	7.5	8.2	10.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AIR DRY MOISTURE	8.8	6.5	5.5	12.2	12.2	7.3	6.1
TOTAL MOISTURE	27.2	27.8	25.0	27.7	31.3	27.1	24.9
ULTIMATE ANALYSIS							
HYDROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
ASH	0.0	7.7	8.7	10.1	7.5	8.2	10.1
TOTAL	0.0	7.7	8.7	10.1	7.5	8.2	10.1
HEAT OF COMBUSTION (BTU/LB)	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
F S I	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	6.4	13.2	10.8	10.4	11.5	13.9	15.6
+1/4 MESH	14.3	42.4	39.0	39.2	43.7	48.4	49.0
-1/4 MESH (WT %)	65.7	57.6	51.0	50.8	56.3	51.6	51.0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1- 44	C1- 45	C1- 46
TIME	11 30	13 30	15 50
DATE	11/24/76	11/24/76	11/24/76
PROXIMATE ANALYSIS			
MOISTURE	15.7	16.5	18.7
VOLATILE MATTER	31.4	31.0	30.2
FIXED CARBON	44.4	44.6	43.6
ASH	8.5	7.9	7.5
TOTAL	100.0	100.0	100.0

AIR DRY MOISTURE	12.0	9.5	6.8
TOTAL MOISTURE	25.8	24.4	25.9

ULTIMATE ANALYSIS

HYDROGEN	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+
ASH	0.5	7.9	7.5
TOTAL	0.5	7.9	7.5

HEAT OF COMBUSTION (BTU/LB)	0. +	0. +	0. +
F S I	0.0+	0.0+	0.0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	14.0	15.1	13.7
+1/4 MESH	46.6	44.0	48.2
-1/4 MESH (WT %)	53.4	55.2	51.8

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C1 - RAW COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1- 47	C1- 48	C1- 49	C1- 50	C1- 51
11 0	13 0	10 0	11 30	14 0
12/14/76	12/14/76	12/15/76	12/16/76	12/16/76

TIME DATE PROXIMATE ANALYSIS

MOISTURE	18 3	21 0	18 0	20 5	21 0
VOLATILE MATTER	30 7	30 9	30 8	31 6	29 4
FIXED CARBON	40 9	39 7	42 1	38 8	41 3
ASH	10 1	8 8	8 3	9 1	8 3
TOTAL	100 0	100 0	100 0	100 0	100 0

AIR DRY MOISTURE	10 5	7 4	8 3	9 5	9 5
TOTAL MOISTURE	26 9	26 8	25 5	28 1	28 5

ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 1	8 8	8 3	9 1	8 3
TOTAL	10 1	8 8	8 3	9 1	8 3

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+3/4 MESH	22 6	18 9	16 9	12 6	12 3
+1/4 MESH	59 5	52 8	47 7	43 7	43 3
-1/4 MESH (WT %)	40 5	47 2	52 3	56 3	56 7

+ = NO ANALYSIS DONE
* = TRACE
+* = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 1

TIME

0 0

DATE

2/26/76

PROXIMATE ANALYSIS

MOISTURE	17.9
VOLATILE MATTER	30.8
FIXED CARBON	42.6
ASH	8.7
TOTAL	100.0

AIR DRY MOISTURE 0.0+

ULTIMATE ANALYSIS

HYDROGEN	5.6
CARBON	55.4
NITROGEN	0.9
OXYGEN	28.7
SULFUR	0.7
ASH	0.7
TOTAL	100.0

HEAT OF COMBUSTION (BTU/LB) 9470

F S J 0.0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 2

TIME 22 0
DATE 4/ 3/76

PROXIMATE ANALYSIS

MOISTURE	16 1
VOLATILE MATTER	30 6
FIXED CARBON	44 1
ASH	9 2
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	5 5
CARBON	86 2
NITROGEN	0 7
OXYGEN	28 5
SULFUR	0 0+
ASH	9 2
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 0 +

F S I 0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C1A- 3	C1A- 4	C1A- 5
TIME	16 57	2 45	16 30
DATE	6/ 8/76	6/11/76	6/16/76
PROXIMATE ANALYSIS			
MOISTURE	17.9	19.7	19.1
VOLATILE MATTER	30.8	29.8	31.2
FIXED CARBON	41.5	41.5	41.8
ASH	9.7	9.0	7.9
TOTAL	100.0	100.0	100.0
AIR DRY MOISTURE	0.0+	0.0+	0.0+
ULTIMATE ANALYSIS			
HYDROGEN	5.5	5.7	5.8
CARBON	54.3	53.8	54.4
NITROGEN	1.1	0.8	1.0
OXYGEN	28.6	30.2	30.3
SULFUR	0.8	0.5	0.6
ASH	9.7	9.0	7.9
TOTAL	100.0	100.0	100.0
HEAT OF COMBUSTION (BTU/LB)	9160	8930	9220
F S I	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 6 C1A- 7

TIME

15 0

3 30

DATE

8/ 5/76

8/21/76

PROXIMATE ANALYSIS

MOISTURE

16 0

15 3

VOLATILE MATTER

32 1

31 9

FIXED CARBON

42 2

42 9

ASH

9 7

9 9

TOTAL

100 0

99 9

AIR DRY MOISTURE

0 0+

0 0+

ULTIMATE ANALYSIS

HYDROGEN

5 5

5 4

CARBON

55 0

55 3

NITROGEN

1 0

0 7

OXYGEN

22 0

27 2

SULFUR

0 2

0 5

ASH

9 7

9 9

TOTAL

100 0

100 0

HEAT OF COMBUSTION (BTU/LB)

9270

8280

F S I

0 0+

0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C1A -- RAW COAL COMPOSITE
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 8

TIME 2 30
DATE 10/ 8 76
PROXIMATE ANALYSIS

MOISTURE	17.3
VOLATILE MATTER	31.5
FIXED CARBON	40.7
ASH	10.4
TOTAL	100.0

AIR DRY MOISTURE 8.0+

ULTIMATE ANALYSIS

HYDROGEN	5.4
CARBON	53.4
NITROGEN	0.8
OXYGEN	19.2
SULFUR	0.8
ASH	10.4
TOTAL	100.0

HEAT OF COMBUSTION (BTU/LB) 8960

F S I 0.0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 9 C1A- 10 C1A- 11

15 30 16 0 8 0
11/ 2/76 11/11/76 11/25/76

TIME DATE PROXIMATE ANALYSIS

MOISTURE	17 8	19 3	14 2
VOLATILE MATTER	31 1	31 6	33 2
FIXED CARBON	43 4	42 1	44 2
ASH	7 7	7 1	8 3
TOTAL	100 1	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	5 7	5 9	5 5
CARBON	55 6	54 7	50 3
NITROGEN	0 8	0 9	0 9
OXYGEN	29 6	31 0	26 4
SULFUR	0 5	0 5	0 6
ASH	7 7	7 1	8 3
TOTAL	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	9500	9290	9910
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F S I	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
+* = SUSPECT ANALYSIS

C1A - RAW COAL COMPOSITE
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C1A- 12

TIME 17 30
DATE 12/17/76
PROXIMATE ANALYSIS

MOISTURE	19 8
VOLATILE MATTER	31 9
FIXED CARBON	40 3
ASH	8 0
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	5 9
CARBON	54 9
NITROGEN	0 8
OXYGEN	29 9
SULFUR	0 5
ASH	0 0
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 8450

F S I 0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 1	C7- 4	C7- 5	C7- 6	C7- 7	C7- 8
TIME	12 0	18 50	20 10	3 35	5 0	11 0
DATE	11/ 5/75	11/29/75	11/29/75	11/30/75	11/30/75	11/30/75

PROXIMATE ANALYSIS

MOISTURE	9 3	6 9	7 5	9 1	8 4	14 8
VOLATILE MATTER	39 4	36 0	36 0	34 6	25 0	32 6
FIXED CARBON	0 0+	46 0	46 2	45 1	45 7	42 1
ASH	10 2	10 2	10 4	11 2	10 9	10 5
TOTAL	57 8	100 0	100 0	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	3 3	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	61 1	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	22 5	0 0	0 0	0 0	0 0	0 0
SULFUR	1 0	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 2	10 3	10 4	11 2	10 9	10 5
TOTAL	100 0	10 3	10 4	11 2	10 9	10 5

HEAT OF COMBUSTION (BTU/LB)	10400	0 +	0 +	0 +	0 +	0 +
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F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 9	C7- 10	C7- 11	C7- 12	C7- 13	C7- 14	C7- 15
TIME	13 8	18 40	19 15	11 15	12 20	12 50	14 45
DATE	12. 1/75	12/20/75	12/20/75	12/21/75	12/21/75	12/21/75	12/21/75
PROXIMATE ANALYSIS							
MOISTURE	10 1	7 3	8 3	6 9	7 1	6 8	6 9
VOLATILE MATTER	33 9	35 6	35 1	35 2	35 5	35 6	35 7
FIXED CARBON	46 1	46 1	45 8	47 0	46 9	46 5	46 1
ASH	9 9	10 8	10 8	10 8	10 4	11 0	11 0
TOTAL	100 0	100 0	100 0	99 9	99 9	99 9	99 9
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	9 9	10 8	10 8	10 8	10 4	11 0	11 0
TOTAL	9 9	10 8	10 8	10 8	10 4	11 0	11 0
HEAT OF COMBUSTION (BTU-LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 16	C7- 17	C7- 18	C7- 19	C7- 20	C7- 21	C7- 22
TIME	15 0	20 30	18 00	0 15	3 30	12 30	21 35
DATE	2/18/76	2/19/76	2/21/76	2/22/76	2/22/76	2/22/76	2/26/76
PROXIMATE ANALYSIS							
MOISTURE	10 6	10 5	9 1	6 7	10 9	7 7	8 3
VOLATILE MATTER	34 3	33 5	34 0	35 0	33 7	32 9	34 5
FIXED CARBON	45 5	47 0	46 4	47 3	44 3	47 7	44 6
ASH	9 6	9 0	10 5	11 0	10 5	11 7	12 6
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	5 2	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	60 0	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	25 2	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	9 6	9 0	10 5	11 0	10 5	11 7	12 6
TOTAL	100 0	9 0	10 5	11 0	10 5	11 7	12 6
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7- 23

TIME

0 30

DATE

2/27/76

PROXIMATE ANALYSIS

MOISTURE	7 9
VOLATILE MATTER	35 3
FIXED CARBON	46 3
ASH	10 3
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	0 0+
CARBON	0 0+
NITROGEN	0 0+
OXYGEN	0 0
SULFUR	0 0+
ASH	10 3
TOTAL	10 3

HEAT OF COMBUSTION (BTU/LB) 0 +

F S I 0 0+

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME -

	C7- 24	C7- 25	C7- 26	C7- 27	C7- 28	C7- 29	C7- 30
TIME	1 30	8 0	5 30	7 30	10 0	16 0	21 15
DATE	3/ 2/76	3/ 2/76	3/ 3/76	3/ 3/76	3/ 3/76	3/ 3/76	3/ 3/76
PROXIMATE ANALYSIS							
MOISTURE	8 1	7 2	10 5	7 0	6 9	9 2	10 2
VOLATILE MATTER	34 3	34 2	33 6	35 7	35 1	35 1	33 5
FIXED CARBON	47 2	48 3	46 4	47 1	48 0	44 8	45 9
ASH	10 4	10 2	9 5	10 2	10 0	10 9	10 4
TOTAL	100 0	99 9	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 4	10 2	9 5	10 2	10 0	10 9	10 4
TOTAL	10 4	10 2	9 5	10 2	10 0	10 9	10 4
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 31	C7- 32	C7- 33	C7- 34	C7- 35
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TIME	18 0	23 0	3 0	7 30	19 0
DATE	2/ 4/76	2/ 4/76	3/ 5/76	3/ 5/76	3. 6/76

PROXIMATE ANALYSIS

MOISTURE	10 6	6 9	7 2	7 4	5 9
VOLATILE MATTER	33 6	35 2	35 3	35 4	35 6
FIXED CARBON	45 8	47 5	46 8	47 2	46 8
ASH	10 0	10 4	10 7	10 0	10 5
TOTAL	100 0	100 0	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 0	10 4	10 7	10 0	10 5
TOTAL	10 0	10 4	10 7	10 0	10 5

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +
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F S I	0 0+	0 0+	0 0+	0 0+	0 0+
-------	------	------	------	------	------

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 36	C7- 37	C7- 38	C7- 39	C7- 40	C7- 41	C7- 42
TIME	20 30	17 30	22 40	15 0	17 0	17 20	17 45
DATE	5/14/76	5/17/76	5/18/76	5/12/76	5/12/76	5/14/76	5/18/76
PROXIMATE ANALYSIS							
MOISTURE	12.7	7.6	7.5	7.0	6.1	7.0	6.3
VOLATILE MATTER	32.1	0.0+	35.3	34.6	35.7	34.7	24.4
FIXED CARBON	45.5	0.0+	46.8	47.0	46.5	48.1	49.1
ASH	9.7	0.0+	10.6	10.6	11.2	10.2	9.7
TOTAL	100.0	7.0	100.2	100.0	99.5	100.0	100.0
AIR DRY MOISTURE	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
ULTIMATE ANALYSIS							
HYDROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+
ASH	9.7	0.0+	10.6	10.6	11.2	10.2	9.7
TOTAL	9.7	0.0	10.6	10.6	11.2	10.2	9.7
HEAT OF COMBUSTION (BTU/LB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
F S I	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 43	C7- 44	C7- 45	C7- 46	C7- 47	C7- 48	C7- 49
TIME	16 10	13 30	1 0	23 0	19 45	1 30	3 30
DATE	5/26/76	5/27/76	5/28/76	5/28/76	5/29/76	5/30/76	5/30/76
PROXIMATE ANALYSIS							
MOISTURE	7 5	7 7	11 0	5 9	7 6	7 1	6 6
VOLATILE MATTER	34 9	32 8	33 7	35 7	34 6	34 6	35 2
FIXED CARBON	46 4	48 4	45 1	47 7	47 2	48 0	48 1
ASH	11 1	9 9	10 3	10 8	10 6	10 5	10 2
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	11 1	9 9	10 3	10 8	10 6	10 5	10 2
TOTAL	11 1	9 9	10 3	10 7	10 6	10 5	10 2
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7- 50	C7- 51
7 30	11 30
5/30/76	5/30/76

TIME DATE PROXIMATE ANALYSIS

MOISTURE	6.9	6.0
VOLATILE MATTER	34.9	34.6
FIXED CARBON	47.5	46.7
ASH	10.7	12.7
TOTAL	100.0	100.0

AIR DRY MOISTURE	0.0+	0.0+
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ULTIMATE ANALYSIS

HYDROGEN	0.0+	0.0+
CARBON	0.0+	0.0+
NITROGEN	0.0+	0.0+
OXYGEN	0.0	0.0
SULFUR	0.0+	0.0+
ASH	10.7	12.7
TOTAL	10.7	12.7

HEAT OF COMBUSTION (BTU/LB)	0. +	0. +
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F S 1	0.0+	0.0+
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+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 52	C7- 53	C7- 54	C7- 55	C7- 56
TIME	12 45	18 38	18 38	22 8	12 15
DATE	6/ 5/76	6/ 6/76	6/ 7/76	6/ 7/76	6/ 8/76
PROXIMATE ANALYSIS					

MOISTURE	8 8	8 2	8 3	7 2	6 4
VOLATILE MATTER	34 3	34 7	33 9	35 8	35 2
FIXED CARBON	47 7	47 3	47 4	48 3	48 1
ASH	9 7	9 8	10 2	9 5	10 3
TOTAL	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	8 8+	8 8+	8 8+	8 8+	8 8+
ULTIMATE ANALYSIS					

HYDROGEN	8 8+	8 8+	8 8+	8 8+	8 8+
CARBON	8 8+	8 8+	8 8+	8 8+	8 8+
NITROGEN	8 8+	8 8+	8 8+	8 8+	8 8+
OXYGEN	8 8	8 8	8 8	8 8	8 8
SULFUR	8 8+	8 8+	8 8+	8 8+	8 8+
ASH	9 7	9 8	10 2	9 5	10 3
TOTAL	9 7	9 8	10 2	9 5	10 3
HEAT OF COMBUSTION (BTU/LB)	8 +	8 +	8 +	8 +	8 +
F S I	8 8+	8 8+	8 8+	8 8+	8 8+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7- 37	C7- 38	C7- 39
16 20	1 30	5 0
7/ 5/76	7/ 6/76	7/ 6/76

TIME DATE PROXIMATE ANALYSIS

MOISTURE	8.3	7.6	8.1
VOLATILE MATTER	14.1	14.0	23.8
FIXED CARBON	46.9	47.1	47.5
ASH	10.7	11.1	10.4
TOTAL	100.0	99.8	100.0

AIR DRY MOISTURE	0.0+	0.0+	0.0+
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ULTIMATE ANALYSIS

HYDROGEN	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+
ASH	10.7	11.1	10.4
TOTAL	10.7	11.1	10.4

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +
A S I	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 60	C7- 61	C7- 62	C7- 63	C7- 64	C7- 65	C7- 66
TIME	21 0	23 30	20 30	15 0	23 30	5 0	22 30
DATE	8/ 2/76	8/ 2/76	8 5/76	8/14/76	8. 15. 76	8. 16. 76	8/16/76

PROXIMATE ANALYSIS

MOISTURE	6 3	6 5	8 0	6 7	7 6	6 6	6 3
VOLATILE MATTER	34 7	34 9	34 9	33 9	33 8	34 6	35 9
FIXED CARBON	40 8	40 3	45 6	48 6	47 9	47 4	47 1
ASH	10 2	10 3	10 5	10 2	10 7	11 3	10 7
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	99 9

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
------------------	------	------	------	------	------	------	------

ULTIMATE ANALYSIS

HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 2	10 3	10 5	10 5	10 7	11 3	10 7
TOTAL	10 2	10 3	10 5	10 2	10 7	11 3	10 7

HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
-----------------------------	-----	-----	-----	-----	-----	-----	-----

F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7- 67

TIME

7 0

DATE

8/17/76

PROXIMATE ANALYSIS

MOISTURE	6 2
VOLATILE MATTER	55 6
FIXED CARBON	47 4
ASH	10 7
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	0 0+
CARBON	0 0+
NITROGEN	0 0+
OXYGEN	0 0
SULFUR	0 0+
ASH	10 7
TOTAL	10 7

HEAT OF COMBUSTION (BTU. LB) 0 +

F S I 0 0+

+ = NO ANALYSIS DONE

* = TRACE

+* = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 68	C7- 69	C7- 70	C7- 71	C7- 72	C7- 73	C7- 74
TIME	10 20	13 15	1 30	5 30	9 30	5 0	16 30
DATE	10/ 6/76	10/ 6/76	10 16/76	10/16/76	10/16/76	10/17/76	10/30/76
PROXIMATE ANALYSIS							
MOISTURE	6 7	6 0	6 2	6 2	5 9	5 7	5 5
VOLATILE MATTER	35 4	36 0	31 5	35 5	34 9	32 5	34 0
FIXED CARBON	42 2	47 6	50 1	41 4	48 1	50 1	47 9
ASH	10 7	10 4	12 2	10 9	11 0	11 7	12 6
TOTAL	95 0	100 0	100 0	94 0	99 9	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	4 5
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	61 8
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	1 2
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	19 7
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 5
ASH	10 7	10 4	12 2	10 9	11 0	11 7	12 6
TOTAL	10 7	10 4	12 2	10 9	11 0	11 7	100 0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	10300
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7- 75

TIME 21 0
DATE 10/31/76
PROXIMATE ANALYSIS

MOISTURE	4 1
VOLATILE MATTER	34 3
FIXED CARBON	50 4
ASH	11 2
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	6 0+
CARBON	8 0+
NITROGEN	0 0+
OXYGEN	0 0
SULFUR	0 0+
ASH	11 2
TOTAL	11 2

HEAT OF COMBUSTION (BTU/LB) 0 +

F S I 0 0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 76	C7- 77	C7- 78	C7- 79	C7- 80	C7- 81	C7- 82
TIME	4 15	12 0	5 0	9 0	2 30	2 30	16 30
DATE	11/ 1/76	11/ 1/76	11/ 2/76	11/ 2/76	11/ 3/76	11/ 4/76	11/19/76
PROXIMATE ANALYSIS							
MOISTURE	4 5	4 1	2 7	2 9	5 5	5 3	5 9
VOLATILE MATTER	35 2	36 0	35 2	35 1	34 4	0 0+	0 0+
FIXED CARBON	49 2	49 4	50 5	50 6	49 7	0 0+	0 0+
ASH	11 1	10 4	11 0	11 2	10 4	0 0+	0 0+
TOTAL	100 0	100 0	100 0	100 0	100 0	5 3	5 9
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	11 1	10 4	11 0	11 2	10 4	0 0+	0 0+
TOTAL	11 1	10 4	11 0	11 2	10 4	0 0	0 0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 83	C7- 84	C7- 85	C7- 86	C7- 87	C7- 88	C7- 89
TIME	1 0	9 0	10 15	11 0	11 10	1 30	8 30
DATE	11 20/76	11 20/76	11 20/76	11 20/76	11 21/76	11 22/76	11 22/76
PROXIMATE ANALYSIS							
MOISTURE	5 8	5 3	5 4	5 8	4 5	5 8	4 4
VOLATILE MATTER	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
FIXED CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	5 8	5 3	5 4	5 8	4 5	5 8	4 4
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	0 0	0 0	0 0	0 0	0 0	0 0	0 0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 90	C7- 91	C7- 92	C7- 93	C7- 94
TIME	11 30	21 0	1 0	2 0	17 0
DATE	11-22/76	11-22/76	11/23/76	11/23/76	11-23/76
PROXIMATE ANALYSIS					
MOISTURE	4 9	5 9	5 5	2 8	4 5
VOLATILE MATTER	0 0+	0 0+	0 0+	0 0+	0 0+
FIXED CARBON	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	4 9	5 9	5 5	2 8	4 6
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS					
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	0 0	0 0	0 0	0 0	0 0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 95	C7- 96	C7- 97	C7- 98	C7- 99	C7-100	C7-101
TIME	0 1	23 0	5 70	12 0	14 0	6 15	5 20
DATE	12/17/76	12/17/76	12/18/76	12/18/76	12/18/76	12/19/76	12/22/76
PROXIMATE ANALYSIS							
MOISTURE	5 7	4 5	4 9	5 0	5 2	5 6	5 3
VOLATILE MATTER	22 9	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
FIXED CARBON	50 2	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 4	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	100 0	4 6	4 9	5 0	5 2	5 6	5 3
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CARBON	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
OXYGEN	0 0	0 0	0 0	0 0	0 0	0 0	0 0
SULFUR	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ASH	10 4	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
TOTAL	10 4	0 0	0 0	0 0	0 0	0 0	0 0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +	0 +	0 +	0 +
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7-102	C7-103	C7-104	C7-105
TIME	12 0	16 0	15 0	6 30
DATE	12/25/76	12/25/76	12/26/76	12/29/76
PROXIMATE ANALYSIS				
MOISTURE	4.1	4.9	4.7	5.2
VOLATILE MATTER	0.0+	0.0+	0.0+	0.0+
FIXED CARBON	0.0+	0.0+	0.0+	0.0+
ASH	0.0+	0.0+	0.0+	0.0+
TOTAL	4.1	4.9	4.7	5.3
AIR DRY MOISTURE	0.0+	0.0+	0.0+	0.0+
ULTIMATE ANALYSIS				
HYDROGEN	0.0+	0.0+	0.0+	0.0+
CARBON	0.0+	0.0+	0.0+	0.0+
NITROGEN	0.0+	0.0+	0.0+	0.0+
OXYGEN	0.0	0.0	0.0	0.0
SULFUR	0.0+	0.0+	0.0+	0.0+
ASH	0.0+	0.0+	0.0+	0.0+
TOTAL	0.0	0.0	0.0	0.0
HEAT OF COMBUSTION (BTU/LB)	0 +	0 +	0 +	0 +
F S I	0.0+	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 1	C7- 4	C7- 5	C7- 6	C7- 7	C7- 8
TIME	12 0	10 50	20 10	3 30	5 0	11 0
DATE	11/ 5/75	11/29/75	11/29/75	11/30/75	11/30/75	11/30/75

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0	5 5	6 0	4 0	6 6
+50 MESH	0 0+	30 0	35 7	35 2	35 5	43 0
+60 MESH	0 0+	43 0	41 7	41 8	41 9	49 3
+100 MESH	0 0+	63 4	62 1	61 4	62 7	67 9
+140 MESH	0 0+	72 3	71 6	70 7	72 5	76 2
+200 MESH	0 0+	81 1	80 6	80 7	81 5	83 9
+325 MESH	0 0+	88 9	89 0	90 2	90 0	91 4
+325 MESH(WEIGHT PERCENT)	0 0+	11 1	11 0	9 6	10 0	8 6

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SPECT ANALYSIS

07 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	07- 9	07- 10	07- 11	07- 12	07- 17	07- 19	07- 18
TIME	12 0	10 40	10 15	11 15	12 20	12 50	14 45
DATE	11 1-75	12/20-75	12/20-75	12 21-75	12 21-75	12/21/75	11 21-75

SIEVE SIZE

CUMMULATIVE WEIGHT PERCENT

+2 MESH	0 0	0 0+	0 0	0 2	0 0	0 0	0 0
+20 MESH	0 0	0 4	0 6	0 5	0 4	0 4	0 5
+10 MESH	7 7	5 0	7 2	4 2	6 0	6 5	6 7
+80 MESH	40 2	51 9	32 2	28 0	34 2	34 2	35 5
+60 MESH	46 3	37 2	39 5	34 2	39 9	39 0	38 2
+100 MESH	65 0	56 4	59 2	52 2	61 2	60 5	58 3
+140 MESH	73 1	65 8	69 9	62 7	70 6	70 9	67 4
+200 MESH	79 7	74 1	78 2	72 1	79 8	79 2	76 1
+125 MESH	86 8	83 0	87 3	91 7	89 8	88 6	85 8
-125 MESH (WEIGHT PERCENT)	13 2	17 0	12 7	10 2	10 2	11 4	14 2

+ = NO ANALYSIS DONE
 + = TRACE
 ++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 16	C7- 17	C7- 18	C7- 19	C7- 20	C7- 21	C7- 22
TIME	17 0	20 30	18 00	0 15	2 30	12 30	21 35
DATE	2 18/76	2 19/76	2 21/76	2/22/76	2/22/76	2 22/76	2/26/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+	0 1	0 0	0 0+	0 1
+20 MESH	0 0	0 5	0 5	0 7	0 7	0 3	0 8
+30 MESH	6 0	6 9	7 1	8 0	7 6	2 5	7 4
+50 MESH	35 0	41 2	39 4	38 9	39 8	46 1	42 6
+60 MESH	41 9	47 0	48 6	46 3	45 8	51 0	50 7
+100 MESH	64 4	67 1	71 8	68 9	66 9	49 5	73 1
+140 MESH	75 2	74 2	79 2	77 8	77 9	56 8	81 1
+200 MESH	82 1	79 9	84 2	84 9	64 9	63 8	87 3
+325 MESH	90 6	86 3	93 0	90 6	92 0	77 0	92 4
-325 MESH(WEIGHT PERCENT)	9 4	14 0	6 9	9 4	8 0	22 7	7 6

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7- 23

TIME	6 30
DATE	2/27/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+
+20 MESH	0 5
+30 MESH	6 7
+50 MESH	41 1
+60 MESH	48 3
+100 MESH	69 4
+140 MESH	77 8
+200 MESH	84 6
+325 MESH	92 6
-325 MESH(WEIGHT PERCENT)	7 4

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 24	C7- 25	C7- 26	C7- 27	C7- 28	C7- 29	C7- 30
TIME	1 30	0 0	19 20	7 20	10 0	16 0	21 15
DATE	2/ 2/76	2/ 2/76	2/ 2/76	2/ 2/76	2/ 3/76	2/ 3/76	2/ 12/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0	0 0	0 0	0 0	0 0	0 0	0 0
+20 MESH	0 0	0 0	0 0	0 7	0 4	0 6	0 7
+30 MESH	6 9	6 9	0 2	7 4	7 5	7 2	0 2
+50 MESH	39 3	40 3	48 9	42 1	45 6	41 4	43 3
+60 MESH	47 1	47 6	54 1	49 4	50 8	48 0	49 0
+100 MESH	69 8	68 6	76 4	72 6	72 6	69 2	70 6
+140 MESH	79 7	77 3	82 5	81 5	81 2	77 7	79 0
+200 MESH	87 4	84 2	87 4	88 0	88 4	84 2	85 0
+325 MESH	94 1	91 1	96 9	94 4	95 0	91 0	91 7
-325 MESH(WEIGHT PERCENT)	5 9	9 9	3 1	5 6	5 0	9 0	8 7

+ = NO ANALYSIS DONE
 * = TRACE
 - = SUSPECT ANALYSIS

	C7- 31	C7- 32	C7- 33	C7- 34	C7- 35
TIME	12 0	23 0	3 0	7 20	19 0
DATE	2/ 4/76	2/ 4/76	2/ 5/76	2/ 5/76	2/ 6/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0	0 0*	0 0*	0 0	0 0
+20 MESH	0 0	0 0	0 4	0 4	0 5
+30 MESH	7 4	5 7	5 4	5 1	6 0
+50 MESH	39 2	39 5	40 0	39 6	39 3
+60 MESH	45 0	45 0	46 0	46 1	45 5
+100 MESH	66 7	67 0	67 3	68 2	67 4
+140 MESH	75 2	76 7	76 4	77 4	77 2
+200 MESH	82 0	81 7	82 0	84 0	84 0
+325 MESH	90 4	90 1	90 6	90 9	91 7
-325 MESH(WEIGHT PERCENT)	9 6	10 4	9 6	9 0	8 3

+ = NO ANALYSIS DONE
 * = TRACE
 - = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 36	C7- 37	C7- 38	C7- 39	C7- 40	C7- 41	C7- 42
TIME	20 30	17 30	23 40	15 0	17 0	15 50	17 45
DATE	5/4/76	5/7/76	5/10/76	5/10/76	5/13/76	5/14/76	5/18/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

	C7- 36	C7- 37	C7- 38	C7- 39	C7- 40	C7- 41	C7- 42
+8 MESH	0 0	0 0	0 0	0 0	0 0	0 0	0 0+
+20 MESH	0 5	0 5	0 4	0 4	0 4	0 3	0 5
+30 MESH	8 8	7 2	6 9	6 9	5 1	5 0	7 1
+50 MESH	42 1	41 5	41 0	41 8	36 0	36 2	43 3
+60 MESH	0 0+	47 8	46 9	47 5	41 8	42 9	48 9
+100 MESH	68 5	67 5	68 3	66 7	62 6	64 2	68 3
+140 MESH	74 6	75 0	77 6	74 3	72 3	72 5	76 0
+200 MESH	80 0	82 3	85 1	80 2	79 7	80 1	82 6
+325 MESH	86 9	88 0	92 1	87 5	87 6	87 8	89 0
-325 MESH\WEIGHT PERCENT	13 1	11 2	7 9	12 5	12 2	12 2	11 0

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

	C7- 43	C7- 44	C7- 45	C7- 46	C7- 47	C7- 48	C7- 49
TIME	16 30	13 30	1 0	22 45	18 45	1 30	2 30
DATE	5/26/76	5/26/76	5/26/76	5/28/76	5/29/76	5/30/76	5/30/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

	C7- 43	C7- 44	C7- 45	C7- 46	C7- 47	C7- 48	C7- 49
+8 MESH	0 0+	0 0	0 0	0 0	0 0	0 0	0 0
+20 MESH	0 5	0 7	0 6	0 3	0 7	0 4	0 2
+30 MESH	6 7	9 1	8 7	6 8	8 2	8 2	6 0
+50 MESH	38 8	42 5	42 1	35 3	38 5	39 1	39 5
+60 MESH	43 6	50 2	47 7	42 4	44 2	45 4	45 1
+100 MESH	61 3	69 0	66 4	59 8	63 4	65 4	65 5
+140 MESH	70 4	77 4	76 6	69 4	72 3	74 1	74 2
+200 MESH	77 0	84 2	82 1	78 5	80 4	82 6	81 0
+325 MESH	87 1	90 1	89 4	81 5	89 9	92 9	92 7
-325 MESH\WEIGHT PERCENT	12 9	9 9	10 6	8 5	10 1	7 1	7 3

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 50	C7- 51
TIME	7 30	11 00
DATE	5/30/76	5 30/76

STIEVE SIZE	CUMMULATIVE WEIGHT PERCENT	
-----		-----
+8 MESH	0 0	0 1
+20 MESH	0 4	0 5
+20 MESH	5 7	5 7
+50 MESH	38 3	38 3
+60 MESH	43 8	43 2
+100 MESH	63 7	63 5
+140 MESH	73 0	72 4
+200 MESH	91 5	90 6
+225 MESH	90 6	90 1
-225 MESH(WEIGHT PERCENT)	9 4	9 9

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

07 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	07- 52	07- 53	07- 54	07- 55	07- 56
TIME	12 45	12 10	12 30	22 0	12 15
DATE	6/ 5/76	6/ 6/76	6/ 7/76	6 7.76	6/ 8.76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0	0 0*	0 1	0 2	0 0
+20 MESH	0 7	0 5	0 5	0 6	0 5
+30 MESH	7 8	6 2	6 8	8 5	7 7
+50 MESH	40 8	42 9	39 9	42 6	44 9
+60 MESH	47 7	48 4	42 3	48 7	51 0
+100 MESH	66 7	67 8	65 0	69 4	71 0
+140 MESH	75 5	75 6	73 4	77 4	79 0
+200 MESH	83 4	82 5	80 8	88 1	85 5
+225 MESH	91 6	89 1	88 7	93 0	91 4
-325 MESH(WEIGHT PERCENT)	8 4	10 9	11 3	7 0	8 6

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 57	C7- 58	C7- 59
TIME	16 30	1 30	5 0
DATE	7/ 5/76	7/ 6/76	7/ 6/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT		
-----	-----	-----	-----
+8 MESH	0 0	0 0	0 0
+20 MESH	0 3	0 0*	0 5
+30 MESH	7 2	5 4	6 8
+50 MESH	41 8	40 4	40 9
+60 MESH	48 0	46 3	47 1
+100 MESH	67 0	67 2	67 2
+140 MESH	75 5	75 7	75 5
+200 MESH	82 6	82 8	82 8
+225 MESH	89 8	89 6	89 4
-225 MESH(WEIGHT PERCENT)	10 2	10 4	10 6

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 60	C7- 61	C7- 62	C7- 63	C7- 64	C7- 65	C7- 66
TIME	21 0	23 30	20 30	15 0	22 30	5 0	22 30
DATE	8/2/76	8/2/76	8/5/76	8/14/76	8/15/76	8/15/76	8/16/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0	0 0	0 0	0 0	0 0	0 0	0 0+
+20 MESH	0 0	0 2	0 1	0 4	0 5	0 2	0 2
+30 MESH	7 9	6 7	5 9	7 0	8 6	6 2	4 7
+50 MESH	38 1	37 2	38 8	38 4	42 3	40 0	32 8
+60 MESH	44 1	43 5	44 4	43 1	48 1	45 4	38 3
+100 MESH	63 9	62 9	65 5	63 8	66 7	66 6	60 5
+140 MESH	73 3	72 0	74 6	73 3	74 8	75 4	70 0
+200 MESH	81 8	80 4	82 2	80 0	81 9	83 1	78 8
+225 MESH	90 2	89 0	89 8	92 8	89 0	90 1	87 5
-325 MESH(WEIGHT PERCENT)	9 8	11 0	14 2	7 2	11 0	9 9	12 5

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

C7- 67

TIME	7 0
DATE	8/17/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0
+20 MESH	0 2
+30 MESH	3 9
+50 MESH	37 6
+60 MESH	43 8
+100 MESH	64 6
+140 MESH	73 6
+200 MESH	81 4
+225 MESH	89 8
-325 MESH(WEIGHT PERCENT)	11 0

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 68	C7- 69	C7- 70	C7- 71	C7- 72	C7- 73	C7- 74
TIME	10 58	10 15	1 20	5 20	9 30	5 0	16 20
DATE	10/5/76	10/5/76	10/16/76	10/16/76	10/16/76	10/17/76	10/30/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0.1	0.1	0.0	0.1	0.0	0.0	0.1
+20 MESH	0.4	0.4	0.3	0.5	0.3	0.3	0.2
+30 MESH	5.9	6.7	5.6	6.7	4.3	5.5	6.5
+50 MESH	40.5	41.5	36.4	39.2	32.2	35.0	38.2
+60 MESH	46.8	47.8	43.8	45.1	39.6	40.4	44.1
+100 MESH	62.5	68.3	60.5	65.2	61.3	59.5	63.7
+140 MESH	76.6	78.9	68.5	73.8	71.1	67.8	72.2
+200 MESH	84.0	84.4	74.7	81.4	79.6	75.3	79.3
+325 MESH	91.9	91.5	81.6	98.5	91.3	93.1	86.1
-325 MESH(WEIGHT PERCENT)	8.1	8.5	18.2	11.5	8.7	16.9	13.9

+ = NO ANALYSIS DONE
 + = TRACE
 ++ = SUSPECT ANALYSIS

C7- 75

TIME	21 0
DATE	10/31/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0.1
+20 MESH	0.5
+30 MESH	5.4
+50 MESH	24.8
+60 MESH	39.8
+100 MESH	62.8
+140 MESH	71.4
+200 MESH	79.9
+325 MESH	88.1
-325 MESH(WEIGHT PERCENT)	11.9

+ = NO ANALYSIS DONE
 + = TRACE
 SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 76	C7- 77	C7- 7A	C7- 79	C7- 80	C7- 81	C7- 82
TIME	4 15	15 0	5 0	9 0	3 30	2 20	16 30
DATE	11/ 1/76	11/ 1/76	11/ 2/76	11/ 2/76	11/ 3/76	11/ 4/76	11/19/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0*	0 0*	0 0	0 0	0 0	0 0	0 0
+20 MESH	0 4	0 0	0 5	0 0	0 2	0 6	0 3
+40 MESH	7 1	6 9	7 6	5 1	6 1	7 0	6 2
+50 MESH	40 2	40 2	39 6	37 0	38 3	37 8	38 2
+60 MESH	46 0	46 9	46 1	43 1	44 8	43 6	44 0
+100 MESH	56 9	66 9	64 7	67 4	64 8	62 1	63 7
+140 MESH	75 0	76 0	73 8	72 6	73 6	70 5	72 0
+200 MESH	83 4	83 5	81 2	80 6	81 5	77 4	79 3
+325 MESH	90 5	91 1	88 2	89 4	90 5	84 2	86 7
-325 MESH(WEIGHT PERCENT)	9 5	8 9	11 0	10 6	9 5	15 8	11 7

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

	C7- 83	C7- 84	C7- 85	C7- 86	C7- 87	C7- 88	C7- 89
TIME	1 0	9 0	10 15	11 0	11 30	1 30	8 30
DATE	11/20/76	11/20/76	11/20/76	11/20/76	11/21/76	11/22/76	11/22/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 1	0 0	0 0	0 0	0 0	0 0	0 0
+20 MESH	0 5	0 2	0 1	0 0	0 5	0 6	0 2
+40 MESH	6 5	6 6	6 0	5 9	6 5	8 7	5 4
+50 MESH	36 9	35 5	33 7	35 4	36 6	40 8	35 9
+60 MESH	42 0	40 1	39 3	41 4	41 9	47 5	42 0
+100 MESH	61 4	56 8	56 6	60 1	60 4	66 1	61 8
+140 MESH	69 5	64 1	64 2	68 3	68 8	75 0	70 7
+200 MESH	76 7	70 0	70 6	74 0	76 1	82 4	78 1
+325 MESH	88 5	81 0	81 5	80 0	80 4	88 7	86 6
-325 MESH(WEIGHT PERCENT)	11 7	19 0	18 3	17 0	16 6	11 0	13 4

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 90	C7- 91	C7- 92	C7- 93	C7- 94
TIME	11 30	21 0	1 0	2 0	17 0
DATE	11 22 76	11 22 76	11 22 76	11 27 76	11 23 76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0	0 0	0 0	0 0	0 1
+20 MESH	0 4	0 4	0 4	0 1	0 5
+30 MESH	6 9	6 3	6 1	5 8	5 8
+50 MESH	36 0	38 6	38 6	59 4	34 9
+60 MESH	45 1	45 9	45 1	45 7	40 1
+100 MESH	63 8	63 6	63 2	45 0	57 9
+140 MESH	72 4	74 1	72 7	75 1	65 5
+200 MESH	79 2	81 4	81 9	79 5	72 7
+325 MESH	86 5	89 5	91 1	87 1	81 0
-325 MESH(WEIGHT PERCENT)	13 5	10 5	8 9	12 8	18 0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7 - GROUND COAL

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7- 95	C7- 96	C7- 97	C7- 98	C7- 99	C7-100	C7-101
TIME	0 1	23 8	5 30	12 0	14 0	6 15	5 30
DATE	12/17/76	12/17/76	12/18/76	12/18/76	12/18/76	12/19/76	12/22/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT						
-----	-----						
+8 MESH	0 0	0 0	0 0	0 0	0 0	0 1	0 0
+20 MESH	0 4	0 1	0 1	0 1	0 1	0 5	0 4
+30 MESH	6 1	7 2	4 2	5 0	5 7	6 5	5 5
+50 MESH	40 7	45 6	35 5	41 0	27 4	38 6	35 4
+60 MESH	47 0	52 3	42 4	47 2	43 1	44 2	41 9
+100 MESH	67 2	72 6	64 2	60 8	63 8	64 3	62 7
+140 MESH	75 5	80 0	73 8	76 2	71 3	72 9	71 8
+200 MESH	82 0	85 5	81 4	82 8	78 2	80 2	79 3
+325 MESH	88 4	91 1	88 2	89 8	86 2	87 4	87 6
-325 MESH(WEIGHT PERCENT)	11 6	8 9	11 7	10 6	13 8	12 7	12 4

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

	C7-102	C7-103	C7-104	C7-105
TIME	12 0	16 0	15 0	6 30
DATE	12/23/76	12/23/76	12/26/76	12/29/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT			
-----	-----			
+8 MESH	0 0	0 0	0 0	0 0
+20 MESH	0 5	0 5	0 4	0 7
+30 MESH	7 8	8 6	7 0	8 3
+50 MESH	38 6	40 5	41 3	39 1
+60 MESH	44 3	46 8	47 1	44 9
+100 MESH	64 7	66 9	66 6	64 2
+140 MESH	73 2	75 9	74 8	73 3
+200 MESH	80 6	82 9	78 1	81 0
+325 MESH	86 3	90 1	87 1	89 1
-325 MESH(WEIGHT PERCENT)	11 7	9 8	12 9	11 9

+ = NO ANALYSIS DONE
 + = TRACE
 ** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 1 C7A- 2

TIME

12 0 20 0

DATE

12. 1/75 12. 20-75

PROXIMATE ANALYSIS

MOISTURE	9 9	7 4
VOLATILE MATTER	25 1	26 3
FIXED CARBON	44 2	46 1
ASH	10 8	10 1
TOTAL	100 0	100 0

AIR DRY MOISTURE

0 0+ 0 0+

ULTIMATE ANALYSIS

HYDROGEN	0 0+	5 0
CARBON	0 0+	63 6
NITROGEN	0 0	1 0
OXYGEN	0 0	19 3
SULFUR	0 0	1 0
ASH	10 8	10 1
TOTAL	12 5	100 0

HEAT OF COMBUSTION (BTU LB)

10600 10800

F S I

0 0+ 0 0+

+ = NO ANALYSIS DONE

+ = TRACE

*+ = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 2	C7A- 4	C7A- 5	C7A- 6
18 30	0 0	0 0	12 0
3. 1/76	2. 5/76	2. 4/76	2. 6/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	8.2	9.0	8.7	7.5
VOLATILE MATTER	24.4	34.3	34.3	34.4
FIXED CARBON	45.1	47.1	47.2	47.6
ASH	12.4	9.6	9.8	10.2
TOTAL	100.0	100.0	100.0	100.0

AIR DRY MOISTURE	0.0+	0.0+	0.0+	0.0+
------------------	------	------	------	------

ULTIMATE ANALYSIS

HYDROGEN	5.0	5.1	5.0	5.0
CARBON	60.1	61.2	61.7	62.1
NITROGEN	0.0+	0.9	0.0+	0.9
OXYGEN	22.5	22.4	22.9	20.9
SULFUR	0.0+	0.6	0.9	0.9
ASH	12.4	9.6	9.8	10.2
TOTAL	100.0	100.0	100.0	100.0

HEAT OF COMBUSTION (BTU LB)	0 + 10400	10500	10300
F S I	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 7	C7A- 8	C7A- 9	C7A- 10	C7A- 11
16 0	18 0	4 0	2 0	13 35
5/14/76	5/19/76	5/28/76	5/30/76	5/20/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	7.3	7.4	9.4	7.2	6.4
VOLATILE MATTER	34.7	34.5	32.9	34.9	34.9
FIXED CARBON	47.4	47.5	47.2	47.6	46.7
ASH	10.6	10.5	10.5	10.3	12.0
TOTAL	100.0	100.0	100.0	100.0	100.0

AIR DRY MOISTURE	0.0+	0.0+	0.0+	0.0+	0.0+
------------------	------	------	------	------	------

ULTIMATE ANALYSIS

HYDROGEN	5.0	5.0	5.1	5.1	4.9
CARBON	61.5	62.4	60.6	61.8	61.6
NITROGEN	0.9	0.8	1.0	1.0	1.0
OXYGEN	21.1	20.5	21.9	21.1	19.6
SULFUR	0.9	0.8	0.9	0.8	0.9
ASH	10.6	10.5	10.5	10.3	12.0
TOTAL	100.0	100.0	100.0	100.0	100.0

HEAT OF COMBUSTION (BTU/LB)	10400	10600	10700	10600	10500
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F S I	0.0+	0.0+	0.0+	0.0+	0.0+
-------	------	------	------	------	------

+ = NO ANALYSIS DONE
+ = TRACE
+ = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 12

TIME

1 0

DATE

6- 8 76

PROXIMATE ANALYSIS

MOISTURE	7 5
VOLATILE MATTER	25 1
FIXED CARBON	47 9
ASH	9 5
TOTAL	100 0

AIR DRY MOISTURE

0 0+

ULTIMATE ANALYSIS

HYDROGEN	5 0
CARBON	61 7
NITROGEN	0 9
OXYGEN	22 3
SULFUR	0 6
ASH	9 5
TOTAL	100 0

HEAT OF COMBUSTION (BTU. LB.)

10400

F S I

0 0+

+ = NO ANALYSIS DONE

γ = TRACE

Δ = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 12

TIME
DATE
PROXIMATE ANALYSIS

5 0
7/ 6/76

MOISTURE	8 2
VOLATILE MATTER	24 4
FIXED CARBON	46 7
ASH	10 5
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	5 0
CARBON	60 7
NITROGEN	0 8
OXYGEN	21 9
SULFUR	0 9
ASH	10 8
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 10200

F S 1 0 0+

+ = NO ANALYSIS DONE
r = TRACE
** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	C7A- 14	C7A- 15	C7A- 16
TIME	11 30	9 00	16 0
DATE	8- 3/76	8-15-76	8-17-76

PROXIMATE ANALYSIS

MOISTURE	5.7	10.0	6.2
VOLATILE MATTER	25.7	34.4	26.8
FIXED CARBON	49.2	45.9	46.7
ASH	9.8	9.7	10.4
TOTAL	100.0	100.0	100.0
AIR DRY MOISTURE	0.0+	0.0+	0.0+

ULTIMATE ANALYSIS

HYDROGEN	4.9	5.2	5.0
CARBON	61.9	59.7	61.2
NITROGEN	1.1	1.1	0.8
OXYGEN	21.5	22.6	21.7
SULFUR	0.8	0.8	0.8
ASH	9.8	9.7	10.4
TOTAL	100.0	100.0	100.0

HEAT OF COMBUSTION (BTU LB.)	10400	10000	10300
F S I	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 17 C7A- 12

TIME

12 15 5 0

DATE

10 6 76 10 17/76

PROXIMATE ANALYSIS

MOISTURE	6.2	5.0
VOLATILE MATTER	26.2	35.1
FIXED CARBON	47.1	48.1
ASH	10.5	10.8
TOTAL	100.0	100.0

AIR DRY MOISTURE 0.0+ 0.0+

ULTIMATE ANALYSIS

HYDROGEN	4.9	4.7
CARBON	61.2	61.4
NITROGEN	1.0	0.9
OXYGEN	21.6	21.4
SULFUR	0.8	0.8
ASH	10.5	10.8
TOTAL	100.0	100.0

HEAT OF COMBUSTION (BTU. LB) 10100 10100

A S 1 0.0+ 0.0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 19	C7A- 20	C7A- 21	C7A- 22	C7A- 23	C7A- 24
16 0	10 0	11 0	1 30	12 0	17 0
11/ 1/76	11/ 3/76	11/20/76	11/22/76	11/22/76	11/23/76

TIME DATE PROXIMATE ANALYSIS

MOISTURE	4 2	3 1	5 7	5 1	4 7	4 7
VOLATILE MATTER	36 0	36 5	34 1	35 7	35 6	35 6
FIXED CARBON	43 9	49 7	49 7	48 1	43 4	49 1
ASH	10 0	10 7	10 6	11 1	10 3	10 5
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	4 7	4 6	4 2	4 2	4 6	4 2
CARBON	63 4	63 2	62 7	63 3	64 0	63 2
NITROGEN	1 1	0 9	0 9	0 9	1 0	1 1
OXYGEN	19 3	19 1	20 3	19 2	19 3	19 6
SULFUR	0 8	0 8	0 8	0 8	0 8	0 7
ASH	10 0	10 7	10 6	11 1	10 3	10 5
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	10700	10800	10700	10700	10300	10800
-----------------------------	-------	-------	-------	-------	-------	-------

F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

C7A - GROUND COAL COMPOSITE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

C7A- 25	C7A- 26	C7A- 27
17: 0	17: 0	10: 0
12/19/76	12/25/76	12/27/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	5.2	4.3	4.5
VOLATILE MATTER	33.9	33.9	34.6
FIXED CARBON	49.3	50.1	49.6
ASH	11.6	11.6	11.4
TOTAL	100.0	100.0	100.0

AIR DRY MOISTURE	0.0+	0.0+	0.0+
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ULTIMATE ANALYSIS

HYDROGEN	4.6	4.5	4.7
CARBON	62.8	63.9	64.1
NITROGEN	0.9	0.9	1.0
OXYGEN	19.6	18.3	18.0
SULFUR	0.5	0.8	0.9
ASH	11.6	11.6	11.4
TOTAL	100.0	100.0	100.0

HEAT OF COMBUSTION (BTU/LB)	10100.	10800.	10700.
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F.S. I.	0.0+	0.0+	0.0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G1 - CHAR SLURRY SAMPLES

SAMPLE NUMBER AND TIME

	G1-211	G1-212	G1-213	G1-214	G1-215	G1-216	G1-217
TIME	21 20	15 15	17 50	0 30	1 30	5 0	16 0
DATE	7/ 7/76	7/ 8/76	7/ 7/76	7/21/76	7/21/76	7/21/76	7/21/76

TSS (WEIGHT %)	6 5	6 3	6 9	6 5	6 5	6 5	0 0+
PH	15 3	2 5	11 4	0 0+	0 0+	0 0+	0 0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

DATE 2/24/78

PAGE 1

G1 - CHAR SLURRY SAMPLES

SAMPLE NUMBER AND TIME

	G1-218	G1-219	G1-220	G1-221
TIME	3 30	11 30	1 40	14 30
DATE	8/13/76	8/15/76	8/16/76	8/17/76

TSS (WEIGHT %)	6 3	15 8	8 1	2 2
PH	7 1	6 6	6 0	6 3

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

DATE 2 24/78

PAGE 1

G1 - CHAR SLURRY SAMPLES

SAMPLE NUMBER AND TIME

	G1-222	G1-223	G1-224
TIME	19 30	12 0	21 0
DATE	10/10/76	10/11/76	10/27/76

TSS (WEIGHT %)	7 5	6 5	5 8
P H	14 6	1 7	4 5

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-B

G2- 12	G2- 13	G2- 14	G2- 15
1 45	17 30	18 5	7 0
7/ 8/76	7/ 8/76	7/ 8/76	7/ 9/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	0 0	0 0	0 0	0 0
VOLATILE MATTER	17 9	10 5	11 3	8 7
FIXED CARBON	65 9	75 3	72 6	84 9
ASH	16 1	16 4	16 2	26 8
TOTAL	100 0	102 1	100 0	120 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	3 1	2 3	2 4	1 3
CARBON	72 1	76 1	76 1	68 5
NITROGEN	0 9	1 0	1 0	0 5
OXYGEN	7 1	3 9	3 7	2 7
SULFUR	0 8	0 4	0 6	0 2
ASH	16 1	16 4	16 2	26 8
TOTAL	100 0	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	10800	12200	12100	10400
-----------------------------	-------	-------	-------	-------

F S 1	0 0+	0 0+	0 0+	0 0+
-------	------	------	------	------

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-C

	G2- 16	G2- 17	G2- 18	G2- 19
TIME	22 30	0 0	2 45	4 30
DATE	7/19/76	7/20/76	7/20/76	7/20/76

PROXIMATE ANALYSIS

MOISTURE	0 0	0 0	0 0	0 0
VOLATILE MATTER	23 7	25 1	17 8	13 9
FIXED CARBON	59 3	63 6	62 7	60 5
ASH	17 0	13 4	19 4	25 7
TOTAL	100 0	100 0	100 0	100 1

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+
------------------	------	------	------	------

ULTIMATE ANALYSIS

HYDROGEN	3 5	3 6	2 8	2 3
CARBON	70 9	71 9	68 5	65 2
NITROGEN	0 7	0 9	0 6	0 6
OXYGEN	7 2	9 5	7 9	5 9
SULFUR	0 6	0 7	0 6	0 4
ASH	17 0	13 4	19 4	25 7
TOTAL	100 0	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	11800	11900	10700	10400
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F S I	0 0+	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR LAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-D

G2- 20

TIME 2 0
DATE 7/21/76

PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	13 7
FIXED CARBON	58 1
ASH	26 2
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	2 3
CARBON	64 1
NITROGEN	0 2
OXYGEN	6 7
SULFUR	0 4
ASH	26 2
TOTAL	100 0

HEAT OF COMBUSTION (BTU./LB.) 10000

F S I 0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-F

G2- 21

TIME

11 0

DATE

8/12/76

PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	12 3
FIXED CARBON	72 4
ASH	15 3
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	2 4
CARBON	75 4
NITROGEN	1 0
OXYGEN	5 6
SULFUR	0 3
ASH	15 3
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 14200

F S J 0 0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

	SAMPLE NUMBER AND TIME	
	G2- 22	G2- 23
RUN 1-G		
TIME	8 00	10 0
DATE	8/13/76	8/13/76
PROXIMATE ANALYSIS		

MOISTURE	0 0	0 0
VOLATILE MATTER	17 3	10 7
FIXED CARBON	66 7	71 5
ASH	16 0	17 8
TOTAL	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+
ULTIMATE ANALYSIS		

HYDROGEN	2 9	2 4
CARBON	72 4	73 9
NITROGEN	1 3	1 1
OXYGEN	7 2	4 5
SULFUR	0 3	0 3
ASH	16 0	17 8
TOTAL	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	11700	11900
F S I	0 0+	0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN J-1

G2- 24

TIME 12 0
DATE 8/15/76

PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	11 3
FIXED CARBON	71 6
ASH	17 1
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	2 1
CARBON	74 8
NITROGEN	1 3
OXYGEN	4 4
SULFUR	0 2
ASH	17 1
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 11800

F S I 0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN L-J

G2- 25

TIME

0 10

DATE

8/16/76

PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	9 7
FIXED CARBON	62 6
ASH	26 7
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	1 8
CARBON	66 6
NITROGEN	0 8
OXYGEN	3 7
SULFUR	0 5
ASH	26 7
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 10400

F S I 0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-K

G2- 26

TIME 12 0
DATE 9/15/76
PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	9 9
FIXED CARBON	63 4
ASH	24 7
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	1 7
CARBON	63 8
NITROGEN	0 7
OXYGEN	2 8
SULFUR	0 2
ASH	24 7
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 10700

F S I 0 0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-L

G2- 27

TIME 12 45
DATE 10. 1/76
PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	22 3
FIXED CARBON	60 2
ASH	16 5
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	3 2
CARBON	71 1
NITROGEN	1 0
OXYGEN	7 6
SULFUR	0 5
ASH	16 5
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 11400

F S I 0 0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-M

G2- 28	G2- 29	G2- 30
19 0	2 10	15 0
10/10/76	10/10/76	10/11/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	0 0	0 0	0 0
VOLATILE MATTER	10 4	11 1	9 7
FIXED CARBON	68 8	50 2	45 7
ASH	20 9	38 6	43 6
TOTAL	100 0	99 9	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	1 9	1 2	0 8
CARBON	72 3	55 1	52 1
NITROGEN	0 0	0 6	0 3
OXYGEN	2 8	4 4	3 1
SULFUR	0 4	0 2	0 1
ASH	20 9	38 6	43 6
TOTAL	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	11500	8180	7640
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F S 1	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

RUN 1-11

SAMPLE NUMBER AND TIME

	G2- 31	G2- 32	G2- 32	G2- 34	G2- 35	G2- 36	G2- 37
TIME	21 0	15 0	20 0	15 0	17 0	19 0	21 0
DATE	10/27/76	10/28/76	10/28/76	10/29/76	10/29/76	10/29/76	10/29/76
PROXIMATE ANALYSIS							

MOISTURE	0 0	0 0	0 0	0 0	0 0	0 0	0 0
VOLATILE MATTER	26 2	22 1	16 1	10 0	8 2	7 9	0 2
FIXED CARBON	58 0	62 6	65 2	68 5	67 9	66 7	66 8
ASH	15 9	15 3	18 7	21 5	23 9	23 4	25 1
TOTAL	100 1	100 0	100 0	100 0	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
------------------	------	------	------	------	------	------	------

ULTIMATE ANALYSIS

HYDROGEN	3 6	3 3	2 6	1 8	1 4	1 4	1 3
CARBON	69 9	70 3	70 6	71 2	69 4	70 0	68 6
NITROGEN	1 3	1 3	1 2	0 8	0 8	0 6	0 5
OXYGEN	8 4	9 0	6 1	4 4	4 3	4 2	4 4
SULFUR	0 0	0 7	0 6	0 4	0 2	0 1	0 1
ASH	15 9	15 3	18 7	21 5	23 9	23 4	25 1
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	11600	11600	11500	10400	10700	10700	10400
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F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-H

G2- 38

TIME 23 8
DATE 10-29-76

PROXIMATE ANALYSIS

MOISTURE	0 0
VOLATILE MATTER	10 8
FIXED CARBON	55 6
ASH	33 6
TOTAL	100 0

AIR DRY MOISTURE 0 0+

ULTIMATE ANALYSIS

HYDROGEN	1 2
CARBON	59 0
NITROGEN	0 4
OXYGEN	5 6
SULFUR	0 2
ASH	33 6
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 8860

F S I 0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

G2- 39	G2- 40	G2- 41
15 15	19 0	25 0
10/10/76	10/30/76	10/30/76

TIME
DATE
PROXIMATE ANALYSIS

MOISTURE	0 0	0 0	0 0
VOLATILE MATTER	9 8	19 4	9 4
FIXED CARBON	68 1	57 2	65 9
ASH	22 1	23 4	24 7
TOTAL	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	1 8	2 5	1 6
CARBON	71 2	64 0	68 1
NITROGEN	0 8	1 0	0 6
OXYGEN	5 8	8 5	4 8
SULFUR	0 3	0 5	0 2
ASH	22 1	23 4	24 7
TOTAL	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	11400	10200	10500
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F S I	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-P

	G2- 42	G2- 43	G2- 44	G2- 45
TIME	15 30	18 0	21 0	2 0
DATE	10/31/76	10/31/76	10/31/76	11/ 1/76
PROXIMATE ANALYSIS				

MOISTURE	0 0	0 0	0 0	0 0
VOLATILE MATTER	8 7	7 1	9 6	8 7
FIXED CARBON	72 7	71 7	71 6	68 3
ASH	18 6	21 3	18 6	22 8
TOTAL	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS				

HYDROGEN	1 9	1 5	1 0	1 6
CARBON	74 2	72 8	74 1	70 6
NITROGEN	1 0	1 0	0 7	0 5
OXYGEN	3 2	3 4	4 6	4 3
SULFUR	0 2	0 1	0 2	0 2
ASH	18 6	21 3	18 6	22 8
TOTAL	100 0	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	11600	11200	9170	10900
F S I	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

	G2- 46	G2- 47	G2- 48	G2- 49	G2- 50	G2- 51
TIME	18 0	22 0	2 30	4 30	6 30	8 30
DATE	11/19/76	11/19/76	11/20/76	11/20/76	11/20/76	11/20/76
PROXIMATE ANALYSIS						

MOISTURE	0 0	0 0	0 0	0 0	0 0	0 0
VOLATILE MATTER	20 4	9 3	11 5	8 8	8 9	9 5
FIXED CARBON	63 1	69 2	66 1	64 7	67 6	64 3
ASH	16 5	21 4	22 4	26 5	24 4	25 8
TOTAL	100 0	100 0	100 0	100 0	100 0	99 6
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS						

HYDROGEN	3 2	1 7	1 7	1 2	1 2	1 5
CARBON	78 3	71 2	69 5	68 1	69 6	66 5
NITROGEN	1 2	0 6	0 5	0 5	0 4	0 5
OXYGEN	8 0	4 9	5 6	3 5	4 1	5 4
SULFUR	0 8	0 3	0 3	0 2	0 2	0 2
ASH	16 5	21 4	22 4	26 5	24 4	25 8
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	11700	11000	10700	10200	10500	10300
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

	G2- 52	G2- 53	G2- 54	G2- 55
TIME	5 30	12 30	15 30	18 30
DATE	11-21-76	11-21-76	11-21-76	11-21-76
PROXIMATE ANALYSIS				
MOISTURE	0 0	0 0	0 0	0 0
VOLATILE MATTER	9 0	18 7	18 2	7 1
FIXED CARBON	63 8	67 7	72 4	68 5
ASH	27 2	12 6	17 5	24 5
TOTAL	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS				
HYDROGEN	1 5	3 0	2 2	1 4
CARBON	66 2	72 0	74 1	69 2
NITROGEN	0 4	1 0	0 8	0 4
OXYGEN	4 5	9 0	5 1	4 5
SULFUR	0 1	0 5	0 3	0 1
ASH	27 2	12 6	17 5	24 5
TOTAL	100 0	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	10000	11900	11700	10400
F S I	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-S

	G2- 56	G2- 57	G2- 58
TIME	22 0	3 30	10 0
DATE	11 22/76	11 23/76	11 23/76
PROXIMATE ANALYSIS			

MOISTURE	0 0	0 0	0 0
VOLATILE MATTER	9 4	9 9	9 1
FIXED CARBON	66 9	64 2	66 4
ASH	23 7	25 8	25 5
TOTAL	100 0	100 0	100 0

AIR DRY MOISTURE	0 0+	0 0+	0 0+
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ULTIMATE ANALYSIS

HYDROGEN	1 5	1 6	1 5
CARBON	69 0	66 1	67 8
NITROGEN	0 5	0 5	0 4
OXYGEN	5 0	5 8	4 9
SULFUR	0 2	0 2	0 2
ASH	23 7	25 8	25 5
TOTAL	100 0	100 0	100 0

HEAT OF COMBUSTION (BTU/LB)	10500	8920	10300
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F S I	0 0+	0 0+	0 0+
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+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR COKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-7

	G2- 59	G2- 60	G2- 61	G2- 62	G2- 63	G2- 64	G2- 65
TIME	11 30	20 0	21 30	23 30	1 0	3 0	5 0
DATE	12/16/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76	12/18/76
PROXIMATE ANALYSIS							
MOISTURE, %	0 0	0 0	0 0	0 0	0 0	0 0	0 0
VOLATILE MATTER, %	8 8	8 4	12 81	7 2	10 9	9 9	9 7
FIXED CARBON, %	69 1	66 2	64 8	69 1	55 7	59 9	59 4
ASH, %	22 1	25 4	22 4	23 7	33 4	30 2	30 9
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE, %	0 0	0 0	0 0	0 0	0 0	0 0	0 0
ULTIMATE ANALYSIS							
HYDROGEN, %	1 5	1 3	1 5	1 2	0 9	1 0	1 0
CARBON, %	70 8	65 0	71 4	70 1	61 0	62 5	62 6
NITROGEN, %	0 7	0 5	0 6	0 5	0 4	0 4	0 2
OXYGEN, %	4 5	7 7	4 0	4 4	4 1	3 6	3 0
SULFUR, %	0 4	0 2	0 1	0 1	0 2	0 2	0 1
ASH, %	22 1	25 4	22 4	23 7	33 4	30 2	30 9
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	11000	10100	10800	10600	8900	8900	8270
F S I	0 0	0 0	0 0	0 0	0 0	0 0	0 0

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS
ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-T

	G2- 66	G2- 67	G2- 68	G2- 69	G2- 70	G2- 71	G2- 72
TIME	7 0	9 0	11 0	13 0	15 0	17 0	19 0
DATE	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76
PROXIMATE ANALYSIS							
MOISTURE	0 0	0 0	0 0	0 0	0 0	0 0	0 0
VOLATILE MATTER	8 1	7 4	7 5	7 9	8 8	8 1	7 4
FIXED CARBON	64 7	67 3	66 6	64 5	65 0	62 7	65 3
ASH	26 9	25 2	25 8	27 6	26 2	28 1	27 3
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS							
HYDROGEN	1 1	1 0	0 9	1 1	1 3	1 1	0 9
CARBON	67 0	69 7	68 9	67 1	67 4	64 8	66 4
NITROGEN	0 4	0 4	0 4	0 4	0 4	0 4	0 4
OXYGEN	4 4	4 1	3 9	3 7	4 5	5 3	4 8
SULFUR	0 1	0 1	0 1	0 2	0 1	0 2	0 2
ASH	26 9	25 2	25 8	27 6	26 2	28 1	27 3
TOTAL	100 0	100 0	100 0	100 0	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	10000	10300	10300	9100	10100	8910	9120
F S I	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE
* = TRACE
+* = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
MOISTURE FREE BASIS

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN J-T

	G2- 73	G2- 74	G2- 75
TIME	21 0	23 0	3 0
DATE	12/18/76	12/19/76	12/19/76
PROXIMATE ANALYSIS			

MOISTURE	0 0	0 0	0 0
VOLATILE MATTER	9 2	8 0	7 9
FIXED CARBON	61 8	63 1	64 0
ASH	29 0	28 9	28 1
TOTAL	100 0	100 0	100 0
AIR DRY MOISTURE	0 0+	0 0+	0 0+
ULTIMATE ANALYSIS			

HYDROGEN	0 5	1 1	0 9
CARBON	68 0	64 7	66 1
NITROGEN	0 4	0 4	0 4
OXYGEN	1 9	4 8	4 3
SULFUR	0 7	0 2	0 2
ASH	29 0	28 9	28 1
TOTAL	100 0	100 0	100 0
HEAT OF COMBUSTION (BTU/LB)	10000	9120	9970
F S I	0 0+	0 0+	0 0+

+ - = NO ANALYSIS DONE
+ = TRACE
+* = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-8

	G2- 12	G2- 13	G2- 14	G2- 15
TIME	1 45	17 30	18 5	7 0
DATE	7/ 8/76	7/ 8/76	7/ 8/76	7/ 9/76
SIEVE SIZE	CUMULATIVE WEIGHT PERCENT			

+8 MESH	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+
+50 MESH	10 2	16 9	18 6	18 1
+60 MESH	17 5	25 2	26 6	26 0
+100 MESH	57 4	59 2	59 6	62 5
+140 MESH	74 2	74 7	74 9	79 1
+200 MESH	87 3	84 8	85 1	90 7
+225 MESH	90 4	93 4	93 8	96 3
-325 MESH(WEIGHT PERCENT)	4 6	6 6	6 2	3 7

+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-C

	G2- 16	G2- 17	G2- 18	G2- 19
TIME	22 30	0 0	0 45	4 30
DATE	7/19/76	7/20/76	7/20/76	7/20/76
SIEVE SIZE	CUMULATIVE HEIGHT PERCENT			
-----	-----			
+5 MESH	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+
+50 MESH	17 1	15 0	28 4	18 5
+60 MESH	25 7	22 2	38 3	26 7
+100 MESH	65 2	55 3	73 6	57 8
+140 MESH	79 2	72 2	86 8	73 6
+200 MESH	90 0	86 6	94 6	85 0
+225 MESH	96 6	95 5	98 4	92 6
-225 MESH(HEIGHT PERCENT)	3 4	4 5	1 6	7 2

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-0

G2- 20

TIME

3 0

DATE

7/21/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	28 0
+60 MESH	41 2
+100 MESH	82 5
+140 MESH	91 5
+200 MESH	96 8
+325 MESH	98 9
-325 MESH(WEIGHT PERCENT)	1 1

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

Q2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-F

Q2- 21

TIME

11 0

DATE

9-12-76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	7 0
+60 MESH	10 1
+100 MESH	32 5
+140 MESH	49 7
+200 MESH	66 0
+325 MESH	81 8
-225 MESH(WEIGHT PERCENT)	18 2

+ = NO ANALYSIS DONE

+ = TRACE

+ = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-G

G2- 22 G2- 23

TIME 8 30 18 0
DATE 8/13/76 8/13/76

STEVE SIZE CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+
+20 MESH	0 0+	0 0+
+30 MESH	0 0+	0 0+
+50 MESH	20 4	0 0+
+60 MESH	25 3	0 0+
+100 MESH	43 8	0 0+
+140 MESH	52 4	0 0+
+200 MESH	61 1	0 0+
+325 MESH	72 9	0 0+
-325 MESH(WEIGHT PERCENT)	27 1	0 0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-1

G2- 24

TIME

12 0

DATE

2/15/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	16 8
+60 MESH	21 5
+100 MESH	50 6
+140 MESH	65 7
+200 MESH	80 4
+225 MESH	93 1
-225 MESH(WEIGHT PERCENT)	6 9

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

G2 - CHAR COKE SAMPLES
 PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-J

G2- 15

TIME 0 30
 DATE 8/15/76

SIEVE SIZE		CUMULATIVE WEIGHT PERCENT
-----		-----

+8 MESH	0 0+	
+20 MESH	0 0+	
+20 MESH	0 0+	
+50 MESH	26 3	
+60 MESH	31 7	
+100 MESH	52 6	
+140 MESH	64 6	
+200 MESH	76 3	
+325 MESH	88 8	
-325 MESH(WEIGHT PERCENT)		7 2

+ = NO ANALYSIS DONE
 + = TRACE
 ** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-A

G2- 26

TIME

12 0

DATE

9.15/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+6 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	0 9
+60 MESH	1 2
+100 MESH	9 2
+140 MESH	32 5
+200 MESH	65 2
+325 MESH	86 7
-325 MESH(WEIGHT PERCENT)	13 3

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

FUN 1-L

G2- 27

TIME

12 45

DATE

10/ 1/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	6 4
+60 MESH	9 8
+100 MESH	24 0
+140 MESH	31 9
+200 MESH	42 5
+325 MESH	73 9
-325 MESH<WEIGHT PERCENT,	20 1

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

FUN 1-M

	G2- 26	G2- 29	G2- 30
TIME	19 0	21 10	15 0
DATE	10/10/76	10/10/76	10/11/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT		
-----	-----	-----	-----
+8 MESH	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+
+50 MESH	34 2	47 4	45 6
+60 MESH	47 8	55 4	49 1
+100 MESH	82 0	81 0	69 2
+140 MESH	90 0	90 1	84 2
+200 MESH	94 4	95 6	93 3
+225 MESH	97 0	98 0	98 4
-325 MESH(WEIGHT PERCENT)	3 0	1 2	1 6

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-N

	G2- 31	G2- 32	G2- 33	G2- 34	G2- 35	G2- 36	G2- 37
TIME	21 0	15 0	20 0	15 0	17 0	19 0	21 0
DATE	10/27/76	10/28/76	10/28/76	10/29/76	10/29/76	10/29/76	10/29/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT						
+8 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+50 MESH	25 3	34 6	9 9	35 4	38 3	24 5	21 8
+60 MESH	31 6	40 6	13 0	43 2	47 3	32 3	28 6
+100 MESH	55 1	61 7	34 0	71 2	77 0	60 9	53 9
+140 MESH	65 6	71 1	46 3	82 9	86 7	73 9	66 7
+200 MESH	73 9	79 5	59 8	92 0	92 5	86 1	80 6
+225 MESH	89 4	89 9	80 9	97 4	97 9	93 5	92 8
-325 MESH(WEIGHT PERCENT)	10 7	10 1	19 1	2 6	2 1	4 5	7 2

+ = NO ANALYSIS DONE
 1 = TRACE
 ** = SUSPECT ANALYSIS

RUN 1-N

	G2- 38
TIME	23 0
DATE	10/29/76

SIEVE SIZE	CUMULATIVE WEIGHT PERCENT
+8 MESH	0 0+
+20 MESH	0 0+
+30 MESH	0 0+
+50 MESH	22 5
+60 MESH	27 1
+100 MESH	46 2
+140 MESH	47 3
+200 MESH	62 1
+325 MESH	82 0
-325 MESH(WEIGHT PERCENT)	18 0

+ = NO ANALYSIS DONE

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-0

	G2- 39	G2- 40	G2- 41
TIME	15 15	19 0	23 0
DATE	10/30/76	10/30/76	10/30/76

STEVE SIZE	CUMULATIVE HEIGHT PERCENT		

+8 MESH	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+
+50 MESH	10 7	5 6	38 4
+60 MESH	14 6	8 0	46 1
+100 MESH	42 2	29 1	72 7
+140 MESH	57 9	48 0	82 8
+200 MESH	75 8	69 9	91 1
+225 MESH	94 8	89 0	96 6
-325 MESH(WEIGHT PERCENT)	5 2	11 0	3 3

+ = NO ANALYSIS DONE
 * = TRACE
 ++ = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN J-P

	G2- 42	G2- 42	G2- 44	G2- 45
TIME	15 0	18 0	20 0	3 0
DATE	10-31-76	10-31-76	10/31/76	11- 1-76
SIEVE SIZE	CUMULATIVE WEIGHT PERCENT			

+8 MESH	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+
+50 MESH	40 1	27 9	16 4	24 9
+60 MESH	47 2	33 5	22 4	30 1
+100 MESH	70 4	55 1	48 9	50 2
+140 MESH	79 7	60 6	64 3	62 7
+200 MESH	88 0	85 2	79 3	76 1
+325 MESH	94 3	90 2	90 0	88 0
-325 MESH(WEIGHT PERCENT)	5 7	6 0	10 0	12 0

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

RUN 1-Q

SAMPLE NUMBER AND TIME

	G2- 46	G2- 47	G2- 48	G2- 49	G2- 50	G2- 51
TIME	18 0	22 0	2 30	4 30	6 30	8 30
DATE	11/19/76	11/19/76	11/20/76	11/20/76	11/20/76	11/20/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+50 MESH	0 0+	26 6	15 8	25 4	16 1	19 3
+60 MESH	0 0+	34 3	22 8	32 9	23 7	27 4
+100 MESH	0 0+	62 4	55 1	63 9	60 2	58 9
+140 MESH	0 0+	75 7	70 1	78 1	75 5	74 0
+170 MESH	0 0+	87 4	84 1	89 0	86 2	85 6
+125 MESH	0 0+	95 6	95 0	96 6	97 8	94 0
-225 MESH(WEIGHT PERCENT)	0 0+	4 4	5 0	3 4	3 0	6 0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-P

	G2- 52	G2- 53	G2- 54	G2- 55
TIME	5 30	12 30	15 30	18 30
DATE	11/21/76	11/21/76	11/21/76	11/21/76
SIEVE SIZE	CUMULATIVE HEIGHT PERCENT			
+8 MESH	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+
+50 MESH	32 9	35 0	20 7	20 9
+60 MESH	42 6	44 2	40 0	39 9
+100 MESH	74 3	73 3	69 9	58 1
+140 MESH	85 4	82 7	81 6	73 9
+200 MESH	92 6	87 8	89 8	86 8
+325 MESH	96 8	93 2	95 5	92 9
-325 MESH (WEIGHT PERCENT)	3 2	6 8	4 5	6 1

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-3

	G2- 56	G2- 57	G2- 58
TIME	23 0	3 30	10 0
DATE	11/22/76	11/23/76	11/23/76
SIEVE SIZE	CUMULATIVE WEIGHT PERCENT		
-----	-----		
+8 MESH	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+
+50 MESH	29 5	43 6	27 3
+60 MESH	37 7	52 0	35 9
+100 MESH	64 4	76 6	63 2
+140 MESH	79 0	86 0	74 8
+200 MESH	90 1	92 5	83 8
+325 MESH	95 3	96 9	90 9
-325 MESH (WEIGHT PERCENT)	4 7	3 1	9 1

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

G2 - CHARACTER SAMPLES

PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

PUN 1-T

	G2- 59	G2- 60	G2- 61	G2- 62	G2- 63	G2- 64	G2- 65
TIME	11 30	20 0	21 30	22 30	1 0	3 0	5 0
DATE	12/16/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76	12/18/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+50 MESH	25 0	14 9	20 9	22 9	8 9	6 4	23 2
+60 MESH	34 8	21 5	29 2	20 4	15 5	9 8	30 6
+100 MESH	64 4	54 1	61 1	58 3	45 3	32 9	53 8
+140 MESH	77 9	72 0	75 9	74 6	71 3	50 6	70 1
+200 MESH	86 6	86 4	87 7	87 8	87 0	68 5	81 3
+325 MESH	91 7	95 1	94 8	95 3	96 6	82 5	91 2
-325 MESH(WEIGHT PERCENT)	6 3	4 9	5 2	4 7	3 4	17 5	8 8

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

PUN 1-T

	G2- 66	G2- 67	G2- 68	G2- 69	G2- 70	G2- 71	G2- 72
TIME	7 0	9 0	11 0	13 0	15 0	17 0	19 0
DATE	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76

SIEVE SIZE

CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
+50 MESH	11 7	22 3	18 7	8 0	19 1	23 9	8 2
+60 MESH	16 1	31 2	26 3	13 0	26 0	34 9	13 9
+100 MESH	41 4	64 2	69 5	48 6	60 2	66 5	44 2
+140 MESH	62 0	80 9	83 2	67 2	72 4	82 1	63 4
+200 MESH	81 4	91 6	92 0	88 6	88 9	91 0	75 7
+325 MESH	92 6	96 7	96 2	90 6	94 8	95 9	84 7
-325 MESH(WEIGHT PERCENT)	7 4	3 0	2 8	9 4	5 2	4 1	15 3

+ = NO ANALYSIS DONE
 + = TRACE
 ** = SUSPECT ANALYSIS

G2 - CHAR CAKE SAMPLES
PARTICLE SIZE DISTRIBUTION

SAMPLE NUMBER AND TIME

RUN 1-7

	G2- 73	G2- 74	G2- 75
TIME	21 0	23 0	3 0
DATE	12/19/76	12/19/76	12/19/76
SIEVE SIZE			

			CUMULATIVE WEIGHT PERCENT

+8 MESH	0 0+	0 0+	0 0+
+20 MESH	0 0+	0 0+	0 0+
+30 MESH	0 0+	0 0+	0 0+
+50 MESH	20 7	25 6	0 5
+60 MESH	30 1	37 2	11 8
+100 MESH	65 3	63 8	32 6
+140 MESH	81 6	77 5	49 2
+200 MESH	89 8	97 5	70 2
+325 MESH	94 7	94 5	87 8
-325 MESH(WEIGHT PERCENT)	5 3	5 5	12 2

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(OA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

SAMPLES TAKEN DURING A NO RUN PERIOD

	S1- 1	S1- 2
TIME	4 30	9 30
DATE	7/ 6/76	7/ 6/76
COMPONENTS		

HYDROGEN	0 0*	0 0*
OXYGEN	0 1	0 0
NITROGEN	0 2	0 0*
METHANE	0 0	0 0
CARBON MONOXIDE	0 0	0 0
CARBON DIOXIDE	83 2	87 0
HYDROGEN SULFIDE	0 0	0 0
WATER	15 8	13 0
ETHYLENE	0 0+	0 0+
ETHANE	0 0	0 0
PROPYLENE	0 0+	0 0+
PROPANE	0 0+	0 0+
1. BUTENE	0 0+	0 0+
N-BUTANE	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-A

	S1- 3	S1- 4
TIME	18 40	19 0
DATE	7/ 7/76	7/ 7/76

COMPONENTS

HYDROGEN	0 0*	3 2
OXYGEN	0 0	0 0
NITROGEN	0 0*	0 0
METHANE	0 3	7 1
CARBON MONOXIDE	0 4	1 6
CARBON DIOXIDE	38 5	76 4
HYDROGEN SULFIDE	0 0	0 1
WATER	10 9	10 0
ETHYLENE	0 0*	0 0*
ETHANE	0 0	0 0
PROPYLENE	0 0*	0 0*
PROPANE	0 0*	0 0*
1, BUTENE	0 0*	0 0*
N-BUTANE	0 0*	0 0*

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-8

	S1- 5	S1- 6
TIME	15. 0	18:15
DATE	7/ 8/76	7/ 8/76
COMPONENTS		

HYDROGEN	14.1	22.0
OXYGEN	0.0*	0.7
NITROGEN	0.0*	1.0
METHANE	7.4	8.9
CARBON MONOXIDE	1.1	2.8
CARBON DIOXIDE	68.8	49.6
HYDROGEN SULFIDE	0.0*	0.0
WATER	0.3	14.8
ETHYLENE	0.0*	0.0*
ETHANE	0.4	0.2
PROPYLENE	0.0*	0.0*
PROPANE	0.0*	0.0*
1, BUTENE	0.0*	0.0*
N-BUTANE	0.0*	0.0*

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-C

	S1- 7	S1- 8	S1- 9	S1- 10	S1- 11
TIME	22 0	0 1	2 0	4 0	6 0
DATE	7/19/76	7/20/76	7/20/76	7/20/76	7/20/76
COMPONENTS					
HYDROGEN	16 1	18 0	15 6	22 8	29 8
OXYGEN	0 0*	0 0*	0 0*	1 7	0 0*
NITROGEN	0 0*	0 0*	0 0*	1 1	0 0*
METHANE	5 3	6 5	8 1	3 5	8 0
CARBON MONOXIDE	2 4	2 9	3 7	2 0	4 3
CARBON DIOXIDE	59 6	50 8	44 5	48 4	49 2
HYDROGEN SULFIDE	0 0	0 0	0 0	0 0	0 0
WATER	16 1	21 3	13 6	20 5	9 3
ETHYLENE	0 0*	0 0*	0 0*	0 0*	0 0*
ETHANE	0 2	0 4	0 3	0 0*	0 4
PROPYLENE	0 0*	0 0*	0 0*	0 0*	0 0*
PROPANE	0 0*	0 0*	0 0*	0 0*	0 0*
1. BUTENE	0 0*	0 0*	0 0*	0 0*	0 0*
N-BUTANE	0 0*	0 0*	0 0*	0 0*	0 0*

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-D

	S1- 12	S1- 13	S1- 14	S1- 15	S1- 16
TIME	0 30	2 20	4 40	7 30	9 30
DATE	7/21/76	7/21/76	7/21/76	7/21/76	7/21/76
COMPONENTS					
HYDROGEN	32 0	31 8	31 8	37 5	30 8
OXYGEN	0 0+	0 0+	0 0+	0 0+	0 0*
NITROGEN	0 0+	0 0+	0 0+	0 0+	0 0*
METHANE	6 1	5 2	5 9	4 6	5 2
CARBON MONOXIDE	5 0	3 6	3 1	3 0	3 4
CARBON DIOXIDE	48 2	52 0	52 0	47 5	46 4
HYDROGEN SULFIDE	0 0	0 0	0 0	0 0	0 0
WATER	8 6	7 3	5 8	6 9	14 0
ETHYLENE	0 0+	0 0+	0 0+	0 0+	0 0+
ETHANE	0 1	0 1	0 5	0 5	0 2
PROPYLENE	0 0+	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+	0 0+
1, BUTENE	0 0+	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-I

S1- 17

TIME 8 30
DATE 8/15/76
COMPONENTS

HYDROGEN	23.6
OXYGEN	0.0*
NITROGEN	0.2
METHANE	8.2
CARBON MONOXIDE	6.3
CARBON DIOXIDE	48.6
HYDROGEN SULFIDE	0.0
WATER	12.8
ETHYLENE	0.0+
ETHANE	0.4
PROPYLENE	0.0+
PROPANE	0.0+
1, BUTENE	0.0+
N-BUTANE	0.0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER<DA-201>
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-J

S1- 10

TIME

23 8

DATE

8/15/76

COMPONENTS

HYDROGEN	10 5
OXYGEN	0 0*
NITROGEN	0 0*
METHANE	10 1
CARBON MONOXIDE	3 9
CARBON DIOXIDE	43 6
HYDROGEN SULFIDE	0 0
WATER	23 4
ETHYLENE	0 0+
ETHANE	0 4
PROPYLENE	0 0+
PROPANE	0 0+
1-BUTENE	0 0+
N-BUTANE	0 0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-K

S1- 19

TIME

11 0

DATE

9/15/76

COMPONENTS

HYDROGEN	26 6
OXYGEN	0 0+
NITROGEN	0 3
METHANE	6 8
CARBON MONOXIDE	5 8
CARBON DIOXIDE	60 0
HYDROGEN SULFIDE	0 1
WATER	0 0+
ETHYLENE	0 0+
ETHANE	0 3
PROPYLENE	0 0+
PROPANE	0 0+
1, BUTENE	0 0+
N-BUTANE	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-L

S1- 20

TIME

0 10

DATE

10/ 1/76

COMPONENTS

HYDROGEN	19 1
OXYGEN	0 0*
NITROGEN	0 2
METHANE	9 7
CARBON MONOXIDE	7 0
CARBON DIOXIDE	57 4
HYDROGEN SULFIDE	0 0+
WATER	9 6
ETHYLENE	0 0+
ETHANE	0 5
PROPYLENE	0 0+
PROPANE	0 0+
1, 3-BUTENE	0 0+
N-BUTANE	0 0+

* = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-M

	S1- 21	S1- 22	S1- 23	S1- 24	S1- 25	S1- 26	S1- 27
TIME	19 0	21 0	0 0	1 30	3 0	7 0	9 0
DATE	10/10/76	10/10/76	10/11/76	10/11/76	10/11/76	10/11/76	10/11/76
COMPONENTS							
HYDROGEN	19 9	19 8	19 6	18 5	19 7	18 5	15 7
OXYGEN	0 0*	0 0*	0 0*	0 0*	0 0*	0 0*	0 0*
NITROGEN	0 3	0 2	0 1	0 1	0 1	0 4	0 8
METHANE	11 9	11 8	12 1	11 2	11 8	15 4	14 8
CARBON MONOXIDE	8 2	8 4	7 6	4 7	8 1	9 8	6 1
CARBON DIOXIDE	54 5	53 7	53 1	58 6	53 5	53 4	58 9
HYDROGEN SULFIDE	0 5	0 4	0 6	0 5	0 3	0 4	0 8
WATER	4 0	4 9	6 1	5 5	5 7	1 2	1 6
ETHYLENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ETHANE	0 7	0 8	0 8	0 9	0 8	0 9	1 3
PROPYLENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
1, BUTENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-N

	S1- 28	S1- 29	S1- 30	S1- 31	S1- 32	S1- 33
TIME	16 45	14 0	15 0	17 0	19 0	21 0
DATE	10/28/76	10/29/76	10/29/76	10/29/76	10/29/76	10/29/76
COMPONENTS						

HYDROGEN	13 9	22 2	22 6	20 8	20 5	16 9
OXYGEN	0 0*	0 0*	0 0*	0 0+	0 0*	0 0*
NITROGEN	0 0*	0 1	0 2	0 0+	0 0*	0 0*
METHANE	6 4	10 3	9 9	10 0	10 7	10 4
CARBON MONOXIDE	1 7	3 6	4 1	4 2	4 3	4 1
CARBON DIOXIDE	60 5	54 2	53 0	52 2	51 1	50 7
HYDROGEN SULFIDE	0 7	0 6	0 7	0 7	0 0+	0 6
WATER	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ETHYLENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
ETHANE	0 0	0 6	0 7	0 7	0 0+	0 0
PROPYLENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
1. BUTENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

	S1- 34	S1- 35	S1- 36	S1- 37
TIME	14 0	15 0	14 0	23 0
DATE	10/30/76	10/30/76	10/30/76	10/30/76
COMPONENTS				
HYDROGEN	22.9	21.2	20.7	21.4
OXYGEN	0.0*	0.0*	0.0*	0.0
NITROGEN	0.0*	0.0*	0.2	0.0*
METHANE	6.9	5.5	8.9	8.9
CARBON MONOXIDE	3.2	2.8	2.6	3.3
CARBON DIOXIDE	55.5	60.5	60.3	53.1
HYDROGEN SULFIDE	0.4	0.5	0.7	0.7
WATER	0.0+	0.0+	0.0+	0.0+
WATER	0.0+	0.0+	0.0+	0.0+
ETHYLENE	0.0+	0.0+	0.0+	0.0+
ETHANE	0.3	0.4	0.7	0.6
PROPYLENE	0.0+	0.0+	0.0+	0.0+
PROPANE	0.0+	0.0+	0.0+	0.0+
1, BUTENE	0.0+	0.0+	0.0+	0.0+
N-BUTANE	0.0+	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-P

	S1- 38	S1- 39	S1- 40	S1- 41
TIME	15 30	18 0	23 0	1 0
DATE	10/31/76	10/31/76	10/31/76	11/ 1/76
COMPONENTS				

HYDROGEN	18 8	18 7	18 2	16 9
OXYGEN	0 0*	0 0*	0 0	0 0
NITROGEN	0 5	0 3	0 2	0 0*
METHANE	11 6	11 0	13 9	10 9
CARBON MONOXIDE	3 2	3 5	3 8	3 4
CARBON DIOXIDE	57 8	55 2	55 1	59 3
HYDROGEN SULFIDE	0 6	0 8	0 7	0 8
WATER	0 0+	0 0+	0 0+	0 0+
ETHYLENE	0 0+	0 0+	0 0+	0 0+
ETHANE	0 8	0 9	1 1	0 9
PROPYLENE	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+
1-BUTENE	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

	S1- 42	S1- 43	S1- 44	S1- 45	S1- 46	S1- 47
TIME	20 0	22 0	2 30	4 30	6 30	8 30
DATE	11/19/76	11/19/76	11/20/76	11/20/76	11/20/76	11/20/76
COMPONENTS						
HYDROGEN	0 0+	3 4	26 4	0 0+	24 7	3 5
OXYGEN	0 0+	0 0*	0 0*	0 0*	0 0*	0 0
NITROGEN	0 0*	0 1	0 2	0 0*	0 3	0 1
METHANE	10 7	9 8	12 3	10 7	12 1	1 1
CARBON MONOXIDE	4 1	4 1	6 0	3 9	5 7	0 2
CARBON DIOXIDE	52 2	52 1	50 7	55 1	50 9	04 6
HYDROGEN SULFIDE	0 4	0 4	0 4	1 1	0 5	0 4
WATER	0 0+	0 0+	2 0	0 0+	4 5	10 0
ETHYLENE	0 1	0 2	0 2	0 2	0 2	0 0+
ETHANE	0 7	0 7	1 0	0 2	1 1	0 1
PROPYLENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
1. BUTENE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-R

	S1- 48	S1- 49	S1- 50
TIME	15 0	16 45	18 30
DATE	11/21/76	11/21/76	11/21/76
COMPONENTS			

HYDROGEN	28.1	31.5	26.9
OXYGEN	0.0	0.0*	0.0*
NITROGEN	0.1	0.1	0.1
METHANE	10.2	5.7	9.7
CARBON MONOXIDE	6.5	4.8	5.9
CARBON DIOXIDE	49.2	53.9	55.1
HYDROGEN SULFIDE	0.3	0.0	0.0
WATER	4.6	3.9	1.2
ETHYLENE	0.2	0.0	0.2
ETHANE	0.0	0.1	0.9
PROPYLENE	0.0+	0.0+	0.0+
PROPANE	0.0+	0.0+	0.0+
1, BUTENE	0.0+	0.0+	0.0+
N-BUTANE	0.0+	0.0+	0.0+

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-5

	S1- 51	S1- 52	S1- 53	S1- 54	S1- 55
TIME	17 0	23 0	0 10	2 10	6 30
DATE	11/22/76	11/22/76	11/23/76	11/23/76	11/23/76
COMPONENTS					

HYDROGEN	26 7	25 4	28 0	26 3	25 2
OXYGEN	0 0*	0 0*	0 0	0 0*	0 0*
NITROGEN	0 0*	0 2	0 0	0 1	0 1
METHANE	10 4	9 0	9 0	10 1	10 3
CARBON MONOXIDE	4 5	5 0	5 2	5 0	5 8
CARBON DIOXIDE	50 2	56 5	51 7	49 9	51 1
HYDROGEN SULFIDE	0 3	0 0	0 4	0 5	0 8
WATER	6 5	3 0	4 8	7 1	5 8
ETHYLENE	0 1	0 1	0 1	0 1	0 1
ETHANE	0 8	0 8	0 8	0 8	0 8
PROPYLENE	0 0+	0 0+	0 0+	0 0+	0 0+
PROPANE	0 0+	0 0+	0 0+	0 0+	0 0+
1-BUTENE	0 0+	0 0+	0 0+	0 0+	0 0+
N-BUTANE	0 0+	0 0+	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

+* = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER (DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-T

	S1- 56	S1- 57	S1- 58	S1- 59	S1- 60	S1- 61	S1- 62
TIME	11 0	12 0	19 0	21 30	23 15	1 0	3 0
DATE	12/16/76	12/16/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76
COMPONENTS							
HYDROGEN	29.4	28.9	30.9	23.9	27.6	30.6	30.7
OXYGEN	0.0	0.0	0.0*	0.0*	0.0*	0.0*	0.0*
NITROGEN	0.5	0.1	0.3	0.0*	0.1	0.1	0.0*
METHANE	10.8	10.7	9.5	12.3	8.8	7.8	9.6
CARBON MONOXIDE	6.4	6.0	6.3	3.5	4.4	5.8	6.3
CARBON DIOXIDE	49.1	49.3	40.9	57.8	42.8	36.3	47.8
HYDROGEN SULFIDE	0.5	0.2	0.0*	0.0*	0.4	0.3	0.0
WATER	2.4	3.6	11.2	0.6	14.4	17.9	4.8
ETHYLENE	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ETHANE	0.7	0.8	0.7	1.2	0.8	0.6	0.6
PROPYLENE	0.0*	0.2	0.1	0.2	0.2	0.1	0.1
PROPANE	0.1	0.0*	0.0*	0.2	0.2	0.2	0.0*
1-BUTENE	0.0*	0.0*	0.0*	0.1	0.1	0.1	0.0*
N-BUTANE	0.0*	0.1	0.0*	0.1	0.1	0.1	0.0*

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

RUN 1-T

	S1- 63	S1- 64	S1- 65	S1- 66	S1- 67	S1- 68	S1- 69
TIME	5 0	7 0	9 0	11 0	13 0	17 30	19 30
DATE	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76	12/18/76
COMPONENTS							
HYDROGEN	30.8	28.1	28.9	25.9	29.2	30.7	29.2
OXYGEN	0.0*	0.1	0.0*	2.5	0.0	0.0*	0.0*
NITROGEN	0.0*	0.3	0.0*	7.5	0.0	0.0*	0.7
METHANE	9.4	10.6	9.4	7.4	9.4	8.9	8.6
CARBON MONOXIDE	3.3	6.2	5.8	4.7	6.7	7.1	5.6
CARBON DIOXIDE	49.1	52.1	50.7	53.0	52.4	51.0	42.6
HYDROGEN SULFIDE	0.2	0.3	0.0*	0.0*	0.3	0.0*	0.1
WATER	5.8	1.1	3.8	3.7	0.2	0.6	7.3
ETHYLENE	0.1	0.1	0.1	0.1	0.2	0.0	0.1
ETHANE	0.2	0.8	0.9	0.7	1.1	0.8	0.7
PROPYLENE	0.1	0.1	0.1	0.0	0.1	0.2	0.1
PROPANE	0.4	0.0*	0.1	0.7	0.1	0.3	0.0*
1-BUTENE	0.0*	0.2	0.2	0.2	0.1	0.2	0.0*
N-BUTANE	0.0*	0.2	0.0*	0.3	0.2	0.1	0.0*

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S1 - OVERHEAD FROM THE GAS SCRUBBER(DA-201)
ALL ANALYSES IN VOLUME PERCENT

SAMPLE NUMBER AND TIME

RUN 1-T

	S1- 70	S1- 71
TIME	21 0	23 30
DATE	12/18/76	12/18/76
COMPONENTS		

HYDROGEN	29 3	0 0+
OXYGEN	0 5	0 0+
NITROGEN	1 5	4 8
METHANE	9 5	11 6
CARBON MONOXIDE	7 8	6 6
CARBON DIOXIDE	48 0	46 8
HYDROGEN SULFIDE	0 0+	0 0+
WATER	2 0	0 0+
ETHYLENE	0 0	0 0
ETHANE	0 7	0 9
PROPYLENE	0 0	0 0
PROPANE	0 2	0 2
1, BUTENE	0 0	0 0
N-BUTANE	0 5	0 1

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

OUT 1-F

	S2- 1	S2- 2
TIME	11 0	13 0
DATE	8/12/76	8/12/76
COMPONENTS		

PHENOLS (PPM)	0 0+	410 0
COD (PPM)	0 0+	18400 0
P-ALKALINITY (GR/GAL)	0 0+	0 0
M-ALKALINITY (GR/GAL)	0 0+	92 0
N AS NH ₄ (PPM)	0 0+	262 0+
S (PPM)	0 0+	28 0+
PH	0 0+	0 0
TSS (WEIGHT %)	0 0+	0 0

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

DATE 8/24/79

PAGE 1

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-284 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-G

S2- 3

TIME

13 0

DATE

8/13/76

COMPONENTS

PHENOLS (PPM)	0 0+
COD (PPM)	0 0+
P-ALKALINITY (GR/GAL)	0 0+
M-ALKALINITY (GR/GAL)	0 0+
N AS NH3 (PPM)	0 0+
S (PPM)	0 0+
PH	0 0+
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-I

S2- 4

TIME

12 0

DATE

8/15/76

COMPONENTS

PHENOLS (PPM)	900 0
COD (PPM)	14400 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	109 0
N AS NH3 (PPM)	438 0+
S (PPM)	21 2
PH	8 2
TSS (WEIGHT %)	0 0

+ = NO ANALYSIS DONE
+ = TRACE
+ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-L

	S2- 5	S2- 6
TIME	13 15	0 15
DATE	9/29/76	10/ 1/76
COMPONENTS		

PHENOLS (PPM)	76 8	0 0+
COD (PPM)	367 0	0 0+
P-ALKALINITY (GR/GAL)	0 0	0 0+
M-ALKALINITY (GR/GAL)	21 5	0 0+
N AS NH3 (PPM)	100 0+	0 0+
S (PPM)	0 3	0 0+
PH	8 3	0 0+
TSS (WEIGHT %)	0 0	0 0+

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-213)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-M

	S2- 7	S2- 8
TIME	11 0	15 0
DATE	10/28/76	10/29/76
COMPONENTS		
PHENOLS (PPM)	3000 0	1600 0
COD (PPM)	5220 0	10900 0
P-ALKALINITY (GR/GAL)	0 0	29 0
M-ALKALINITY (GR/GAL)	42 7+	124 0
N AS NH3 (PPM)	3420 0+	730 0+
S (PPM)	0 0	22 1
PH	8 2	8 2
TSS (WEIGHT %)	0 0	0 0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

S2- 9

TIME 12 15
DATE 10-30-76
COMPONENTS

PHENOLS (PPM)	2680 0
COD (PPM)	29000 0
P-ALKALINITY (GR/GAL)	104 0
M-ALKALINITY (GR/GAL)	362 0
HAZARD (PPM)	1850 0+
S (PPM)	70 9
PH	9 0
TSS (HEIGHT :)	0 0

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

DATE 2/24/78

PAGE 1

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-P

	S2- 10	S2- 11
TIME	13 0	13 0
DATE	10/31/76	11/ 1/76
COMPONENTS		

PHENOLS (PPM)	2000 0	130 0
COD (PPM)	34900 0	760 0*
P-ALKALINITY (GR/GAL)	104 0	0 0
M-ALKALINITY (GR/GAL)	257 0	16 6
N AS NH3 (PPM)	1500 0*	100 0*
S (PPM)	21 6	21 0
PH	9 2	8 3
TSS (WEIGHT %)	0 0	0 0

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

WATER SAMPLES

SAMPLE NUMBER AND TIME
RUN 1-T

	S2- 12	S2- 13
TIME	11 0	15 15
DATE	12/16/76	12/16/76
COMPONENTS		
PHENOLS (PPM)	3000 0	400 0
COD (PPM)	21500 0	4160 0
P-ALKALINITY (GR/GAL)	0 0	0 0
M-ALKALINITY (GR/GAL)	504 0	77 0
N AS NH3 (PPM)	3160 0	1120 0
S (PPM)	7 6	66 1
PH	7 9	6 9
TSS (WEIGHT %)	1 4	0 5

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK<FA-215>
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

PUN 1-F

S2- 1

TIME

11 0

DATE

8 12 76

PROXIMATE ANALYSIS

MOISTURE	1 9
VOLATILE MATTER	22 3
FIXED CARBON	55 4
ASH	20 4
TOTAL	100 0

ULTIMATE ANALYSIS

HYDROGEN	0 0+
CARBON	0 0+
NITROGEN	1 1
OXYGEN	0 0
SULFUR	0 7
ASH	20 4
TOTAL	22 2

HEAT OF COMBUSTION (BTU/LB) 10900

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-G

S2- 3

TIME

13 0

DATE

8-13/78

PROXIMATE ANALYSIS

MOISTURE	4 1
VOLATILE MATTER	13 5
FIXED CARBON	64 3
ASH	18 0
TOTAL	99 9

ULTIMATE ANALYSIS

HYDROGEN	3 1
CARBON	78 1
NITROGEN	0 9
OXYGEN	7 6
SULFUR	0 3
ASH	18 0
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 11400

+ = NO ANALYSIS DONE
+ = TRACE
** = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-204 HAND CONTROL VALVE

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-L

	S2- 5	S2- 6
TIME	13 15	0 15
DATE	9/29/76	10/ 1/76

PROXIMATE ANALYSIS

MOISTURE	8.5	7.7
VOLATILE MATTER	13.8	21.4
FIXED CARBON	57.0	53.3
ASH	20.8	17.6
TOTAL	100.1	100.0

ULTIMATE ANALYSIS

HYDROGEN	2.9	3.7
CARBON	63.1	66.1
NITROGEN	0.7	0.6
OXYGEN	12.2	11.6
SULFUR	0.3	0.4
ASH	20.8	17.6
TOTAL	100.0	100.0

HEAT OF COMBUSTION (BTU/LB)	9940	10700
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+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

S2 - TAR FROM SCRUBBER SURGE TANK (FA-215)
DOWNSTREAM OF HCV-284 HAND CONTROL VALVE

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

S2- 9

TIME

13 15

DATE

10/30/76

PROXIMATE ANALYSIS

MOISTURE	0.4
VOLATILE MATTER	24.2
FIXED CARBON	59.7
ASH	15.7
TOTAL	100.0

ULTIMATE ANALYSIS

HYDROGEN	3.3
CARBON	74.4
NITROGEN	1.1
OXYGEN	-14.8
SULFUR	20.3
ASH	15.7
TOTAL	100.0

HEAT OF COMBUSTION (BTU/LB) 12400

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

5.3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-A

SC- 12

TIME

20 0

DATE

7/ 7/76

COMPONENTS

PHENOLS (PPM)	0 0+
COD (PPM)	0 0+
P-ALKALINITY (GR/GAL)	0 0+
M-ALKALINITY (GP/GAL)	0 0+
N AS NH ₃ (PPM)	0 0+
S (PPM)	0 0+
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6 7
TSS (WEIGHT %)	0 0+

* = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-C

	S3- 13	S3- 14	S3- 15
TIME	01 15	2 0	6 0
DATE	7/19/76	7/20/76	7/20/76
COMPONENTS			
PHENOLS (PPM)	1560 0	3020 0	3200 0
COD (PPM)	7290 0	15200 0	12200 0
P-ALKALINITY (GR. GAL)	98 0	112 0	0 0
N-ALKALINITY (GR. GAL)	295 0	375 0	408 0
N AS NH3 (PPM)	0 0+	0 0+	0 0+
S (PPM)	48 1	91 7	50 0
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0	0 0	0 0
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	9 1	9 0	7 4
TSS (WEIGHT %)	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

	S3- 16	S3- 17
TIME	3 0	5 0
DATE	7/21/76	7/21/76
COMPONENTS		
PHENOLS (PPM)	2200 0	2820 0
COD (PPM)	9450 0	14300 0
F-ALKALINITY (GR/GAL)	44 5	82 5
M-ALKALINITY (GR/GAL)	258 0	272 0
N AS NH3 (PPM)	0 0+	0 0+
S (PPM)	127 0	88 2
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0	0 0
CYANIDE (PPM)	0 0+	0 0+
PH	8 7	9 0
TSS (WEIGHT %)	0 0+	0 0+

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-F

S3- 18

TIME

11 30

DATE

8/12/76

COMPONENTS

PHENOLS (PPM)	154 0
COD (PPM)	4560 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	22 7
N AS NH3 (PPM)	0 0+
S (PPM)	0 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6 1
TSS (WEIGHT %)	0 0

* = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201.)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-G

	S3- 19	S3- 20	S3- 21
TIME	4 0	11 0	17 0
DATE	8/13/76	8/13/76	8/13/76
COMPONENTS			

PHENOLS (PPM)	37 6	19 2	2500 0
COD (PPM)	240 0	184 0	82400 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0
M-ALKALINITY (GP/GAL)	7 1	3 8	301 0
N AS NH3 (PPM)	0 0+	0 0+	0 0+
S (PPM)	5 5	1 9	56 8
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	6 5	6 4	8 3
TSS (WEIGHT %)	0 0+	0 1	0 1

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER<EE-201>

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-1

S3- 22

TIME 13 0
DATE 8/15/76
COMPONENTS

PHENOLS (PPM)	2200 0
COD (PPM)	14600 0
P-ALKALINITY (GR./GAL.)	0 0
M-ALKALINITY (GR./GAL.)	972 0
N AS NH3 (PPM)	0 0+
S (PPM)	24 7
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 3
TSS (WEIGHT %)	0 6

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

SS - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-J

SS- 23

TIME

5 30

DATE

8/16/76

COMPONENTS

PHENOLS (PPM)	450 0
COD (PPM)	39200 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	29 5
N AS NH2 (PPM)	0 0+
S (PPM)	15 7
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 1
TSS (WEIGHT %)	0 6

* = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER(EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-K

S3- 24

TIME

9 30

DATE

9/15/76

COMPONENTS

PHENOLS (PPM)	2000 0
COD (PPM)	19000 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	338 0
N AS NH3 (PPM)	180 0
S (PPM)	0 0
CHLORINE (PPM)	0 0
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0
PH	0 0
TSS (WEIGHT %)	9 3

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER<EE-201>

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-L

	S3- 25	S3- 26	S3- 27
TIME	11 15	12 30	22 15
DATE	9/29/76	9/30/76	9/30/76
COMPONENTS			

PHENOLS (PPM)	676 0	0 0+	2000 0
COD (PPM)	17500 0	0 0+	14000 0
P-ALKALINITY (GR/GAL)	0 0	0 0+	0 0
M-ALKALINITY (GR/GAL)	97 6	0 0+	361 0
N AS NH3 (PPM)	250 0	0 0+	630 0
S (PPM)	0 0	0 0+	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	111 0	0 0+	1950 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	7 3	5 7	3 0
TSS (WEIGHT %)	3 6	0 0+	6 6

+ = NO ANALYSIS DONE
 + = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUR 1-H

	S3- 28	S3- 29	S3- 30	S3- 31	S3- 32
TIME	15 0	17 0	21 0	4 0	10 15
DATE	10/10/76	10/10/76	10/10/76	10/11/76	10/11/76
COMPONENTS					

PHENOLS (PPM)	1600 0	4000 0	3000 0	1800 0	2400 0
COD (PPM)	175 0	153 0	247 0	0 0+	201 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	102 0	527 0	467 0	101 0	476 0
N AS NH2 (PPM)	5600 0	2990 0	7200 0	4900 0	4000 0
S (PPM)	40 1	50 9	58 5	6 4	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	1550 0	3000 0	2680 0	1050 0	1460 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+
PH	7 2	7 9	8 0	7 0	7 8
TSS (WEIGHT %)	5 5	4 1	0 4	1 0	0 3

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

SAMPLES TAKEN DURING A NO RUN PERIOD

	SI- 33	SI- 34
TIME	5 0	7 0
DATE	10/14/76	10/14/76
COMPONENTS		
PHENOLS (PPM)	5000 0	4750 0
COD (PPM)	232 0	860 0
P-ALKALINITY (GR/GAL)	0 0+	0 0+
M-ALKALINITY (GR/GAL)	513 0	560 0
N AS NH3 (PPM)	1020 0	2100 0
S (PPM)	81 4	64 5
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	1660 0	13000 0
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	8 4	8 4
TSS (WEIGHT %)	15 4	0 0+

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER<EE-201>

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-41

	S1- 13	S3- 16	S3- 17
TIME	11 0	10 0	20 0
DATE	10/29/76	10/29/76	10/29/76
COMPONENTS			

PHENOLS (PPM)	1650 0	4240 0	2800 0
POD (PPM)	173 0	662 0	154 0
F-ALKALINITY (GR/GAL)	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	34 0	458 0	479 0
N AS NH3 (PPM)	1070 0	2900 0	4800 0
S (PPM)	29 0	65 0	54 2
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	0 0	7 7	7 7
TSS (WEIGHT %)	17 8	0 1	2 4

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER(EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

	S3- 08	S3- 39
TIME	11 0	19 0
DATE	10/30/76	10/30/76
COMPONENTS		

PHENOLS (PPM)	2500 0	4500 0
COD (PPM)	585 0	421 0
P-ALKALINITY (GR. GAL)	0 0	0 0
M-ALKALINITY (GR. GAL)	261 0	420 0
M AS NH3 (PPM)	5900 0	1350 0
S (PPM)	103 0	87 4
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	7 7	8 1
TSS (WEIGHT %)	8 2	19 9

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

53 - WATER TO VENTURI SCRUBBER<EE-201>

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-P

	SD- 40	SD- 41	SD- 42	SD- 42
TIME	4 45	11 0	14 30	19 0
DATE	10/31/76	10/31/76	10/31/76	10/31/76
COMPONENTS				

PHENOLS (PPM)	4600 0	3000 0	0 0+	2200 0
COD (PPM)	858 0	1250 0	0 0+	869 0
F-ALKALINITY (GR/GAL)	0 0	54 7	0 0+	0 0
M-ALKALINITY (GR/GAL)	213 0	254 0	0 0+	165 0
N AS NH3 (PPM)	1250 0	1800 0	0 0+	1300 0
S (PPM)	76 7	174 0	0 0+	164 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	7 3	8 9	0 0+	7 0
TSS (WEIGHT %)	4 2	0 1	10 6	1 6

* = NO ANALYSIS DONE
 + = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

SAMPLES TAKEN DURING A NO RWI PERIOD

S3- 44

TIME 11 00
DATE 11. 2.78
COMPONENTS

PHENOLS (PPM)	160 0
COD (PPM)	4 9
F-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	20 2
N H% NH3 (PPM)	140 0
S (PPM)	38 5
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6 6
TSS (WEIGHT %)	0 2

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER(EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

	S3- 45	S3- 46	S3- 47	S3- 48	S3- 49	S3- 50	S3- 51
TIME	19 20	5 0	15 30	17 20	19 40	21 45	1 00
DATE	11.18/76	11.19/76	11.19/76	11.19/76	11.19/76	11.19/76	11.20/76
COMPONENTS							
PHENOLS (PPM)	6 8	6 8	2650 0	0 0+	0 0+	0 0+	2460 0
COD (PPM)	0 0+	0 0+	183 0	0 0+	0 0+	0 0+	142 0
P-ALKALINITY (GR/GAL)	0 0+	0 0	0 0	0 0+	0 0+	0 0+	0 0
M-ALKALINITY (GR/GAL)	0 0+	2 2	175 0	0 0+	0 0+	0 0+	409 0
N AS NH3 (PPM)	0 0+	5 4	1300 0	0 0+	0 0+	0 0+	2060 0
S (PPM)	0 0+	0 0	50 6	0 0+	0 0+	0 0+	13 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 0	5 6	7 2	7 8	8 0	8 6	7 5
TSS (WEIGHT %)	0 0+	0 0	0 2	0 2	0 5	2 9	10 2

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

RUN 1-0

	S3- 52	S3- 53	S3- 54
TIME	3 30	5 30	7 30
DATE	11.20/76	11.20/76	11.20/76
COMPONENTS			
PHENOLS (PPM)	0 0+	2200 0	0 0+
COD (PPM)	0 0+	16 5	0 0+
P-ALKALINITY (GR/GAL)	0 0+	0 0	0 0+
M-ALKALINITY (GR/GAL)	0 0+	459 0	0 0+
N AS NH3 (PPM)	0 0+	2650 0	0 0+
S (PPM)	0 0+	54 8	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	8 2	7 9	7 9
TSS (WEIGHT %)	19 3	14 6	15 4

+ = NO ANALYSIS DONE

+ = TRACE

SUSPECT ANALYSIS

53 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-R

	S3- 55	S3- 56	S3- 57	S3- 58	S3- 59	S3- 60	S3- 61
TIME	11 30	15 30	17 30	25 30	0 30	9 30	11 30
DATE	11/20/76	11/20/76	11/20/76	11/20/76	11/21/76	11/21/76	11/21/76
COMPONENTS							
PHENOLS (PPM)	640 0	126 0	60 0	2160 0	2100 0	176 0	0 0+
COD (PPM)	51 6	12 8	6 2	202 0	148 0	18 7	0 0+
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	0 0	0 0	0 0	0 0+
M-ALKALINITY (GR/GAL)	0 0+	10 0	5 3	165 0	210 0	7 2	0 0+
N AS NH3 (PPM)	0 0	28 0	0 0	680 0	1210 0	0 0	0 0+
S (PPM)	8 5	0 4	50 7	120 0	2 1	482 0	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 6	6 2	6 0	6 8	6 8	5 5	0 0+
TSS (WEIGHT %)	0 5	0 8	0 7	1 1	0 4	0 1	0 0+

+ = NO ANALYSIS DONE

* = TRACE

+* = SUSPECT ANALYSIS

RUN 1-R

	S3- 62	S3- 63	S3- 64	S3- 65
TIME	13 30	15 30	17 30	19 30
DATE	11/21/76	11/21/76	11/21/76	11/21/76
COMPONENTS				
PHENOLS (PPM)	1080 0	0 0+	1080 0	1540 0
COD (PPM)	222 0	0 0+	192 0	102 0
P-ALKALINITY (GR/GAL)	0 0	0 0+	0 0	0 0
M-ALKALINITY (GR/GAL)	440 0	0 0+	188 0	100 0
N AS NH3 (PPM)	2320 0	0 0+	1950 0	2000 0
S (PPM)	87 6	0 0+	61 1	39 8
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	7 8	9 1	8 2	7 5
TSS (WEIGHT %)	0 8	7 6	5 5	5 5

+ = NO ANALYSIS DONE

* = TRACE

+* = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-5

	S2- 66	S3- 67	S2- 68	S3- 69	S3- 70	S3- 71	S2- 72
TIME	9 30	13 45	15 00	17 00	19 50	1 30	3 30
DATE	11/22/76	11/22/76	11/22/76	11/22/76	11/22/76	11/23/76	11/23/76
COMPONENTS							
PHENOLS (PPM)	200 0	0 0+	1500 0	1200 0	140 0	1540 0	2200 0
COD (PPM)	18 0	0 0+	141 0	88 0	1 7	236 0	272 0
P-ALKALINITY (GR/GAL)	0 0	0 0+	0 0	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	27 2	0 0+	298 0	254 0	19 7	492 0	119 0
N AS NH3 (PPM)	0 0	0 0+	1870 0	2600 0	0 0	2750 0	660 0
S (PPM)	3 1	0 0+	99 5	21 2	4 5	67 0	20 9
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	7 1	5 1	7 5	7 9	6 4	8 1	7 4
TSS (WEIGHT %)	0 0+	0 1	0 7	23 5	0 2	2 1	0 2

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

RUN 1-5

	S3- 73	S2- 74	S3- 75
TIME	5 30	7 30	11 45
DATE	11/23/76	11/23/76	11/23/76
COMPONENTS			
PHENOLS (PPM)	1160 0	2160 0	0 0+
COD (PPM)	151 0	11 1	0 0+
P-ALKALINITY (GR/GAL)	10 7	0 0	0 0+
M-ALKALINITY (GR/GAL)	275 0	396 0	0 0+
N AS NH3 (PPM)	1930 0	2730 0	0 0+
S (PPM)	38 9	35 3	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	6 5	7 6	7 3
TSS (WEIGHT %)	4 0	5 2	0 0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	S3- 76	S3- 77	S3- 78	S3- 79	S3- 80	S3- 81	S3- 82
TIME	19 50	23 0	3 0	7 0	11 0	15 15	19 15
DATE	12/15/76	12/15/76	12/16/76	12/16/76	12/16/76	12/16/76	12/16/76
COMPONENTS							
PHENOLS (PPM)	2180 0	800 0	2800 0	1300 0	2960 0	336 0	270 0
COD (PPM)	21900 0	7360 0	15200 0	832 0	17200 0	5750 0	2360 0
P-ALKALINITY (GR/GAL)	125 0	14 5	48 4	0 0	31 4	0 0	0 0
M-ALKALINITY (GR/GAL)	278 0	30 6	472 0	472 0	492 0	38 0	35 2
N AS NH3 (PPM)	1690 0	471 0	2180 0	1410 0	3050 0	446 0	125 0
S (PPM)	22 7	6 2	59 9	6 7	79 7	21 5	3 3
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	8 2	8 5	8 2	7 7	8 1	6 8	6 4
TSS (WEIGHT %)	0 3	0 2	0 1	1 2	1 7	0 2	0 3

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

RUN 1-T

	S3- 83	S3- 84	S3- 85	S3- 86	S3- 87	S3- 88	S3- 89
TIME	4 0	9 0	13 0	17 0	21 30	1 0	5 0
DATE	12/17/76	12/17/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76
COMPONENTS							
PHENOLS (PPM)	160 0	370 0	325 0	2080 0	4020 0	2800 0	1700 0
COD (PPM)	1960 0	7420 0	5410 0	11100 0	20900 0	21700 0	17600 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	31 1	0 0	32 7	0 0
M-ALKALINITY (GR/GAL)	52 0	40 4	31 7	264 0	345 0	419 0	576 0
N AS NH3 (PPM)	113 0	267 0	187 0	1680 0	2630 0	2550 0	2280 0
S (PPM)	7 6	2 2	2 0	33 1	65 5	70 8	50 6
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 4	6 2	6 8	8 5	8 8	8 4	8 2
TSS (WEIGHT %)	0 4	0 3	0 0	8 1	0 3	0 1	7 1

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER (EE-201.)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	S3- 90	S3- 91	S3- 92	S3- 93	S3- 94	S3- 95	S3- 96
TIME	3 0	13 0	15 30	17 15	21 0	1 0	3 45
DATE	12-18/76	12-18/76	12-18/76	12-18/76	12-18/76	12-19/76	12-19/76
COMPONENTS							
PHENOLS (PPM)	3100 0	2200 0	2800 0	2100 0	3800 0	3000 0	356 0
COD (PPM)	17800 0	11500 0	13400 0	18300 0	22700 0	18600 0	3260 0
P-ALKALINITY (GR/GAL)	0 0+	0 0	0 0	0 0	65 0	0 0	0 0
M-ALKALINITY (GR/GAL)	280 0	228 0	286 0	266 0	340 0	500 0	26 0
N AS NH3 (PPM)	1750 0	1280 0	1680 0	1590 0	3280 0	5180 0	153 0
S (PPM)	13 9	13 7	27 8	36 8	91 1	125 0	0 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	8 5	7 5	7 5	8 0	8 6	7 7	7 0
TSS (WEIGHT %)	4 8	5 2	5 4	2 1	2 4	8 9	0 9

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER(EE-201)

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-0

S3- 16 S3- 17

TIME 2 0 6 0
DATE 7/21/76 7/21/76

PROXIMATE ANALYSIS

MOISTURE	0 7	0 7
VOLATILE MATTER	13 0	16 5
FIXED CARBON	49 0	45 2
ASH	36 5	37 6
TOTAL	100 0	100 0

ULTIMATE ANALYSIS

HYDROGEN	1 5	1 8
CARBON	30 1	31 7
NITROGEN	0 7	0 7
OXYGEN	30 8	27 9
SULFUR	0 4	0 3
ASH	36 5	37 6
TOTAL	100 0	100 0

HEAT OF COMBUSTION (BTU/LB) 4740 5130

* = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S3 - WATER TO VENTURI SCRUBBER(EE-201)

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-P

S3- 42

TIME

14 30

DATE

10/31/76

PROXIMATE ANALYSIS

MOISTURE	0 7
VOLATILE MATTER	0 0+
FIXED CARBON	0 0+
ASH	17 6
TOTAL	18 3

ULTIMATE ANALYSIS

HYDROGEN	3 2
CARBON	72 0
NITROGEN	0 0+
OXYGEN	6 4
SULFUR	0 0+
ASH	17 6
TOTAL	100 0

HEAT OF COMBUSTION (BTU. LB) 0 +

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

53 - WATER TO VENTURI SCRUBBER (EE-201)

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-5

53- 69

TIME 17 20
DATE 11/22/76

PROXIMATE ANALYSIS

MOISTURE	10 7
VOLATILE MATTER	19 1
FIXED CARBON	55 7
ASH	14 5
TOTAL	100 0

ULTIMATE ANALYSIS

HYDROGEN	4 0
CARBON	68 3
NITROGEN	0 9
OXYGEN	12 0
SULFUR	0 3
ASH	14 5
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 12300

+ = NO ANALYSIS DONE
* = TRACE
** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER (DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-C

	S4- 49	S4- 50	S4- 51
TIME	21 15	2 0	6 0
DATE	7/19/76	7/20/76	7/20/76
COMPONENTS			
PHENOLS (PPM)	1580 0	2640 0	2660 0
COD (PPM)	15100 0	3900 0	15400 0
P-ALKALINITY (GR/GAL)	162 0	302 0	236 0
M-ALKALINITY (GR/GAL)	467 0	712 0	686 0
N AS NH3 (PPM)	0 0+	0 0+	0 0+
S (PPM)	154 0	161 0	168 0
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0	0 0	0 0
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	9 2	9 3	9 2
TSS (WEIGHT %)	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER(DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-D

	S4- 52	S4- 53
TIME	3 0	5 0
DATE	7.21/76	7/21/76
COMPONENTS		

PHENOLS (PPM)	1600 0	2400 0
COD (PPM)	10000 0	15500 0
P-ALKALINITY (GR/GAL)	241 0	278 0
M-ALKALINITY (GR/GAL)	529 0	602 0
N AS NH2 (PPM)	0 0+	0 0+
S (PPM)	113 0	124 0
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	9 3	9 4
TSS (WEIGHT %)	0 0+	0 0+

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER (DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-1

	S4- 54	S4- 55	S4- 56
TIME	12 45	12 30	1 0
DATE	9/29/76	9/30/76	10/ 1/76
COMPONENTS			
PHENOLS (PPM)	1400 0	0 0+	3800 0
COD (PPM)	25800 0	0 0+	21400 0
F-ALKALINITY (GR./GAL)	0 0+	0 0+	207 0
M-ALKALINITY (GR./GAL)	430 0	0 0+	771 0
N AS NH ₃ (PPM)	2180 0	0 0+	0 0+
S (PPM)	0 0+	0 0+	78 0
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	374 0	0 0+	1340 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	8 8	5 5	9 0
TSS (WEIGHT %)	0 0+	0 0+	0 0+

+ = NO ANALYSIS DONE
 + = TRACE
 ++ = SUSPECT ANALYSIS

54 - WATER TO RAW GAS SCRUBBER (DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-M

	54- 57	54- 58	54- 59	54- 60
TIME	17 0	20 0	21 0	10 15
DATE	10/18/76	10/10/76	10/10/76	10/11/76

COMPONENTS

PHENOLS (PPM)	2600 0	1760 0	4360 0	4480 0
COD (PPM)	13700 0	15600 0	18100 0	16900 0
P-ALKALINITY (GR/GAL)	0 0+	90 4	108 0	0 0+
M-ALKALINITY (GP/GAL)	621 0	755 0	808 0	1000 0
N AS NH3 (PPM)	3070 0	3840 0	5100 0	6300 0
S (PPM)	137 0	75 0	104 0	51 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	406 0	422 0	196 0	440 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	0 6	6 7	0 0	0 5
TSS (WEIGHT %)	0 0+	0 3	0 0*	0 1

+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER (DA-201.)

WATER SAMPLES

SAMPLE NUMBER AND TIME

SAMPLES TAKEN DURING A NO RUN PERIOD:

	S4- 61	S4- 62
TIME	3 0	7 0
DATE	10/14/76	10/14/76
COMPONENTS		
PHENOLS (PPM)	4000 0	4250 0
COD (PPM)	16000 0	19500 0
P-ALKALINITY (GR/GAL)	0 0+	175 0
M-ALKALINITY (GR/GAL)	714 0	891 0
N AS NH3 (PPM)	2920 0	4800 0
S (PPM)	97 4	175 0
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	44 0	526 0
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	8 5	8 9
TSS (WEIGHT %)	0 0+	0 6

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER(DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-N

S4- 63

TIME 18 0
DATE 10-29-76
COMPONENTS

PHENOLS (PPM)	2440 0
COD (PPM)	16800 0
F-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	824 0
N AS NH2 (PPM)	2900 0
S (PPM)	135 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	9 1
TSS (WEIGHT %)	1 5

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER(DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

S4- 64

TIME

4 15

DATE

10/30/76

COMPONENTS

PHENOLS (PPM)	1160 0
COD (PPM)	31300 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	251 0
N AS NH3 (PPM)	840 0
S (PPM)	42 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 5
TSS (WEIGHT %)	0 1

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

54 - WATER TO RAW GAS SCRUBBER(DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

	54- 65	54- 66	54- 67	54- 68	54- 69	54- 70	54- 71
TIME	19 15	5 0	15 30	17 30	19 40	21 45	1 30
DATE	11/18/76	11/19/76	11/19/76	11/19/76	11/19/76	11/19/76	11/20/76
COMPONENTS							
PHENOLS (PPM)	15 2	12 4	620 0	960 0	0 0+	2160 0	3920 0
COD (PPM)	0 0+	190 0	6600 0	8600 0	0 0+	14400 0	18700 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	0 0	0 0+	81 0	0 0
M-ALKALINITY (GR/GAL)	6 6	3 0	41 9	305 0	0 0+	819 0	984 0
N AS NH3 (PPM)	0 0+	0 0	274 0	1270 0	0 0+	4580 0	4460 0
S (PPM)	0 0+	2 6	61 3	57 7	0 0+	256 0	22 4
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 1	6 1	6 3	7 6	8 2	8 7	8 5
TSS (WEIGHT %)	0 0+	0 0+	0 0+	0 2	0 0	0 1	0 1

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

RUN 1-0

	54- 72	54- 73	54- 74
TIME	3 30	5 30	7 30
DATE	11/20/76	11/20/76	11/20/76
COMPONENTS			
PHENOLS (PPM)	0 0+	2600 0	0 0+
COD (PPM)	0 0+	20300 0	0 0+
P-ALKALINITY (GR/GAL)	0 0+	0 0	0 0+
M-ALKALINITY (GR/GAL)	0 0+	788 0	0 0+
N AS NH3 (PPM)	0 0+	4440 0	0 0+
S (PPM)	0 0+	20 3	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	9 0	8 3	8 2
TSS (WEIGHT %)	0 1	0 9	0 1

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER (DA-201)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-R

	S4- 75	S4- 76	S4- 77	S4- 78	S4- 79	S4- 80
TIME	11 30	15 30	17 30	23 30	0 30	9 30
DATE	11/20/76	11/20/76	11/20/76	11/20/76	11/21/76	11/21/76
COMPONENTS						
PHENOLS (PPM)	1800 0	760 0	520 0	600 0	600 0	280 0
COD (PPM)	9920 0	4320 0	1520 0	5440 0	3960 0	2690 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	175 0	109 0	78 0	84 0	94 0	28 0
N AS NH3 (PPM)	942 0	680 0	390 0	2720 0	471 0	67 0
S (PPM)	0 0*	0 2	1 7	8 8	35 0	2 5
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	7 0	6 7	6 7	7 0	6 6	6 4
TSS (WEIGHT %)	0 3	0 1	0 1	0 1	0 0+	0 3

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S4 - WATER TO RAW GAS SCRUBBER (DA-201.)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	S4- 81	S4- 82	S4- 83	S4- 84	S4- 85	S4- 86	S4- 87
TIME	19 30	23 30	1 0	7 0	11 0	15 15	19 15
DATE	12/15/76	12/15/76	12/16/76	12/16/76	12/16/76	12/16/76	12/16/76
COMPONENTS							
PHENOLS (PPM)	2100 0	1000 0	3650 0	3420 0	1940 0	1950 0	3620 0
COD (PPM)	14600 0	6610 0	16800 0	16000 0	12800 0	10300 0	21800 0
P-ALKALINITY (GR/GAL)	136 0	0 0	0 0+	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	373 0	134 0	237 0	362 0	285 0	323 0	140 0
N AS NH3 (PPM)	2220 0	3760 0	2880 0	4210 0	5410 0	3550 0	1660 0
S (PPM)	66 6	80 0	114 0	96 0	131 0	10 2	4 9
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	8 8	7 0	7 9	7 8	7 9	7 5	7 0
TSS (WEIGHT %)	0 0+	0 2	0 4	0 2	0 2	0 3	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

RUN 1-T

	S4- 88	S4- 89	S4- 90	S4- 91	S4- 92	S4- 93	S4- 94
TIME	4 0	9 0	13 0	17 0	21 30	1 0	9 0
DATE	12/17/76	12/17/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76
COMPONENTS							
PHENOLS (PPM)	352 0	1080 0	880 0	840 0	940 0	640 0	2160 0
COD (PPM)	4570 0	8000 0	7920 0	14300 0	16700 0	17500 0	16800 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	118 0	43 0	119 0	0 0
M-ALKALINITY (GR/GAL)	62 0	206 0	145 0	605 0	695 0	468 0	2720 0
N AS NH3 (PPM)	431 0	1220 0	762 0	5410 0	4010 0	2810 0	1590 0
S (PPM)	0 0	4 3	63 7	84 2	178 0	139 0	190 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 5	7 3	7 2	8 7	8 6	8 9	7 2
TSS (WEIGHT %)	0 0+	0 2	0 1	0 3	0 8	2 5	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-A

SS- 42

TIME

20 10

DATE

7/ 7/76

COMPONENTS

PHENOLS (PPM)	0 0+
COD (PPM)	0 0+
F-ALKALINITY (GR/GAL)	0 0+
M-ALKALINITY (GR/GAL)	0 0+
N AS NH3 (PPM)	0 0+
S (PPM)	0 0+
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 6
TSS (WEIGHT %)	0 0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-B

	55- 43	55- 44
TIME	11 0	19 0
DATE	7/ 8/76	7/ 8/76
COMPONENTS		

PHENOLS (PPM)	2 4	127 0
COD (PPM)	157 0	215 0
P-ALKALINITY (GR/GAL)	0 0+	0 0+
M-ALKALINITY (GR/GAL)	0 0+	0 0+
N AS NH3 (PPM)	2 1	60 0
S (PPM)	0 0+	0 0+
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	52 0	0 0+
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0
PH	5 3	7 7
TSS (WEIGHT %)	0 0+	0 0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK<FA-215>

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-C

	SS- 45	SS- 46
TIME	21 15	2 0
DATE	7/19/76	7/20/76
COMPONENTS		
<hr/>		
PHENOLS (PPM)	1560 0	2600 0
COD (PPM)	7810 0	16300 0
P-ALKALINITY (GR/GAL)	0 0	76 4
M-ALKALINITY (GR/GAL)	525 0	480 0
N AS NH3 (PPM)	0 0+	0 0+
S (PPM)	47 5	82 5
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0	0 0
CYANIDE (PPM)	0 0+	0 0+
PH	7 4	8 8
TSS (WEIGHT %)	0 0	0 0

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-D

SS- 47

TIME

19 15

DATE

7/20/76

COMPONENTS

PHENOLS (PPM)	1500 0
COD (PPM)	2560 0
P-ALKALINITY (GR/GAL)	17 6
M-ALKALINITY (GR/GAL)	292 0
N AS NH3 (PPM)	0 0+
S (PPM)	58 5
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	624 0
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	8 6
TSS (WEIGHT %)	5 8

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-F

55- 48

TIME

11 30

DATE

8/12/76

COMPONENTS

PHENOLS (PPM)	367 0
COD (PPM)	6360 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	65 0
N AS NH3 (PPM)	207 0
S (PPM)	0 0+
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 3
TSS (WEIGHT %)	0 0

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-213)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-G

	SS- 49	SS- 50
TIME	4 0	11 0
DATE	8/13/76	8/13/76

COMPONENTS

PHENOLS (PPM)	37 5	60 0
COD (PPM)	1320 0	1560 0
P-ALKALINITY (GR./GAL)	0 0	0 0
M-ALKALINITY (GR./GAL)	10 6	5 3
M AS NH3 (PPM)	12 5	2 4
S (PPM)	1 7	2 8
CHLORINE (PPM)	0 0*	0 0*
DISSOLVED SOLIDS (PPM)	0 0*	0 0*
THIOCYANATE (PPM)	0 0*	0 0*
CYANIDE (PPM)	0 0*	0 0*
PH	6 2	6 0
TSS (WEIGHT %)	0 0	0 0*

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-23.5)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-H

SS- 51

TIME

1 0

DATE

8/14/76

COMPONENTS

PHENOLS (PPM)	1200 0
COD (PPM)	11000 0
P-ALKALINITY (GR./GAL)	0 0
M-ALKALINITY (GR./GAL)	144 0
N AS NH3 (PPM)	600 0
S (PPM)	165 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 2
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	SS- 52	SS- 53	SS- 54
TIME	7 30	12 0	21 0
DATE	8/15/76	8/15/76	8/15/76

COMPONENTS

PHENOLS (PPM)	2040 0	3020 0	1000 0
COD (PPM)	14400 0	2000 0	69200 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	350 0	95 1	22 6
N AS NH3 (PPM)	1100 0	0 0+	0 0+
S (PPM)	46 9	26 5	34 1
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	7 7	7 2	6 8
TSS (WEIGHT %)	1 5	0 6	0 5

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK<FA-2.15>

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-J

55- 55

TIME

6 30

DATE

8/16/76

COMPONENTS

PHENOLS (PPM)	800 0
COD (PPM)	1820 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	143 0
N AS NH ₄ (PPM)	125 0
S (PPM)	30 9
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0
PH	7 5
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-k

SS- 56

TIME

9 30

DATE

9 15/76

COMPONENTS

PHENOLS (PPM)	1200 0
COO (PPM)	11800 0
K-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	280 0
N AS NH3 (PPM)	0 0+
S (PPM)	0 0+
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 4
TSS (WEIGHT %)	0 2

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-4

	55- 57	55- 58	55- 59	55- 60
TIME	11 15	15 0	22 0	1 0
DATE	9 29 76	9 30 76	9 30 76	10 1 76

COMPONENTS

PHENOLS (PPM)	1200 0	0 0+	600 0	1750 0
COD (PPM)	21800 0	0 0+	13400 0	19540 0
P-ALKALINITY (GR/GAL)	0 0	0 0+	0 0	0 0
M-ALKALINITY (GR/GAL)	254 0	0 0+	186 0	601 0
M AS NH3 (PPM)	670 0	0 0+	1450 0	2500 0
S (PPM)	0 0+	0 0+	0 0+	31 6
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	110 0	0 0+	1010 0	1220 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	7 7	6 2	7 6	7 2
TSS (WEIGHT %)	0 3	0 0	0 0+	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

+ = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-M

	55- 61	55- 62	55- 63
TIME	17 0	4 0	10 15
DATE	10/10/76	10/11/76	10/11/76

COMPONENTS

PHENOLS (PPM)	1 4	5300 0	2320 0
COD (PPM)	2420 0	14100 0	15600 0
P-ALKALINITY (GR/GAL)	0 0	150 0	70 6
M-ALKALINITY (GR/GAL)	7 3	225 0	240 0
N AS NH3 (PPM)	90 0	2200 0	1300 0
S (PPM)	27 9	127 0	67 0
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	414 0	2090 0	1920 0
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	6 4	9 2	9 0
TSS (WEIGHT %)	5 6	0 2	0 3

+ = NO ANALYSIS DONE
 * = TRACE
 ** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-11

	SS- 64	SS- 65	SS- 66
TIME	11 0	18 0	20 0
DATE	10/29/76	10/29/76	10/29/76

COMPONENTS

PHENOLS (PPM)	126 0	3000 0	2800 0
COD (PPM)	282 0	24400 0	16100 0
P-ALKALINITY (GR/GAL)	0 0	81 7	131 0
M-ALKALINITY (GR/GAL)	75 1	348 0	458 0
N AS NH3 (PPM)	132 0	1000 0	100 0
S (PPM)	51 1	12 2	51 9
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	7 7	8 7	9 0
TSS (WEIGHT %)	0 1	2 8	0 7

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN L-0

	SS- 67	SS- 68
TIME	11 0	19 0
DATE	10/20/76	10/20/76

COMPONENTS

PHENOLS (PPM)	2000 0	1920 0
COD (PPM)	25800 0	41200 0
P-ALKALINITY (GR/GAL)	21 5	17 7
M-ALKALINITY (GR/GAL)	126 0	120 0
N AS NH3 (PPM)	190 0	730 0
S (PPM)	0 0+	0 2
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	8 7	8 8
TSS (WEIGHT %)	0 4	0 2

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUR 1-P

	SS- 69	SS- 70	SS- 71	SS- 72
TIME	4 45	11 0	19 0	11 30
DATE	10/31/76	10/31/76	10/31/76	11/1/76
COMPONENTS				

PHENOLS (PPM)	7880 0	2680 0	1480 0	380 0
COD (PPM)	61800 0	71100 0	1810 0	35800 0
P-ALKALINITY (GR/GAL)	44 0	47 2	67 1	0 0
M-ALKALINITY (GR/GAL)	184 0	285 0	328 0	29 5
N AS NH3 (PPM)	480 0	750 0	1000 0	140 0
S (PPM)	37 4	22 0	261 0	24 9
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	8 9	8 7	8 7	7 1
TSS (WEIGHT %)	0 1	1 5	0 0	0 1

+ = NO ANALYSIS DONE
+ = TRACE
++ = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-0

	SS- 73	SS- 74	SS- 75	SS- 76	SS- 77	SS- 78	SS- 79
TIME	19 35	5 0	19 50	17 30	19 40	21 45	1 30
DATE	11/18/76	11/19/76	11/19/76	11/19/76	11/19/76	11/19/76	11/20/76
COMPONENTS							
PHENOLS (PPM)	0 0	0 0	0 0+	0 0+	2000 0	0 0+	3400 0
COD (PPM)	64 0	94 4	0 0+	0 0+	10700 0	0 0+	18800 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0+	0 0+	0 0	0 0+	113 0
M-ALKALINITY (GR/GAL)	1 2	5 7	0 0+	0 0+	399 0	0 0+	481 0
N AS NH3 (PPM)	2 0	4 7	0 0+	0 0+	2200 0	0 0+	2800 0
S (PPM)	19 5	0 0	0 0+	0 0+	72 1	0 0+	60 4
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	5 4	5 6	7 0	7 0	7 9	8 2	9 1
TSS (WEIGHT %)	0 0+	0 0	0 0	0 0+	0 1	0 3	0 3

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

RUN 1-0

	SS- 80	SS- 81	SS- 82
TIME	0 20	5 20	7 30
DATE	11/20/76	11/20/76	11/20/76
COMPONENTS			
PHENOLS (PPM)	0 0+	3300 0	0 0+
COD (PPM)	0 0+	21400 0	0 0+
P-ALKALINITY (GR/GAL)	0 0+	104 0	0 0+
M-ALKALINITY (GR/GAL)	0 0+	671 0	0 0+
N AS NH3 (PPM)	0 0+	3700 0	0 0+
S (PPM)	0 0+	152 0	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	5 0	5 0	9 0
TSS (WEIGHT %)	0 6	0 1	0 2

+ = NO ANALYSIS DONE
* = TRACE
+ = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-P

	55- 69	55- 70	55- 71	55- 72
TIME	4 45	11 0	19 0	11 20
DATE	10/21/76	10/21/76	10/21/76	11/ 1/76

COMPONENTS

PHENOLS (PPM)	5800 0	2600 0	3400 0	280 0
COD (PPM)	67000 0	71100 0	1910 0	35000 0
P-ALKALINITY (GR/GAL)	44 0	47 8	67 1	0 0
M-ALKALINITY (GR/GAL)	194 0	285 0	228 0	29 0
N AS NH3 (PPM)	480 0	720 0	1000 0	360 0
S (PPM)	37 4	22 0	261 0	24 9
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	8 9	8 7	8 7	7 1
TSS (WEIGHT %)	0 1	1 5	0 8	0 1

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-0

	SS- 72	SS- 74	SS- 75	SS- 76	SS- 77	SS- 78	SS- 79
TIME	19 35	5 0	15 50	17 30	19 40	21 45	1 30
DATE	11/18/76	11/19/76	11/19/76	11/19/76	11/19/76	11/19/76	11/20/76
COMPONENTS							
PHENOLS (PPM)	0 0	0 0	0 0+	0 0+	2000 0	0 0+	3400 0
COD (PPM)	64 0	94 4	0 0+	0 0+	10700 0	0 0+	18800 0
P-ALKALINITY (GR GAL)	0 0	0 0	0 0+	0 0+	0 0	0 0+	113 0
M-ALKALINITY (GR GAL)	2 2	5 7	0 0+	0 0+	599 0	0 0+	481 0
N AS NH3 (PPM)	2 0	4 0	0 0+	0 0+	2280 0	0 0+	2980 0
S (PPM)	19 5	0 0	0 0+	0 0+	73 1	0 0+	60 4
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	5 4	5 6	7 0	7 0	7 9	8 2	9 1
TSS (WEIGHT %)	0 0+	0 0	0 0	0 0+	0 1	0 5	0 3

+ = NO ANALYSIS DONE
* = TRACE
++ = SUSPECT ANALYSIS

PUN 1-0

	SS- 80	SS- 81	SS- 82
TIME	5 20	5 20	7 20
DATE	11/20/76	11/20/76	11/20/76
COMPONENTS			
PHENOLS (PPM)	0 0+	3300 0	0 0+
COD (PPM)	0 0+	21400 0	0 0+
P-ALKALINITY (GR GAL)	0 0+	104 0	0 0+
M-ALKALINITY (GR GAL)	0 0+	471 0	0 0+
N AS NH3 (PPM)	0 0+	3780 0	0 0+
S (PPM)	0 0+	152 0	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	8 0	8 0	9 0
TSS (WEIGHT %)	0 6	0 1	0 2

+ = NO ANALYSIS DONE
* = TRACE
+ = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-P

	55- 80	55- 84	55- 85	55- 86	55- 87	55- 88	55- 89
TIME	11 30	15 30	17 30	21 30	0 30	9 30	11 30
DATE	11/20/76	11/20/76	11/20/76	11/21/76	11/21/76	11/21/76	11/21/76
COMPONENTS							
PHENOLS (PPM)	260 0	148 0	0 0+	1080 0	0 0+	160 0	0 0+
COD (PPM)	2680 0	1280 0	0 0+	10900 0	0 0+	720 0	0 0+
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0+	0 0	0 0+	0 0	0 0+
M-ALKALINITY (GR/GAL)	66 5	20 8	0 0+	110 0	0 0+	21 3	0 0+
N AS NH3 (PPM)	320 0	283 0	0 0+	312 0	0 0+	94 0	0 0+
S (PPM)	7 4	1110 0	0 0+	47 0	0 0+	15 2	0 0+
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	8 0	6 0	6 6	9 0	0 0+	6 6	6 0
TSS (WEIGHT %)	0 1	0 1	0 1	0 6	0 0	0 4	0 1

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

RUN 1-R

	55- 90	55- 91	55- 92	55- 93
TIME	13 30	15 30	17 30	19 30
DATE	11/21/76	11/21/76	11/21/76	11/21/76
COMPONENTS				
PHENOLS (PPM)	1800 0	1400 0	0 0+	1000 0
COD (PPM)	16800 0	12700 0	0 0+	6400 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0+	0 0
M-ALKALINITY (GR/GAL)	408 0	279 0	0 0+	103 0
N AS NH3 (PPM)	942 0	1720 0	0 0+	672 0
S (PPM)	84 9	56 6	0 0+	7 1
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+
PH	8 0	7 0	7 2	7 4
TSS (WEIGHT %)	1 0	1 0	10 2	1 9

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-5

	SS- 94	SS- 95	SS- 96	SS- 97	SS- 98	SS- 99	SS-100
TIME	9 30	13 45	15 30	17 30	19 50	1 30	3 30
DATE	11/22/76	11/22/76	11/22/76	11/22/76	11/22/76	11/23/76	11/23/76
COMPONENTS							
PHENOLS (PPM)	40 0	0 0+	2160 0	1120 0	190 0	3500 0	1300 0
COD (PPM)	320 0	0 0+	12700 0	3760 0	3400 0	21000 0	6720 0
P-ALKALINITY (GR/GAL)	0 0	0 0+	0 0	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	0 0	0 0+	283 0	212 0	19 3	495 0	152 0
N AS NH3 (PPM)	28 0	0 0+	1540 0	680 0	0 0	2640 0	2410 0
S (PPM)	5 4	0 0+	38 0	11 7	1 5	200 0	86 8
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	7 4	5 4	7 5	8 0	6 2	7 9	7 6
TSS (WEIGHT %)	0 1	0 6	0 5	1 8	0 3	5 0	3 6

+ = NO ANALYSIS DONE
* = TRACE
+* = SUSPECT ANALYSIS

RUN 1-5

	SS-101	SS-102	SS-103
TIME	5 30	7 30	11 45
DATE	11/23/76	11/23/76	11/23/76
COMPONENTS			
PHENOLS (PPM)	2680 0	2560 0	680 0
COD (PPM)	13400 0	12000 0	5520 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	294 0	406 0	156 0
N AS NH3 (PPM)	3800 0	2370 0	1620 0
S (PPM)	27 4	38 6	10 6
CHLORINE (PPM)	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+
PH	7 6	7 7	7 2
TSS (WEIGHT %)	6 3	4 8	1 0

+ = NO ANALYSIS DONE
* = TRACE
+* = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK(CA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	SS-104	SS-105	SS-106	SS-107	SS-108	SS-109	SS-110
TIME	19 50	27 0	3 0	7 0	11 0	15 15	19 15
DATE	12/15/76	12/15/76	12/16/76	12/16/76	12/16/76	12/16/76	12/16/76
COMPONENTS							
PHENOLS (PPM)	2060 0	840 0	1400 0	3160 0	2910 0	212 0	248 0
COD (PPM)	19200 0	10700 0	21100 0	15900 0	18800 0	3790 0	4800 0
P-ALKALINITY (GR/GAL)	22 7	0 0	0 0	0 0	0 0	0 0	0 0
M-ALKALINITY (GR/GAL)	418 0	114 0	255 0	477 0	504 0	81 1	17 2
N AS NH3 (PPM)	2250 0	749 0	1440 0	2540 0	3050 0	510 0	265 0
S (PPM)	60 2	0 0	5 9	65 8	62 4	12 5	2 5
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	8 3	7 6	7 2	7 7	8 0	6 8	6 5
TSS (WEIGHT %)	0 1	0 5	0 1	0 1	0 2	0 2	0 1

+ = NO ANALYSTS DONE

* = TRACE

** = SUSPECT ANALYSTS

RUN 1-T

	SS-111	SS-112	SS-113	SS-114	SS-115	SS-116	SS-117
TIME	4 0	9 0	13 0	17 0	21 30	1 0	5 0
DATE	12/17/76	12/17/76	12/17/76	12/17/76	12/17/76	12/18/76	12/18/76
COMPONENTS							
PHENOLS (PPM)	220 0	744 0	308 0	1760 0	3400 0	2560 0	2460 0
COD (PPM)	8440 0	4570 0	6210 0	12200 0	22500 0	15000 0	15800 0
P-ALKALINITY (GR/GAL)	0 0	0 0	0 0	20 0	110 0	0 0	6 5
M-ALKALINITY (GR/GAL)	15 7	44 7	37 2	205 0	431 0	536 0	414 0
N AS NH3 (PPM)	79 0	265 0	199 0	2050 0	2780 0	2900 0	3010 0
S (PPM)	45 6	0 3	132 0	20 9	210 0	76 5	54 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	6 3	6 4	6 3	8 5	8 9	7 8	8 1
TSS (WEIGHT %)	0 1	0 3	0 0	7 4	1 4	0 1	1 6

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

SS - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-T

	SS-118	SS-119	SS-120	SS-121	SS-122	SS-123
TIME	9 0	11 0	15 30	17 15	21 0	1 0
DATE	12/19/76	12/18/76	12/18/76	12/18/76	12/19/76	12/19/76
COMPONENTS						
PHENOLS (PPM)	2560 0	1480 0	1880 0	2680 0	3720 0	3920 0
COD (PPM)	14900 0	11200 0	12200 0	15900 0	22100 0	22600 0
F-ALKALINITY (GR/GAL)	0 0	0 0	0 0	0 0	0 0	76 6
M-ALKALINITY (GR/GAL)	339 0	277 0	239 0	209 0	586 0	481 0
N AS NH3 (PPM)	2210 0	1630 0	1880 0	2080 0	1770 0	3920 0
S (PPM)	23 0	47 0	37 9	42 0	33 0	35 0
CHLORINE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+	0 0+	0 0+	0 0+	0 0+
PH	7.3	7.6	7.0	7.3	8.1	8.9
TSS (WEIGHT %)	1.0	49.3	0.1	0.4	0.6	0.2

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

55 - LIQUID EFFLUENT FROM SCRUBBER SURGE TANK (FA-215)

SOLIDS FILTERED FROM SAMPLE

ANALYSES IN WEIGHT PERCENT

SAMPLE NUMBER AND TIME

RUN 1-C

55- 46

TIME

2 0

DATE

7/20/76

PROXIMATE ANALYSIS

MOISTURE	0 8
VOLATILE MATTER	26 7
FIXED CARBON	58 8
ASH	13 7
TOTAL	100 0

ULTIMATE ANALYSIS

HYDROGEN	3 6
CARBON	76 7
NITROGEN	0 8
OXYGEN	4 8
SULFUR	0 4
ASH	13 7
TOTAL	100 0

HEAT OF COMBUSTION (BTU/LB) 12300

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

57 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-B

57- 1

TIME

20 0

DATE

7/9/76

COMPONENTS

PHENOLS (PPM)	340 0
COD (PPM)	3 3
F-ALKALINITY (GR/GAL)	0 0+
M-ALKALINITY (GR/GAL)	0 0+
N AS NH3 (PPM)	26 0
CLORINE (PPM)	0 0+
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0
PH	7 7
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-C

S7- 2

TIME

6 8

DATE

7/20/76

COMPONENTS

PHENOLS (PPM)	2120 8
COD (PPM)	93 7
P-ALKALINITY (GR/GAL)	5 8
M-ALKALINITY (GR/GAL)	526 0
N AS NH3 (PPM)	0 0+
S (PPM)	57 4
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	8 2
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-D

S7- 3

TIME 3 0
DATE 7/21/76
COMPONENTS

PHENOLS (PPM)	1000 0
COD (PPM)	4460 0
P-ALKALINITY (GR/GAL)	0 0*
M-ALKALINITY (GR/GAL)	420 0
N AS NH3 (PPM)	0 0+
S (PPM)	2 7
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	7 7
TSS (WEIGHT %)	0 0+

+ = NO ANALYSIS DONE

+ = TRACE

++ = SUSPECT ANALYSIS

57 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-F

57- 4

TIME

23 45

DATE

8/12/76

COMPONENTS

PHENOLS (PPM)	1200 0
COD (PPM)	74 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	206 0
N AS NH ₃ (PPM)	11 5
S (PPM)	2 7
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6 6
TSS (WEIGHT %)	0 0*

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

DATE 2/24/78

PAGE 1

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

PUN 1-G

S7- 5

TIME

11 0

DATE

8/13/76

COMPONENTS

PHENOLS (PPM)	198 0
COD (PPM)	76 8
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	173 0
N AS NH3 (PPM)	0 0+
S (PPM)	0 3
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6.1
TSS (WEIGHT %)	0.1

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-213)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-H

S7- 6

TIME

1 0

DATE

8/14/76

COMPONENTS

PHENOLS (PPM)	1200 0
COD (PPM)	113 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	193 0
N AS NH3 (PPM)	360 0
S (PPM)	13 5
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	6 6
TSS (WEIGHT %)	0 0*

+ = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-I

	S7- 7	S7- 8
TIME	7 30	21 0
DATE	8/15/76	8/15/76
COMPONENTS		

PHENOLS (PPM)	2000 0	780 0
COO (PPM)	176 0	3020 0
P-ALKALINITY (GR/GAL)	0 0	0 0
M-ALKALINITY (GR/GAL)	387 0	100 0
N AS NH3 (PPM)	0 0+	0 0+
S (PPM)	0 0+	0 0+
CHLORINE (PPM)	0 0+	0 0+
DISSOLVED SOLIDS (PPM)	0 0+	0 0+
THIOCYANATE (PPM)	0 0+	0 0+
CYANIDE (PPM)	0 0+	0 0+
PH	7 9	8 0
TSS (WEIGHT %)	3 2	26 9

+ = NO ANALYSIS DONE

+ = TRACE

** = SUSPECT ANALYSIS

S7 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-M

S7- 9

TIME

20 0

DATE

10/10/76

COMPONENTS

PHENOLS (PPM)	3200 0
COD (PPM)	202 0
P-ALKALINITY (GR/GAL)	0 0
M-ALKALINITY (GR/GAL)	438 0
N AS NH3 (PPM)	1000 0
S (PPM)	101 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	8 1
TSS (WEIGHT %)	0 2

+ = NO ANALYSIS DONE

* = TRACE

++ = SUSPECT ANALYSIS

DATE 2/24/78

PAGE 1

57 - WATER SAMPLES TAKEN FROM THE UPPER
LAYER OF THE SCRUBBER SURGE TANK (FA-215)

WATER SAMPLES

SAMPLE NUMBER AND TIME

RUN 1-P

57- 10

TIME

11 0

DATE

10/31/76

COMPONENTS

PHENOLS (PPM)	3000 0
COD (PPM)	389 0
P-ALKALINITY (GR/GAL)	69 9
M-ALKALINITY (GR/GAL)	268 0
N AS NH3 (PPM)	480 0
S (PPM)	145 0
CHLORINE (PPM)	0 0+
DISSOLVED SOLIDS (PPM)	0 0+
THIOCYANATE (PPM)	0 0+
CYANIDE (PPM)	0 0+
PH	9 0
TSS (WEIGHT %)	0 5

* = NO ANALYSIS DONE

* = TRACE

** = SUSPECT ANALYSIS

MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

1

FEED FLOW RATES (LB-HR)

		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3732.0	246.8	871.6	57.0	48.6	635.4	5591.4
COAL MOISTURE CONTENT		0.0	45.4	363.2	0.0	0.0	0.0	408.6
COAL FEED RATE		3732.0	292.2	1234.8	57.0	48.6	635.4	6000.0

STEAM FLOW

FLDNG STM TO PTR	F264	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	649.6	5197.0	0.0	0.0	0.0	5846.6
CHR CLR STM FEED	F205	0.0	346.2	2769.5	0.0	0.0	0.0	3115.7
HP STM TO CHAR CLR	F252	0.0	11.6	92.0	0.0	0.0	0.0	104.4
GASF STEAM PURGES	F278	0.0	4.7	37.2	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.2	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO ARTS	F135	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	1017.2	0.0	0.0	0.0	1017.2
TRANSPORT LINE O2	F239	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	317.8	0.0	847.5	0.0	0.0	0.0	1165.4
CO2 FLOW TO FE-105	F7	371.7	0.0	991.1	0.0	0.0	0.0	1362.8
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
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H2O FLW TO CHAR CLR	F250	0.0	0.5	26.2	0.0	0.0	0.0	26.7
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FILTRATE TO FA-411	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATE (LB-HR)		4578.6	1479.1	14027.7	57.0	48.6	635.4	20627.4
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EFFLUENT FLOW RATE (LB-HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFPPPH	2054.2	42.6	100.5	20.6	10.3	635.4	2877.6
WASTE WATER FLOW	F255	0.0	798.1	6362.4	0.0	0.0	0.0	7160.5
STM FLW FR CHAR CLR	F154	0.0	324.4	2595.5	0.0	0.0	0.0	2920.0
H2O FR CHR SLURRY TK	210ST	0.0	302.4	2419.6	0.0	0.0	0.0	2722.0
RW GS SCRER SF	F209	2564.0	404.7	3763.1	42.9	50.1	0.0	2679.1
TAR FLOW THRL D CLR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB-HR)		4538.2	1870.2	17277.1	64.5	60.4	635.4	24555.2
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% CLOSURE (OUT/IN) 100		100.4	126.4	123.2	112.2	124.4	100.0	117.9
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MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T		STEADY STATE NO. 2					
FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH
		TOTAL					
MF COAL FEED RATE		3732 0	246 8	871 6	57 0	48 6	635 4
COAL MOISTURE CONTENT		0 0	45 4	263 2	0 0	0 0	0 0
COAL FEED RATE		3732 0	292 2	1234 8	57 0	48 6	635 4
STEAM FLOW							
FLDZNG STM TO PRTR	F284	0 0	0 0	0 0	0 0	0 0	0 0
GSFR STM FEED RATE	F204	0 0	643 8	5150 5	0 0	0 0	5794 4
CHR CLR STM FEED	F205	0 0	343 7	2749 4	0 0	0 0	3093 0
HP STM TO CHR CLR	F253	0 0	7 3	58 3	0 0	0 0	65 6
GASF STEAM PURGES	F278	0 0	4 7	37 3	0 0	0 0	42 8
CC STEAM PURGES	F279	0 0	4 7	37 3	0 0	0 0	42 8
STM TRANSPORT FLOW	F1	0 0	0 0	0 0	0 0	0 0	0 0
CHAR TRANSPORT STEAM	F239	0 0	0 0	0 0	0 0	0 0	0 0
OXYGEN FLOW							
OXYGEN TO PRTR	F285	0 0	0 0	0 0	0 0	0 0	0 0
GSFR O2 FEED RATE	F203	0 0	0 0	909 0	0 0	0 0	909 0
TRANSPORT LINE O2	F289	0 0	0 0	0 0	0 0	0 0	0 0
CARBON DIOXIDE FLOW							
CO2 TRANSPORT FLOW	F6	306 6	0 0	617 5	0 0	0 0	1124 1
CO2 FLOW TO FE-105	F7	560 4	0 0	1494 5	0 0	0 0	2854 9
PRETREATER CO2 FLOW	F283	0 0	0 0	0 0	0 0	0 0	0 0
CO2 INST PURGE FLOW	F274	158 1	0 0	421 6	0 0	0 0	579 7
SEAL WATER AND BFW PURGES		0 0	166 7	1333 3	0 0	0 0	1500 0
H2O FLW TO CHR CLR	F130	0 0	0 4	2 8	0 0	0 0	3 2
FILTRATE TO FA-401	F401	0 0	0 0	0 0	0 0	0 0	0 0
TOTAL FEED FLOW RATES (LB/HR)		4757 1	1462 3	14146 4	57 0	48 6	635 4
EFFLUENT FLOW RATES (LB/HR)							
CARRY OVER	CARRY	0 0	0 0	0 0	0 0	0 0	0 0
CHAR REMOVAL RATE	CHARPH	2014 1	42 6	130 5	20 6	10 2	635 4
WASTE WATER FLOW	F235	0 0	881 1	7046 3	0 0	0 0	7929 6
STM FLW FR CHR CLR	F254	0 0	250 4	1002 0	0 0	0 0	1253 4
H2O FR CHM SLURRY TK	ZMCST	0 0	302 4	2419 6	0 0	0 0	3722 0
RM GS SCRBR EF	F209	2335 5	166 1	5209 5	0 0	18 1	7956 4
TAR FLOW THRL DNDZR	F221	0 0	0 0	0 0	0 0	0 0	0 0
TOTAL EFFLUENT FLOW RATE (LB/HR)		4369 6	1842 6	16311 1	20 6	28 4	635 4
% CLOSURE (OUT/IN)(100)		91 9	125 9	118 8	35 3	58 5	100 0

MATERIAL BALANCES ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

3

FEED FLOW RATES (LB/HR)

		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3847.8	281.6	711.8	46.5	39.7	518.9	4866.3
COAL MOISTURE CONTENT		0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE		3847.8	238.6	1808.4	46.5	39.7	518.9	4900.0

STEAM FLOW

FLD2NG STM TO PTRR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	622.8	5862.4	0.0	0.0	0.0	5695.2
CHR CLR STM FEED	F205	0.0	324.2	2593.6	0.0	0.0	0.0	2917.8
HP STM TO CHAR CLR	F233	0.0	21.6	172.7	0.0	0.0	0.0	194.3
GSF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO PTRR	F285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F283	0.0	0.0	314.6	0.0	0.0	0.0	314.6
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	323.3	0.0	888.8	0.0	0.0	0.0	1222.1
CO2 FLOW TO FE-105	F7	512.8	0.0	1378.3	0.0	0.0	0.0	1884.1
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
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H2O FLW TO CHAR CLR

	F220	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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FILTRATE TO FA-401

	F483	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB/HR)

		4852.8	1393.2	12848.4	46.5	39.7	518.9	19891.8
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CRPPH	1327.4	35.5	156.9	9.3	3.3	518.9	2041.4
WASTE WATER FLOW	F255	0.0	1267.2	10157.3	0.0	0.0	0.0	11405.2
STM FLW FR CHAR CLR	F254	0.0	228.8	1830.1	0.0	0.0	0.0	2059.1
H2O FR CHR SLURRY TK	ZWCST	0.0	202.4	2413.6	0.0	0.0	0.0	2722.0
RW GS SCREP EF	F289	2312.6	428.0	5295.6	27.7	0.1	0.0	3064.2
TAR FLOW THRU Q102R	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB/HR)

		3640.0	2252.0	19840.5	37.0	3.4	518.9	26291.9
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% CLOSURE (OUT/IN)(100)

		89.8	161.6	143.4	79.4	8.6	100.0	132.2
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MATERIAL BALANCES
ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

4

FEED FLOW RATES (LB/HR)

	CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE	3847.8	281.6	711.8	46.5	39.7	518.9	4566.3
COAL MOISTURE CONTENT	0.0	27.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE	3847.8	238.6	1808.4	46.5	39.7	518.9	4900.0

STEAM FLOW

FLOZNG STM TO PRTP	F284	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F284	0.0	634.5	5875.6	0.0	0.0	5710.1
CHR CLR STM FEED	F285	0.0	323.4	2667.4	0.0	0.0	3000.8
HP STM TO CHAR CLR	F253	0.0	19.9	159.0	0.0	0.0	178.8
QASF STEAM PURGES	F278	0.0	4.7	27.3	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	27.3	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO AFTR	F285	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F283	0.0	0.0	676.5	0.0	0.0	876.5
TRANSPORT LINE O2	F239	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	338.4	0.0	881.0	0.0	0.0	1219.4
CO2 FLOW TO FE-105	F7	381.6	0.0	1017.5	0.0	0.0	1399.0
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1233.3	0.0	0.0	1500.0
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H2O FLW TO CHAR CLR	F258	0.0	46.8	198.7	0.0	0.0	423.1
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FILTRATE TO FA-4011	F403	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB/HR)		3917.8	1451.2	12905.4	46.5	39.7	518.9	13879.6
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRAPH	1632.4	34.5	92.1	13.3	2.9	518.9	2314.1
WASTE WATER FLOW	F255	0.0	1885.5	2842.7	0.0	0.0	0.0	9049.1
STM FLW FR CHAR CLR	F254	0.0	278.2	2785.5	0.0	0.0	0.0	3043.7
H2O FR CHR SLURRY TK	ZWCST	0.0	382.4	2419.6	0.0	0.0	0.0	2722.0
RW GS SCRBR EF	F289	2744.3	392.0	6154.1	0.1	0.1	0.0	9290.7
TAR FLOW THRL 0'02R	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB/HR)		4396.7	2872.6	19415.0	13.4	3.0	518.9	26419.7
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% CLOSURE (OUT/IN)*100		112.2	142.8	139.6	28.8	7.5	100.0	132.9
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MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

5

FEED FLOW RATES (LB/HR)

	CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE	3847.8	281.6	711.8	46.5	39.7	518.9	4566.3
COAL MOISTURE CONTENT	0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE	3847.8	238.6	1008.4	46.5	39.7	518.9	4900.0

STEAM FLOW

FLDZNG STM TO PRTR	F284	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F284	0.0	621.5	5851.7	0.0	0.0	5683.2
CHR CLR STM FEED	F285	0.0	238.8	2640.4	0.0	0.0	2970.4
HP STM TO CHR CLR	F253	0.0	19.8	158.1	0.0	0.0	177.9
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO PRTR	F285	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F283	0.0	0.0	895.3	0.0	0.0	895.3
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	338.9	0.0	882.5	0.0	0.0	1213.4
CO2 FLOW TO FE-185	F7	245.2	0.0	653.9	0.0	0.0	899.2
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	1500.0
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H2O FLW TO CHR CLR

	F226	0.0	0.0	0.0	0.0	0.0	0.0
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FILTRATE TO FA-401

	F401	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB/HR)

	1782.1	1535.9	13128.0	46.5	39.7	518.9	16903.1
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CHRRPH	1535.2	27.2	96.8	11.1	1.8	2191.0
WASTE WATER FLOW	F288	0.0	684.4	5475.3	0.0	0.0	6159.7
STM FLW FR CHR CLR	F254	0.0	109.8	871.7	0.0	0.0	980.6
H2O FR CHR SLURRY TK	ZWCST	0.0	182.4	2419.6	0.0	0.0	2722.0
RN GS SCRBR EF	F289	2511.5	433.6	5686.9	9.9	44.8	8728.2
TAR FLOW THPML OXDZR	F221	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB/HR)

	4846.6	1556.6	14544.3	21.0	46.6	518.9	20781.6
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% CLOSURE (OUT/IN)(100)

	107.0	111.5	110.9	45.0	117.3	100.0	109.9
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MATERIAL BALANCES
ELEMENTAL AND OVERALL

RUN 1-T		STEADY STATE NO. 6						
FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3047.8	201.6	711.8	46.5	29.7	518.9	4566.3
COAL MOISTURE CONTENT		0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE		3047.8	238.6	1008.4	46.5	39.7	518.9	4900.0
STEAM FLOW								
FLOZNG STM TO PTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	523.3	4986.6	0.0	0.0	0.0	5609.9
CHR CLR STM FEED	F205	0.0	317.8	2542.0	0.0	0.0	0.0	2859.8
HP STM TO CHAR CLR	F253	0.0	17.8	142.4	0.0	0.0	0.0	160.2
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OXYGEN FLOW								
OXYGEN TO FATE	F285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F283	0.0	0.0	869.8	0.0	0.0	0.0	869.8
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE FLOW								
CO2 TRANSPORT FLOW	F6	331.8	0.0	884.7	0.0	0.0	0.0	1216.5
CO2 FLOW TO FE-105	F7	462.5	0.0	1233.3	0.0	0.0	0.0	1695.8
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7
SEAL WATER AND BFW PURGES		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
H2O FLW TO CHAR CLR	F220	0.0	4.3	33.1	0.0	0.0	0.0	42.9
FILTRATE TO FH-401	F402	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL FEED FLOW RATES (LB/HR)		4000.2	1378.2	13525.0	46.5	39.7	518.9	19813.6
EFFLUENT FLOW RATES (LB/HR)								
CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRPPH	848.7	14.6	63.9	6.5	2.3	518.9	1555.8
WASTE WATER FLOW	F255	0.0	445.8	2566.6	0.0	0.0	0.0	4012.5
STM FLW FF CHAR CLR	F254	0.0	257.8	2062.7	0.0	0.0	0.0	2320.5
H2O FR CHA SLURRY TK	ZHCST	0.0	502.4	2419.6	0.0	0.0	0.0	2722.0
RW GS SCRBR EF	F289	2626.2	516.9	5978.6	11.6	39.6	0.0	9215.1
TAR FLOW THRMAL CRDZR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EFFLUENT FLOW RATE (LB/HR)		3575.0	1537.6	14091.2	18.1	42.9	518.9	19823.9
% CLOSURE (OUT IN) (100)		89.4	111.6	104.1	39.0	108.1	100.0	101.6

MATERIAL BALANCES ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

7

FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3006 1	192 2	708 4	46 5	39 7	573 3	4566 3
COAL MOISTURE CONTENT		0 0	27 1	296 6	0 0	0 0	0 0	333 7
COAL FEED RATE		3006 1	229 3	1005 0	46 5	39 7	573 3	4900 0
STEAM FLOW								
FLOZING STM TO PPTR	F284	0 0	0 0	0 0	0 0	0 0	0 0	0 0
GSFR STM FEED RATE	F204	0 0	621 2	4969 8	0 0	0 0	0 0	5591 0
CHR CLR STM FEED	F205	0 0	320 7	2565 3	0 0	0 0	0 0	2886 0
HP STM TO CHAR CLR	F253	0 0	18 1	144 8	0 0	0 0	0 0	162 9
GASF STEAM PURGES	F278	0 0	4 7	37 3	0 0	0 0	0 0	42 0
CC STEAM PURGES	F279	0 0	4 7	37 3	0 0	0 0	0 0	42 0
STM TRANSPORT FLOW	F1	0 0	0 0	0 0	0 0	0 0	0 0	0 0
CHAR TRANSPORT STEAM	F229	0 0	0 0	0 0	0 0	0 0	0 0	0 0
OXYGEN FLOW								
OXYGEN TO PPTR	F205	0 0	0 0	0 0	0 0	0 0	0 0	0 0
GSFR O2 FEED RATE	F203	0 0	0 0	919 1	0 0	0 0	0 0	919 1
TRANSPORT LINE O2	F209	0 0	0 0	0 0	0 0	0 0	0 0	0 0
CARBON DIOXIDE FLOW								
CO2 TRANSPORT FLOW	F6	332 0	0 0	885 4	0 0	0 0	0 0	1217 4
CO2 FLOW TO FE-105	F7	790 5	0 0	2188 0	0 0	0 0	0 0	2898 5
PRETREATER CO2 FLOW	F283	0 0	0 0	0 0	0 0	0 0	0 0	0 0
CO2 INST PURGE FLOW	F274	158 1	0 0	421 6	0 0	0 0	0 0	579 7
SEAL WATER AND BFW PURGES		0 0	166 7	1333 3	0 0	0 0	0 0	1500 0
H2O FLW TO CHAR CLR		0 0	0 0	0 0	0 0	0 0	0 0	0 0
FILTRATE TO FA-403		0 0	0 0	0 0	0 0	0 0	0 0	0 0
TOTAL FEED FLOW RATES (LB/HR)		4206 6	1368 3	1442 0	46 5	39 7	573 3	20718 6
EFFLUENT FLOW RATES (LB/HR)								
CARRY OVER	CARRY	0 0	0 0	0 0	0 0	0 0	0 0	0 0
CHAR REMOVAL RATE	CFRAPH	1162 6	12 9	93 3	6 4	1 9	573 3	1857 7
WASTE WATER FLOW	F255	0 0	894 4	7155 6	0 0	0 0	0 0	8050 0
STM FLW FR CHAR CLR	F234	0 0	244 2	1952 8	0 0	0 0	0 0	2198 0
H2O FR CHR SLURRY TK	ZWCST	0 0	202 4	2419 6	0 0	0 0	0 0	2722 0
RW QS SCRBR EF	F209	1971 5	517 6	6041 3	0 0	16 1	0 0	6564 4
TAR FLOW THRL OXDR	F221	0 0	0 0	0 0	0 0	0 0	0 0	0 0
TOTAL EFFLUENT FLOW RATE (LB/HR)		3135 4	1977 6	17665 5	7 2	18 0	573 3	22392 2
% CLOSURE (OUT/(IN)<100)		73 1	244 8	122 4	15 5	45 4	100 0	112 8

MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

8

FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3047.8	201.6	711.8	46.5	39.7	518.9	4566.3
COAL MOISTURE CONTENT		0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE		3047.8	238.6	1008.4	46.5	39.7	518.9	4900.0
STEAM FLOW								
FLOZNG STM TO PTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	598.5	4798.2	0.0	0.0	0.0	5366.3
CHR CLR STM FEED	F205	0.0	313.0	2504.1	0.0	0.0	0.0	2817.1
HP STM TO CHAR CLR	F253	0.0	14.6	116.6	0.0	0.0	0.0	131.2
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OXYGEN FLOW								
OXYGEN TO PTR	F265	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	937.6	0.0	0.0	0.0	937.6
TRANSPORT LINE O2	F269	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE FLOW								
CO2 TRANSPORT FLOW	F6	377.2	0.0	1006.2	0.0	0.0	0.0	1383.5
CO2 FLOW TO FE-105	F7	494.7	0.0	1319.3	0.0	0.0	0.0	1814.1
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7
SEAL WATER AND BFW PURGES		0.0	166.7	1333.2	0.0	0.0	0.0	1500.0
H2O FLW TO CHAR CLR	F230	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FILTRATE TO FA-401	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL FEED FLOW RATES (LB/HR)		4078.8	1340.7	13510.1	46.5	39.7	518.9	13523.3
EFFLUENT FLOW RATES (LB/HR)								
CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRPPH	1290.1	20.7	84.3	0.5	2.7	518.9	1925.2
WASTE WATER FLOW	F255	0.0	754.4	6035.6	0.0	0.0	0.0	6790.0
STM FLW FR CHAR CLR	F254	0.0	0.0	0.0	0.0	0.0	0.0	0.0
H2O FR CHR SLURRY TK	ZUCST	0.0	302.4	2419.6	0.0	0.0	0.0	2722.0
AN GS SCRBR EF	F209	1734.6	433.1	5261.5	16.0	12.7	0.0	7472.3
TAR FLOW THRLM QVDR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EFFLUENT FLOW RATE (LB/HR)		3024.8	1510.7	13801.5	25.3	15.4	518.9	15910.1
% CLOSURE (OUT/IN)(100)		74.2	112.7	102.2	54.3	38.3	100.0	96.8

MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1--T

STEADY STATE NO.

9

FEED FLOW RATES (LB/HR)

CARBON HYDROGEN OXYGEN NITROGEN SULFUR ASH TOTAL

HF COAL FEED RATE	3047.8	201.6	711.8	46.5	39.7	518.9	4566.3
COAL MOISTURE CONTENT	0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE	3047.8	238.6	1008.4	46.5	39.7	518.9	4900.0

STEAM FLOW

FLD2NG STM TO PTRR	F284	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	613.8	4918.6	0.0	0.0	5524.4
CHR CLR STM FEED	F285	0.0	222.7	2581.3	0.0	0.0	2903.9
HP STM TO CHAR CLR	F253	0.0	17.7	141.3	0.0	0.0	158.9
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO PTRR	F185	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	938.9	0.0	0.0	938.9
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	396.7	0.0	1031.2	0.0	0.0	1417.9
CO2 FLOW TO FE-105	F7	310.2	0.0	827.3	0.0	0.0	1137.5
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	1500.0
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H2O FLOW TO CHAR CLR

	F230	0.0	0.0	0.0	0.0	0.0	0.0
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FILTRATE TO FE-401

	F403	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB/HR)

	3902.8	1368.8	13268.5	46.5	39.7	518.9	19145.1
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CRAPP4	1423.6	19.6	64.4	0.9	1.9	2052.5
WASTE WATER FLOW	F255	0.0	488.9	1311.4	0.0	0.0	4400.2
STM FLOW FR CHAR CLR	F254	0.0	34.8	758.5	0.0	0.0	653.4
H2O FR CHR ELUFERY TL	WOCST	0.0	102.4	2419.6	0.0	0.0	2722.0
RW GS SCRER EF	F209	2258.4	557.5	6782.7	0.1	0.1	9599.8
TAR FLOW THPML D.OZER	F221	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB/HR)

	3687.0	1463.5	13957.6	9.1	2.0	518.9	19638.1
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% CLOSURE /OUT (IN)(100)

	94.5	106.9	105.2	19.4	4.9	100.0	102.6
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MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

10

FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3047.8	201.6	711.8	46.5	39.7	518.9	4566.3
COAL MOISTURE CONTENT		0.0	37.1	236.6	0.0	0.0	0.0	333.7
COAL FEED RATE		2047.8	238.6	1008.4	46.5	39.7	518.9	4900.0
STEAM FLOW								
FLDZNG STM TO PRTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	633.5	5067.6	0.0	0.0	0.0	5701.1
CHR CLR STM FEED	F205	0.0	318.1	2544.6	0.0	0.0	0.0	2862.7
HP STM TO CHAR CLR	F253	0.0	17.2	137.8	0.0	0.0	0.0	155.0
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OXYGEN FLOW								
OXYGEN TO PRTR	F285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	963.6	0.0	0.0	0.0	963.6
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE FLOW								
CO2 TRANSPORT FLOW	F6	385.1	0.0	1826.9	0.0	0.0	0.0	1412.0
CO2 FLOW TO FE-105	F7	377.8	0.0	1807.4	0.0	0.0	0.0	1385.2
PRETREATER CO2 FLOW	F282	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7
SEAL WATER AND BFW PURGES		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
H2O FLW TO CHAR CLR	F238	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FILTRATE TO FA-401	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL FEED FLOW RATES (LB/HR)		3969.8	1383.4	11096.0	46.5	39.7	518.9	19343.3
EFFLUENT FLOW RATES (LB/HR)								
CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRPPH	1382.9	13.2	77.7	8.3	2.1	518.9	2009.2
WASTE WATER FLOW	F255	0.0	731.2	5849.7	0.0	0.0	0.0	6580.9
STM FLW FR CHAR CLR	F254	0.0	58.1	400.7	0.0	0.0	0.0	458.8
H2O FR CHR SLURRY TH	ZWCST	0.0	202.4	2419.6	0.0	0.0	0.0	2722.0
RN GS SCRBR SF	F209	2155.0	582.6	6580.4	515.3	0.1	0.0	9753.5
TAR FLOW THFML 0 DCR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EFFLUENT FLOW RATE (LB/HR)		3538.9	1604.6	15128.1	522.6	2.2	518.9	21516.3
% CLOSURE (OUT. IN/100)		89.2	116.0	112.8	1124.8	5.5	100.0	110.1

MATERIAL BALANCES
ELEMENTAL AND OVERALL

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STEADY STATE NO. 1.1

FEED FLOW RATES (LB/HR)		CARBON	HYDROGEN	O/YGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		2047.8	201.4	711.8	46.5	19.7	518.9	4566.3
COAL MOISTURE CONTENT		0.0	37.1	296.6	0.0	0.0	0.0	333.7
COAL FEED RATE		2047.8	238.6	1008.4	46.5	19.7	518.9	4900.0
STEAM FLOW								
FLDZNG STM TO PTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F284	0.0	622.2	4982.4	0.0	0.0	0.0	5605.2
CHR CLR STM FEED	F285	0.0	339.4	2715.4	0.0	0.0	0.0	3054.8
HP STM TO CHR CLR	F253	0.0	17.7	141.2	0.0	0.0	0.0	158.9
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OXYGEN FLOW								
OXYGEN TO PTR	F285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F283	0.0	0.0	974.1	0.0	0.0	0.0	974.1
TRANSPORT LINE O2	F269	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CARBON DIOXIDE FLOW								
CO2 TRANSPORT FLOW	F6	377.9	0.0	1807.8	0.0	0.0	0.0	1385.8
CO2 FLOW TO FE-185	F7	353.4	0.0	942.4	0.0	0.0	0.0	1295.9
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7
SEAL WATER AND BFW PURGES		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
H2O FLW TO CHR CLR	F230	0.0	6.7	53.5	0.0	0.0	0.0	60.1
FILTATE TO FA-401	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL FEED FLOW RATES (LB/HR)		2937.2	1401.2	13654.9	46.5	19.7	518.9	19596.5
EFFLUENT FLOW RATES (LB/HR)								
CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CRFPM	1262.1	20.6	69.1	7.0	2.9	518.9	1880.6
WASTE WATER FLOW	F255	0.0	501.8	4014.1	0.0	0.0	0.0	4515.8
STM FLW FR CHR CLR	F254	0.0	209.9	1679.2	0.0	0.0	0.0	1889.1
H2O FR CHR SLURRY TK	2WCST	0.0	302.4	2419.6	0.0	0.0	0.0	2722.0
RW GS SCRBR EF	F209	2327.8	590.3	7166.4	0.1	25.5	0.0	10137.3
TAF FLOW THRMAL OXDR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL EFFLUENT FLOW RATE (LB/HR)		3589.9	1625.0	15348.6	7.2	28.5	518.9	21145.2
% CLOSURE (OUT/IN)(100)		91.2	116.0	112.4	15.4	71.7	100.0	107.9

MATERIAL BALANCES

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STEADY STATE NO.

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FEED FLOW RATES (LB/HR)

	CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
HF COAL FEED RATE	3079 8	197 0	725 7	47 7	40 7	587 3	4678 1
COAL MOISTURE CONTENT	0 0	38 0	303 9	0 0	0 0	0 0	341 9
COAL FEED RATE	3079 8	234 9	1029 6	47 7	40 7	587 3	5020 0

STEAM FLOW

FLDZNG STM TO PTRR	F204	0 0	0 0	0 0	0 0	0 0	0 0
GSFR STM FEED RATE	F204	0 0	615 7	4925 3	0 0	0 0	5541 0
CHR CLR STM FEED	F205	0 0	298 6	2286 4	0 0	0 0	2687 0
HP STM TO CHR CLR	F253	0 0	12 1	97 0	0 0	0 0	109 1
GASF STEAM PURGES	F270	0 0	4 7	37 3	0 0	0 0	42 0
CC STEAM PURGES	F279	0 0	4 7	37 3	0 0	0 0	42 0
STM TRANSPORT FLOW	F1	0 0	0 0	0 0	0 0	0 0	0 0
CHAR TRANSPORT STEAM	F229	0 0	0 0	0 0	0 0	0 0	0 0

OXYGEN FLOW

OXYGEN TO PTRR	F205	0 0	0 0	0 0	0 0	0 0	0 0
GSFR O2 FEED RATE	F203	0 0	0 0	1023 7	0 0	0 0	1023 7
TRANSPORT LINE O2	F209	0 0	0 0	0 0	0 0	0 0	0 0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	347 8	0 0	927 5	0 0	0 0	1275 4
CO2 FLOW TO FE-105	F7	279 2	0 0	744 5	0 0	0 0	1023 6
PRETREATER CO2 FLOW	F203	0 0	0 0	0 0	0 0	0 0	0 0
CO2 INST PURGE FLOW	F274	150 1	0 0	421 6	0 0	0 0	579 7

SEAL WATER AND BFW PURGES

		0 0	166 7	1333 3	0 0	0 0	1500 0
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H2O FLW TO CHR CLR

	F230	0 0	0 0	0 0	0 0	0 0	0 0
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FILTRATE TO FA-101

	F402	0 0	0 0	0 0	0 0	0 0	0 0
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TOTAL FEED FLOW RATES (LB/HR)

	3864 9	1337 2	12965 2	47 7	40 7	587 3	18843 4
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0 0	0 0	0 0	0 0	0 0	0 0
CHAR REMOVAL RATE	CRPPH	1429 9	20 4	102 4	0 6	4 1	2152 7
WASTE WATER FLOW	F255	0 0	888 9	7111 1	0 0	0 0	8000 0
STM FLW FR CHR CLR	F254	0 0	263 2	2105 0	0 0	0 0	2369 0
H2O FR CHR SLURRY TK	ZWCST	0 0	302 4	2419 6	0 0	0 0	2722 0
RH GS SCRBR EF	F209	2218 0	585 2	6930 0	0 1	0 1	9742 3
TAP FLOW THRLM QNDZR	F221	0 0	0 0	0 0	0 0	0 0	0 0

TOTAL EFFLUENT FLOW RATE (LB/HR)

	3648 7	2060 1	18676 9	0 8	4 2	587 3	24906 0
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% CLOSURE (OUT/IN)(100)

	94 4	154 1	144 0	10 3	10 2	100 0	132 6
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MATERIAL BALANCES ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

13

FEED FLOW RATES (LB./HR)

		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3079.8	197.8	725.7	47.7	40.7	587.3	4678.1
COAL MOISTURE CONTENT		0.0	38.0	203.9	0.0	0.0	0.0	241.9
COAL FEED RATE		3079.8	234.9	1029.6	47.7	40.7	587.3	5020.0

STEAM FLOW

FLODNG STM TO PTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F284	0.0	629.8	5038.2	0.0	0.0	0.0	5668.0
CHR CLP STM FEED	F205	0.0	138.2	2705.8	0.0	0.0	0.0	3044.0
HP STM TO CHAR CLR	F253	0.0	17.8	142.5	0.0	0.0	0.0	160.3
GASF STEAM PURGES	F278	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO PTR	F285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	1055.7	0.0	0.0	0.0	1055.7
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	379.4	0.0	1011.9	0.0	0.0	0.0	1391.3
CO2 FLOW TO FE-105	F7	415.3	0.0	1107.4	0.0	0.0	0.0	1522.6
PRETREATER CO2 FLOW	F283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	159.1	0.0	421.6	0.0	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
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H2O FLW TO CHAR CLR

	F230	0.0	11.7	93.1	0.0	0.0	0.0	105.0
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FILTRATE TO FA-401

	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB./HR)

		4032.6	1408.4	14012.9	47.7	40.7	587.3	20150.6
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EFFLUENT FLOW RATES (LB./HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRPPH	1378.4	9.8	36.5	8.1	7.6	587.3	2015.8
WASTE WATER FLOW	F255	0.0	716.7	5733.3	0.0	0.0	0.0	6450.0
STM FLW FR CHAR CLR	F254	0.0	270.6	2164.4	0.0	0.0	0.0	2435.0
H2O FR CHR SLURRY T	WCST	0.0	302.4	2419.6	0.0	0.0	0.0	2722.0
RM GS SCASP EF	F209	2141.2	535.0	6298.7	59.5	9.7	0.0	9054.3
TAR FLOW THPML N'DZF	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB./HR)

		3519.6	1814.4	16654.5	67.7	13.3	587.3	22687.2
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% CLOSURE (OUT/IN)(100)

		87.1	129.2	118.3	141.9	32.7	100.0	112.7
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MATERIAL BALANCES

ELEMENTAL AND OVERALL

RUN 1-T

STEADY STATE NO.

14

FEED FLOW RATES (LB/HR)

		CARBON	HYDROGEN	OXYGEN	NITROGEN	SULFUR	ASH	TOTAL
MF COAL FEED RATE		3950.9	252.7	931.0	61.2	52.2	753.5	6001.4
COAL MOISTURE CONTENT		0.0	48.7	389.0	0.0	0.0	0.0	438.6
COAL FEED RATE		3950.9	301.4	1320.0	61.2	52.2	753.5	6440.0

STEAM FLOW

FLOZNG STM TO PRTR	F284	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR STM FEED RATE	F204	0.0	561.7	4493.3	0.0	0.0	0.0	5055.0
CHR CLR STM FEED	F205	0.0	333.0	2664.0	0.0	0.0	0.0	2997.0
MP STM TO CHR CLR	F253	0.0	19.9	159.0	0.0	0.0	0.0	178.9
GRSF STEAM PURGES	F270	0.0	4.7	37.3	0.0	0.0	0.0	42.0
CC STEAM PURGES	F279	0.0	4.7	37.3	0.0	0.0	0.0	42.0
STM TRANSPORT FLOW	F1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR TRANSPORT STEAM	F229	0.0	0.0	0.0	0.0	0.0	0.0	0.0

OXYGEN FLOW

OXYGEN TO PRTR	F205	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GSFR O2 FEED RATE	F203	0.0	0.0	951.1	0.0	0.0	0.0	951.1
TRANSPORT LINE O2	F289	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CARBON DIOXIDE FLOW

CO2 TRANSPORT FLOW	F6	411.1	0.0	1696.2	0.0	0.0	0.0	1507.2
CO2 FLOW TO FE-105	F7	464.5	0.0	1238.0	0.0	0.0	0.0	1703.3
PRETREATER CO2 FLOW	F203	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CO2 INST PURGE FLOW	F274	158.1	0.0	421.6	0.0	0.0	0.0	579.7

SEAL WATER AND BFW PURGES

		0.0	166.7	1333.3	0.0	0.0	0.0	1500.0
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H2O FLOW TO CHR CLR

	F230	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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FILTRATE TO FA-401

	F403	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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TOTAL FEED FLOW RATES (LB/HR)

		4984.6	1391.9	13752.9	61.2	52.2	753.5	20996.3
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EFFLUENT FLOW RATES (LB/HR)

CARRY OVER	CARRY	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CHAR REMOVAL RATE	CFRPPH	1760.3	12.5	49.4	10.4	4.6	753.5	2590.8
WASTE WATER FLOW	F255	0.0	583.3	4666.7	0.0	0.0	0.0	5250.0
STM FLW FR CHR CLR	F254	0.0	283.9	2271.1	0.0	0.0	0.0	2555.0
H2O FR CHR SLURRY TK	ZHCST	0.0	302.4	2419.6	0.0	0.0	0.0	2722.0
RM GS SCRBR EF	F209	2323.0	466.4	6014.9	117.4	0.1	0.0	8922.6
TAR FLOW THRM OXDR	F221	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TOTAL EFFLUENT FLOW RATE (LB/HR)

		4092.1	1648.6	15421.7	127.8	4.7	753.5	22048.5
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% CLOSURE (OUT/IN)(100)

		82.1	118.4	112.1	208.9	9.0	100.0	105.0
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SYNTHANE PILOT PLANT
RUN REPORT NO. 1

SECTION IX

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