1 of 1

**ENGINEERING DEVELOPMENT OF
SELECTIVE AGGLOMERATION**

SITE CLOSEOUT REPORT

APRIL 1993

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**PREPARED BY
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WILSONVILLE, ALABAMA**

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INTRODUCTION

Introduction

This report discusses the closeout activities at the Clean Coal Research Center (CCRC) in Wilsonville, Alabama, for the project entitled "Engineering Development of Selective Agglomeration." The project was funded primarily by the U.S. Department of Energy (DOE Contract No. DE-AC22-89PC88879) and conducted by a multiorganizational team headed by Southern Company Services, Inc. (SCS), who provided management, detailed design, and cost sharing. The Alberta Research Council (ARC) provided process development and co-funding. Southern Electric International (SEI) was responsible for POC construction and operations. Praxis Engineers, Inc. (Praxis), provided process engineering. The Electric Power Research Institute (EPRI) provided significant co-funding as well as expertise in coal cleaning and coal markets.

There are several companion reports to this Site Closeout report. A Final Technical report provides a performance evaluation of the advanced coal cleaning technology and presents a preliminary engineering design of a 200 ton-per-hour selective agglomeration process. A standalone Executive Summary is also available. In addition, the performance of the selective agglomeration technology in removing trace elements from coal prior to combustion is documented in a Trace Element Removal Study report.

The project effort at Wilsonville was conducted in two phases, with component development testing in Phase I, and Proof-of-Concept (POC) operation in Phase II. Site preparation began on December 1, 1989, and construction of the Component Development Test Facility (CDTF) began in May, 1990. Phase I was completed in August, 1991, after which modifications were made to the plant for Phase II POC operation.

The POC facility is shown in Figure 1-1. POC operation was completed on October 2, 1992. A schedule of Phase II activities is shown in Table 1-1. This report summarizes all site restoration and permitting issues that have been completed. Disposition of property is ongoing.

Summary of POC Process

The Selective Agglomeration POC facility consisted of a coal crushing and grinding circuit, followed by an agglomeration circuit and product dewatering. (A plot plan of the facility is shown in Figure 1-2.) The coal crushing and grinding system consisted of a hammermill coal crusher, weigh-belt feeder, two ball mills (primary and secondary), and necessary hoppers, pumps, and conveyors. The mills were capable of providing coal over a range of grinds from a d_{50} of 125 to 25 microns. Slurry discharged from the ball mills was pumped to the agglomeration circuit.

The agglomeration circuit began with a high-shear mixer, where diesel was added to the slurry to begin the formation of microagglomerates. The high-shear mixer was followed by two stages of conventional flotation cells for microagglomerate recovery. The second-stage-flotation-cell product was pumped to either a rotary-drum vacuum filter or a high-G centrifuge for dewatering. The dewatered product was then conveyed to the product pad from which dump trucks were used to transfer it to the utility plant located next to the facility. Plant tailings were pumped to the water clarifier for thickening and then dewatered in plate-and-frame filter presses. These dewatered tailings were also removed to the utility via dump truck. Clarified water (thickener overflow) was recycled to the process via a head tank.

Figure 1-1. Selective Agglomeration Proof-of-Concept Facility

**Table 1-1
Phase II Schedule**

Modifications and Startup Activities	November 1991- March 18, 1992
Upper Freeport Mill Calibration and Startup	March 19, 1992 - April 28, 1992
Upper Freeport Optimization Testing	April 29, 1992 - June 2, 1992
Upper Freeport Demonstration Run	June 3, 1992 - June 8, 1992
Pittsburgh No. 8 Mill Calibration and Startup	June 11, 1992 - June 15, 1992
Pittsburgh No. 8 Optimization Testing	June 15, 1992 - July 22, 1992
Pittsburgh No. 8 Demonstration Run	July 27, 1992 - July 31, 1992
Illinois No. 5 Mill Calibration and Startup	August 4, 1992 - August 13, 1992
Illinois No. 5 Optimization Testing	August 14, 1992 - September 3, 1992
Illinois No. 5 Demonstration Run	September 8, 1992 - September 12, 1992
Pond Fines Modifications and Operation	September 14, 1992 - October 2, 1992

Dismantling

Dismantling of the plant began on October 5, 1992. A schedule of dismantling activities is shown in Figure 1-3. Initial activities were centered around the repair of equipment (a requirement for DOE-owned property), removal of smaller pieces of equipment, and disconnection of utilities (steam, instrument air, process and potable water, electrical supply, and the discharge piping to the Advanced Coal Liquefaction Research & Development Facility wastewater treatment unit). Underground piping was abandoned in place after removing pipe to a point several feet underground. Sanitary and firewater piping was left in place for use by the Power Systems Development Facility (PSDF), a Department of Energy, Morgantown Energy Technology Center (DOE/METC) (Contract No. DE-FC21-90MC25140) project to be installed at the site.

The next phase of dismantling included the removal of remaining equipment, all process piping, conduit, and electrical racks. Structural steel was then removed from the process structure, ball mill structure, and the crusher tower. The roof over the process structure was left in place for the PSDF. Conveyors and storage tanks were then removed.

Concrete was removed from all designated areas (see Section 3.1), and disposed of at Alabama Department of Environmental Management (ADEM) approved off site landfills. Some concrete and the perimeter fence were left in place for the PSDF. Some gravel and soil was removed from selected areas for aesthetic reasons due to the accumulation of coal dust during operation of the facility. New gravel was spread over these areas in preparation for transfer of the site to the PSDF. Disposition of gravel and soil is discussed in Section 3.1.

Figure 1-2. Selective Agglomeration Plot Plan

ADEM* - Alabama Department of Environmental Management

NPDES** - National Pollutant Discharge Elimination System

Figure 1-3. Dismantling and Site Closeout Schedule

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EQUIPMENT DISPOSITION

Upon completion of dismantling, all DOE-owned property was stored on site pending disposition instructions from DOE. As much property as possible was stored in a building on site, located within the plant perimeter. The building and all gates to the site are kept locked at all times for security. Any property too large for storage in the building was placed on concrete pads at the Selective Agglomeration site, also within the locked plant perimeter.

A final inventory of all DOE-purchased property was taken upon completion of the project, and submitted to DOE on December 9, 1992. The following inventories were included:

- Capital equipment valued at greater than \$5000;
- Items valued at less than \$5000;
- Sensitive equipment; and
- Surplus materials.

All documents from the project were boxed and transferred to the SCS offices in Birmingham. This included all vendor equipment maintenance and operating manuals, vendor and construction drawings, and laboratory and operating logs. Once disposition instructions are received from DOE, the equipment

and corresponding manuals and drawings will be shipped to the receiving party.

After approval from DOE, the heavy binder (asphalt) storage tank was purchased by SCS and sold for the same value to an asphalt supplier. (This eliminated the need to clean the tank, resulting in a cost savings to the project.) In addition, the supplier took several drums of asphalt that had been collected during pump calibrations during Phase I.

Small lot sales of scrap metal and valves were conducted under the direction of DOE Property Management personnel. A package for request of bids from local scrap dealers was prepared and submitted to DOE for review and approval. Once approval was received, the bid package was issued and corresponding bids received. A bid was awarded and the bidder issued a check to the Department of Energy and removed the material from the plant.

The site Radioactive Material License was canceled. The radioactive source for the nuclear density gauge was transferred to TN Technologies, Inc., for disposition. A letter acknowledging receipt of the source is attached in the Appendix.

SUMMARY OF SITE RESTORATION

Soil, Gravel, and Concrete Sampling and Disposition

During operation of the Selective Agglomeration facility, coal dust accumulated on the gravel around the coal storage pad and product pad. In addition, trace quantities of asphalt and diesel fuel were present in some areas due to the nature of the agglomeration product. As a result, gravel and soil were removed from selected areas of the plant. New gravel was spread over these areas in preparation for transfer of the site to a DOE/METC project (Power Systems Development Facility).

Three initial samples of soil and gravel at the site were taken for Toxic Characteristic Leaching Procedure (TCLP) and Total Petroleum Hydrocarbon (TPH) analyses. The TCLP results indicated the soil and gravel were non-hazardous, but one TPH result was 540 ppm. According to the Alabama Department of Environmental Management (ADEM), soil containing TPH greater than 500 ppm cannot remain on site.

In order to characterize the entire site for potential TPH contamination, the plant area was divided into grids as shown in Figure 3-1. Approximately six inches depth of gravel and soil was removed from the areas shown, and placed in 15 separate piles ranging from 5 to 20 cubic yards each. A sample was taken from each pile (December 8, 1992) and subjected to TPH analysis. The TPH data, shown in Table 3-1 below, indicated that no single pile exceeded the action limit of 500 ppm. However, it was decided to remove the gravel and soil for aesthetic reasons. Necessary forms were submitted to ADEM for approval to landfill the material in the Shelby County landfill. The landfill management was provided all the necessary ADEM documentation and analytical results before any of the soil was transported to the landfill. Approximately 200 cubic yards of soil and gravel were landfilled at the Shelby County landfill, near

Columbiana, Alabama, after obtaining written approval from ADEM. A copy of the approval notification is included in the Appendix. Replacement gravel (and soil where needed) was spread out over the site. Sludge was removed from the collection basin (Coal Pad Runoff Sump) and dewatered. Sludge analysis indicated no significant quantity of metals, so the soil was used as fill on site.

The process pad, ball-mill pad, initial-product pad, fuel-storage dike, crusher pad, and coal-storage pad (see Figure 1-2) were left in place for use by the PSDF. The reclaim hopper ramp, conveyor footings, product-pad addition, and thickener foundation were all removed. This concrete was sampled and sent to an outside laboratory for TPH analysis for use in determining appropriate disposition procedures. ADEM specifications allow concrete with less than 500 ppm TPH to be disposed of at local landfills, after obtaining ADEM approval. All concrete removed from the site contained less than 10 ppm TPH, and was landfilled at the Shelby County landfill, near Columbiana, Alabama.

Other Site Cleanup Activities

The fuel-oil tank was drained of all diesel, and residual oil was cleaned up with clay absorbent. The tank was then vented to remove all fuel-oil vapors. Manways and other flanges were reinstalled for long-term storage. The binder oil (asphalt) tank was drained of asphalt, and the asphalt returned to the supplier. The fuel-oil-containment dike and sump were cleaned, and provisions were made for gravity drainage of the rainwater from the diked area (see Section 4.2, Stormwater Runoff).

Figure 3-1. Soil/Gravel Sampling Grid

Table 3-1
Selective Agglomeration Site Soil/Gravel Analytical
Results

Grid No.	TPH, ppm
1	<10
2	48
3	<10
4	110
5	60
6	<10
7	18
8	<10
9	<10
10	<10
11	<10
12	<10
13	<10
14	94
15	<10

All laboratory coal samples not stored at SCS were emptied into drums for disposition. These drums, as well as all remaining drums of feed coal and product, were fuel blended with the existing coal on the coal pile at the adjacent Alabama Power Company E. C. Gaston power plant, as was done throughout the project with excess coal and product. The fuel blending program was approved by Alabama Power Company. All frother was consumed in the process, and residual flocculant was used at the wastewater treatment facility at the site.

ENVIRONMENTAL COMPLIANCE

Introduction

The purpose of the environmental program at the CCRC was to minimize environmental pollution and to abide by local, state, and federal environmental rules and regulations. The operation of a successful environmental program depended heavily on management support and education of staff and employees regarding goals and objectives. ADEM routinely inspected the facility and offered suggestions for improving the program.

Solid Waste

One miscellaneous solid waste stream was generated during the life of the project. Occasionally, product from the CDTF during Phase I of the project was spilled from the product bins onto surrounding gravel. This gravel was scooped up with shovels and placed into 55-gallon steel drums for disposal. It was then manifested and shipped to the Chemical Waste Management facility in Emelle, Alabama as non-hazardous waste. The facility is a licensed waste treatment, storage, and disposal facility. This waste was characterized with Chemical Waste Management using established procedures.

NPDES Permit Compliance

The wastewater treatment facility at the adjacent Advanced Coal Liquefaction Research & Development Facility (another DOE/PETC project at the Clean Coal Research Center in Wilsonville, Alabama) was used to treat process water from both the Liquefaction and Selective Agglomeration facilities and discharge the water within compliance limitations established by ADEM. All excess recycle water purged from the Selective Agglomeration facility was sent to

wastewater treatment as a precautionary measure due to the possible contamination of the water by diesel fuel, which was added to the coal slurry in the Selective Agglomeration process. Essentially all the diesel exited the process with the coal product, with only minute quantities entering the water. The wastewater treatment facility and the site sanitary treatment system were operated under a National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued by ADEM which is authorized by the Environmental Protection Agency (EPA) to administer the NPDES program in Alabama.

The site permit was modified in 1990 to allow for a third discharge point consisting of runoff water from the Selective Agglomeration coal storage pad. (A copy of the modified permit is included in the Appendix.) The three outfall points regulated by the NPDES permit - wastewater-treatment effluent (DSN001), sanitary-system effluent (DSN002), and the Selective Agglomeration coal-pile runoff (DSN003) discharged into an unnamed tributary of Yellow Leaf Creek.

The collection basin receives stormwater runoff from the Selective Agglomeration coal pile. The NPDES permit requires that the water be characterized for flow, pH, total suspended solids (TSS), manganese, and iron prior to discharge. Monthly reports were submitted to ADEM. A summary of the NPDES performance is shown in Table 4-1. A summary of the discharge limitations and monitoring requirements is shown in the copy of the permit modification in the Appendix. An example of the monthly discharge monitoring report and procedures for draining the basin are also included in the Appendix. A typical certificate of analysis for the effluent is also included in the Appendix. No problems were encountered with meeting the permitted discharge limitations.

Table 4-1
Selective Agglomeration NPDES Performance Summary

	Discharges	No. Gallons	pH	TSS (mg/l)	Iron (mg/l)	Manganese (mg/l)
January, 1991	0	-	-	-	-	-
February	0	-	-	-	-	-
March	3	61,000	7.0	-	-	-
April	4	100,000	7.0	3.0	1.6	0.1
May	4	100,000	7.1	5.0	2.1	0.2
June	0	-	-	-	-	-
July	0	-	-	-	-	-
August	0	-	-	-	-	-
September	3	30,000	7.2	2.0	-	-
October	0	-	-	-	-	-
November	2	82,000	7.3	0.2	0.05	0.05
December	0	-	-	-	-	-
January, 1992	3	68,000	7.6	21.3	0.5	0.05
February	2	65,000	7.5	<1.0	0.3	<0.01
March	2	63,000	7.6	0.1	0.03	0.02
April	2	63,000	7.9	7.8	1.2	0.06
May	0	-	-	-	-	-
June	3	31,000	8.1	7.3	0.2	0.04
July	0	-	-	-	-	-
August	3	89,000	7.6	4.9	0.1	0.03
September	0	-	-	-	-	-
October	0	-	-	-	-	-
November	1	86,000	7.1	26.4	0.30	0.02
December	1	77,000	7.4	10.5	0.41	0.01
January, 1993	2	106,000	7.2	11.8	0.30	0.01
February	2	52,000	7.5	14.6	0.14	0.01

The Clean Coal Research Center NPDES permit (#AL0057479) will be transferred from SEI to SCS, and the Selective Agglomeration coal pile runoff discharge point will be used for the PSDF. The PSDF will be constructed adjacent to the Selective Agglomeration site.

The existing sanitary treatment system, also covered by the site NPDES permit, will be utilized by the SCS PSDF, therefore, SCS will pick up associated maintenance and operating costs, sampling, and monitoring and reporting. Since there will be very little or no flow to the sanitary system after current site closeout activities are completed, the system will be shut down completely and cleaned out until such

time that sufficient flow is generated from PSDF activities to warrant starting it back up. (These

activities will be carried out by the liquefaction facility termination scope.) Requirements for temporary shutdown of the system will be discussed with ADEM.

It is planned to utilize the existing underground sanitary piping at the Selective Agglomeration site for the PSDF pending that piping is suitable in size and that liquefaction site remediation activities do not require removal of sanitary piping passing through the liquefaction facility.

Stormwater Runoff

The stormwater runoff from the site will continue to be collected in the collection basin and discharged as needed. In discussions with ADEM, it was indicated that SEI was still obligated under 40 CFR 122.26(b)(14) to collect and monitor stormwater runoff, since the stormwater originated from a site which had prior industrial activity. The current site NPDES permit is being transferred from SEI to SCS (target April 1993). This permit includes the Selective Agglomeration coal-pile stormwater runoff (DSN003). After the transfer, SCS will perform all monitoring and reporting activities for the permit, which will be modified for the DOE/METC PSDF project. Coal-pile stormwater monitoring is no longer the responsibility of the DOE/PETC Selective Agglomeration Project.

OSHA COMPLIANCE

Safety Program

This section summarizes the Safety Program at the Wilsonville Clean Coal Research Center, which included the Selective Agglomeration facility. The section focuses more attention to the program as it developed over the past five years. Key elements in the Safety Program were Management Support, Safety Director Leadership, Education, and Employee Participation. A full-time Safety Director was charged with the duties of implementing a program designed to safeguard the health and safety of all employees and visitors. The Safety Director answered directly to the Plant Manager. Education of employees was a key factor in a successful program. The Wilsonville program utilized the following methods for educating employees about safety concerns:

- Attendance at monthly safety meetings was a requirement for all employees.
- Safety orientation was conducted for all new employees.
- All personnel received training in how to handle hazardous waste and chemicals.
- Material Safety Data Sheet (MSDS) stations were located at key locations in the plant.
- Safety bulletin boards were maintained in the plant areas.
- Review of plant safety rules and procedures was conducted routinely.
- Red Cross certification of employees in CPR and first aid was accomplished.
- Employee respirator fit test conducted annually.
- Hazard identification program developed.

Safety meetings were conducted weekly to accommodate different shifts, with employees required to attend the meeting once a month. The meetings were a key element in carrying out the program. In these meetings, management and labor discussed immediate safety concerns, reviewed safety procedures and rules, viewed pertinent safety films and documentaries, and discussed problematic areas. The majority of educating employees about safety took place in these meetings. The following is a list of key elements in the Safety Program that were discussed on a regular basis at these meetings.

- Vessel entry procedure and permit.
- Confined space entry.
- Electrical safety and lockout procedures.
- Emergency response procedure for injured employee.
- Personal hygiene.
- Fire-drill and employee-station assignments.
- Personal-protection equipment.
- Respirators and self-contained breathing apparatus.
- Noise protection.
- Lifting techniques and procedures.
- Designated areas for smoking.
- Designated areas for eating and drinking.

- Rules for outside contractors entering facility.
- Forklift training.
- Employee Right-to-Know training.
- OSHA requirements and regulations.

A number of programs were developed and implemented to increase safety awareness. For example, a safety suggestion committee was formed that reviewed employee safety suggestions and awarded the employee with the best suggestion a monetary prize. This also proved to be an excellent source for gathering employee concerns about plant safety. Another safety awareness program divided employees into groups that were given the task of noting unsafe conditions or procedures, conducting safety meetings, etc., for which points were awarded. The group accumulating the most points at the end of the month was awarded a luncheon.

Employee Health

Employee health and safety are closely associated. The work environment establishes the groundwork for many of the health and safety-related items that make up a good health and safety program. Educating employees about health risks was an important part of the overall safety program at Wilsonville, and significant time and effort was put forth to minimize health risks, particularly due to the following exposures:

- Chemicals, including raw materials and products.
- Toxic gases, including hydrogen sulfide and methane.
- Radiation exposure from nuclear density gauges.
- Dusts including fine coal, ash, and insulation.

A set of MSDS was maintained in all site operating units, the laboratory, and the maintenance areas so information on chemicals and materials used was readily available. Employees were taught how to read the sheets in an annual workshop.

Employee health was routinely monitored by annual physical examinations and industrial-hygiene audits.

A physical examination was a prerequisite for employment and a doctor's approval was required for authorization to return to work for an employee who had been sick or injured. Industrial hygiene audits included the laboratory and outside work environment of both maintenance and operator personnel. Employee health records were available for review. No health problems were encountered during operation of the selective agglomeration facility.

Personal Protection Equipment

Use of protective clothing and proper equipment was important in minimizing exposure to chemicals. Uniforms were provided to workers as well as face shields, glasses, goggles, rainwear, and safety shoes. Clean uniforms were provided daily and plant workers were allowed to change and shower immediately should they be exposed to chemicals. Use of chemical resistant neoprene gloves was encouraged when handling solvents and acidic/basic materials. Gloves were very important in the daily schedule of laboratory work. Neoprene gloves were available for general laboratory tests and latex gloves offered protection to workers where a hands-on situation was more appropriate such as in Gas Chromatography and elemental analyzers. A chemical hygiene plan was implemented for laboratory workers in 1991. The plan covered general hygiene for laboratory workers and was devised in accordance with OSHA regulations for laboratories.

Exposure to coal dust, mists, and insulation dusts was always a potential risk to the health of employees. Dust hazards were present with coal, especially near the hammermill crusher, centrifuges, and the coal pile. Dust from insulation installation was also a hazard, but was a less common problem than with coal due to the limited quantity of insulation used. Dust masks were readily available and all personnel trained in the proper use of organic vapor/acid gas respirators with a dust/mist prefilter. An annual fit test was required. Personnel working in areas which generated dust were required to wear respirators.

Hearing protection was required in the crusher and ball mill areas due to high noise levels caused by the vibrators on the cone section of the 24- and 3-ton storage bins.

Back supports were issued to all plant personnel to help in preventing back injuries when lifting or moving objects. Training was conducted annually on proper lifting techniques and procedures.

Low-level radiation was present at the site in a coal slurry nuclear density gauge. Only certified maintenance personnel were allowed to conduct maintenance of the gauge and the sources. Personnel working in close vicinity of the sources were required to wear monitoring badges. Badges were sent out routinely for exposure checks and no problems were encountered with excessive exposure.

Plant Safety Considerations

The Selective Agglomeration facility had several methods of fire protection. An underground pipe connected the unit to the CCRC firewater distribution system. This system consisted of two diesel operated pumps of 1570 gpm capacity each, a 240,000 gallon firewater storage tank, and a network of piping and monitors. Three fire hydrants with monitors were installed at the Selective Agglomeration plant. One monitor was located just west of the crusher tower (for use with the conveyors and coal storage pad), one was located southeast of the diesel/asphalt storage area (for use with the coal storage pad and the diesel and asphalt storage tanks), and the third was located west of the product pad. A cabinet was located next to each hydrant for storage of fire hoses and nozzles.

The firewater distribution piping included an automatic sprinkler system on each of the two coal conveyors used at the feed end of the plant. Sprinkler nozzles were activated if heat tripped the sensors, opening an automatic deluge valve which supplied the nozzle distribution piping. An alarm was installed in a control room at the adjacent liquefaction facility in the event of a trip of the deluge system. This control room was manned 24 hours a day.

Fire extinguishers were located throughout the plant. Annual inspections of the extinguishers were conducted to ensure reliable operation. Emergency safety showers and eyewash stations were located in the facility.

Plant personnel were trained in the use of the all fire protection equipment. Fire drills were conducted to gain experience with use of hydrants, monitors, and

fire hoses. Also, paging phones were located throughout the Clean Coal Research Center for notification and communication of emergency situations.

Spill Prevention Control and Countermeasure (SPCC) Plan

A Spill Prevention, Control, and Counter-measure (SPCC) Plan was maintained at the Clean Coal Research Center. This Plan was provided to employees and submitted to the proper environmental agencies. Key portions of the plan that applied to the Selective Agglomeration facility are provided below.

Facility Emergency Coordinators

Facility Emergency Coordinators were thoroughly familiar with all operation and activities at the facility, and had the authority to commit the resources needed to carry out the requirements of any emergency. The Emergency Coordinators included the plant Safety Director, Environmental Coordinator, and Plant Manager.

Major Spills (Chemical or Hazardous Waste)

A "spill" was defined as an intentional or accidental discharge of a chemical (diesel fuel, caustic, etc.) to grade. The Clean Coal Research Center was equipped to contain small spills through curbing, trenches, adsorbent, and dikes. The Selective Agglomeration binder-oil-storage area (diesel fuel and asphalt storage) was surrounded by a concrete containment dike containing a sump and pump. The caustic storage tank (located at the Advanced Coal Liquefaction Research & Development Facility) was also surrounded by a concrete containment dike. These dikes were sized to handle the contents of the tanks within the dike perimeter.

All plant operators were trained to report spills to their Shift Supervisor immediately. The Shift Coordinators acted as Emergency Coordinators in the absence of the primary Coordinators listed above. In the event of a spill, the Emergency Coordinator determined the amount of the spill, the most effective initial response, and the local emergency teams who should be notified. All plant personnel understood that each spill must be contained and cleaned up immediately. If a spill was large, instructions were to channel the material to a sump, if possible. Portable sump pumps

were available to move spilled material from pools, sumps, etc. to contain the spill as soon as possible.

In the event of a major spill, Emergency Release Notification was to be given to several authorities. These included the Shelby County Emergency Management Authority's Local Emergency Planning Commission, the State Emergency Response Commission, and the National Response Center.

Fire or Explosion

In the event of a fire or explosion, employees were trained to sound the fire alarm at the nearest plant paging phone, and make an appropriate announcement as to the location and type of emergency. (Paging phones were located throughout the plant.) Plant personnel assigned as fire crew members would then report to designated stations (fire hydrants, plant gates, etc.).

Specific instructions for an emergency would be provided by the Safety Director (or Shift Supervisor). Unit operators were responsible for implementing emergency procedures within the boundary of the affected area. Other plant personnel without specific assignments were to stay clear of the emergency area and report to a specific area for roll call (usually the main plant entrance gate).

All telephone system lines were to remain clear for emergency use. The Safety Director had the responsibility of determining whom should be contacted for outside assistance, including the specification of which local fire department or medical assistance personnel were required. Another responsibility was the determination of the need for plant evacuation. Once the emergency situation was resolved, the Safety Director would signal an "All Clear" over the plant paging system.

Emergency Equipment

As stated earlier in the Plant Safety Considerations section, the CCRC had a central firewater protection supply system. This consisted of two diesel operated pumps of 1570 gpm capacity each, a 240,000 gallon firewater storage tank, and associated distribution headers, hydrants, sprinkler systems, etc. In the event of an extreme situation, the Alabama Power Company E. C. Gaston steam plant next to the CCRC was capable of supplying additional water. Appropriate fire extinguishers were located throughout the facility. Also, paging phones were located in the units and control rooms.

Evacuation Areas and Transportation Routes

If plant evacuation was warranted, notification would be given via an announcement over the paging system. All employees were instructed to withdraw to the parking area, where a roll call would be taken to account for all personnel. The normal evacuation route was via the north plant entrance road.

Arrangement with Local Emergency Response Agencies

Arrangements were in place with local emergency response organizations for assistance, if the need arose. These included two fire departments, an ambulance service and local health center, the Shelby County Sheriff's office, and the city of Wilsonville mayor and police. In addition, the Shelby County Civil Defense Office was available if needed to coordinate emergency fire and rescue units, and all the above contacts could be made via the Shelby County Sheriff's dispatcher office in Columbiana, Alabama.

6

SUMMARY

Site closeout for the Selective Agglomeration project included dismantling of the POC facility, site restoration, and finalizing environmental compliance issues. The Selective Agglomeration unit was dismantled per project scope after final inventory, with all equipment and most structures removed. Remaining structural items have been left in place with DOE/PETC approval for use by the DOE/METC PSDF project. Shipment of equipment and materials will continue under SCS supervision as instructions are received from DOE until all DOE-owned equipment is dispositioned. All DOE equipment will be stored securely until shipped.

Product and unused feed coal were either shipped to other DOE projects or blended as fuel on the adjacent Alabama Power Company utility coal pile. Coal-stained soil and gravel was removed, and new gravel was added where needed for aesthetic purposes. All

solid wastes generated during the project (see Sections 3 and 4) were properly disposed. All reagents were either consumed in the process or used at the adjacent wastewater treatment facility.

All NPDES permit discharge requirements were met throughout the life of the project. Water purged from the process was treated at the CCRC wastewater treatment facility to remove residual diesel-oil traces and properly adjust pH. The NPDES permit is being transferred from SEI to SCS for modification for the PSDF. All required environmental monitoring and reporting associated with the site will continue as the responsibility of SCS. This includes NPDES and stormwater-runoff monitoring.

The site has been successfully closed, and there are no known environmental, safety, or health issues remaining associated with the Selective Agglomeration site.

APPENDIX

██████████ IN

April 10, 1992

Mr. Andy Patko
Southern Clean Fuels
P.O. Box 1069
Wilsonville, AL 35186

Dear Mr. Patko:

This is to certify that TN Technologies, Inc. has received and accepted ownership of the radioactive material described on the attached page(s) pursuant to applicable regulations and as authorized by our Texas License Number LO-3524.

This receipt should be retained in your file as a permanent record showing the disposition of this radioactive material.

If you have any questions or if we may be of further assistance, please contact us.

Sincerely,

TN TECHNOLOGIES, INC.

Lori Pellicci
Technical Services Coordinator

/llp
Attachments

TN Technologies, Inc.

A Baker Hughes company

P.O. Box 800 Round Rock, Texas 78680-0800
(512) 388-9100, Fax (512) 388-9200, Telex: 77-8413

Southern Clean Fuels
Page 2
April 10, 1992

<u>ISOTOPE</u>	<u>ACTIVITY</u>	<u>SOURCE SERIAL NO.</u>	<u>MODEL NUMBER</u>	<u>MANUFACTURER</u>	<u>SOURCE HEAD SERIAL NO.</u>
Cs-137	4000 mCi	CS-17005	SH302	Accuray	772001
Cs-137	4000 mCi	CS-17007	SH302	Accuray	773002
Cs-137	4000 mCi	CS-17006	SH302	Accuray	772003
Cs-137	1000 mCi	Unreadable	7062P	Kay Ray	9518
Cs-137	1000 mCi	KR-6746	7062P	Kay Ray	9517
Cs-137	10 mCi	KR-7901	7062	Kay Ray	10779
Cs-137	10 mCi	KR-7900	7062P	Kay Ray	10780
Cs-137	100 mCi	KR-8308	7062	Kay Ray	12181
Cs-137	1500 mCi	M-4731	SA1	Ronan	M4731 ← *
Cs-137	500 mCi	MA-7109	5191	Texas Nuclear	B1371
Cs-137	100 mCi	MC-0591	5201	Texas Nuclear	B869
Cs-137	50 mCi	MS-049	5195	Texas Nuclear	337

ADEM

Agglomeration Soil & Gravel

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Leigh Pegues, Director

Guy Hunt
Governor

1751 Cong. W. L.
Dickinson Drive
Montgomery, AL
36130
(205) 271-7700
FAX 271-7950
270-5612

February 12, 1993

Mr. Charles Cantrell
Southern Clean Fuels
P.O. Box 1069
Wilsonville, AL 35186

Field Offices:

110 Vulcar. Road
Birmingham, AL
35209
(205) 942-6168
FAX 941-1603

P.O. Box 953
Decatur, AL
35602
(205) 353-1713
FAX 340-9359

2204 Perimeter Road
Mobile, AL
36615
(205) 450-3400
FAX 479-2593

Dear Mr. Cantrell:

Personnel with ADEM have reviewed your request to dispose of approximately 200 cubic yards of petroleum contaminated soil and gravel which have TPH concentrations less than 500 parts per million. According to the information submitted dated January 29, 1993, this waste appears to be non-hazardous in accordance with the applicable regulations.

We are approving the Shelby County Sanitary Landfill, permit number 59-04R to accept this material for disposal. Contact Mr. Robert Shaw at (205) 669-3880 for local approval and any additional requirements prior to delivery.

NOTE: This letter does not exempt you from complying with applicable requirements of ADEM Administrative Code Division 335-14, Hazardous Waste Program Rules.

If you have any questions regarding this, please contact Mr. Ben Norman at (205) 271-7766.

Sincerely,

John Narraamore, Chief
Compliance Section
Solid Waste Branch

JWN/CBN/kap#2640

C: Mr. Robert Shaw

File: I/W - Southern Clean Fuels
CF: 59-04R

ADEM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Guy Hunt
Governor

Leigh Pegues, Director February 8, 1990

1751 Cong. W. L.
Dickinson Drive
Montgomery, AL
36130
205 / 271-7700

Maria L. Jeffers
Clean Coal Research Center
P.O. Box 470
Wilsonville, AL 35186

Field Offices:

Unit 806, Building 8
225 Oxmoor Circle
Birmingham, AL
35209
205 / 942-6168

P.O. Box 953
Decatur, AL
35602
205 / 353-1713

2204 Perimeter Road
Mobile, AL
36615
205 / 479-2336

Dear Maria Jeffers:

RE: NPDES Permit Number AL0057479

Enclosed is the modification of the above referenced permit per your request of October 4, 1989. Please include the enclosed Part I.A. for DSN003 with your permit.

Also enclosed for your use in submitting effluent reports is a copy of the appropriate DSN003 monitoring form which has been adapted to your specific discharge.

Should you have any questions please contact Jim Phillips at 271-7828.

Sincerely,

John A. Poole, Jr.
Chief
Industrial Branch
Water Division

JAP/bt

cc: EPA w/enc.
Marilyn Elliott/P & S

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERMITTEE: CLEAN COAL RESEARCH CENTER
(Formerly Advanced Coal Liquefaction
R & D Facility)

FACILITY LOCATION: Highway 25 North
Wilsonville, Alabama

PERMIT NUMBER: AL0057479

RECEIVING WATERS

Unnamed Tributary to Yellow Leaf Creek

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251-1378 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the discharge limitations, monitoring requirements and other terms and conditions set forth in Parts I, II and III hereof, the Permittee is hereby authorized to discharge into the above-named receiving waters.

ISSUANCE DATE: November 10, 1988

MODIFICATION DATE: February 7, 1990

EFFECTIVE DATE: December 1, 1988

EXPIRATION DATE: November 30, 1993

Alabama Department of Environmental Management

Permit Modifications

I. Page(s) Added: Page I-1
Page(s) Modified: Name Change on Cover Page
Modification Effective: March 1, 1990

PART I
Page I-1
MODIFICATION ISSUED: February 7, 1990
MODIFICATION EFFECTIVE: March 1, 1990
SIGNED BY: [Signature]

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s), described more fully in the permittee's application:

DSN003: Stormwater runoff from coal storage area.

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Monthly Average	Measurement Frequency	Sample Type
Flow (MGU)	N/A	Monitor	Monitor	1/Discharge	Estimate
pH	6.0 s.u.	9.0 s.u.	N/A	2/Month	Grab
Total Suspended Solids	N/A	70 mg/l	35 mg/l	2/Month	Composite
Iron, Total	N/A	7.0 mg/l	3.5 mg/l	2/Month	Composite
Manganese, Total	N/A	4.0 mg/l	2.0 mg/l	2/Month	Composite

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3.
**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2. Composite samples may be flow or time-proportioned during period of discharge (not to exceed 24 hours per sample).

☒ MONTHLY

LOCATION: Highway 25 North
Wilsonville, AL

EFF: 3/1/90 EXP: 11/30/93

PARAM	Flow	pH	TSS	Fe,T	Mn,T
AVG	Mon	6.0 min	35	3.5	2.0
MAX	Mon	9.0	70	7.0	4.0
FREQ	1/dis	2/mo.	2/mo	2/mo	2/mo
UNITS	MGD	S.U.	mg/l	mg/l	mg/l
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
MO AVG					
MAX					

NO	AVG	MAX
<p>I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.</p>		

Procedure for Draining Basin

Collect a sample of water and conduct pH and total suspended solids (TSS) tests. If pH is out of permit range, adjust with acid base accordingly. If TSS exceeds the permit limit, allow the solids to settle further and check again. Collect a sample for iron and manganese analysis. When test results indicate permit compliance, commence draining the basin.

Read the flowmeter on the basin outlet, and record the meter value and date in the log book.

Unlock the valve at the basin discharge, and slowly open the valve. Record the start time in the log book. Regulate the flow to a maximum of approximately 40 gal/min, since the flow tends to restrict the Wastewater Treatment discharge flow and may cause water backup in the unit if the valve is opened too far. (It may take 24 hrs to drain a full basin.)

When the basin has been drained, record date and time in the log book. Close and lock the valve at the basin discharge.

Read the meter. Record value and times in log book.

Calculations:

Agglomeration Flow (gallons) = (End Read - Start Read) x 100

Rate (gal/min) = Total Flow (gal)/Total Drain Time (minutes)

GALBRAITH

Laboratories, Inc.

QUANTITATIVE MICROANALYSES

ORGANIC — INORGANIC

PHONE 615/546-1335 FAX 615/546-7209

HARRY W. GALBRAITH, PH.D.
CHAIRMAN OF THE BOARD
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EXECUTIVE VICE-PRESIDENT
WILLIAM M. LONGMIRE
VICE-PRESIDENT
TECHNICAL SERVICES

Mr. C. Cantrell
Southern Clean Fuels Division
Highway 25 North
Wilsonville, Alabama 35186

January 31, 1992

Received: Jan. 29th
PO#: 8907

Dear Mr. Cantrell:

Analysis of your compounds gave the following results:

Your #,	Our #,	Iron,	Manganese,
Agglomeration Basin Discharge 1/2/92 SN 28649	U-6368	0.76 mg/liter	<0.05 mg/liter
Agglomeration Basin Discharge 1/2/92 SN 28650	U-6369	0.20 mg/liter	<0.05 mg/liter

Sincerely yours,

GALBRAITH LABORATORIES, INC.

Gail R. Hutchens
Exec. Vice-President

GRH:dse

**DATE
FILMED**

10 / 19 / 93

END