ENCOAL Mild Coal Gasification Project

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EXECUTIVE SUMMARY -- SECOND QUARTER

Construction of the project dominated the activities of both the ENCOAL and KCI field groups during this reporting period. Emphasis was placed on expediting late vendor information and upon completing the construction phase of the project. Field progress was estimated to be 94 % complete as of the end of March. As a result of the construction progress, demobilization of KCI and their subcontractors was initiated.

The Operations team concentrated on the operator training classes which began on February 24. The classes were well received and many precommissioning activities were accomplished during the afternoon "hands-on" sessions. Commissioning and testing plans were also a priority as the project continued to make the transition from construction to operation.

Several meetings were held during the quarter discussing the commissioning and testing procedures. The purpose of these meetings was to develop a sequential work schedule to coordinate all commissioning activities. A resulting time-line of both testing and commissioning plans was developed, and will be continuously updated to ensure the most efficient management of manpower.

PLANNED SCOPE OF WORK

The scope of work for this period included the issuance of all remaining subcontracts for construction and to complete the construction phase of the project. All permits to operate the plant were to be essentially completed, and field engineering was to focus on performing any plant modifications necessary to achieve acceptable plant performance.

Operations training was to be well underway, and testing plans were to be organized and issued. Commissioning plans were to be drafted and initiated, and programming of the plant PLC was to be 100% complete. A final HazOp meeting was to be held, and the final design report was to be drafted and submitted in March.

ACCOMPLISHMENTS

2.0 PHASE II -- CONSTRUCTION AND START-UP

Field engineering efforts focused on performing minor plant modifications and aiding in the organization of plant operations, testing, and training plans. Improvement in vendor deliveries of data and equipment items was seen and thus helped bring the construction of the plant to a conclusion. Field progress was estimated to be 94% complete by the end of March. Mild weather conditions during the months of January and February allowed for excellent construction progress through the winter season.

The Operations Team concentrated on the operator training courses for the majority of the quarter. Morning classes were well received, and many commissioning activities were accomplished during the afternoon sessions. Operations manuals and testing plans were prepared for the commissioning sequence. A time line for all start-up and commissioning activities was developed and will be continuously updated for the most efficient management of manpower and materials.

2.1 Construct Mild Coal Gasification Facilities

Construction of the PDF structure and equipment progressed well during the quarter. Structural steel for the PDF Building was completed and turned over, and the screening building structural steel was essentially completed with only punch list items remaining. Both stack pipes were raised into place, and all Salem Furnace equipment was received and installed with only minor rework required (*See Figure 1*). Installation of the siding for the PDF structure has been completed on the north, west, and south walls, and work is currently underway on the east face of the structure (*See Figures 2 and 3*).

Figure 1: Stack Installation Looking East (April 2, 1992).

FIGURE 2: PDF
Structure Looking
North.
(April 2, 1992)

FIGURE 3: PDF Structure Looking West
(April 2, 1992).

Application of refractory material in the combustors, dryer cyclone, and large diameter duct was completed with the favorable winter weather conditions experienced during the season. All refractory material has now been applied, and proper freeze protection on non-cured refractory material is being followed. The final dry-out and curing of refractory has been rescheduled to be done during start-up of the plant rather than by subcontractors. The combustors 301B and 302B will be utilized to apply the temperatures necessary to slow cure the material. This action will aid the project by both reducing project costs and by improving the completion schedule.

The pneumatic test on the large bore piping was initiated on March 21. The results of this test indicated that several major equipment items required considerable rework in order to be adequately sealed. The pyrolyzer and dryer shells had to be seal welded at the interior joints to make them air tight. The large blowers 101J and 301J need to be dismantled and the porous gasket material supplied by the manufacturer replaced with impermeable material. Rework on 301J was nearly completed by the end of the March, and 101J rework is expected to be complete by April 10. All equipment items and large bore piping will be retested for leaks on April 14.

The insulation contractor has continued to progress well. Insulation on equipment items is 65% complete, and insulation on line items is 58% complete. The contractual scope of work was expanded to include additional heat traced lines and the hopper section of the dryer cyclone. The current scope of work is expected to be completed by May 1, 1992.

2.2 Construct Off-Sites Facilities and Utilities

Top-of-silo conveyor revision work was re-initiated during the quarter with the setting of the shuttle conveyor. Top-of-silo work that remains to be done includes handrail and platform modifications and minor rework to the shuttle conveyor itself to field fit the conveyor within the existing silo roof protrusions. *(See Figure 4 -- Shuttle Conveyor and Top-of-Silo Revisions).*

The electrical subcontractor continued to make reasonable progress. Lights were installed and energized on all levels of the PDF and Screening buildings, and as of the end of March, 230 out of 301 instruments are in place. Emphasis continues to be placed on completing electrical systems to ensure that they will be available for commissioning activities in April. The work in the control room has been completed and the building turned over for ENCOAL personnel use.

FIGURE 4: ENCOAL Control Room (April 2, 1992).

The off-sites above ground piping contract work was completed in February with the exception of the train load-out platform. The erection of the platform was rescheduled for April due to delivery delays.

The natural gas company completed installation of the main supply pipeline and the supply lines to the control room and PDF structure were commissioned and charged with gas. This supply of gas to the PDF building allowed the main heating unit to be commissioned and started up in early February to improve working conditions within the building.

2.3 Plant commissioning and Start-Up

The Operations Team concentrated on the operator training courses for much of the quarter. Drafts of the training manuals were assembled for the training sessions which began on February 24, 1992. The operator training sessions consisted of 7 weeks of classes, 5 days a week. Classes were held in the morning, with "hands-on" precommissioning work activities in the afternoons. During the training period, ENCOAL operators completed precommissioning tasks on the Fire Water, Potable Water, Coal Fines, Cooling Water, and Wash Oil systems as well as commissioning the air compressor.

Requirements for spare parts, commissioning spares and tools have been finalized and the procurement process is underway. Preventive maintenance plans are being drafted for each piece of equipment as well as all instruments, valves and electrical gear.

A meeting was held to discuss the noise and ventilation surveys of the plant. Topics of discussion centered on the potential problems, methods of solutions, and scheduling of the surveys themselves. The PDF and Screening buildings will initially be classified as requiring hearing protection for commissioning and start-up. As noise surveys are completed, some areas may be declassified. Vendors have been requested to furnish the initial information necessary to identify potential problem areas within the plant. Noise tests on individual equipment items during commissioning will provide the information necessary for final area classification. All tests will be verified with a noise consultant to ensure that the proper test method is used for each application. Heat and ventilation surveys will be conducted during the tail end of the commissioning schedule to correspond with the heating of the plant systems and large ductwork.

2.4 Plant Modifications

Extensive engineering effort was required for the interference problems within the screening building. Most of the misalignment problems were related to vendor supplied equipment not being coordinated with the structural steel of the building due to the late arrival of vendor information. All of the major interference problems have now been resolved and corrections are nearly complete.

2.5 Project Coordination

The project is currently undergoing a transition from construction to plant commissioning activities. As a result, a list of items that KCI and their subcontractors will not perform is being developed. Many items on this list will be performed by ENCOAL personnel, while the others will be contracted to small, local firms. A maintenance contract was awarded to a small, local firm during the month of March to aid in accomplishing commissioning operations and other mechanical work. A similar commissioning contract for electrical and instrumentation is expected to be awarded in April. These contracts are intended to help ENCOAL meet its goal of processing coal by mid May.

Approval of the Pre-Manufacture Notice (PMN) for PDF was granted by the Environmental Protection Agency. The document underwent the standard 90 day review without receiving any comments.

A meeting was held with the WDEQ in Cheyenne, WY to discuss the permit stipulations for continuous SO₂ stack monitoring. An agreement was reached on the quality control procedures, reporting requirements, conditions for monitoring and the specifications for the monitoring equipment. A permit was issued on January 21, 1992 based on these conditions. The installation schedule for this monitor has been verbally accepted by WDEQ, but still awaits formal approval.

ENCOAL is currently awaiting formal comments from the WDEQ in regards to permitting of the plant boiler emissions. Initial conversations with the WDEQ indicate that a standard permit will be issued with no special conditions. A formal permit is expected to be issued by mid April so that scheduled commissioning plans may proceed.

The coal purchase agreement with Triton Coal for the supply of raw coal for the plant has been updated and all exhibits added. Modifications were required to reflect the method of measurement of coal that the plant will use, and to allow for the purchase of sized coal from Triton. A meeting is scheduled in Gillette in April for final document review.

There were no MSHA reportable or lost time accidents on the project during the quarter. A project safety dinner was held at the end of February celebrating 325 consecutive days without a lost time accident. The dinner was attended by over 300-employees and guests and provided an excellent opportunity to reward the entire team for an outstanding safety performance. As of 31 March 1992, a record of 355 days without a lost time accident was achieved. The project was also visited by both the MSHA and state inspectors, with no citations being issued. More frequent safety inspections are expected in the future with the initiation of commissioning and start-up procedures.

TECHNICAL IMPACTS ON SCHEDULE AND MILESTONES

Despite the winter time erection schedule and past delays in the receipt of vendor data and materials, construction progress has continued to stay ahead of the DOE baseline schedule. Mechanical completion has essentially been achieved and electrical completion is expected in April or early May. With much of the project construction complete, more attention is now being focused on commissioning and start-up efforts.

Milestones reached during this quarter and the past year are listed on the Milestone Log (*See Table 1 -- Milestone Log*).

CONCLUSIONS AND LOOK AHEAD

Mechanical construction of the project is essentially complete with only minor rework and non-contractual items left to be accomplished. Electrical completion has progressed well and is expected to be accomplished by early May. All permits for plant operation have now been obtained and a coal purchase agreement has been negotiated with Triton. A May date for processing coal is still projected.

The Operations Team is currently wrapping up the operator training sessions and will soon concentrate entirely on commissioning of the plant systems. Work on completing the maintenance plans and commissioning procedures has continued and is expected to be completed prior to the initiation of shift work on April 20.

The next quarter activities will concentrate on the completion of the electrical construction of the project as well as the commissioning of the plant systems. All testing and maintenance plans should be complete and plant operation should be initiated.

ENCOAL Mild Gasification Demonstration Project

MILESTONE LOG

Table 1

ID. No	Description	Planned Completion Date	Actual Completion Date	Comments
1	Mobilize Team/Subcontractors	17-Sep-90	17-Sep-90	
2	Complete NEPA	01-Nov-90	01-Oct-90	
3	Project Management Plan	01-Dec-90	31-Dec-90	
4	Design Review - 60%	14-Dec-90	13-Dec-90	
5	Conduct 90% Design Review	15-May-91	22-May-91	
6	Begin Plant Erection	15-May-91	11-Mar-91	
7	Complete Engineering	15-Jul-91	15-Jul-91	
8	Complete Plant Construction	31-May-92		
9	Environmental Monitoring Plan	14-Nov-90	31-Oct-90	
10	Construction Review - 20%	16-May-91	23-May-91	
11	Design Completion Report	16-Sep-91		New Compl. date 15-March-92
12	Construction Review	16-Dec-91		New review date April-92
13	Construction Report	16-Jul-92		
14	Complete Commissioning	16-Sep-92		

GLOSSARY

BACT	Best Available Control Technology
CDL	Coal Derived Liquid
DOE	U.S. Department of Energy
EMP	Environmental Monitoring Plan
ENCOAL	ENCOAL Corporation, a wholly-owned subsidiary of Shell Mining Company
EPA	U.S. Environmental Protection Agency
ESP	Electrostatic Precipitator
FGD	Flue Gas Desulfurization
HazOp	Hazardous Operation
KCI	Kellogg Constructors INC.
Kellogg	The M.W. Kellogg Company
LFC	Liquids From Coal
MCC	Master Control Center
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NEPA	National Environmental Policy Act
PDF	Process Derived Fuel
PLC	Programmable Logic Controller
P&ID	Piping and Instrumentation Diagram
QA/QC	Quality Assurance / Quality Control
SGI	SGI International
WDEQ	Wyoming Department of Environmental Quality

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