“Commercial Demonstration of the Manufactured Aggregate Processing Technology Utilizing Spray Dryer Ash”

Quarterly Technical Progress Report

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Abstract

This quarterly report covers the period from July 1st, 2003 through September 30th, 2003. It covers; technical development, permitting status, engineering status, construction status, operations summary and marketing support activities for this period.

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- I) Experimental – This section is not applicable to this project.
- II) Results and Discussions
This section is broken down into the following subsections: Technical Support, Permitting, Engineering, Construction, Marketing Support, Operations Summary and DOE activities. These subsections describe the activities that have taken place during this quarter as they pertain to this project.

A) Technical Support

An alternative additive was evaluated as a replacement for use in aggregate production. Aggregate produced with addition of the alternative additive had similar crush strength and unit weight, but lower water absorption than those produced previously. Aggregates with adequate size gradation were prepared for use in block production and evaluation at NCMA. If it is successful, the additive will be used in commercial demonstration.

A program was initiated to monitor variation of spray dryer ash compositions over time at the Birchwood Station. Ash compositions characterized include hydrated lime, unburned carbon, major elements and others. One or several ash samples were collected daily from the silo for characterization. The composition variation will be used as a reference in ash quality control during commercial operation.

Specifications of quick lime were modified after meeting with Birchwood and Global Stone Chemstone personnel to discuss lime quality. Quick lime with high purity and reactivity is required for use in aggregate production at the Birchwood Station.

Miscellaneous

At the request of DOE, abstracts on manufactured aggregate production were submitted and accepted for a presentation at the 35th ACS Central Regional meeting (October 19-22, 2003) and for participation in the poster session at Clean Coal and Power Conference (November 17-19, 2003).

B) Permitting

Written approval from CSX for the “at-grade crossing” of the CSX/BPP tracks was received. An application for building permit #3 (Modular Office) was submitted to King George County and the permit was received. A draft Storm Water Pollution Prevention Plan (SWPPP) was prepared, comments made and returned to our environmental consultant for integration into the plan. The permit for storm water discharge for the operations phase was received.

C) Engineering

The approval drawings for equipment that has been ordered continued to be reviewed, corrected, and/or approved. Detailed engineering on the electrical and instrumentation design continues. The functional description for the project was reviewed and comments made. This document will become the foundation for the PLC programming which is underway. The final general arrangement drawings,

P&IDs, and flow sheets were issued. A draft start up plan was prepared and forwarded to operations for review. The PLC program is complete and work is underway on the programming for the Panel Mate display. A package of drawings of the chute work has been prepared and forwarded to P. J. Dick for bidding purposes.

D) Construction

Bids were received for the insulation package and a subcontract proposed. The final certified drawings for the curing vessel were received from Titan Contracting. The structural steel drawings for the curing vessel support below the support ring were finalized and fabrication is underway. A site visit was made to the Titan Contracting fabrication facility in Owensboro, Kentucky to inspect their shop and check progress of structural fabrication. The process building and pug mill foundations were poured, as was the process building main floor. Structural steel arrived on site and erection began July 21st. A request for quote for the Panel Mate was issued. A new construction schedule was prepared and issued. The extruder, pug sealer, pug mill and peripheral equipment were delivered to Birchwood for installation on July 24th. Bids were received for the building skin and roof and a change order was issued to CSE for the work. The curing vessel field erection started on August 4th, and Kerry Johanson inspected the work on August 27th. The majority of process equipment has been set in place. Foundations for the conveyor bents, stacker, and truck scales were installed. Purchase orders were placed for the Panel Mate Controller, Bottom Ash Trailer, hoists and plant computer. Electrical wire way and conduit installation continues. The mechanical subcontractor mobilized in August and began installing process piping. RFQs were issued for a potable well and site fence work. The modular office was delivered and set in place. An inspection of the completed curing vessel subassemblies by Kerry Johanson was completed and a report was submitted to P. J. Dick for review and implementation. Building steel erection is complete as well as the setting of the major pieces of mechanical equipment. A safety inspection was completed by the P. J. Dick Safety Department and outage plans for tie-ins to the Birchwood Facility are underway. Preparations were implemented for Hurricane Isabel and this storm will force approximately a one-week delay in the project schedule between preparing for, lost production, and clean up afterward.

E) Marketing Support

Emphasis continues to be placed on establishing a sales agreement document for the lightweight aggregate produced at the Birchwood facility including; terms and conditions, product quality and quality control reporting, and product availability. Visits to perspective aggregate purchasers (masonry producers), developing contacts and customer interest continues. Testing at the National Concrete Masonry Association (NCMA) in Herndon, Virginia was again conducted to establish baseline mix designs using a modified Birchwood lightweight aggregate and with various concrete masonry producers indigenous aggregates and cement.

F) Operations Summary

Visits were made to the Birchwood job site to observe construction progress in advance of potential operational problems. The hiring schedule was developed for an April 1, 2004 Transition Period start. The SDA start-up requirements schedule was developed and talks continue with Birchwood to obtain the quantities requested. Interviews were held for the first three mechanic positions. A visit to the selected lime supplier (Global Stone Chemstone Corporation) was made to discuss lime quality, the manufacturing process and the QA/QC program and lab. A purchase order was prepared and routed for comments and approval. The start-up sequence plan was developed and routed for input. The Plant Manager (Darrel Martin) was hired and started July 7, 2003. The Plant Manager reviewed the Health and Safety Manual and additions/changes were made after discussions. The Plant Manager reviewed the Policy and Procedure Manual and additions/changes were made after discussions. Local credit applications have been submitted to service providers. Field review with J.C. Steele personnel was held regarding maintenance for the extruder package. Reviewed the Panel Mate screens with R.T. Patterson personnel in addition to desired daily and monthly operating reports.

G) DOE

The second quarter of 2003 Quarterly Technical Progress Report was prepared and submitted to DOE. Topical Report #1 was revised for the third time per DOE's request, and resubmitted. A DOE site visit was complete on the 25th of September. The DOE Quarterly Program/Project Status Report for period ending June 30th was prepared and submitted. Work on Topical Report #2 is underway.

- III) Conclusion – This project is slightly behind schedule and within budget. The activities described in section II will continue into the next quarter.
- IV) References – Not applicable for this report.