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7/27/05

**Texas Commission on Environmental Quality
New Technology Research & Development (NTRD) Program
Monthly Project Status Report**

Performing Party – WOW Energy Inc. I.D. 68-0554788

**Contract Number: TCEQ New Technology Research and Development Grant
Contract 582-5-70807-0010**

Grantee: TCEQ

Date Submitted: July 25, 2005

Report for the Monthly period:

Starting Date January 3rd 2005

Ending Date June 30th 2005

Section I. Accomplishments

- **Commenced contract work on January 3rd, 5.5 months prior to Notice to Proceed, thus accelerating the completion of the FFGC-PP and subsequent testing.**
- **Complete preliminary design and performance specifications required to support the contract negotiations with contractors.**
- **Completed production schedule with Eisenmann for the FFGC-PP unit.**
- **Negotiated detailed design and construction contract with Eisenmann Corporation leading the way to early release of contracts.**
- **Completed Quality Control and Inspection plan with contractor in preparation for the early design and construction contract release.**
- **Released contractor to conduct detailed design and construction on April 15th two months prior to formal TCEQ Notice to Proceed.**
- **Signed the Letter of Intent with AES Deepwater for testing site enabling the exchange of plant exhaust gas data required for preliminary design.**
- **Released FFGC-PP shell design and commenced fabrication on May 24th**
- **Completed piping and electrical design for FFGC-PP.**
- **Released contractor on major component procurements.**

Indicate which part of the Grant Activities as defined in the grant agreement, the above accomplishments are related to:

**Task One: Test Site Selection
(July 14th 2005 to September 8th 2005)
Commenced January 3rd 2005 and is 65% complete**

Task One was initiated on January 3rd 2005. Wow Energy has entered into a Letter of Intent with AES Deepwater to demonstrate the FFGC-PP at their petcoke power plant in Pasadena, Texas. A contractual detailed agreement is underway and should be completed by mid-August. At Holcim, Midlothian testing discussions are underway. We are targeting a Letter of Intent agreement by late August.

- 2.1.1.1 The baseline flue gas analysis and testing procedures have been developed and detailed procedure will be complete by mid-September.
- 2.1.1.2 The detailed design of the FFGC-PP interface is in final review for approval. There is a project meeting scheduled for July 27th 2005 with Wow/Eisenmann and AES to lock in the interface. There will be a similar review process with Holcim.
- 2.1.1.3 The test plan and schedule for AES Deepwater is scheduled for raft review at AES in our joint Wow, AES and Eisenmann meeting on the 27th of July. It is our plan to modify the test plan for Holcim. We anticipate completing the Holcim test plan and schedule by the end of September.
- 2.1.1.4 The preparation of the Safety Execution Plan is currently scheduled to kick off during the July 27th meeting with AES. The Holcim plan will be tailored to their facility safety plan during the development of the Holcim test plan and schedule reference in 2.1.1.3.
- 2.1.1.5 At AES, the pilot plant exhaust will be re-injected into the plant's exhaust stream prior to the existing scrubbers and WESP, and therefore will not require any additional permits. The chemical solution discharge will be introduced under the existing treatment systems that are already designed to handle the same chemistry. At Holcim, we are evaluating the intake and discharge parameters for the specific site and should conclude the interface design and related re-injection/discharge treatment issues by the end of September.

Completion of Task One is on track per the contract schedule. Our definitive agreements, procedures and plans with AES Deepwater will be completed by the end of August. The Holcim Midlothian agreements are scheduled to be completed by September.

**Task Two: FFGC Pilot Plant Design
(July 14th 2005 to November 2nd 2005)
Commenced April 15th 2005 and is 75% complete.**

On April 15th, Wow Energy gave Eisenmann the notice to proceed with the detailed FFGC-PP design and fabrication contract. There have been numerous internal Wow Energy design review meetings as well as external review meetings with our outside engineering firm and with our test site clients. Fabrication of the FFGC-PP shell was released and the unit commenced construction on June 28th 2005.

- 2.2.1.1 The modifications to the existing scrubber design is complete.
- 2.2.1.2 The design of the serpentine section of the second stage is complete.

- 2.2.1.3 The analysis of the UV radiation system is ongoing and should be completed in August. The FFGC-PP will have the ability to incorporate this system in the field.
- 2.2.1.4 The definition of the size and number of the FFGC-PP chemical additive vessels is complete
- 2.2.1.5 The definition of the size and number of by product vessels is ongoing. Existing plant storage and treatment systems are under review at AES and should be complete in August. Review of plant storage and treatment systems at Holcim are scheduled for August and should be complete in September.
- 2.2.1.6 The FFGC-PP pumps, motors and piping component selection is complete. Purchase orders have been issued for; recycling pumps, metering pumps, exhaust fan, nozzles, PH and ORP sensors, pressure/temperature and flow measuring devices, and the high voltage transformer/rectifier units.
- 2.2.1.7 The semi-trailer has been selected for leasing.
- 2.2.1.8 The design of the electrical and instrumentation systems is 90% complete and should be completed in early August.
- 2.2.1.9 The control system and control logic design is 90% complete and is scheduled to be completed in early August.
- 2.2.1.10 The final layout drawings including the trailer mounting details will be completed by the end of July.

The project schedule demonstrates that the FFGC-PP project is ahead of the contractual schedule and that Task Two is currently scheduled to complete in early September. The final design report shall be submitted to TCEQ at completion of this task.

Task Three: Fabrication & Construction

(July 14th 2005 to January 26th 2006)

Commenced May 1st 2005 and is 10% complete.

Wow Energy has released for fabrication the shell design of the FFGC-PP. Eisenmann has already commenced the unit construction based on our submitted production schedule. Prior to releasing the shell design, Wow Energy approved the Eisenmann Quality Control and Inspection Plan.

- 2.3.1.1 The selection of major component suppliers is complete and major procurements have been released.

- 2.3.1.2 The production schedule is complete. The plan will be updated during the next project meeting scheduled for July 26th 2005 and submitted to TCEQ.
- 2.3.1.3 Quality Control and Inspection Plan is complete.
- 2.3.1.4 The final construction drawings release is the subject of a meeting here in Houston between Wow Energy and Eisenmann on July 26th 2005.
- 2.3.1.5 The shop test plan draft is complete and will be reviewed during the July 26th meeting.
- 2.3.1.6 As-built drawings are scheduled to commence in August and is scheduled for completion in late September.
- 2.3.1.7 Conduct shop test is currently scheduled for September.

Task Three is well ahead of the contract schedule. The FFGC-PP will be ready to ship to Texas in September. The as-built drawings, shop test reports and photographs will be submitted by the end of September.

**Task Four: Operating and Test Plan
(July 14th 2005 to January 26th 2006)
Commenced May 1st 2005 and is 5% complete.**

Wow Energy has selected the chemical additives to be used in the FFGC-PP. The initial flow rates and quantities have been determined and used to size the pumps, sumps and vessels.

- 2.4.1.1 The test site hosts are evaluating their existing permits and have taken the action to amend them if required. Our testing procedures should not necessitate this as we are returning the flue gas into the exhaust flow near the same point of extraction.
- 2.4.1.2 The chemical additives have been selected. The quantity of chemicals required for each test site is under review. This task will be completed by early September.
- 2.4.1.3 The Safety Execution Plan is in the drafting stage. It will incorporate the handling of the chemical solutions and waste products.
- 2.4.1.4 The initial chemical quantities and storage requirements are complete for AES Deepwater and will be developed for Holcim during the upcoming project meetings in August.
- 2.4.1.5 As the FFGC-PP design basis was to recycle the used solutions and by-products, there should be very little waste or by-product. We are analyzing and quantifying the amount of by-product for each test site.

2.4.1.6 We are developing a plan with AES that incorporates these by-products into their gypsum production. As we further the technical reviews with Holcim, we will develop a by-product disposal plan for testing at their site.

2.4.1.7 As we proceed with definitive site test agreements, there will be a site specific test plan and procedure. This task will commence in mid- August.

Parts of this task were performed early in the design stage as they relate to the FFGC-PP design basis. The main part of this task is scheduled to commence at the end of July and carry on until early September.

Task Five is scheduled to commence in October 2005

Task Six is scheduled to commence in December 2006

Task Seven is ongoing throughout the project commencing on January 3rd 2005.

Section II: Problems/Solutions

<p>Problem(s) Identified</p> <p><i>(Please report anticipated or unanticipated problem(s) encountered and its effect on the progress of the project)</i></p>	<p><i>We have experienced a longer than planned lead time for the delivery of the transformer/rectifier units which resulted in adding two weeks to the completion target of the FFGC-PP.</i></p>
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<p>Proposed Solution(s)</p> <p><i>(Please report any possible solution(s) to the problem(s) that were considered/encountered)</i></p>	<p><i>We decided against expediting the components which would have resulted in a higher cost.</i></p>
<p>Action(s) Conducted and Results</p> <p><i>(Please describe the action(s) taken to resolve the problem(s) and its effect)</i></p>	<p><i>As we kicked off the project approximately 5.5 months prior to the Notice to Proceed, the extra two weeks were added onto the FFGC-PP production schedule without impact to the contract timeline.</i></p>

Section III. Goals and Issues for Succeeding Period: *(Please provide a brief description of the goal(s) you hope to realize in the coming period and identify any notable challenges that can be foreseen)*

- ***We are holding a joint AES/Eisenmann and Wow Energy meeting in Houston to finalize the detailed design on the FFGC-PP and give full release to Eisenmann on the design and construction contract.***
- ***We are finalizing the contractual agreement between AES Deepwater and Wow Energy for the testing at AES.***
- ***We are drafting a Letter of Intent between Wow Energy and Holcim which we plan on signing and moving into contractual agreement negotiations.***
- ***We are finalizing the UV portion of the FFGC-PP design. Access ports for installation are already incorporated in the design.***

Authorized Project Representative's Signature

Date: _____

NOTE: *Please attach any additional information that you feel should be a part of your report or that may be required to meet the deliverable requirements for tasks completed during this reporting period.*

**TCEQ New Technology Research and Development Grant
Contract 582-5-70807-0010
Performing Party – WOW Energy Inc. I.D. 68-0554788
Notice to Proceed Issued July 14th 2005**

Narrative

Wow Energy kicked off the New Year by commencing the TCEQ contract for the Final Flue Gas Clean-up – Pilot Plant project on January 3rd 2005 prior to the TCEQ Notice to Proceed. The project staff included Dan Stinger (Project Manager), Dave Nickerson (Construction Manager) and Martin Brau (Contracts Manager). Basing our work on our previous research, we initiated Task One - Test Site Selection, Task Two - FFGC Pilot Plant Design and Task Seven – Program Management and Reporting.

Dan Stinger led the TCEQ GGFC-PP project effort, supported by Dave Nickerson, working with Eisenmann and others technical staff on developing the FFGC-PP performance specifications and process flow diagrams in support of the preliminary engineering and design of FFGC pilot plant. Modifications to the existing Eisenmann designs were developed and incorporated. The chemical process was analyzed to quantify the amount of solutions required and the storage and pumping capacities needed for FFGC-PP operations.

In parallel Dave Nickerson focused his work on the pilot plant construction planning, pilot plant integration and testing schedules.

In parallel, discussions and meetings with AES Deepwater and Holcim Midlothian were held to discuss site testing. FFGC-PP performance specifications and designs were discussed and their feedback was a key input to the preliminary design process. The plant layout and operations were reviewed to develop the optimal pilot plant location and interconnection with the existing flue gas stream. With AES, a Letter of Intent was drafted defining the respective work scopes, schedules and pilot plant interconnection requirements. The host plant operating schedule was reviewed to coordinate planned outages with plant modification activities. This, in part, drove our schedule on the detailed design of the points of interface between the FFGC-PP and the host plant.

Martin Brau began drafting contractual agreements and purchase orders. Trailer leasing firms and trucking firms were contacted and a semi-trailer that met our transit requirements was selected. A purchase order was finalized, including the scope of work for the FFGC-PP. Administrative tracking systems and project controls were developed and put in place. Insurance requirements for the TCEQ project was discussed with TCEQ and finalized.

Draft preliminary designs and specification were exchanged with Eisenmann and equipment suppliers. By early April, Wow and Eisenmann agreed on a preliminary pilot plant design upon which we would base our subcontract. Contract terms and conditions were negotiated and on April 15th, the detailed design and construction contract for the FFGC-PP between Wow Energy and Eisenmann was signed and a notice to proceed was issued, thus initiating Task Three – Fabrication & Construction. A production schedule was developed and agreed to. Major components have been specified and purchase orders were released. Fabrication of the FFGC-PP began on May 24th 2005.

After many design reviews and discussions, we established the baseline design and were prepared to release the FFGC-PP shell for fabrication. On May 1st 2005, we initiated Task Four – Operating and Test Plan. Inputs from Task Four were required to support Task Two.

In accordance with the contract, we have held monthly project reviews, as well as, day to day project discussions. The initial review was held at the Eisenmann offices in Michigan. The first two project reviews after the contract was released, were teleconferences that focused on the process engineering, detailed engineering, production schedules and procurement reviews. Monthly production reports were submitted to Wow Energy. The next project review will be held in Houston with the Eisenmann team on July 26th. In addition the project team will meet with AES Deepwater for a project and test site review on the 27th of July. After this project meeting, we will be submitting the FFGC-PP Design, Production Schedule, Quality Control & Inspection Plan, Letter of Intent with AES Deepwater.