

MONTHLY PROGRESS REPORT FOR CONTRACT NO. 500-00-036

PROJECT 2.2 – ENHANCED ENERGY RECOVERY THROUGH OPTIMIZATION OF  
ANAEROBIC DIGESTION AND MICROTURBINES PROJECT

REPORT PREPARED BY: COMMONWEALTH ENERGY TEAM

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**What we planned to accomplish this period:**

It was anticipated that installation and start up testing of the IWe Tech and Sonico ultrasound systems at the City of Riverside Treatment Plant would continue in August. Equipment received in June and installed in July was to undergo testing and interconnection with all of the existing plant systems in August. Testing and start up activities were also to be undertaken and the pre-test baseline data collection activity was to continue. In addition, required control system modifications that were identified and planned in July were to be implemented. On the gas cleaning projects joint efforts were to continue with NIRAS, a Danish firm that is a member of the Commonwealth Team.

NIRAS was to continue assisting in the development of design and system performance criteria for the biological gas cleaning system that is to be installed under this project. An option for the biological treatment system to be further evaluated was the use of an existing tank that is not currently being used at another IEUA facility which could house the biological media to be employed as part of the biological gas cleaning system at RP-1. The potential use of this tank was to be further investigated. The tank's supplier was to be contacted to determine the design criteria of the tank to ensure it is adequate for potential use at RP-1. Additional coordination activity on the gas cleaning project's design efforts were to continue, with the focus being on the efforts needed to make sure that the connections to the existing gas distribution system are adequate. In addition, equipment layouts and the associated mechanical, civil and electrical/instrumentation and control engineering activity were to continue. The weekly coordination calls with the City of Riverside were to continue in August however, as the critical installation activities were completed, this would change to bi-weekly calls. It was also expected that coordination meetings would be held with IEUA engineering and operations staff at RP-1, the project's host facility. .

**What we actually accomplished this period:**

Task 2.2.1 Process Selection:

Work on this task is complete. The results have been have been incorporated into the design process and are being implemented into the project in the field.

Task 2.2.2 Site Selection and Test Plan:

Work on this task is complete. The results have been have been incorporated into the design process and are being implemented into the project in the field.

Task 2.2.3.a. Design Gas Cleaning System:

Efforts on this task continued in August. Design data and other information on site conditions collected previously were analyzed. Conceptual design drawings, showing the layout of the various gas cleaning elements (gas drying, H<sub>2</sub>S removal and siloxane removal) and design concepts were refined, enabling more detailed design activities required prior to and in order for equipment installation to proceed. Design data related to sizing of the piping, electrical, instrumentation/control and other project elements were refined. This effort is important because the existing gas distribution infrastructure needs to be upgraded to handle the extra gas that will be collected. Coordination activities were undertaken with vendors so that equipment requirements would be properly integrated into the design being prepared. In addition, engineers from NIRAS, provided preliminary design information for the biological gas treatment system being considered under this project.

Task 2.2.3b Design Ultrasound System:

Design activities were completed previously so activities on this task undertaken in August were related to ensuring that that units installed met the required design parameters. As part of this effort the CE Team continued to work with the City of Riverside staff to ensure that piping, electrical, instrumentation/control and other design activities were initiated in a coordinated manner so that the ultrasound test units will be properly sized and will function effectively. As noted in previous progress reports, the design documents for this project were submitted to the Energy Commission in June. Design information was reviewed and updated in the field on an ongoing basis as needed as installation continued.

Task 2.2.4b Install Ultrasound Systems:

Significant progress related to installation of the IWe Tech and Sonico ultrasound systems occurred in August, with installation start up testing occurring in August. Both systems were placed in their proper location at the plant and activities related to connecting them to the plant's electrical, instrumentation and control and mechanical systems were undertaken.

Improvements were needed at the site so that equipment could be placed and secured at the proper location at the Riverside Treatment Plant. Each system was connected to the plant's digesters in a manner that would enable both units to be run in parallel so that their performance could be prepared. This was accomplished so that each unit could be run in accordance with the Project's test plan. Connections to the plant were also made so that once the pretest baseline analysis was completed, it would be possible to switch over to the new ultrasound systems for testing.

Task 2.2.5a. First Quarterly Report on Data Collection and Analysis

Data collection activities were undertaken and basic information on the baseline data for the ultrasound test systems was collected so that it could be used as the baseline against which to evaluate the performance of the two ultrasound technologies. These data were being collected in accordance with the *Test Plan and Protocol*.

**How we are doing compared to our plan:**

As reported previously, the redirection of our approach (two ultrasound technologies, instead of one ultrasound and one thermal hydrolysis technology) will make the project findings more relevant to the State of California, but required additional consultation and planning with the technology vendors. This modified focus delayed completion of the *Site Selection and Test Plan Report*. However, the findings produced will clearly document how the use of ultrasound technology can help increase gas production as well as improve the treatment process.

As part of the ongoing coordination with the technology vendors, the CE Team sought to streamline the site selection and design tasks by involving the vendors in the project planning. This allowed subsequent efforts to focus on project implementation, rather than further evaluations and design activities. However, these additional processes/steps further delayed the finalization of the *Site Selection and Test Plan Report*. These challenges have been largely overcome, and the testing program is being initiated in 2004 and completed in 2005. As reported previously, the *Site Selection and Test Plan* was completed in March, and sent to the Technical Advisory Committee (TAC) for review and comment. Additional information was presented to the TAC at the Critical Project Review meeting held on May 22 and installation and start up continued through August.

**Significant problems or changes:**

There are no significant fiscal problems to report during this period and work is proceeding within budget. Progress and expenditures will result in project being completed on our revised project schedule and within budget.

**What we expect to accomplish during the next period:**

It is anticipated that during September operation of the ultrasound systems at Riverside will continue. Additionally, the CE Team anticipates that the equipment installed during the period from June through August will continue to be operated, including control system modifications identified during the installation process that were needed so that the systems would meet all their design requirements.

On the gas cleaning project, design efforts will continue in September, with the focus being on the efforts needed to ensure that the connections to the existing gas distribution system are adequate. Additionally, equipment layouts and the associated mechanical, civil and electrical/instrumentation and control engineering activities will continue. It is planned that the draft design of the gas cleaning system will be completed and reviewed internally by the Commonwealth Team in September so that it can be submitted to the Commission in October.

Work on the first quarterly report, focusing on baseline data, will continue. This will include data collection for the ultrasound systems at the City of Riverside's plant, and the gas cleaning data at IEUA Regional Plant 1. The bi-weekly coordination calls with the City of Riverside will continue and it is expected that coordination meetings will be held with IEUA to review the draft design approach for the moisture removal, siloxane removal and H<sub>2</sub>S removal systems. It is also anticipated that the preparation of the "as-built" drawings will continue so that they can be completed and submitted to the Commission in November.

**Status of Milestones and Deliverables:**

Table 1 on the following page summarizes the status of Project 2.2 task deliverables as of the end of the current reporting period.

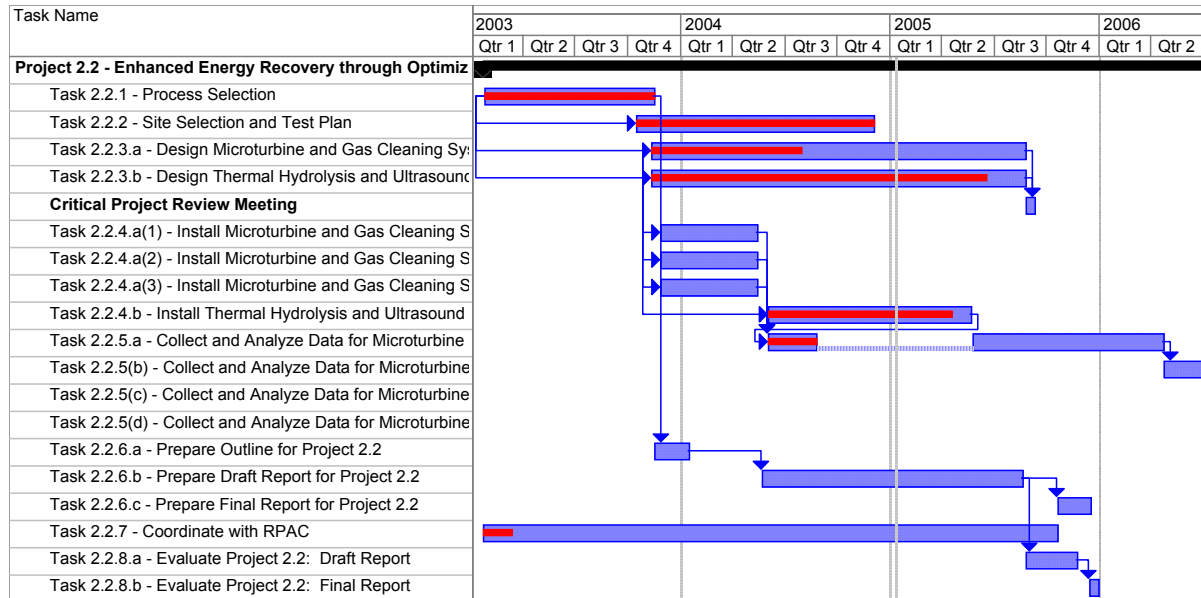
**Table 1: Summary of Project Status and Deliverables – Project 2.2**

Task No.	Description	Start Date		Due Date		Status (%)
		Planned	Actual	Planned	Actual	
2.2.1	Process Selection	01/24/02	01/24/03	09/04/03	11/10/03	100%
2.2.2	Site Selection and Test Plan	02/15/02	10/15/03	10/26/03	3/31/04	100%
2.2.3.a	Design Gas Cleaning System	02/15/02	11/10/03	11/24/03		40%
2.2.3.b	Design Ultrasound Systems	02/15/02	11/10/03	11/24/03		100%
2.2.4.b	Install Ultrasound System	12/5/03	6/1/04	5/21/04		90%
2.2.5.a	First Quarterly Report	06/20/04	6/1/04	8/20/04		20%
2.2.7	Coordinate with RPAC	01/24/02		01/16/06		

*Explanation of any Difference(s) in Schedule*

*Task 2.2.2 – Site Selection and Test Plan* – The findings of the Process Selection Report identified the technologies that are to be used at both the Riverside plant for enhanced anaerobic digestion and at RP-1 for gas cleaning. As noted previously, additional coordination activities with vendors has been required. Efforts were undertaken to streamline the site selection and test plan and design processes by conducting more detailed coordination with the vendors on their technologies. This approach shortened the time needed to secure the long lead-time equipment items and execute the project most efficiently

**Overall Schedule for Project 2.2:**



**Overview of Fiscal Status:**

Table 2 below summarizes the fiscal status of Project 2.2 by task as of the end of the current reporting period.

**Table 2: Fiscal Status by Task – Project 2.2**

Task Number	Budget	Invoiced <sup>1</sup> To-Date	Fiscal Status *
2.2.1	\$236,563	\$236,563	OT
2.2.2	\$182,543	\$182,543	OT
2.2.3.a	\$242,995	\$0	OT
2.2.3.b	\$215,842	\$0	OT
2.2.4.b	\$229,585	\$0	OT
2.2.5.a	\$87,073	\$0	OT
2.2.7	\$22,557	\$0	OT

\*Fiscal Status – Please indicate if you are “On Track” (OT), OverBudget (OB), or UnderBudget (UB)

<sup>1</sup> Invoice to-Date refers to amount invoiced prior to 10% retention withheld.