

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 during September operation of the ultrasound systems at Riverside would continue. Additionally, the equipment installed during the period from June to August up and operating. This work was to include, 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 were to be undertaken in September, with the focus being on the efforts needed to make sure that the connections to the existing gas distribution system were adequate. In addition, equipment layouts and the associated mechanical, civil and electrical/instrumentation and control engineering activity were to continue. It was further anticipated that the draft design of the gas cleaning system would be completed and reviewed internally by the Commonwealth Team in September so that it could be submitted to the Commission in October. Work on the first quarterly report, focusing on baseline data, was to continue. This was to include data collection for both 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 were to continue and it was expected that coordination meetings would be held with IEUA to review the draft design approach for the moisture removal, siloxane removal and H₂S removal systems. It was also anticipated that the preparation of the "as built" drawings would continue so that they could be developed in September, finalized and reviewed within the team in October and submitted to the Commission in November.

What we actually accomplished this period:

Task 2.2.1 Process Selection:

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

Task 2.2.3.a. Design Gas Cleaning System:

- As anticipated, efforts on this task continued in September. Design data and other information on site conditions was collected and incorporated into the design of the gas cleaning systems. Preliminary design drawings, showing the layout of the various gas cleaning elements (gas drying, H₂S removal and siloxane removal) were reviewed and refined with the host (IEUA) staff so that efforts with the various vendors could be undertaken to ensure that the design incorporated all equipment requirements. Design data related to sizing of the piping, electrical, instrumentation/control and other project elements were incorporated into the design and reviewed with project host engineering and operations staff. The result of these efforts was a set of preliminary drawings that were reviewed by members of the project team. This review was conducted with the expectation that the final completed design could be prepared in October and be submitted to the Commission in November.

Task 2.2.3b Design Ultrasound System:

- Design activities were completed on this task previously and the design documents were submitted to the Commission in June. Efforts on this task was very limited in September with the only activity being use of the results of this task to complete the as built drawings prepared under Task 2.2.4.b. The City of Riverside staff worked closely with the CE Team staff to ensure that piping, electrical, instrumentation/control and other design activities were conducted in a manner so that the ultrasound test units were properly sized and functioned effectively. Effective communication with City of Riverside has been accomplished through bi-weekly calls where project activities are discussed to insure that the proposed system's design was fully compatible with existing facilities at the City of Riverside.

Task 2.2.4b Install Ultrasound System:

- Installation of the ultrasound systems was completed in August. The installation allowed start up testing to occur in August and September. Work continued with IWe Tech and Sonico, the two ultrasound vendors used on this project. Efforts undertaken in October included updating the design drawings with “as built” information so that adequate project documentation would be achieved. Photos of the equipment were taken and the vendors were asked to provide technical support as operational issues arose. Under this task 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 to 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.

Task 2.2.5.a First Quarter Data Collection and Analysis

- Baseline data at the City of Riverside’s Treatment Plant for the ultrasound systems was collected starting in June and collection continued until September when start up began. For the gas cleaning project, baseline data collection activities began approximately two months later in August. In both cases it was important to have data that described the performance of the existing systems before the project started, to document operating conditions prior to startup so that the effectiveness of the units could be assessed. As part of this effort close coordination with the City of Riverside continued through the bi-weekly calls referenced earlier. Regular coordination with IEUA also continued as the design of the gas cleaning system (See Task 2.2.3.b) continued and baseline data collection activities were initiated.

Task 2.2.5.b Second Quarterly Data Collection and Analysis

- In September, data collection during the ultrasound system operational phase continued. As noted previously, start up activities occurred during September and several performance issues with the ultrasound units being tested arose. Both vendors, IWe Tech and Sonico, provided technical support during this period so that the units would operate satisfactorily. On the gas cleaning project, baseline data collection continued and CE Team staff worked closely with IEUA host facility staff to coordinate data collection activity with operations. This activity was expected to continue throughout the quarterly data collection efforts.

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 efforts to focus on project implementation, rather than evaluations and design activities. However, these additional processes/steps additionally delayed the finalization of the *Site Selection and Test Plan Report*. These challenges have been largely overcome, and the testing program was initiated in the second half of 2004. This will enable all testing to be completed by the end of the third quarter of 2005 with the results being incorporated into the final report to be drafted by the end of 2005.

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 October, operation of the ultrasound systems at Riverside will continue. The equipment installed from June to August and started up in September, will continue to operate. This is to include, 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 October, 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 are to continue. It is anticipated that the draft design of the gas cleaning system will be completed and reviewed internally by the Commonwealth Team so that it can be submitted to the Commission in October.

Work on the first quarterly report, focusing on baseline data, will also continue. This will include data collection for both 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 H₂S 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 below summarizes the status of Project 2.2 task deliverables as of the end of the current reporting period.

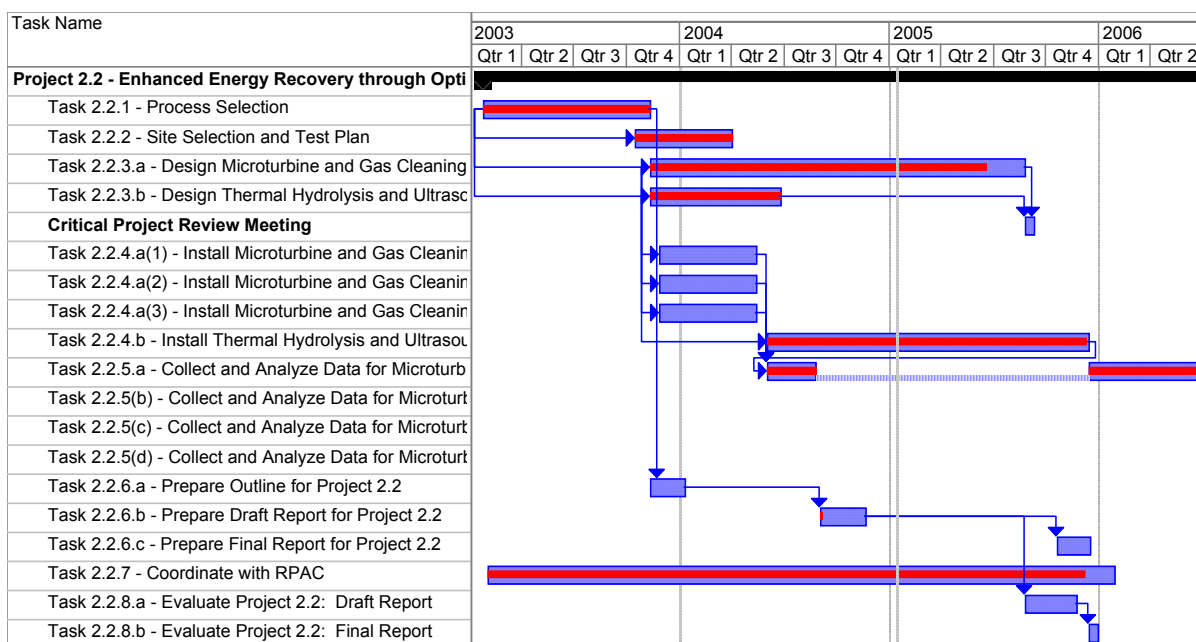
Table 1: Summary of Project Status and Deliverables – Project 2.2

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		90%
2.2.3.b	Design Ultrasound Systems	02/15/02	11/10/03	11/24/03	6/23/04	100%
2.2.4.b	Install Ultrasound System	12/5/03	6/1/04	5/21/04		99%
2.2.5.a	First Quarterly Report	6/20/04	6/1/04	8/20/04		100%
2.2.6.b	Second Quarterly Report	8/20/03	9/1/04	11/19/04		5%
2.2.7	Coordinate with RPAC	01/24/02	2/1/03	01/16/06		95%

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 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 ¹ 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
2.2.5.b	\$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)

¹ Invoice to-Date refers to amount invoiced prior to 10% retention withheld.