

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 July, installation of the two separate ultrasound treatment systems at Riverside would continue. Equipment received in June was to be installed and start up activities planned. In addition, control system modifications planned in June were to be developed in detail, so the control system upgrades could be implemented during the installation process. On the gas cleaning project, 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 were 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 and it was expected that coordination meetings would be held with IEUA to review the design approach for the moisture removal, siloxane removal and H₂S removal systems. Finally, it was anticipated that the gas sampling plan would be reviewed.

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:

- Efforts on this task continued in July. Design data and other information on site conditions were collected for the design efforts on the gas cleaning task. Conceptual design drawings, showing the layout of the various gas cleaning elements (i.e., gas drying, H₂S removal and siloxane removal) and design concepts were reviewed and refined with the host customer (IEUA) staff so that efforts could begin on the more detailed design activities required prior to equipment installation. Design data related to sizing of the piping, electrical, instrumentation/control and other project elements were developed and reviewed. This effort is important because the existing gas distribution infrastructure likely will need to be upgraded to handle the extra gas that will be collected as a result of the demonstration. Coordination activities were undertaken with vendors so that equipment requirements would be properly integrated into the design being prepared. In addition, engineers from NIRAS, a Danish firm, were requested to develop design information for the biological gas treatment system being considered under this project.

Task 2.2.3b Design Ultrasound System:

- Design activities were completed in July. These activities were undertaken in close coordination with the City of Riverside to ensure that the two ultrasound test units being tested would be properly integrated into the plant's existing facilities. The City of Riverside staff worked closely with the CE Team staff to ensure that piping, electrical, instrumentation/control and other design activities were initiated in a coordinated manner so that the ultrasound test units are properly sized and will function effectively. The design documents for this project were submitted to the Commission in June. Design information was reviewed and updated in the field on an ongoing basis as needed as installation continued. This has been accomplished through frequent communications with City of Riverside staff including weekly calls where project activities are discussed. In the previous months these calls were held on a bi-weekly basis, but in July they will be held weekly during the critical installation and startup period. These calls have been very productive in ensuring that the proposed system's design was fully compatible with existing facilities at the City of Riverside

Task 2.2.4b Install Ultrasound Systems:

- Significant progress related to installation of the IWe Tech and Sonico ultrasound systems occurred in July. 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.

Connections to the plant were also made so that once the pre-test baseline analysis was completed, it would be possible to switch over to the new ultrasound systems for testing.

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 will allow future efforts to focus on project implementation, rather than further 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 it is anticipated that the testing program will be initiated and implemented by the end of 2004. As reported earlier, 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 22nd and installation and start up will continue to proceed through the August time frame.

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:

Installation and start up testing of the IWe Tech and ultrasound systems at Riverside will continue in August. Equipment received in June, installed in July will undergo testing and interconnection with all of the existing plant systems will be completed. Testing and start up activities will also be undertaken and the pre-test baseline data collection will continue. In addition, required control system modifications that were identified and planned in July will be implemented in August. On the gas cleaning project, joint efforts will continue with NIRAS, a Danish firm that is a member of the Commonwealth Team. NIRAS staff is assisting in the development of design and system performance criteria for the biological gas

cleaning system that is to be installed under this project. Biological gas cleaning systems are relatively untested in the United States so the Commonwealth Team is seeking to draw on European experiences to ensure that the system installed is “state-of-the-art.”

An option for the biological treatment system is to use an existing tank that is not currently being used at another IEUA facility to 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 investigated. The tank’s supplier was to be contacted to determine the design criteria of the tank to make sure it is adequate for potential use at RP-1. Additional coordination activity with IEUA is also planned. Also on the gas cleaning project, design efforts will continue, with the focus being on the efforts needed to make sure that the connections to the existing gas distribution system are adequate and communication with the vendors to make sure equipment being procured is fully consistent with the existing plants requirements and the overall performance objectives of the project. In addition, equipment layouts and the associated mechanical, civil and electrical/instrumentation and control engineering activity will continue. The weekly coordination calls with the City of Riverside will continue in August and it is expected that a coordination meeting will be held with IEUA engineering and operations staff at RP-1, the project’s host facility.

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.

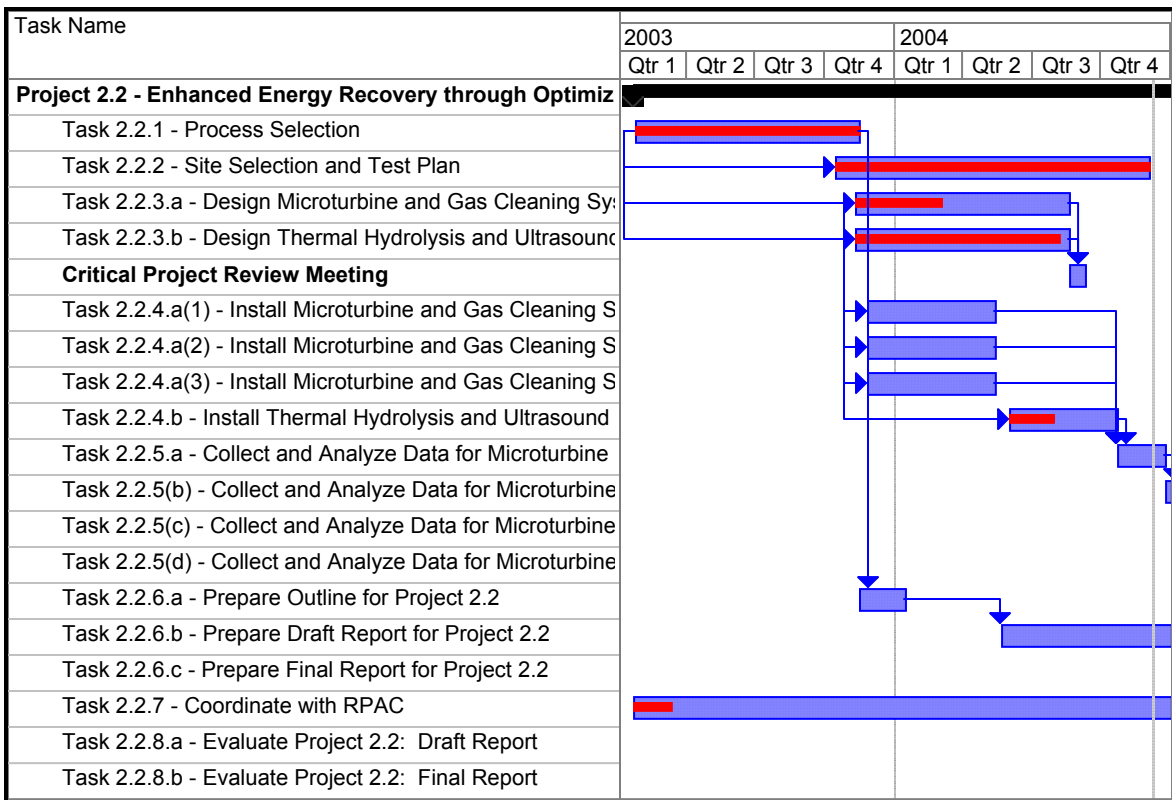
Table 1: Summary of Project Status and Deliverables – Project 2.2

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		40%
2.2.3.b	Design Ultrasound Systems	02/15/02	11/10/03	11/24/03		95%
2.2.4.b	Install Ultrasound System	12/5/03	6/1/04	5/21/04		40%
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	Invoiced¹ 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
2.2.7	\$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.