

# **SEMI-ANNUAL TECHNICAL PROGRESS REPORT**

For

**REPORTING PERIOD**  
BEGINNING April 1, 2004  
ENDING September 30, 2004

Prepared by Mark A. Carl

Report Submitted October 27, 2004

For

DOE Award No. DE-PS26-02NT15444

Report Submitted  
By The  
Interstate Oil and Gas Compact Commission  
P.O. Box 53127  
Oklahoma City, OK 53127-3127

## **DISCLAIMER**

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights,. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do no necessarily state or reflect those of the United States Government or any agency thereof.

## **ABSTRACT**

The CEC approved funding on April 9, 2003 for \$1,000,000.00 instead of the \$1,500,000.00 COPE requested for the project. A kickoff meeting with the California Energy Commission (CEC) was held on Monday, April 14, 2003, in their Sacramento, CA offices. Mark Carl, IOGCC project manager for the DOE grant, attended this meeting, along with Bob Fickes with COPE, Edan Prabhu, Mike Merlo and CEC officials. The change in funding by the CEC required a modification in the scope of work and an amended form DOE F 4600.1. The modifications were completed and the IOGCC received approval to commence work on the project on May 9, 2003. On May 29, 2003, Virginia Weyland with DOE/NETL, Mark Carl with IOGCC, and Bob Fickes with COPE, Edan Prabhu and Mike Merlo, consultants with COPE, participated in a teleconference kick-off meeting.

During May, 2003, COPE canvassed its membership for potential locations for the four test sites. They received a very good response and have identified at least two potential sites for each of the four test sites. COPE has been obtaining gas samples from the various potential lease sites for analyses to verify the chemical properties analyses which the oil and gas producers provided during the initial contact period. The St. James project located at 814 W. 23<sup>rd</sup> Street in Los Angeles, California, was selected as the first test site for the project.

A Project Advisory Committee (PAC) was established in May, 2003. The following representatives from each of the following areas of expertise comprise the PAC membership. Acquisition of permits for the initial test site has required drawn out negotiations with CEC which has hindered progress on the technical aspects of the project. The technical aspects will begin aggressively beginning in October, 2003.

The Southern California Air Quality Management District (SCAQMD) donated three Capstone micro-turbines to the project. These micro-turbines will be utilized at the St. James Project site located in Los Angeles, California. This site will fulfill the requirements of the medium BTU test site. It is anticipated that start-up of operations will begin during late December, 2003 or early January, 2004

## **Table of Contents**

<b>DISCLAIMER</b> .....	2
<b>ABSTRACT</b> .....	3
<b>LISTS OF GRAPHICAL MATERIALS</b> .....	5
<b>INTRODUCTION</b> .....	6
<b>EXECUTIVE SUMMARY</b> .....	7
<b>EXPERIMENTAL</b> .....	8
<b>RESULTS AND DISCUSSION</b> .....	9
<b>CONCLUSIONS</b> .....	10
<b>REFERENCES</b> .....	11
<b>BIBLIOGRAPHY</b> .....	11
<b>LISTS OF ACRONYMS AND ABBREVIATIONS</b> .....	12
<b>APPENDICES</b> .....	13

**LISTS OF GRAPHICAL MATERIALS**

**GANTT CHART (July, 2004)**..... 42

## **INTRODUCTION**

This is the fourth Technical Report submitted in compliance with the United States Department of Energy (DOE) National Energy Technology Laboratory Preferred Up-Stream Management Practices (PUMP) III Assistance Grant Number DE-FC26-02NT15444 awarded to the Interstate Oil and Gas Compact Commission (IOGCC). This is a joint project between the IOGCC and the California Oil Producers Electric Cooperative (COPE) with funding provided by the DOE and the California Energy Commission (CEC). The entire project scope of work is anticipated to exceed \$2,000,000.00. Funding for the project is from an award from the DOE to the IOGCC for \$1,000,000.00 and the balance of the funding is being obtained by COPE through grant funding from the (CEC) for \$1,000,000.00 and additional in-kind donation of time and materials.

## EXECUTIVE SUMMARY

**Work Status and Progress:** COPE received an executed copy of the California Energy Commission (CEC) grant on April 9, 2003. The CEC approved funding for \$1,000,000.00 instead of the \$1,500,000.00 COPE requested for the project. A kickoff meeting with the CEC was held on Monday, April 14, 2003, in their Sacramento, CA offices. Mark Carl, IOGCC project manager for the DOE grant, attended this meeting, along with Bob Fickes with COPE, Edan Prabhu, Mike Merlo and CEC officials.

The change in funding by the CEC required a modification in the scope of work and an amended form DOE F 4600.1. The modifications were completed and the IOGCC received approval to commence work on the project on May 9, 2003. On May 29, 2003, Virginia Weyland with DOE/NETL, Mark Carl with IOGCC, and Bob Fickes with COPE, Edan Prabhu and Mike Merlo, consultants with COPE, participated in a teleconference kick-off meeting.

COPE canvassed its membership for potential locations for the four test sites. We presently have contracts on the High BTU site, the Medium BTU site and the Harsh Gas site. The Low BTU site continues to be between two sites and we are evaluating them to select the best between the two.

The St. James project, located at 814 W. 23<sup>rd</sup> Street in Los Angeles, California, is the Medium BTU site and was selected as the first test site for the project. This site underwent a 2 ½ hour test run in early February and is currently back into essentially continual production and excess gas is treated to meet SoCal Gas Company specifications and sold to them by the producer. The three microturbines at the site are working extremely well to date. COPE has arranged with the University of Southern California – Irving to include the St. James site in its on-line monitoring Website so anyone can log on and evaluate the system at any time. The on-line monitoring well data is currently available at <http://www.apep.uci.edu/DER/AQMD/>. The St. James site is denoted as site number 20 at this Website.

The other two sites under contract are currently working on logistics dealing with either excess electricity or gas and distributed energy equipment selection. The high BTU gas site is experiencing difficulty in maintaining a continuous supply of high BTU gas and therefore we are considering an alternate site at this time. We are finding that obtaining the pertinent permits for the sites the biggest hurdle to cope with at each of the sites. However, Mr. Bob Fickes, President of COPE, has been successful in obtaining approval from the California Energy Commission that utilizing waste/flare gas for the generation of electricity, as this project is doing, qualifies as an environmentally friendly renewable resource activity. This allows operators tax benefits and should allow for facilitating permitting.

Due to many various delays related to permitting in California required an extension of time for the project. An extension of 18- months was approved in September 2004 for this project.

Monthly status reports, beginning with March, 2004 and ending with August, 2004, may be found in the Appendices.

## **EXPERIMENTAL**

### **MICROTURBINE NOISE ABATEMENT**

The St. James project site received citizen complaints regarding excessive noise once the microturbines were installed and we were requested to investigate and provide recommendations. Capstone and Cal Power were contacted for recommendations for possible noise abatement and mitigation techniques. We acquired a sound meter and performed spot readings to establish a baseline.

Several trial fixes were attempted during July, 2004 with limited success. The ambient noise level for the area exceeded existing city ordinance allowable's with, or without, the microturbines operating at the site. The primary issue for the individual's complaints is the high pitch whine emanating from the microturbines. Trial fixes were completed in August with the installation of a prototype design installed on all three microturbines. The noise suppression equipment has reduced the whine significantly and is now considered to be at an acceptable level. A photograph of the various noise suppression designs to include the one selected for use at the site are shown in the August, 2004 Status Report found in the Appendix.

## RESULTS AND DISCUSSION

The location selected for the medium BTU project site will be the St. James project lease site located at 814 W. 23<sup>rd</sup> Street in Los Angeles, California. It is anticipated that this site will begin operations sometime in late December, 2003 or early January, 2004. The long delay in getting this site ready for start-up was due to its location. The site is located in downtown Los Angeles which made permitting extremely difficult due to the many various regulatory agencies. Air quality permit requirements proved to be the greatest hurdle. Mr. Bob Fickes, President of COPE, has been successful in obtaining approval from the California Energy Commission that utilizing waste/flare gas for the generation of electricity, as this project is doing, qualifies as an environmentally friendly renewable resource activity. This allows operators utilizing the methods we are doing research on for this project extra tax benefits and should allow for facilitating permitting.

We are also breaking new ground on how operators will be able to deal with excess “waste gas” or electricity generated when utilizing distributed energy equipment.

Monthly status reports and a Gantt Chart, developed July, 2004 is provided in the end of the Appendix

Results from the medium BTU site (St. James project site) are very encouraging at this point. Continuous production from the site has been occurring since May, 2004

## **CONCLUSIONS**

There are no conclusions to make regarding the technical and experimental aspects to date in this project as project start-up activities have only begun on the medium BTU site (St. James project site). It is anticipated that the additional three sites will be operational prior to the next semi-annual technical report due by April 30, 2005.

## **REFERENCES**

None

## **BIBLIOGRAPHY**

None

## **LISTS OF ACRONYMS AND ABBREVIATIONS**

AQMD	Air Quality Management District
BTU	British Thermal Units
CEC	California Electric Cooperative
COPE	California Oil Producers Electric Cooperative
DOE	Department of Energy
IOGCC	Interstate Oil and Gas Compact Commission
NETL	National Energy Technology Laboratory
PAC	Project Advisory Committee
PUMP	Preferred Upstream Management Practices
SCAQMD	Southern California Air Quality Management District

# **APPENDICES**

## **STATUS REPORT**

**For**

**OFFGASES, California Energy Commission Contract Number 500-02-016  
March 2004**

**Prime Contractor Project Manager: Bob Fickes  
Commission Contract Manager: Paul Roggensack**

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

#### **Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

#### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

#### **Task 4: High BTU Installation.**

- **Continue negotiation on agreements with site owner and sign Membership Participation Agreement.**
- **Proceed with conceptual design.**

#### **Task 5: Medium BTU Installation.**

- **Monitor and report status of Contractor activities.**
- **Install gas conditioning equipment**
- **Perform complete system startup and begin 30 day warranty run.**
- **Complete monitoring system design and start installation.**

#### **Task 6: Low BTU Installation.**

- **Continue proposal evaluation for distributed Generation source for this class.**
- **Continue Site owner negotiations**
  
- **Determine best site to use based on equipment utilization.**

#### **Task 7: Harsh Gas Installation.**

- **Continue Evaluation for electrical power sales agreement for power generated in excess of site demand.**
- **Determine costs of interconnect for**
  - **(a) power sales through the grid, and**
  - **(b) power sales to adjacent properties (over-the-fence).**

## ***What we accomplished this period***

### **Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

### **Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

### **Task 4: High BTU Installation.**

- Continued negotiation with owner on Membership Participation Agreement.
- Met with owner and reviewed status of present activity with owner provided 30 kW Capstone microturbine and gas conditioning concept. Owner agreed to interface with neighbor on possible use of excess electricity/gas.
- Owner has contracted for electrical design and has started work on site.

### **Task 5: Medium BTU Installation.**

- Refrigerated Drier arrived during the week of 3/15.
- Held construction restart meeting on 3/25. Work to restart the week of 3/29 with the installation of the Offgases project separator and drier followed by the installation of a regulator at the owner's well test tank.
- Met with principles on Monitoring system at 3/25 construction meeting. UCI representative attended meeting to discuss participation in monitoring as part of South Coast AQMD program. All parties agreed to their participation and that the monitoring system would be completed following installation of gas conditioning system and startup.

### **Task 6: Low BTU Installation.**

- Site selection has been reduced to either site 25/26 or site 31.
- Review of agreement requirements with owners of sites is in progress.
- Proposals from Distributed Generation vendors have been received and evaluation is in progress.

### **Task 7: Harsh Gas Installation.**

- Agreements approved and signed by Drilling & Production, Maricopa Lease (Site 35), for participation in project.
- Task responsibility established and draft time line developed.
- Generator sizing is under review because of low (40kW) demand and high gas availability (estimated at 120 MSCF/day).
- Gas production, electrical meter demands and connected loads do not agree with each other. Perform additional testing and verifying electrical load and gas volume.
- Interconnect cost estimates in progress for
  - power sales through the grid, and

- power sales to adjacent properties (over-the-fence).

*What we expect to accomplish during the next period*

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Continue negotiation on agreements with site owner and sign Membership Participation Agreement.
- Proceed with design and installation

**Task 5: Medium BTU Installation.**

- Monitor and report status of Contractor activities.
- Install gas conditioning equipment
- Perform complete system startup and begin 30 day warranty run.
- Complete monitoring system design and start installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue Site owner negotiations
- Establish DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Continue Evaluation for electrical power sales agreement for power generated in excess of site demand.
- Verify Site Demand
- Verify type Interconnect application to be for excess power sales to grid.
- Assemble H2S systems data for review and evaluation.
- Determine costs of interconnect for power sales through the grid, only.

*How we are doing compared to our plan*

**Issues encountered:**

- **Gas Co. inability to accept gas at Medium Btu site.**
- **High Btu site requires sale of excess power to support production.**
- **Harsh Gas site requires sale of excess power to support production.**
- **COPE is working on changing oilfield offgases from non-renewable to renewable.**
- **Low Btu site owners are take more time to respond than expected**
- **Need to fully evaluate best H2S removal System for Harsh Gas Site**

**Actions:**

- **So Cal Gas is replacing a moisture separator and is getting material together to start next month. They are sub-contracting this work due to workload constraints. Retest of the delivery system will be performed at completion of the installation.**
- **COPE has initiated contact with utility and potential buyer of power for High Btu and Harsh Gas sites to negotiate power sales.**

***Status of Milestones and Deliverables***

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100
1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		45
	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		15
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100
Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		30
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003	10/21/2003	100
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003		2/16/2004		35

5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004	75
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004	5
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004	15
8.0	CPR	1/17/2004		2/17/2004	
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005	
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005	
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005	
12.0	Harsh Gas System Maintenance & Monitoring	2/24/2004		2/24/2005	
13.0	Technology Transfer Activities	2/15/2005		3/6/2005	

**STATUS REPORT**  
For  
**OFFGASES, California Energy Commission Contract Number 500-02-016**  
**April 2004**

**Prime Contractor Project Manager: Bob Fickes**  
**Commission Contract Manager: Paul Roggensack**

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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Continue negotiation on agreements with site owner and sign Membership Participation Agreement.
- Proceed with design and installation

**Task 5: Medium BTU Installation.**

- Monitor and report status of Contractor activities.
- Install gas conditioning equipment
- Perform complete system startup and begin 30-day warranty run.
- Complete monitoring system design and start installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue Site owner negotiations
- Establish DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Continue Evaluation for electrical power sales agreement for power generated in excess of site demand.
- Verify Site Demand
- Verify type Interconnect application to be for excess power sales to grid.
- Assemble H2S systems data for review and evaluation.
- Determine costs of interconnect for power sales through the grid, only.

***What we accomplished this period***

**Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

### **Task 4: High BTU Installation.**

- **Membership Participation Agreement has been approved and signed by the TERMO Company for the Cherry Fee lease (Site 28) for participation in the project. Agreement contains requirement for verification of Btu content above 1600 Btu.**
- **Met with owner and reviewed status of present activity with owner providing 30 kW Capstone microturbine and minimal gas conditioning concept. COPE will provide additional gas cleanup solutions as challenges present themselves. Owner agreed to interface with neighbor on possible use of excess electricity/gas.**
- **Completion of construction and startup is expected in May/June depending on inspection and permit sign off by City of Long Beach and inspection approval by Southern California Edison.**

**Air permitting not required as Capstone 30kW turbine was purchased and installed prior to rule change.**

- **Electrical design completed and permit submitted to City of Long Beach.**
- **Interconnection agreement has been signed with Southern California Edison.**

### **Task 5: Medium BTU Installation.**

- **Refrigerated Drier and Separator installed. Piping and electrical systems installed to connect this equipment along with regulator at owner's well test tank.**
- **Prerequisite testing of mechanical system for startup failed several pressure tests over a three-week period. Contractor determined that a combination of pipe treading tool and fittings selected contributed to system leaks. Contractor has replaced sections of pipe that had been cut and treading and fittings. Initial test results indicate that system pressure is holding and fix was satisfactory.**
- **A defective dump valve for the separator was identified as an internal system leak source. The manufacturer under warranty is replacing the valve.**
- **Electrical power system installation complete**
- **Based upon positive final test results and meter set by DWP the Microturbines 30 day warranty run will begin the first week in May.**
- **Monitoring system finalized and shop fabrication started. Field wiring started. Work is being coordinated with UCI representative to install their equipment for monitoring as part of South Coast AQMD program. The monitoring system will be completed following installation of gas conditioning system and startup.**

### **Task 6: Low BTU Installation.**

- Site selection has been reduced to either site 25/26 or site 31.
- Review of agreement requirements with owners of sites is in progress.
- Proposals from Distributed Generation vendors have been received and evaluation is in progress.

**Task 7: Harsh Gas Installation.**

- Agreements approved and signed by Drilling & Production, Maricopa Lease (Site 35), for participation in project.
- Task responsibility established and draft time line developed.
- Generator sizing is under review because of low (40kW) demand and high gas availability (estimated at 120 MSCF/day).
- Finished verification of site gas production and electrical demand Interconnect cost estimates in progress for power sales through grid.
- Completed H2S Systems Review

*What we expect to accomplish during the next period*

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Proceed with installation and startup of 30 kW Microturbine.
- Interface with owner on building permit and Edison inspection on installation.

**Task 5: Medium BTU Installation.**

- Monitor and report status of Contractor activities.
- Perform complete system startup and begin 30-day warranty run.
- Complete monitoring system installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue and complete Site owner negotiations
- Make DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Evaluate near term site demand increases
- 
- Obtain cost of interconnect for small amount of kW sales to grid.
- Start H2S system implementation. Review costs of acceptable vendors
- Determine if site location power lines need to be sized up to handle load input from DG.
- Start DG installation bid process. Pre-qualify interested bidders. Verify that bidders understand the local APCD requirement and can meet or exceed those specifications.

*How we are doing compared to our plan*

**Issues encountered:**

- Gas Co. inability to accept gas at Medium Btu site.
- High Btu site requires sale of excess power to support production.
- Harsh Gas site requires sale of excess power to support production.
- COPE is working on changing oilfield offgases from non-renewable to renewable.
- Low Btu site owners are take more time to respond than expected
- Need to fully evaluate best H2S removal System for Harsh Gas Site

**Actions:**

- So Cal Gas sub-contractor on site working installing equipment and piping. Retest of the delivery system will be performed at completion of the installation. Complete startup of St James site scheduled for early May.
- COPE has initiated contact with utility and other potential buyer of power for High Btu and Harsh Gas sites.
- COPE working with several agencies including LADWP, CEC and FERC to establish OFFGASES as part of renewable portfolio.

*Status of Milestones and Deliverables*

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100
1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		50

	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		15
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100
		<b>Start Date</b>		<b>Due Date</b>		<b>Status</b>
<b>Task Number</b>	<b>Task/Description</b>	<b>Planned /</b>	<b>Actual</b>	<b>Planned/</b>	<b>Actual</b>	<b>(%)</b>
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		30
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003	10/21/2003	95
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003		2/16/2004		45
5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004		85
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004		10
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004		15
8.0	CPR	1/17/2004		2/17/2004		
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
12.0	Harsh Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
13.0	Technology Transfer Activities	2/15/2005		3/6/2005		

**STATUS REPORT**  
For  
**OFFGASES, California Energy Commission Contract Number 500-02-016**  
May 2004

**Prime Contractor Project Manager: Bob Fickes**  
**Commission Contract Manager: Paul Roggensack**

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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Proceed with installation and startup of 30 kW Microturbine.
- Interface with owner on building permit and Edison inspection on installation.

**Task 5: Medium BTU Installation.**

- Monitor and report status of Contractor activities.
- Perform complete system startup and begin 30-day warranty run.
- Complete monitoring system installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue and complete Site owner negotiations
- Make DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Evaluate near term site demand increases
- 
- Obtain cost of interconnect for small amount of kW sales to grid.
- Start H2S system implementation. Review costs of acceptable vendors
- Determine if site location power lines need to be sized up to handle load input from DG.
- Start DG installation bid process. Pre-qualify interested bidders. Verify that bidders understand the local APCD requirement and can meet or exceed those specifications.

## ***What we accomplished this period***

### **Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

### **Task 4: High BTU Installation.**

- **30 kW Capstone microturbine installed along with vapor recovery compressor. System piping installed and Electrical system installed to support the microturbine.**
- **City of Long Beach approved installation and signed off on permit. Southern California Edison inspection and metering started with completion and startup scheduled for first week in June.**
- **Owner interface with neighbor on possible use of excess electricity/gas on hold pending results of startup test.**
- **Interconnection agreement has been signed with Southern California Edison.**

### **Task 5: Medium BTU Installation.**

- **System startup initiated with wellhead gas on May 19. Microturbines were shut down for weekend at owner request due to resource limitation.**
- **30 day run continued on May 22 with all three microturbines.**
- **On May 25, one of the three microturbines shut down. Initially, it was thought that this was due to reduction in gas supply from the wells (see next bullet) but it was later determined that the unit experienced an electronic system failure. Capstone has been contacted to investigate and repair the microturbine under their warranty.**
- **The owner experienced mechanical troubles that cause loss of three wells (one being the highest gas producer). One well has been repaired. The other two will be repaired in June. One well had a pump failure; the other two had separated rods.**
- **The owner is also experiencing a high liquid level in the wells, which is normal for restarting a field that has been shut down for a long period. This causes low gas production. The field will stabilize within a few weeks and provide a more consistent quantity of gas.**
- **Gas conditioning initially was very positive; but, as time progress, liquids were found to accumulate in the pipe between the dryer and the microturbines. This is being monitored and if adjustments in the dryer do not resolve this condition, alternative configurations will be considered to capture the liquid. It appears that the dryer is performing a gross condensation of water and hydrocarbons instead of “polishing” the gas after the scrubber.**

- The monitoring system was partially installed in the field. Field wiring was started but it was determined that a new power source was required due to negative interaction with site protection/monitoring system. The monitoring system will be completed following installation of the new power circuit and repair of the #2 microturbine.

**Task 6: Low BTU Installation.**

- Site selection has been reduced to either site 25/26 or site 31.
- Review of agreement requirements with owners of sites is in progress.
- Proposals from Distributed Generation vendors have been received and evaluation is in progress.

**Task 7: Harsh Gas Installation.**

- Started evaluation of near term site demand increases
- Review H2S mitigation systems and selected a vendor.
- Start H2S system implementation. Review costs of acceptable vendors
- Started DG selection process.
- Relocated DG location to take advantage of electrical, feed gas, and heat utilization accessibility.

*What we expect to accomplish during the next period*

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Proceed with startup of 30 kW Microturbine.
- Interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.

**Task 5: Medium BTU Installation.**

- Address issues identified in startup/warranty run and implement fixes to system as needed.
- Complete system startup and finish 30-day warranty run.
- Complete monitoring system installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue and complete Site owner negotiations
- Make DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Evaluate and verify feed gas quality and quantity.
- Review and select gas meters and analytical laboratory to aid in the feed gas evaluation.
- Complete DG vendor selection
- Start installation contractor selection.
- Start H2S mitigation system installation.

*How we are doing compared to our plan*

**Issues encountered:**

- Gas Co. inability to accept gas at Medium Btu site.
- High Btu site requires sale of excess power to support production.
- Harsh Gas site requires sale of excess power to support production.
- COPE is working on changing oilfield Stranded Gas from non-renewable to renewable.
- Low Btu site owners are take more time to respond than expected
- Need to fully evaluate best H2S removal System for Harsh Gas Site

**Actions:**

- So Cal Gas sub-contractor completed Medium Btu site work. Retest of the delivery system was successful. Sales gas is within So Cal Gas standards Gas Company making minor changes to their metering equipment but will allow sale of gas when wells are in production.
- COPE has initiated contact with utility and other potential buyer of power for High Btu and Harsh Gas sites.
- COPE working with several agencies including LADWP, CEC and FERC to establish OFFGASES as part of renewable portfolio.

*Status of Milestones and Deliverables*

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100

1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		54
	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		15
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		40
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003	10/21/2003	95
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003		2/16/2004		75
5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004		100
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004		10
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004		15
8.0	CPR	1/17/2004		2/17/2004		
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
12.0	Harsh Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
13.0	Technology Transfer Activities	2/15/2005		3/6/2005		

**STATUS REPORT**  
For  
**OFFGASES, California Energy Commission Contract Number 500-02-016**  
**June 2004**

**Prime Contractor Project Manager: Bob Fickes**  
**Commission Contract Manager: Paul Roggensack**

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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Proceed with startup of 30 kW Microturbine.
- Interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.

**Task 5: Medium BTU Installation.**

- Address issues identified in startup/warranty run and implement fixes to system as needed.
- Complete system startup and finish 30-day warranty run.
- Complete monitoring system installation.

**Task 6: Low BTU Installation.**

- Continue proposal evaluation for distributed Generation source for this class.
- Continue and complete Site owner negotiations
- Make DG equipment selection
- Finalize Site selection.

**Task 7: Harsh Gas Installation.**

- Evaluate and verify feed gas quality and quantity.
- Review and select gas meters and analytical laboratory to aid in the feed gas evaluation.
- Complete DG vendor selection
- Start installation contractor selection.
- Start H2S mitigation system installation.

***What we accomplished this period***

**Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

### **Task 4: High BTU Installation.**

- **Southern California Edison inspection and metering completed.**
- **Capstone microturbine started utilizing gas from all three wells.**
- **Owner working at lowering liquid levels and balancing system. Oil production is lower than expected. Verification gas sample will be taken first or second week in July.**

### **Task 5: Medium BTU Installation.**

- **Contractor 30 day run continued in June with two of three microturbines running most of the month.**
- **On May 25, one of the three microturbines (MT#2) shut down. Cal Power repaired the unit on June 23 by replacing the DPC Power Board. They also replaced the “personality” module on MT #1 which had been experiencing fuel failure incident reports. Both were covered under the Capstone warranty.**
- **The owner experienced mechanical troubles that cause loss of three wells (one being the highest gas producer) in May. One well had a pump failure; the other two had separated rods. One well has been repaired. Repair of the other two has been delayed due higher priority repair of wells at owner’s other sites.**
- **The owner experienced a leak in the offsite oil distribution system. This precipitated a shutdown of the 23rd Street site when the oil holding tank reached its capacity on June 25. Restart of production is expected in the first week of July.**
- **Gas conditioning initially was very positive; but, as time progress, liquids were found to accumulate in the pipe between the dryer and the microturbines. Monitoring has continued to show liquids in the line in spite of adjustments in the dryer. An alternative configuration of placing the dryer before the scrubber is being initiated while the site is down. Work was started on June 29 and is being done based upon availability of owner resources. During the work it was observed that the original contractor had piped the dryer backwards. The manufacturer is being contacted to discuss the impact on performance. It was decided to continue the reconfiguration with the correction of input and output lines.**
- **The monitoring system was partially installed in the field. Field wiring was started but it was determined that a new power source was required due to negative interaction with site protection/monitoring system. The new power circuit was installed the third week in June. Completion of the system has been delayed to July due to several reasons (availability of subcontractor, repair of the #2 microturbine and site shutdown due to pipeline leak).**

- So Cal Gas sub-contractor completed Medium Btu site work. Retest of the delivery system was successful. The owner is working to maintain sales gas within So Cal Gas standards. Additional work may be required to divert higher btu gas from the LTS system to the microturbines as an aid in maintaining the sales gas parameters.
- The owner advised the project of neighborhood complaints on odor and noise from the oil lease. The complaints were initiated before the turbines were installed and noise from the turbines had aggravated the problem. A high-pitched whine was qualitatively observed coming from the microturbines (especially MT#3). COPE was requested to investigate noise levels relative to the microturbines and provide recommendations. Capstone and Cal Power were contacted for recommendations and possible fixes.

**Task 6: Low BTU Installation.**

- Site selection has been reduced to either site 25/26 or site 31.
- Review of agreement requirements with owners of sites is in progress.
- Proposals from Distributed Generation vendors have been received and evaluation is in progress.

**Task 7: Harsh Gas Installation.**

- Started evaluation of near term site demand increases
- Review H2S mitigation systems and selected a vendor.
- Start H2S system implementation. Review costs of acceptable vendors
- Started DG selection process.
- Relocated DG location to take advantage of electrical, feed gas, and heat utilization accessibility.

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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Monitor performance of 30 kW microturbine.
- Interface with owner on verification of 1600 + Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.

**Task 5: Medium BTU Installation.**

- **Address issues identified in startup/warranty run and implement fixes to system as needed.**
- **Complete monitoring system installation.**
- **Monitor performance of microturbines and gas conditioning system.**

**Task 6: Low BTU Installation.**

- **Continue proposal evaluation for distributed Generation source for this class.**
- **Continue and complete Site owner negotiations**
- **Make DG equipment selection**
- **Finalize Site selection.**

**Task 7: Harsh Gas Installation.**

- **Evaluate and verify feed gas quality and quantity.**
- **Review and select gas meters and analytical laboratory to aid in the feed gas evaluation.**
- **Complete DG vendor selection**
- **Start installation contractor selection.**
- **Start H2S mitigation system installation.**

*How we are doing compared to our plan*

**Issues encountered:**

- **High Btu and Harsh Gas sites may require sale of excess power to support production.**
- **Changing oilfield Stranded Gas from non-renewable to renewable would allow the sale and utilization of excess power from projects.**
- **Low Btu site owners are taking more time to respond than expected**
- **Need to convince member of best H2S removal System for Harsh Gas Site**

**Actions:**

- **COPE has initiated contact with utility and other potential buyer of power for High Btu and Harsh Gas sites.**
- **COPE working with several agencies including LADWP, CEC and FERC to establish OFFGASES to qualify as part of renewable portfolio.**
- **Continue to work with Low BTU site owners to resolve issues.**
- **Vendor for H2S removal System selected. Member buy in on system. Looking for H2S removal equipment.**

## *Status of Milestones and Deliverables*

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100
1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		58
	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		20
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100
Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		40
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003		75
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003	10/03/03	2/16/2004		75
5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004		100
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004		10
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004		15
8.0	CPR	1/17/2004		2/17/2004		
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
12.0	Harsh Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
13.0	Technology Transfer Activities	2/15/2005		3/6/2005		

**STATUS REPORT**  
**For**  
**OFFGASES, California Energy Commission Contract Number 500-02-016**  
**July 2004**

**Prime Contractor Project Manager: Bob Fickes**  
**Commission Contract Manager: Paul Roggensack**

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

**Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

**Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

**Task 4: High BTU Installation.**

- **Monitor performance of 30 kW microturbine.**
- **Interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.**

**Task 5: Medium BTU Installation.**

- **Address issues identified in startup/warranty run and implement fixes to system as needed.**
- **Complete monitoring system installation.**
- **Monitor performance of microturbines and gas conditioning system.**

**Task 6: Low BTU Installation.**

- **Continue proposal evaluation for distributed Generation source for this class.**
- **Continue and complete Site owner negotiations**
- **Make DG equipment selection**
- **Finalize Site selection.**

**Task 7: Harsh Gas Installation.**

- **Evaluate and verify feed gas quality and quantity.**
- **Review and select gas meters and analytical laboratory to aid in the feed gas evaluation.**
- **Complete DG vendor selection**
- **Start installation contractor selection.**
- **Start H2S mitigation system installation.**

## ***What we accomplished this period***

### **Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

### **Task 4: High BTU Installation.**

- **Capstone microturbine runs for 5-7 hours and shuts down. Automated Controls, Capstone authorized provider, is trouble shooting.**
- **Intermittent operation of DG unit is making gas Btu verification problematic. Continuing to attempt to verify 1600 Btu at site.**

### **Task 5: Medium BTU Installation.**

- **Field installation of the monitoring system equipment and wiring was completed. The subcontractor continues to work on getting the system to function. This work will continue into August.**

The UCI monitoring system was installed and made functional and can be viewed at <http://www.apep.uci.edu/DER/AQMD/>. Our project is site #20. However, it is having problems collecting data in parallel with the contractor's system. Steven Lee is trouble shooting the problem.

### **Task 6: Low BTU Installation.**

- **Site owners decided not to participate in the Program because of internal changes.**
- **Another site owner has been found that appears to have three locations with the fuel gas necessary for this project.**

### **Task 7: Harsh Gas Installation.**

- **Started RFP documentation**
- **Completed DG Summary evaluation**
- **Identified operational and power demand requirements.**
- **Selected meters**

### **Task 10: Med test and monitor.**

Contractor 30 day run was completed in July with all three microturbines running most of the month. Negotiations are in progress for contractor identified scope changes. Punch list items are being worked off and performance of equipment is being monitored. One Capstone provided regulator valve requires adjustments to

restart MT #2 where the other microturbines do not require this action. This valve is being monitored.

- The owner has scheduled well repair work in August. Presently, the site is operating with Wells number 6, 9 and 10. Re-establishing additional wells is required in order to satisfy Btu and inert criteria for sales gas.
- The offsite oil distribution system leak reported last month was repaired and production was restarted July 5. The microturbines were restarted and are running. They initially had some low fuel faults but this was resolved using casing gas from #10 well to supplement the other two wells. Presently, all three wells are producing with gas pressure at about 90 psig.
  - The rerouting of the piping to place the dryer in front of the scrubber was complete. Moisture is no longer accumulating in the microturbines' header pipe. The fix has solved the problem. The vendor advised that reversing the connection to the dryer would cause it to not work at all.
- The owner is working to maintain sales gas within So Cal Gas standards. Additional work may be required to divert higher btu gas from the LTS system to the microturbines as an aid in maintaining the sales gas parameters.
- The owner advised the project of a complaint from the neighborhood on odor and noise last month. A high-pitched whine was qualitatively observed coming from the microturbines (especially MT#3).
- COPE was requested to investigate noise levels relative to the microturbines and provide recommendations.
- Capstone and Cal Power were contacted for recommendations and possible fixes.
- COPE acquired a sound meter and has performed spot readings to establish a baseline.
- Several trial fixes were performed during the month with limited success. The ambient noise level for the area is higher than the City ordinances allows with or without the site operating and it appears that the turbines running or not will not effect the ambient noise "db" level.
- The primary issue for the project is to reduce the whine component of the noise, which comes from two sources within the microturbine. Trial fixes are continuing into August with support from Capstone.

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

#### **Task 1.8: Identify and Obtain Required Permits:**

- **Ongoing process. Will track under each classification activity unless generic activity.**

#### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

#### **Task 4: High BTU Installation.**

- **Monitor performance of 30 kW microturbine.**
- **Interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.**

**Task 5: Medium BTU Installation.**

- Continue to address issues identified in startup/warranty run and implement fixes to system as needed.
- Complete monitoring system installation.
- Monitor performance of microturbines and gas conditioning system.
- Monitor owner repair of wells and re-establishing sales gas system.

**Task 6: Low BTU Installation.**

- Select DG for this project.
- Evaluate fuel gas sources from new site owner
- Make DG equipment selection

•

**Task 7: Harsh Gas Installation.**

- Complete preliminary Site sketches for RFP
- Completed meter and CG review.
- Make DG selection
- Complete installation contractor lists.

Assemble data to start utility interconnect application.

*How we are doing compared to our plan*

**Issues encountered:**

- Harsh Gas site requires sale of excess power to support production.
- COPE is working on changing oilfield Stranded Gas from non-renewable to renewable.
- Low Btu site owners are take more time to respond than expected
- Need to fully evaluate best H2S removal System for Harsh Gas Site

**Actions:**

- COPE has initiated contact with utility and other potential buyer of power for Harsh Gas sites. If COPE cannot obtain a sales contract with a wholesale buyer, We will need to down-size the DG to match the member load.
- COPE working with several agencies including LADWP, CEC and FERC to establish OFFGASES as part of renewable portfolio.

### *Status of Milestones and Deliverables*

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100
1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		62
	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		20
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100
Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		40
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003	10/21/2003	100
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003	10/03/03	2/16/2004		75
5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004		100
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004		10
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004		15
8.0	CPR	1/17/2004		2/17/2004		
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004	7/13/04	2/24/2005		
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		

12.0	Harsh Gas Maintenance Monitoring	System & Transfer	2/24/2004	2/24/2005
13.0	Technology Activities		2/15/2005	3/6/2005

**STATUS REPORT**  
For  
**OFFGASES, California Energy Commission Contract Number 500-02-016**  
August 2004

**Prime Contractor Project Manager: Bob Fickes**  
**Commission Contract Manager: Paul Roggensack**

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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Monitor performance of 30 kW microturbine.
- Interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project

**Task 5: Medium BTU Installation.**

- Continue to address issues identified in startup/warranty run and implement fixes to system as needed.
- Complete monitoring system installation.
- Monitor performance of microturbines and gas conditioning system.
- Monitor owner repair of wells and re-establishing sales gas system.

**Task 6: Low BTU Installation.**

- Start Member Agreement discussions
- Continue fuel gas sources evaluation from new site owner

**Task 7: Harsh Gas Installation.**

- Revise & Complete process flow sketches
- Start detailed review with DG supplier
- Continue data assembly for Interconnect permit.

***What we accomplished this period***

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

### **Task 3: Specify Equipment**

- **Equipment being evaluated under Task 4, 6 and 7.**

### **Task 4: High BTU Installation.**

- **Automated Controls found and repaired a problem with electronic components in the microturbine control system to resolve the unit shut down every 5-7 hours.**
- **During August, the microturbine experienced shut downs in the night due to lack of gas from the vapor recovery system under cooler temperatures. Adjustments were made in the fuel control system to fix the problem.**
- **The project and owner are continuing to attempt to verify 1600 Btu at site. Samples taken on August 26 showed Well #6 at 1763 Btu content. The other two wells and composite were below the 1600 Btu level expected for the site. We determined that the wells have not pumped enough to reach a stable state. We will retest after a stable state has been reached.**
- **A parallel effort is being made to establish a alternative High Btu site.**

### **Task 5: Medium BTU Installation.**

- **Field installation of the monitoring system equipment and wiring was completed in July.**
  - The UCI monitoring system was installed and made functional and can be viewed at <http://www.apep.uci.edu/DER/AQMD/>. Our project is site #20. However, it was having problems collecting data in parallel with the contractor's system.
  - Steven Lee, with UCI, resolved the problem identified last month and data is being collected.

### **Task 6: Low BTU Installation.**

- **Started agreement discussions with new site owner**

### **Task 7: Harsh Gas Installation.**

- **Continue on RFP documents including Process Flow sketches**
- **Started detailed DG review with vendor.**
- **Continue evaluating dower demand requirements and operation solutions thereto.**
- **Updated and revised RFP recipients list**
- **Started support equipment selection**
- **Agreed on H2S removal gas conditioning system**

**Task 10: Med test and monitor.**

- Negotiations were conducted with the contractor on scope changes. COPE is awaiting submittal of a revised scope change document from the contractor to finalize cost of their work. The contractor did not perform any punch list work or complete monitoring system pending resolution of scope change document.
- The owner has started well repair work this month with continuance in September. Presently, the site was operating with Wells number 6, 9 and 10 with expectation they will be able to use up to eight wells when complete.
  
- The site primarily operated with well 9 primarily utilized for the microturbines. Well 10 is used to provide sales gas with well 6 used for sales or as supplement to well 9 as needed. Presently, all three wells are producing with gas pressure at about 90 psig.
  
- Ongoing monitoring has shown that moisture is no longer accumulating in the microturbines' header pipe. Gas conditioning is continuing to perform as expected to maintain dry gas to the microturbines.
  
- Field installation of the monitoring system equipment and wiring was completed. The subcontractor needs to make the system functional. No observable work was performed during August.
- The owner is working to maintain sales gas within So Cal Gas standards. Additional work may be required to divert higher Btu gas from the LTS system to the microturbines as an aid in maintaining the sales gas parameters. This action will be considered after production has been established for the remaining wells and the system stabilized.
  
- The owner advised the project of a complaint from the neighborhood on odor and noise in June. A high-pitched whine was qualitatively observed coming from the microturbines (especially MT#3).
  - COPE was requested to investigate noise levels relative to the microturbines and provide recommendations.
  - Capstone and Cal Power were contacted for recommendations and possible fixes.
  - COPE acquired a sound meter and has performed spot readings to establish a baseline.
  - Several trial fixes were performed during July with limited success. The ambient noise level for the area is higher than the City ordinances allows with or without the site operating and it appears that the turbines running or not will not effect the ambient noise "db" level.
  - The primary issue for the project is to reduce the whine component of the noise which comes from two sources within the microturbine. Trial fixes were completed in August with installation of prototype design installed on all three units. The noise suppression equipment has reduced the whine significantly where it is considered to be at an acceptable level.

- In response to a concern, surface temperature checks verified that the top noise suppression box has not significantly affected the surface temperature of the microturbine.
- The attached photo shows three configurations of noise mitigation. The configuration on the far left was the one that reduced the most noise and the one that we are using.



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

**Task 1.8: Identify and Obtain Required Permits:**

- Ongoing process. Will track under each classification activity unless generic activity.

**Task 3: Specify Equipment**

- Equipment being evaluated under Task 4, 6 and 7.

**Task 4: High BTU Installation.**

- Monitor performance of 30 kW microturbine.
- Continue interface with owner on verification of 1600 Btu threshold for wellhead gas once wells are stabilized to continue participation in Offgases project.
- Explore alternative site should above action not prove to be successful.

**Task 5: Medium BTU Installation.**

- Complete monitoring system installation.

**Task 6: Low BTU Installation.**

- Work with new site owner on agreement documents

**Task 7: Harsh Gas Installation.**

- Finalize RFP mechanical and electrical requirements
- Complete Detailed DG review with vendor.
- Complete evaluation of Power Demand vs DG output
- Revise and complete installation contractor lists and verify interest in job.
- Continue interconnect application data assembly and submit to utility.

**Task 10: Medium Btu test and monitor.**

- Establish monitoring system functionality.
- Monitor performance of microturbines and gas conditioning system.
- Monitor owner repair of wells and re-establishing sales gas system.

*How we are doing compared to our plan*

**Issues encountered:**

- Harsh Gas site requires sale of excess power to support production, or an increase in demand
- COPE is working on changing oilfield Stranded Gas from non-renewable to renewable.
- Low Btu site owner is taking a detailed engineering and legal review of the project.

**Actions:**

- COPE has initiated contact with utility and other potential buyer of power for Harsh Gas sites. If COPE cannot obtain a sales contract with a wholesale buyer, We will need to down-size the DG to match the member load, or increase the load
- COPE working with several agencies including LADWP, CEC and FERC to establish OFFGASES as part of renewable portfolio.
- Maintaining contact with Low Btu site owner. Recommended that Site owner establish a group of key people to review and approve.

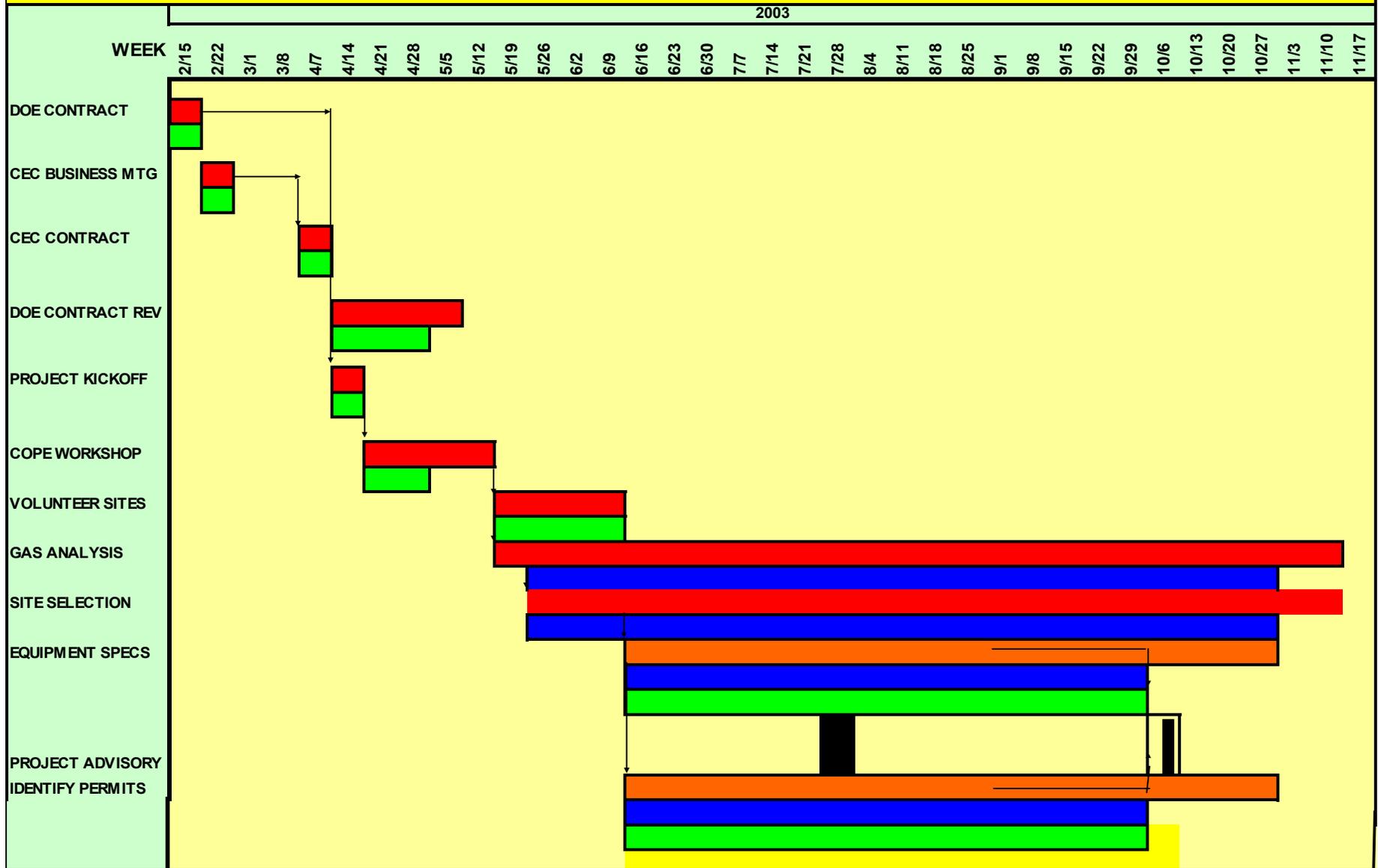
## *Status of Milestones and Deliverables*

Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.1	Attend Kick-off Meeting	4/14/2003	4/14/2003	4/26/2003	4/14/2003	100
1.2	CPR Meetings	1/17/2004		2/17/2004		
1.3	Final Meeting	3/7/2005		3/31/2005		
1.4	Monthly Progress Reports	4/26/2003	4/26/2003	3/6/2005		66
1.5	Test Plans, Technical Reports and Interim Deliverables	10/20/2003	2/2004	2/16/2004		20
1.6	Final Report	2/15/2005		3/6/2005		
1.7	Identify and Obtain Matching Funds	4/14/2003		4/26/2003		100
Task Number	Task/Description	Start Date		Due Date		Status (%)
		Planned /	Actual	Planned/	Actual	
1.8	Identify and Obtain Required Permits	4/14/2003	4/14/2003	10/6/2003		40
1.9	Electronic File Format	4/14/2003	4/14/2003	4/14/2003	4/14/2003	100
1.10	Establish the PAC	5/5/2003	5/5/2003	7/14/2003	5/21/2003	100
1.11	Conduct PAC Meetings	7/21/2003	10/09/03	1/15/2005		
2.0	Site Selection	6/2/2003	5/12/2003	10/16/2003	10/21/2003	75
3.0	Specify Equipment	6/23/2003	5/12/2003	10/20/2003		80
4.0	High BTU Installation & Testing	10/20/2003	10/03/03	2/16/2004		75
5.0	Medium BTU Installation & Testing	10/20/2003	5/20/2003	2/16/2004		100
6.0	Low BTU Installation & Testing	10/20/2003	9/15/2003	2/16/2004		5
7.0	Harsh Gas Installation & Testing	10/20/2003	9/15/2003	2/16/2004		20
8.0	CPR	1/17/2004		2/17/2004		
9.0	High BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		5
10.0	Medium BTU Gas System Maintenance & Monitoring	2/24/2004	7/13/04	2/24/2005		
11.0	Low BTU Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
12.0	Harsh Gas System Maintenance & Monitoring	2/24/2004		2/24/2005		
13.0	Technology Transfer Activities	2/15/2005		3/6/2005		

# OFFGASES PROJECT

## PHASE 1 TO FIRST PROJECT ADVISORY COMMITTEE REVIEW FINAL

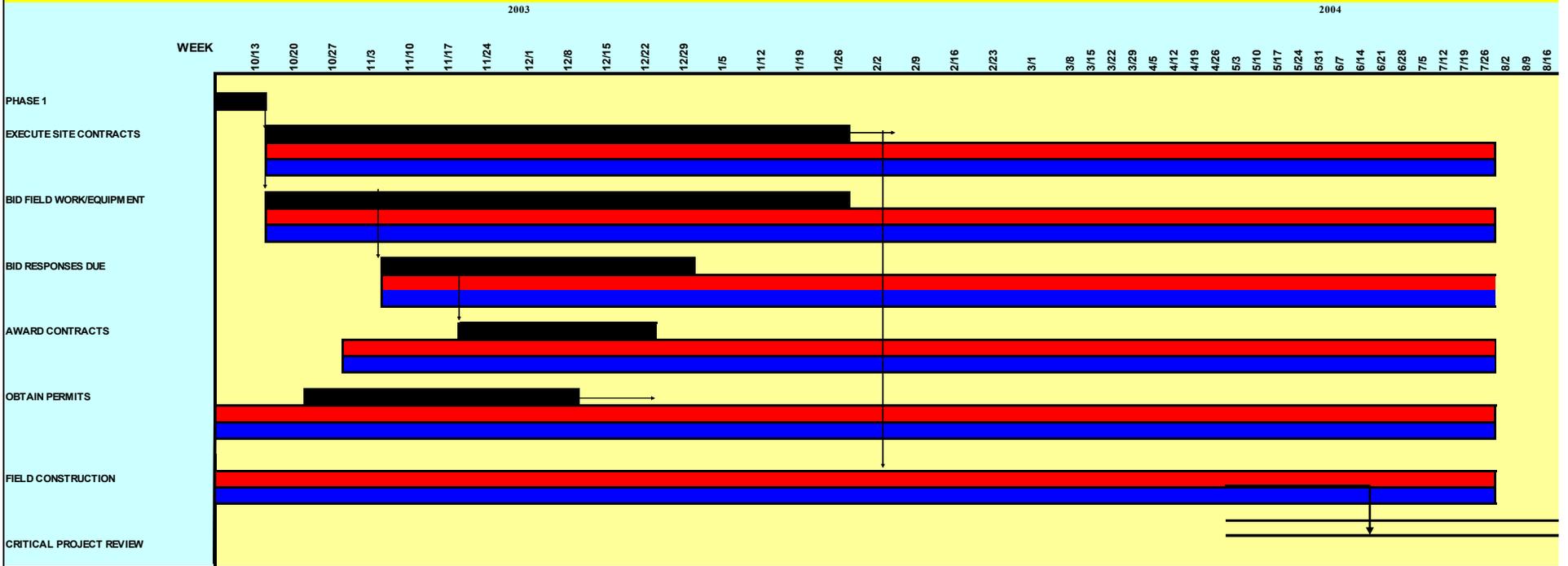
- = TASK PROPOSED
- = TASK STARTED
- = TASK CURRENT STATUS
- = TASK COMPLETED



# OFFGASES PROJECT JULY 2004

## HIGH BTU SITE PHASE 2 TO CONSTRUCTION COMPLETION

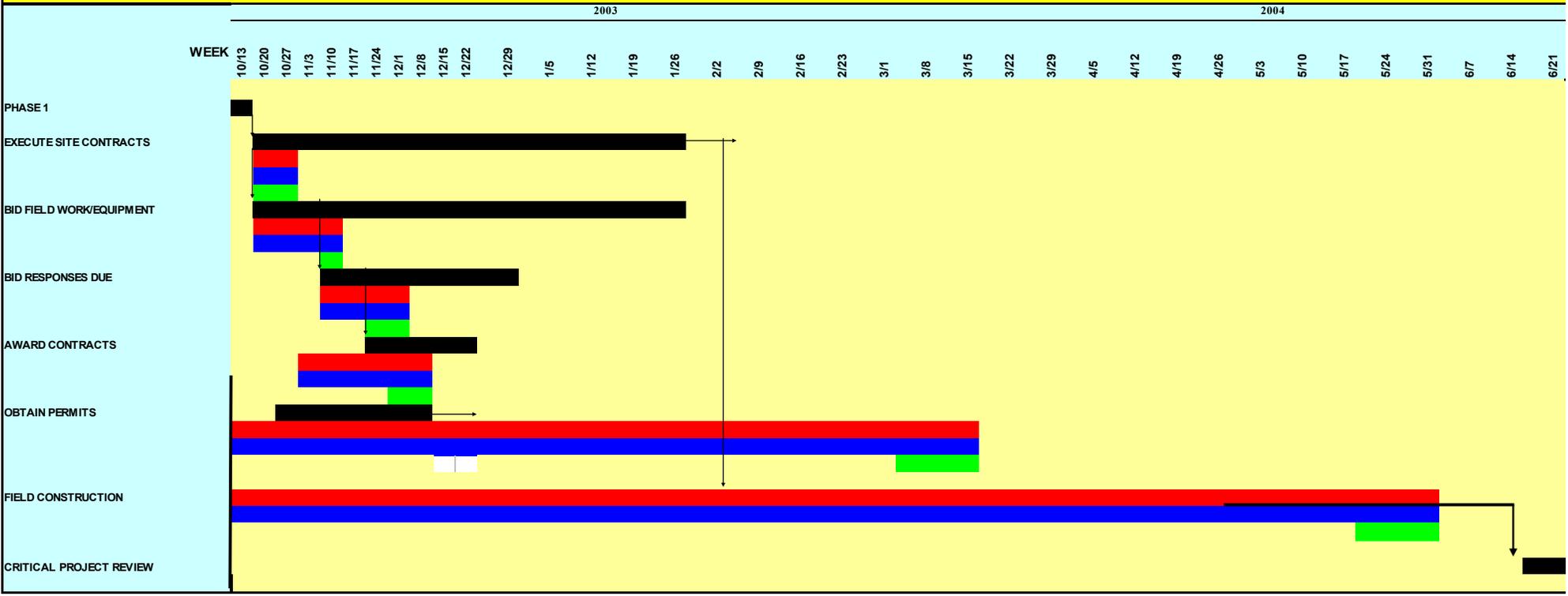
- = TASK PROPOSED
- = TASK STARTED
- = TASK CURRENT STATUS
- = TASK COMPLETED



# OFFGASES PROJECT JULY 2004

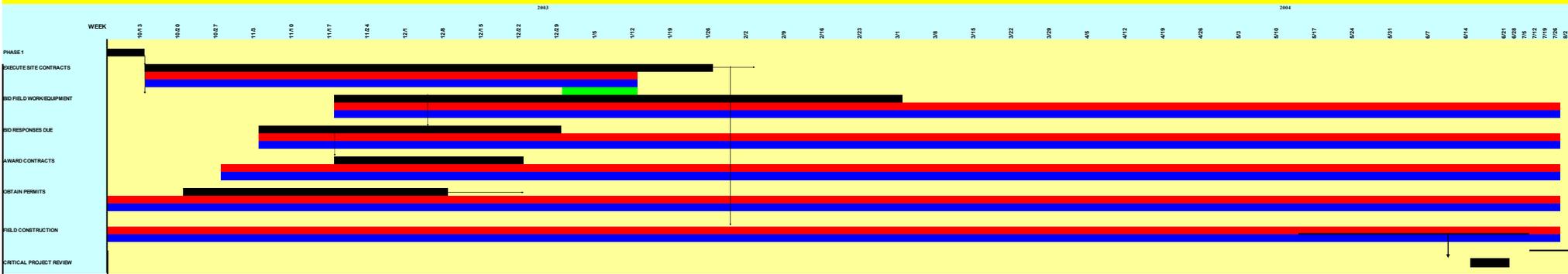
## MEDIUM BTU SITE PHASE 2 TO CONSTRUCTION COMPLETION

- = TASK PROPOSED
- = TASK STARTED
- = TASK CURRENT STATUS
- = TASK COMPLETED



**OFFGASES PROJECT JULY 2004**  
**HARSH SITE PHASE 2 TO CONSTRUCTION COMPLETION**

- = TASK PROPOSED
- = TASK STARTED
- = TASK CURRENT STATUS
- = TASK COMPLETED



**OFFGASES PROJECT JULY 2004**  
**LOW BTU SITE PHASE 2 TO CONSTRUCTION COMPLETION**

- = TASK PROPOSED
- = TASK STARTED
- = TASK CURRENT STATUS
- = TASK COMPLETED

