

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 December 2003

Production Information

Total Accumulated MWh: **1001**

MWh This Report Period: **124**

Total Hours Run: **6044**

Total Hours Run This Report Period: **737**

Gas Meter Reading*: **7918**

Gas Consumption This Period*: **1034**

Approximate Gas Cost Per CCF \$0.939 (based on total bill cost & consumption)

*Multiply X10 for CCF

Please note electrical production data was extracted on January 1, 2004. Gas meter reading was collected on January 5, 2004 thus monthly gas consumption appears to be higher than expected.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated continuously during the month of December.

Accomplishments (during reporting period):

The final version of the MTC report will be submitted January 9, 2004.

USCG R&D Center staff met with USCG headquarters staff to request additional project funds to complete the necessary interconnection to enable the exportation of power. Budget allocations and concerns have delayed a decision from CGHQ. A response is still forthcoming.

Upcoming Activities (for next monthly period):

1. RDC to submit final project report to MTC.
2. RDC, PPL, FCE to work on maintenance planning and interconnect issues.
3. RDC & FCE to look at conducting full power consumption monitoring in conjunction with interval or chart reading by the commercial utility to verify usage.
4. RDC to follow-up with PPL to ascertain status of non-functioning waste heat recovery BTU meter and delinquent As-Built drawings.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

Major Project Milestone

Fuel Cell Fabricated, Tested, & Delivered
Complete Fuel Cell Power Plant Installation

Date

14 Mar 2003 (Completed)
14 Mar 2003 (Completed)

Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	09 January 2004
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. The USCG continues to work on identifying the necessary funds to cover the cost of maintenance of the fuel cell until such time that the expected energy cost savings are realized and can be dedicated to cover the expenses.
2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU. As previously mentioned, the feeder is one possible cause for the lower than expected base loads.
3. The USCG continues to explore the possibility of selling the Fuel Cell’s renewable energy credits (REC’s) as a means to offset the fuel cell’s O&M costs. At current projected fuel cell production and REC trading rates, REC selling/trading could conceivably cover the entire annual planned maintenance costs.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 30 November 2003

Production Information

Total Accumulated MWh: **878**

MWh This Report Period: **114**

Total Hours Run: **5307**

Total Hours Run This Report Period: **708**

Gas Meter Reading*: **6884**

Gas Consumption This Period*: **798**

Approximate Gas Cost Per CCF \$0.939 (based on total bill cost & consumption)

*Multiply X10 for CCF

Fuel Cell Operational Status (during reporting period):

The fuel cell operated nearly continuously during the month of November.

Accomplishments (during reporting period):

The draft report for the Massachusetts Technology Collaborative was completed, reviewed, and returned with comments. The final version of the report will be submitted in early December.

USCG R&D Center staff met with USCG headquarters staff to request additional project funds to complete the necessary interconnection to enable the exportation of power. We anticipate a response from CGHQ personnel in December.

Upcoming Activities (for next monthly period):

1. RDC to submit final project report to MTC.
2. RDC, PPL, FCE to work on maintenance planning and interconnect issues.
3. RDC & FCE to look at conducting full power consumption monitoring in conjunction with interval or chart reading by the commercial utility to verify usage.
4. RDC to follow-up with PPL to ascertain status of non-functioning waste heat recovery BTU meter and delinquent As-Built drawings.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

Major Project Milestone

Fuel Cell Fabricated, Tested, & Delivered
Complete Fuel Cell Power Plant Installation

Date

14 Mar 2003 (Completed)
14 Mar 2003 (Completed)

Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	08 December 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. The USCG continues to work on identifying the necessary funds to cover the cost of maintenance of the fuel cell until such time that the expected energy cost savings are realized and can be dedicated to cover the expenses.
2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU. As previously mentioned, the feeder is one possible cause for the lower than expected base loads.
3. Mr. Dave Cleveland recently retired from ASCC. Mr. Cleveland was one of the driving forces behind the Fuel Cell installation and the continuous on site point of contact and CG site manager. His expertise and hard work was greatly appreciated and will be missed. Fortunately, there is no lack of knowledgeable engineering and facilities experts at the site to take charge.
4. The USCG has been exploring the possibility of selling the Fuel Cell’s renewable energy credits (REC’s) as a means to offset the fuel cell’s O&M costs. At current projected fuel cell production and REC trading rates, REC selling/trading could conceivably cover the entire annual planned maintenance costs.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 October 2003

September Production Information

Total Accumulated MWh: **630**

MWh This Report Period: **124.7**

Total Hours Run: **3912**

Total Hours Run This Report Period: **744**

Gas Meter Reading*: **5150**

Gas Consumption This Period*: **997**

Approximate Gas Cost Per CCF \$0.939 (based on total bill cost & consumption)

*Multiply X10 for CCF

October Production Information (Midnight Oct 1 thru Midnight Oct 31):

Total Accumulated MWh: **756**

MWh This Report Period: **126.26**

Total Hours Run: **4658**

Total Hours Run This Report Period: **746**

Hours at full load this period: **741 (99.3%)**

Gas Meter Reading*: **6086**

Gas Consumption This Period*: **936**

Approximate Gas Cost Per CCF \$0.939 (based on total bill cost & consumption)

*Multiply X10 for CCF

Fuel Cell Operational Status (during reporting period):

The fuel cell operated nearly continuously during the month of October.

Accomplishments (during reporting period):

USCG R&D Center staff met with Fuel Cell Energy, Inc. Customer Service staff on October 16 to discuss the ongoing state of the project, energy production, maintenance costs, expectations, and related issues. The meeting was very positive and resulted in a number of action items including better-defined data reporting periods and procedures.

USCG R&D Center staff completed FCE's Customer Service Scorecard, and has seen immediate improvements particularly in FCE's customer service.

Upcoming Activities (for next monthly period):

1. RDC to complete project report for MTC.
2. RDC, PPL, FCE to work on maintenance planning, interconnect, and remote monitoring issues.
3. RDC & FCE to look at conducting full power consumption monitoring in conjunction with interval or chart reading by the commercial utility to verify usage.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	17 November 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. The USCG continues to work on identifying the necessary funds to cover the cost of maintenance of the fuel cell until such time that the expected energy cost savings are realized and can be dedicated to cover the expenses.
2. The local Civil Engineering command will complete the main feeder inspection this Autumn, as weather and funding permits. As previously mentioned, the feeder is one possible cause for the lower than expected base loads. It is possible the line may be grounded, or in addition to supplying power to the CG Base, the feeder may be the power source for additional undetermined loads.
3. The USCG is engaged with various program level managers to identify additional funding sources to complete a full interconnect with the commercial utility. Once funds have been identified, negotiations with the commercial utility, NStar, regarding charges, credits, engineering requirements will be undertaken.

Important Note Dated 10/6/03 Regarding Fuel Cell Load Reporting:

During the past several months of operation, the output of the fuel cell has been significantly under reported due to errors on the part of CG personnel in obtaining and reporting the raw production data.

The actual electrical production of the DFC300 for the period 6/2/03 to 8/28/03 is as follows:

Total Accum. Hr.	2088 Hours	
Total Generating Hr.	2074 Hours	(Hours full load plus Partial load)
Hours Full Load	1782 Hours	≥ 150 Net kw
Hours Partial Load	292 Hours	$20 \text{ kw} < \text{partial load} < 150$
Hot Standby	15 Hours	kw = 0

Total Accum. Full MW	307	MWh
Total MW Partial Load Gen	29.3	MWh
Total Accum. MW	336.3	MWh

Avg. KWh operating load for period: 161KWh/Hr

The existing reports will be modified in the near future to reflect the true data, and subsequent reports will contain accurate data.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 August 2003

Production Information: (As of 10:50AM, 8/28/2003)

Total KWH Meter Reading: **165,683**

KWH This Report Period: **11,193**

Total Hours Run: **3448**

Total Hours Run This Report Period: **573**

Gas Meter Reading*: **4153**

Gas Consumption This Period*: **700**

*Multiply X10 for CCF

Fuel Cell Operational Status (during reporting period):

The fuel cell operated continuously during the period.

Accomplishments (during reporting period):

No change from last period.

Upcoming Activities (for next monthly period):

1. RDC to work on draft project report for MTC.
2. RDC, PPL, FCE to work on maintenance planning, interconnect, and remote monitoring issues.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	30 September 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. The USCG is engaged in the identification and allocation of necessary funds to cover the cost of maintenance of the fuel cell until such time that the expected energy cost savings are realized and can be dedicated to cover the expenses.

2. The local Civil Engineering command will complete the main feeder inspection this Autumn, as weather and funding permits. As previously mentioned, the feeder is one possible cause for the lower than expected base loads. It is possible the line may be grounded, or in addition to supplying power to the CG Base, the feeder may be the power source for additional undetermined loads.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 July 2003

Production Information: (As of 11:43AM, 8/4/2003)

Total KWH Meter Reading: **154,490**

KWH This Report Period: **17,431**

Total Hours Run: **2875**

Total Hours Run This Report Period: **939**

Gas Meter Reading*: **3453**

Gas Consumption This Period*: **1101**

*Multiply X10 for CCF (NOTE THIS IS A CORRECTION FROM THE LAST REPORT)

Fuel Cell Operational Status (during reporting period):

The fuel cell operated continuously during the period. Several short grid outages occurred; however, the fuel cell operated per design and effectively covered the load.

Accomplishments (during reporting period):

A vendor has been identified to design and install the sign once funds become available, likely after the start of the new fiscal year. Website development is also on hold pending funding.

PPL & FCE have provided basic cost figures for extended maintenance and restacking costs. The CG is working internally to address appropriate funding sources for these costs, and will pursue further cost discussions with PPL & FCE once fund sources are identified.

Upcoming Activities (for next monthly period):

1. RDC to work on draft project report for MTC.
2. RDC, PPL, FCE to work on maintenance planning, interconnect, and remote monitoring issues.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	30 September 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. The reverse power relay problems have been resolved. However, clearly, a long-term agreement with the commercial provider is needed. RDC has taken on the lead on dealing with the commercial provider.
2. Maintenance and restacking costs provided by FCE are significantly larger than originally expected or utilized in the original economic analysis. As such several new iterations of the analysis are being completed to re-evaluate the ongoing cost-benefits of the project. Although final values are yet to be determined, it has become obviously clear resolution of the interconnect and low load issue is imperative; otherwise, the fuel cell, as configured, will not prove cost effective in the long term.
3. Additional research into the cause of the lower than anticipated loads has ruled out most potential causes. Speculation is currently focusing on the main feeder line extending nearly one mile from the NSTAR main line and meter location to the actual air station. This buried conduit is many years old and was scheduled for testing and evaluation by the local Civil Engineering command this fiscal year. It is possible the line may be grounded, or in addition to supplying power to the CG Base, the feeder may be the power source for additional undetermined loads.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 30 June 2003

Production Information: (As of 7:37AM, 6/26/2003)

Total KWH Meter Reading: **137059**

KWH This Report Period: **10,307**

Total Hours Run: **1936**

Total Hours Run This Report Period: **572**

Gas Meter Reading*: **2352**

Gas Consumption This Period*: N/A**

*Reported in 100 Cubic Feet or CCF

**Previous reading not taken

Fuel Cell Operational Status (during reporting period):

The reverse power relay tripped the fuel cell into island mode on a variety of occasions, resulting in several days of the system being in hot standby vice online operation. During a site visit on 2 July 03, PPL determined that the radio at the main transformer had failed. A new unit was installed and the original unit returned to the manufacturer to determine the cause of failure. The low load utilization of the air station also still is causing an occasional reverse power relay trip.

A minor problem with the water purification system caused the reverse osmosis system to clog, which in turn caused the fuel cell to shutdown. The system was in shutdown mode for about 6 hours. The problem was two-fold, a loose hose in the water softener bed, and an unexpected increase of the hardness of the raw water. The equipment issues have been resolved. The water hardness is being investigated and dealt with to eliminate a repeat of the problem.

Accomplishments (during reporting period):

The CG continues to work with PPL, FCE, and other parties to resolve the low load situation. Recent talks have proven both promising and productive.

A vendor has been identified to design and install the sign.

Upcoming Activities (for next monthly period):

1. RDC to continue development of web site.
2. RDC to work on draft project report.
3. RDC, PPL, FCE to work on maintenance planning and remote monitoring issues.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

Major Project Milestone

Fuel Cell Fabricated, Tested, & Delivered
Complete Fuel Cell Power Plant Installation

Date

14 Mar 2003 (Completed)
14 Mar 2003 (Completed)

Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	31 July 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. Although, a number of challenges and learning opportunities presented themselves, the fuel cell completed its first full month of field production. A number of minor and more significant challenges still need to be addressed in order to reap the maximum benefits of the system.
2. The reverse power relay has caused the fuel cell to trip into island mode on several occasions. Part of the initial problem was related to calibration and load levels. Additional resets have occurred due to issues related to the commercial grid. From the standpoint of providing an appropriate long-term solution to the reverse power issue, clearly, a long-term agreement with the commercial provider is needed.
3. The informational will be installed in August. Web site completion is contingent upon funds remaining after installation of kiosk.
4. Monthly reports will continue in this format until the web site is operating. The USCG will be monitoring the fuel cell’s production and provide monthly production data in these reports and to MTC.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 May 2003

Production Information: (As of 8:16AM, 6/2/2003)

Total KWH Meter Reading: **126752**

KWH This Report Period: **N/A***

Total Hours Run: **1364**

Total Hours Run This Report Period: **N/A***

*For tracking purposes, the USCG will be using June 1, 2003 through May 31, 2004 for the first operational year's tracking period; therefore these fields are not applicable (N/A) for this report only.

Accomplishments (during reporting period):

Certificate of Substantial Completion and Final Acceptance was signed on May 16, 2003.

The ribbon cutting ceremony was held on Monday, May 19th. The ceremony was well attended by project partners and state and local dignitaries.

The CG continues to work with PPL, FCE, and other parties to resolve the low load situation. Recent talks have proven both promising and productive.

The USCG has commenced its first year of monitoring of the fuel cell performance. At the end of the performance period, we will be conducting a thorough analysis of all aspects of the project with the goal of identifying future CG shore facility fuel cell applications.

Upcoming Activities (for next monthly period):

1. RDC to continue development of web site.
2. RDC to work on draft project report due June 30, 2003 to MTC.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003 (Completed)
Commence First Year of Operation	17 May 2003 (Completed)
Tentative "Ribbon Cutting" Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	30 June 2003
End of Year 1 Operating Report	30 June 2004

Outlook (general comments on overall “health” of project and upcoming challenges):

1. R&D Center is working with MTC, PPL & FCE in the development of the web site.
2. The informational kiosk fabrication and installation is currently within the contracting process. It is anticipated to be installed in July or August. Web site completion is contingent upon funds remaining after installation of kiosk.
3. Monthly reports will continue in this format until the web site is operating. The USCG will be monitoring the fuel cell’s production and provide monthly production data in these reports and to MTC.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 30 April 2003

Accomplishments (during reporting period):

Acceptance testing has been completed. Sign off for the fuel cell is scheduled for Friday, May 16th after completion of operating training.

Acceptance testing was conducted with minimal interruptions. Some key issues did arise including:

- 1) The base loads encountered during the field acceptance testing were significantly lower than anticipated. The load data originally determined from a study of electric bills and used in the USCG sponsored power consumption study may have provided inaccurate information and/or changes to occupancy or equipment have resulted in different loadings. In order to ensure adequate loads were available during the testing, a load bank was installed to allow the Fuel Cell to operate at full load without tripping the reverse power relay. The fuel cell is currently operating at 150KW, well below its capability and its point of maximum efficiency in order to minimize the potential for tripping the reverse power relay if base loads drop to very low levels. Currently the CG, PPL, and FCE are gathering information about the electrical loads and evaluating potential solutions. Several of these solutions may require the assistance of additional parties to implement and will require ongoing negotiation and cooperation. With summer air conditioning season approaching, low electrical loads likely will not be a problem until autumn. Hopefully, by the end of the summer season, an appropriate solution will be ready for implementation.
- 2) Although, the heat recovery system was originally designed to provide hot water for the galley, it appears the fuel cell will be able to supply a substantial amount of heat for the barracks heating system. The Airsta galley is only using a small portion of the heat available. It is in the USCG's interest to use all heat available from the Fuel Cell. With minor modifications to the existing system, we will be able to more fully extract the available heat thus resulting in increased total energy efficiency. The USCG is pursuing several additional funding venues in order to complete these modifications.
- 3) Fuel Cell Energy's on site testing team performed admirably during the testing. They were extremely knowledgeable, helpful, and professional during the period. When minor issues arose, they quickly resolved the situations, and ultimately their efforts were instrumental in ensuring the testing was completed successfully and without delay.

Upcoming Activities (for next monthly period):

1. FCE to complete unit operating training.
2. Ribbon Cutting Ceremony to be held on Monday, May 19th at 1000 at Airsta Cape Cod

3. RDC to continue development of web site.
4. RDC to work on draft project report due June 30, 2003 to MTPC.

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Start Engineering & Design	04 Oct 2001 (Completed)
Design Review Meeting	29 Nov 2001 (Completed)
Final Design Review Meeting	07 Mar 2002 (Completed)
Final Design Complete	18 Apr 2002 (Completed)
Commence Site Preparation (slab, piping, etc)	29 Apr 2002 (Completed)
Finish Site Preparation Work	13 Jun 2002 (Completed)
Begin DHW Tank & Transformer Installation	16 Aug 2002 (Completed)
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003 (Completed)
Fuel Cell Accepted & On Line	16 May 2003
Commence First Year of Operation	17 May 2003
Tentative “Ribbon Cutting” Ceremony	19 May 2003

Outlook (general comments on overall “health” of project and upcoming challenges):

1. Fuel Cell Status – The fuel cell has completed the acceptance testing. The only item remaining on the original contract is completion of the operating training for ASCC personnel. The training is scheduled for Thursday, May 15th. Sign off is anticipated to occur at the completion of training on 5/16. A contract for the first year’s maintenance is in place and will go into effect upon sign off.
2. The ribbon cutting ceremony will be held at Airsta Cape Cod on Monday, May 19th at 1000. Speakers representing the various project partners and state and local political figures will be on hand.
3. R&D Center will work with MTPC, PPL & FCE in the development of the web site.
4. The informational kiosk fabrication and installation is currently within the contracting process. It is anticipated to be installed in July or August.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 March 2003

Accomplishments (during reporting period):

Installation of the fuel cell and anti-islanding package has been completed. Start-up has commenced. The first hot water generated by the fuel cell has been piped into the barracks for use in the galley.

Upcoming Activities (for next monthly period):

1. Complete field acceptance testing of the fuel cell.
2. RDC to continue development of web site and kiosk

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Start Engineering & Design	04 Oct 2001 (Completed)
Design Review Meeting	29 Nov 2001 (Completed)
Final Design Review Meeting	07 Mar 2002 (Completed)
Final Design Complete	18 Apr 2002 (Completed)
Commence Site Preparation (slab, piping, etc)	29 Apr 2002 (Completed)
Finish Site Preparation Work	13 Jun 2002 (Completed)
Begin DHW Tank & Transformer Installation	16 Aug 2002 (Completed)
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	14 Mar 2003 (Completed)
Startup	27 March 2003 (Completed)
Begin Acceptance Testing	13 April 2003
Fuel Cell Accepted & On Line	30 April 2003
Commence First Year of Operation	01 May 2003
Tentative “Ribbon Cutting” Ceremony	16 May 2003

Outlook (general comments on overall “health” of project and upcoming challenges):

1. Fuel Cell Status – The project is nearing completion. On site installation proceeded nearly flawlessly with only minor weather induced delays. The certificate of mechanical completion was signed on March 26.
2. As of this writing on March 31, the galley is using the water heated by the fuel cell in its dishwasher units. The unit is scheduled to produce its first electricity at the site on April 1st.
3. A ribbon cutting ceremony is tentatively scheduled to be held at Airsta Cape Cod on Friday, May 16.
4. R&D Center will be working closely with MTPC, PPL & FCE in the development of the web site. The web site is tentatively scheduled to be on line June 30th or earlier.

Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 28 February 2003

Accomplishments (during reporting period):

The fuel cell was delivered to Air Station Cape Cod on February 27, 2002. See attached pictures.

Upcoming Activities (for next monthly period):

2. Complete installation and field testing of the fuel cell.
2. RDC to continue development of web site and kiosk

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Start Engineering & Design	04 Oct 2001 (Completed)
Design Review Meeting	29 Nov 2001 (Completed)
Final Design Review Meeting	07 Mar 2002 (Completed)
Final Design Complete	18 Apr 2002 (Completed)
Commence Site Preparation (slab, piping, etc)	29 Apr 2002 (Completed)
Finish Site Preparation Work	13 Jun 2002 (Completed)
Begin DHW Tank & Transformer Installation	16 Aug 2002 (Completed)
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
Complete Fuel Cell Power Plant Installation	28 Mar 2003
Startup & Acceptance Testing	11 April 2003
Fuel Cell Accepted & On Line	25 April 2003
Commence First Year of Operation	26 April 2003
Tentative “Ribbon Cutting” Ceremony	May/June

Outlook (general comments on overall “health” of project and upcoming challenges):

5. Fuel Cell Status – The fuel cell has been delivered and installation has commenced. Testing will follow thereafter. The NSTAR interconnect issue has been resolved and a reverse power relay will be installed to provide appropriate safeguards for the NSTAR equipment and personnel in the event of a power outage. The proposal has been evaluated by RDC and will be executed via a contract modification at a cost of \$60K.

6. Photos:





Monthly Status Report: USCG Air Station Cape Cod Fuel Cell Project

Report Period: 01– 31 January 2003

Accomplishments (during reporting period):

Fuel cell testing continued.

Upcoming Activities (for next monthly period):

3. Complete shop testing of the fuel cell. (See discussion below)
2. RDC to continue development of web site and kiosk

Project Schedule (Note: The schedule will be shown on each report, and any changes from the previous report will be in **bold type**.)

<u>Major Project Milestone</u>	<u>Date</u>
Start Engineering & Design	04 Oct 2001 (Completed)
Design Review Meeting	29 Nov 2001 (Completed)
Final Design Review Meeting	07 Mar 2002 (Completed)
Final Design Complete	18 Apr 2002 (Completed)
Commence Site Preparation (slab, piping, etc)	29 Apr 2002 (Completed)
Finish Site Preparation Work	13 Jun 2002 (Completed)
Begin DHW Tank & Transformer Installation	16 Aug 2002 (Completed)
Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003
Complete Fuel Cell Power Plant Installation	28 Mar 2003
Startup & Acceptance Testing	11 April 2003
Fuel Cell Accepted & On Line	25 April 2003
Commence First Year of Operation	26 April 2003
Tentative “Ribbon Cutting” Ceremony	May/June

Outlook (general comments on overall “health” of project and upcoming challenges):

7. Fuel Cell Status – Preliminary testing of the fuel cell designated for delivery to the USCG has been completed. The fuel cell did not perform as anticipated, prompting an in-house design review. Based on the results of the review, the delivery schedule has been extended to ensure continuous operation at 250 kW through the incorporation of the latest design improvements to the power plant. The delivery date has been revised to reflect the new timeframe.