

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

Report Period: 01– 31 December 2004

Production Information

Total Accumulated kWh: 1,846,919	kWh This Report Period: 63,243
Total Generating Hours to date: 11,138	Total Hours Generation This Month: 377
Total Hours in Operation: 14,947	Total Hours downtime since installed: 3809
Overall Operational Availability: 0.7452	Monthly Operational Availability: .5067
Gas Meter Reading*: 014882	Gas Consumption This Period*: 551

Net Electrical Output (kWh): **57828.00**

Monthly Capacity Factor: **.33** (Actual kWh/Total Possible kWh=250kW x 720 hours)

Approximate Gas Cost Per CCF is approx. \$1.19 (based on most recent total bill cost & consumption)

*Multiply X10 for CCF = \$ **6556.9**

Please note electrical production data was extracted at midnight Dec. 31, 2004. The gas meter reading was collected on Jan. 3, 2005 at 8:00 due to the holiday weekend.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 377 of 744 total hours (50.7% availability). The unit experienced one plant trip on the 11th of December and was immediately restarted and brought to full power.

FuelCell Energy inspected the unit under routine post start-up inspection procedures on the 21st of December. One blower was found to have noisy bearing and abnormal vibration.

FuelCell Energy recommended the replacement of this blower to prevent further damage. The unit was shut down for blower replacement on the 21st of December. The blower will be replaced and the unit restarted the first week of January 2005.

Current condition is cold shutdown.

Accomplishments (during reporting period):

- Continued power operations
- Unit emergency shut down (ESD) due to loss of grid.
- Recovered plant and brought to power.
- Performed unit inspection
- Shutdown unit for component replacement

NSTAR provided a work order estimate for the recloser on the incoming line to the Coast Guard. The R&D Center is obtaining the proper approvals for funding the effort at this time.

Upcoming Activities (for next monthly period):

NSTAR are working with the Coast Guard to get bi-metering in place. Complete design and work orders should be in place with funding. Task should be accomplished in sink with the next billing cycle.

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	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 August 2004 (Completed)
Completion of RDC Project Report	30 November 2004 (Completed)
Proposed turn over to Airsta Cape Cod	01 October 2004(Completed)
**Bi-Metering and interconnection Up-grade	01 February 2004

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

A monthly fee is requested by NSTAR for Bi-metering. The Coast Guard first saw this fee in the recloser work order document. The Coast Guard is currently looking into the possibility of not having this fee incurred until such time as when the Coast Guard addresses selling its Renewable Energy Credits.

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

Report Period: 01– 30 Nov. 2004

Production Information

Total Accumulated kWh: 1,783,676	kWh This Report Period: 53,882
Total Generating Hours to date: 10,761	Total Hours Generation This Month: 343
Total Hours in Operation: 14,203	Total Hours downtime since installed: 3442
Overall Operational Availability: 0.7576	Monthly Operational Availability: .4764
Gas Meter Reading*: 014331	Gas Consumption This Period*: 522

Net Electrical Output (kWh): **48859.96**

Monthly Capacity Factor: **.30** (Actual kWh/Total Possible kWh=250kW x 720 hours)

Approximate Gas Cost Per CCF is approx. \$1.19 (based on most recent total bill cost & consumption)

*Multiply X10 for CCF = \$ **6211.80**

Please note electrical production data was extracted at midnight Nov. 30, 2004. The gas meter reading was collected on Dec. 1, 2004 at 15:49.

Net Electrical Output – During completion of the recent year-end project reports, it was determined the Total Accumulated kWh being reported was the actual total electricity being created by the fuel cell. When the fuel cell is operating, approximately 18-20 kW are needed to operate the system. The remaining power is available for output and utilization by the facility. For example, during this period the fuel cell generated 53,882 kWh, but only 48859.96kWh were actually available for use. Future reports will contain both the total and net output to avoid confusion.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 343 of 720 total hours (47.0% availability). After having been offline since July 14 for diagnosis and repair of components in the balance of plant (BOP) portion of the generator. The Coast Guard unit was recommissioned after the shut down on the 5th of November and heat-up was started on the 7th of November.

The unit was brought on power on the 16th of November and was brought to the power level of 150 kW on the 17th of November. The unit tripped due to an external grid outage caused by a mechanical malfunction of a local transfer switch on the 17th of November and was recovered on the 18th of November.

The unit ran at 150 Net AC kW until the 27th of November. The unit tripped on a deviation from setpoint and was recovered on the on the November 27 to 150 Net AC kW.

Accomplishments (during reporting period):

The following parts were replaced:

Product pump filter shell gasket
Product pump filter cap gasket
RO pre-filter housing gasket

The following corrective maintenance activities were conducted:

Completed installation of fuel cell stack and other internal components
Repaired and optimized water system
Updated HMI software
Calibrated airflow transmitters

The following operational activities were conducted:

Completed commissioning activities
Completed fuel cell heat-up
Began power operations on 11/15/04
Unit emergency shut down (ESD) due to loss of grid.
Recovered plant and brought to power.
Current condition is 150 Net AC kW

PPL has commenced design of the interconnection. The Coast Guard R&D Center has been in contact with NSTAR and has started the process to put in place a Bi-Metering agreement.

The RDC project report was delivered to the Sponsors.

Upcoming Activities (for next monthly period):

1. PPL and NSTAR are working with the Coast Guard to get bi-metering in place. Complete design and work orders should be in place and work started to accomplish this task.

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

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Commence First Year of Operation	17 May 2003 (Completed)
Tentative "Ribbon Cutting" Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 August 2004 (Completed)
Completion of RDC Project Report	30 November 2004 (Completed)
Proposed turn over to Airsta Cape Cod	01 October 2004(Completed)

****Bi-Metering and interconnection Up-grade**

01 February 2004

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

**Progress meeting is scheduled for the Bi-metering effort on December 10, 2004. The schedule for all items required to accomplish this effort will be set at this time.

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

Report Period: 01– 31 October 2004

Production Information

Total Accumulated kWh: 1,729,794	kWh This Report Period: 0
Total Generating Hours to date: 10,418	Total Hours Generation This Month: 0
Total Hours in Operation: 13,483	Total Hours downtime since installed: 3065
Overall Operational Availability: 0.7727	Monthly Operational Availability: 0
Gas Meter Reading*: 134809	Gas Consumption This Period: 0
Net Electrical Output (kWh): 0	
Monthly Capacity Factor: 0 (Actual kWh/Total Possible kWh)	

Approximate Gas Cost Per CCF is approx. \$0.93 (based on most recent total bill cost & consumption)

* Please note: September Gas Meter Reading was 134809 there was a typo in the report. Please note electrical production data was extracted at midnight Oct 31, 2004. The gas meter reading was collected on Nov. 1, 2004 at 08:33 AM.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 0 of 744 total hours (0.0% availability). All modifications and repairs were completed in the middle of October. The remainder of the month was spent grooming the unit's software to assure that all of the updates and modifications would work together properly. BOP check out will commence on 11/2/04. Heat up is planned to begin on 11/3/04.

Accomplishments (during reporting period):

The long-term maintenance program contract was funded for FY 05.

PPL has designed the interconnection and is setting up a meeting with the Coast Guard R&D Center and NSTAR to address finishing this effort.

Comments have been submitted and are being incorporated into the Project Report.

Received one of the 2004 Federal Energy & Water Management Awards. It was the Energy Security & Reliability Award to a Small Group.

Upcoming Activities (for next monthly period):

1. The RDC project report will be completed and delivered.

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

Date

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	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 August 2004 (Completed)
Completion of RDC Project Report	30 November 2004
Proposed turn over to Airsta Cape Cod	01 October 2004(Completed)

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

The interconnect effort is still outstanding. A meeting with NSTAR officers is planned to move this effort towards completion.

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

Report Period: 01– 30 Sept 2004

Production Information

Total Accumulated kWh: 1,729,794	kWh This Report Period: 0
Total Generating Hours to date: 10,418**	Total Hours Generation This Month: 0
Total Hours in Operation: 12,739	Total Hours downtime since installed: 2321
Overall Operational Availability: 0.8178	Monthly Operational Availability: 0
Gas Meter Reading*: 13809	Gas Consumption This Period*: 61
Net Electrical Output (kWh): 0	
Monthly Capacity Factor: 0 (Actual kWh/Total Possible kWh)	

Approximate Gas Cost Per CCF is approx. \$0.93 (based on most recent total bill cost & consumption)

*Multiply X10 for CCF = \$ 567.30

**** Total Generating Hours to date were misstated in Aug report correct number is 10,418**

Please note electrical production data was extracted at midnight Sept 30, 2004. The gas meter reading was collected on Oct. 1, 2004 at 0927.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 0 of 720 total hours (0.0% availability). The fuel cell has been offline since July 14 for diagnosis and repair of components in the balance of plant (BOP) portion of the generator. The current estimated date of return to power production is mid October 2004.

Accomplishments (during reporting period):

A long-term maintenance program contract with Fuel Cell Energy has been awarded.

PPL has commenced design of the interconnection. The Coast Guard R&D Center has been in contact with NSTAR and has started the process to put in place a Bi-Metering agreement.

Major items resolved:

The unit was initially taken off line in July to correct a leak in a regenerative heat exchanger and to correct a blockage in the fuel system that was preventing the unit from operating at full power. After a thorough and time consuming assessment of most components in the fuel systems, the point of blockage was traced to the de-oxidizer, a component used to remove oxygen from fuel if the peak shave gas was provided. The heat exchanger and de-oxidizer were replaced.

During restart FCE encountered problems with a circuit board and relay that disrupted our ability to synchronize with the grid. FCE has decided to take advantage of the shut down to swap out the module.

The Coast Guard installation utilizes the fuel cell in a grid independent mode when the NSTAR grid goes down. The unit has operated in a grid independent mode numerous times since initial

operation. A critical part of the FCE field follow program is to evaluate and incorporate improvements learned in the field into the current and future products. It is for this reason that FCE has decided that the prudent course of action will be to remove this module return it to Danbury for evaluation. Following that evaluation, FCE fully expects to return the module to operating condition for its application elsewhere. This module exchange is being completed at no cost to the Coast Guard.

During this outage, a number of upgrades were performed on Balance of Plant (BOP) components to bring the BOP up to current design standard.

All work is scheduled to be complete and the plant ready for restart in the middle of October.

Upcoming Activities (for next monthly period):

1. The fuel cell will be repaired and back online.
2. The RDC project report will be completed and delivered.

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

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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	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 August 2004 (Completed)
Completion of RDC Project Report	29 October 2004
Proposed turn over to Airsta Cape Cod	01 October 2004(Completed)

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

FCE had another stack in stock when they needed it. FCE plans to replace the damaged stack and complete several other model upgrades simultaneously at NO cost to the Coast Guard. When FCE is done, the Coast Guard will basically have the latest model Fuel Cell system which is slightly more efficient, more responsive, and warms up in about 1/3 the time.

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

Report Period: 01– 31 Aug 2004

Production Information

Total Accumulated kWh: 1,729,794	kWh This Report Period: 3
Total Generating Hours to date: 12,019	Total Hours Generation This Month: 1
Total Hours in Operation: 12,019	Total Hours downtime since installed: 1601
Overall Operational Availability: 0.867	Monthly Operational Availability: 0
Gas Meter Reading*: 13748	Gas Consumption This Period*: 75
Net Electrical Output (kWh): 0	
Monthly Capacity Factor: 0 (Actual kWh/Total Possible kWh)	

Approximate Gas Cost Per CCF is approx. \$0.93 (based on most recent total bill cost & consumption)
*Multiply X10 for CCF

Please note electrical production data was extracted at midnight August 31, 2004. The gas meter reading was collected on Sept. 1, 2004 at 0820.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 1 of 744 total hours (0.134% availability). The fuel cell has been offline since July 14 for diagnosis and repair of components in the balance of plant (BOP) portion of the generator. The current estimated date of return to power production is Tuesday, September 14, 2004.

Accomplishments (during reporting period):

A long-term maintenance program contract with Fuel Cell Energy is expected to be ready to award by Sept 17th.

PPL has commenced design of the interconnection.

MTC Year One Operations Report was delivered.

Major items requiring resolution during the last six weeks included:

- A fuel control valve that was not controlling fuel flow properly.
- The inverter would trip after every attempt to sync to the utility grid.
- Malfunction in the reverse power relay or the radio link was sending a continuous trip signal to TB.
- The radio power relay had two problems. The signal varied in strength and a trip signal came in at about every 30 seconds.
- A checkout of the fuel system found that there is a blockage in the system. The blockage is so complete that the unit is not able to get enough fuel with the fuel valve wide open at

Hot Standby to maintain cell voltages. People and material are currently being gathered to address this issue.

Upcoming Activities (for next monthly period):

1. The fuel cell will be repaired and back online.
2. The RDC project report will be completed and delivered.

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Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
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Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 August 2004 (Completed)
Completion of RDC Project Report	01 October 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. The long-term maintenance contract is on track for execution prior to October 1 pending availability of funds.
2. The main feeder inspection is still awaiting completion pending fiscal resource availability at the local CEU. The possibility of the feeder being the reason for erroneous readings has been virtually ruled out. However, we await confirmation via the inspection.

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

Report Period: 01– 31 July 2004

Production Information

Total Accumulated kWh: 1,729,791	kWh This Report Period: 36,805
Total Generating Hours to date: 10,417	Total Hours Generation This Month: 289
Total Hours in Operation: 11,275	Total Hours downtime since installed: 858
Overall Operational Availability: 0.924	Monthly Operational Availability: 0.39
Gas Meter Reading*: 13674	Gas Consumption This Period*: 375

Net Electrical Output (kWh): 29,881 (see note in Operational Status)

Monthly Capacity Factor: **0.20** (Actual kWh/Total Possible kWh)

Approximate Gas Cost Per CCF is approx. \$0.93 (based on most recent total bill cost & consumption)

*Multiply X10 for CCF

Please note electrical production data was extracted at midnight August 1, 2004. The gas meter reading was collected on August 2, 2004 at 0930.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 289 of 744 total hours (39% availability). The fuel cell has been offline since July 14 for diagnosis and repair of components in the balance of plant (BOP) portion of the generator. The stack has been unaffected. The current estimated time of repair is August 15. While the fuel cell is down, FCE is incorporating engineering changes to the BOP and also completing the 18-month preventive maintenance.

Net Electrical Output – During completion of the recent year-end project reports, it was determined the Total Accumulated kWh being reported was the actual total electricity being created by the fuel cell. When the fuel cell is operating, approximately 18-20 kW are needed to operate the system. The remaining power is available for output and utilization by the facility. For example, during this period the fuel cell generated 36,805 kWh, but only 29,881 were actually available for use. Future reports will contain both the total and net output to avoid confusion.

Accomplishments (during reporting period):

A request for proposal for a long-term maintenance program contract was forwarded to Fuel Cell Energy. The response is due in late August.

PPL has commenced design of the interconnection.

PPL completed and forwarded the final report for the DOE Climate Change grant.

Upcoming Activities (for next monthly period):

1. The fuel cell will be repaired and back online.
2. The RDC and MTC project reports will be completed and delivered.

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

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Fuel Cell Fabricated, Tested, & Delivered	14 Mar 2003 (Completed)
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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	02 Feb 2004 (Completed)
End of Year 1 Operating Report	15 August 2004
Completion of RDC Project Report	01 September 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. The long-term maintenance contract is on track for execution prior to October 1 pending availability of funds.
2. The main feeder inspection is still awaiting completion pending fiscal resource availability at the local CEU. The possibility of the feeder being the reason for erroneous readings has been virtually ruled out. However, we await confirmation via the inspection.
3. Discovery of the electrical output reporting discrepancy is an area of concern. The current cost-benefit analyses, expected operational costs, and budget models were based upon the assumption that the production data being provided was the actual useable electrical output of the system. As a result the total systems costs are now higher than previously believed and higher than originally projected/estimated.

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

Report Period: 01– 30 June 2004

Production Information

Total Accumulated kWh: **1,692,986** kWh This Report Period: **118,152**
Total Generating Hours to date: **10,128** Total Hours Generation This Month: **718**
Total Hours in Operation: **10,531** Total Hours downtime since installed: **403**
Overall Operational Availability: **0.9617**
Gas Meter Reading*: **13,299** Gas Consumption This Period*: **966**
Monthly Capacity Factor: **0.66** (Actual kWh/Total Possible kWh)
Approximate Gas Cost Per CCF is \$1.19 (based on most recent total bill cost & consumption)
*Multiply X10 for CCF = \$11,495.40

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 718 of 720 total hours (99.7% availability). Of note, there was no reported down time during this reporting period.

Accomplishments (during reporting period):

USCG R&D Center received a draft report that PPL has prepared to submit to the DOE for the Climate Change Fuel Cell Program.

USCG continued to discuss long-term maintenance programs and funding and ultimate turnover of ownership and responsibility of the fuel cell to Airsta Cape Cod.

Upcoming Activities (for next monthly period):

1. RDC, PPL, FCE to continue to work on maintenance planning and interconnect issues.
2. 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**.)

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Commence First Year of Operation	17 May 2003 (Completed)
Tentative “Ribbon Cutting” Ceremony	19 May 2003 (Completed)
Post Project Report to MTC	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 June 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. A multi-year maintenance & restacking service contract needs to be in place prior to turning project management over to ASCC. In the development of this project, it was discussed that the recurring maintenance and restacking funds would need to come from the energy account. The cost of the service contracts should be offset by the energy savings and energy credits the fuel cell is producing. RDC is working with CGHQ and MLCLANT on the funding and contracting issues this effort is on track to be in place Oct.1, 2004 pending funding.

2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU.

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

Report Period: 01– 31 May 2004

Production Information

Total Accumulated kWh: 1,574,834	kWh This Report Period: 127,541
Total Generating Hours to date: 9414	Total Hours Generation This Month: 744
Total Hours in Operation: 9817	Total Hours downtime since installed: 403
Overall Operational Availability: 0.959	Monthly Operational Availability: 1.0
Gas Meter Reading*: 12333	Gas Consumption This Period*: 942
Monthly Capacity Factor: 0.685 (Actual kWh/Total Possible kWh)	
<u>Approximate</u> Gas Cost Per CCF is approx. \$1.20 (based on most recent total bill cost & consumption)	
*Multiply X10 for CCF	

Please note electrical production data was extracted at midnight June 1, 2004. The gas meter reading was collected on June 1, 2004 at 1000.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 744 of 744 total hours (**100% availability**).

Accomplishments (during reporting period):

PPL's proposal for the reconfigured interconnection was received. It will be awarded the first week of June.

USCG personnel continue to work on the long-term maintenance programs and funding and ultimate turnover of ownership and responsibility of the fuel cell to Airsta Cape Cod.

Upcoming Activities (for next monthly period):

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

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End of Year 1 Operating Report	30 June 2004
Completion of RDC Project Report	01 August 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. The long term maintenance contract is on track for execution prior to October 1.
2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU.
3. The first year’s operation of the fuel cell has been completed. The RDC will be compiling a report of the first year’s operating statistics to provide to the MTC by early July. In addition, the RDC will be completing its comprehensive project report for an August 1 deadline.

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

Report Period: 01– 30 April 2004

Production Information

Total Accumulated kWh: 1,447,293	kWh This Report Period: 98,484
Total Generating Hours to date: 8670	Total Hours Generation This Month: 584
Total Hours in Operation: 9073	Total Hours downtime since installed: 403
Overall Operational Availability: 0.9556	
Gas Meter Reading*: 11,391	Gas Consumption This Period*: 906
Monthly Capacity Factor: 0.55 (Actual kWh/Total Possible kWh)	
Approximate Gas Cost Per CCF is \$1.19 (based on most recent total bill cost & consumption)	
*Multiply X10 for CCF	

Please note electrical production data was extracted at midnight May 1, 2004. Gas meter reading was collected on May 3, 2004 at 0830.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 584 of 720 total hours (81.1% availability). The plant was reduce power to Hot Standby for approximately 136 hours on April 9th after a routine sample disclosed that sulfur had broken through the desulfurizer beds. It took a few days to marshal the contractors and material to replace the bed material.

Accomplishments (during reporting period):

USCG headquarters staff approved the additional project funds to complete the necessary interconnection to enable the exportation of power. Appropriate contracting documents have been prepared and forwarded to PPL.

A contract modification was awarded to PPL to extend the current maintenance service agreement through the remainder of the Federal fiscal year (30 September).

USCG continued to discuss long-term maintenance programs and funding and ultimate turnover of ownership and responsibility of the fuel cell to Airsta Cape Cod.

Upcoming Activities (for next monthly period):

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

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Post Project Report to MTC	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 June 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. A multi-year maintenance & restacking service contract needs to be in place prior to turning project management over to ASCC. In the development of this project, it was discussed that the recurring maintenance and restacking funds would need to come from the energy account. The cost of the service contracts should be offset by the energy savings and energy credits the fuel cell is producing. RDC is working with CGHQ and MLCLANT on the funding and contracting issues.

2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU.

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

Report Period: 01– 31 March 2004

Production Information

Total Accumulated kWh: 1,348,809	kWh This Report Period: 112,303
Total Generating Hours to date: 8086	Total Hours Generation This Month: 663
Total Hours in Operation: 8353	Total Hours downtime since installed: 267
Overall Operational Availability: 0.968	
Gas Meter Reading*: 10,485	Gas Consumption This Period*: 836
Monthly Capacity Factor: 0.605 (Actual kWh/Total Possible kWh =250kW x 744 hours)	
<u>Approximate</u> Gas Cost Per CCF is \$1.20 (based on most recent total bill cost & consumption)	
*Multiply X10 for CCF	

Please note electrical production data was extracted at midnight April 1, 2004. Gas meter reading was collected on April 1, 2004 at 0630.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 663 of 744 total hours (89.1% availability). The fuel cell was offline on March 13 for 6.5 hours due to problems with an exhaust fan attributed to windy conditions.

The plant tripped offline on March 26 at 1400 because of a grid disturbance that was so severe that it was also reflected in a disturbance in the fuel cell load (the lights flickered at the base). The unit was unable to communicate the fact that it had tripped until about 1730, possibly as a result of the grid disturbance or noise on the telephone line that the unit uses. The unit was reconnected to the grid and began to assume load at 1631 on 3/29/04. (More specific information omitted due to proprietary technology concerns).

Accomplishments (during reporting period):

USCG headquarters staff approved the additional project funds to complete the necessary interconnection to enable the exportation of power. Appropriate contracting documents have been prepared and await final receipt of the funds.

Contracting documents were prepared and forwarded to PPL to extend the current maintenance service agreement through the remainder of the Federal fiscal year (30 September). RDC is awaiting PPL's response/proposal.

USCG personnel met on March 1st to discuss long-term maintenance programs and funding and ultimate turnover of ownership and responsibility of the fuel cell to Airsta Cape Cod.

Upcoming Activities (for next monthly period):

1. RDC, PPL, FCE to continue to work on maintenance planning and interconnect issues.

2. 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	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 June 2004
Proposed turn over to Airsta Cape Cod	01 October 2004

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

1. A multi-year maintenance & restacking service contract needs to be in place prior to turning project management over to ASCC. In the development of this project, it was discussed that the recurring maintenance and restacking funds would need to come from the energy account. The cost of the service contracts should be offset by the energy savings and energy credits the fuel cell is producing.
2. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU and better weather.
3. The USCG continues to discuss long-term maintenance plans and is currently awaiting information and proposals from PPL/FCE.

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

Report Period: 01– 29 February 2004

Production Information

Please note the addition of several pieces of data. Also, the production generating hours and hours in operation since installed have been further broken down to alleviate confusion regarding the information.

Total Accumulated kWh: 1,236,506	kWh This Report Period: 105,114
Total Generating Hours to date: 7423	Total Hours Generation This Month: 648
Total Hours in Operation: 7609	Total Hours downtime since installed: 186
Overall Operational Availability: 0.98	
Gas Meter Reading*: 9649	Gas Consumption This Period*: 867
Monthly Capacity Factor: 0.637 (Actual kWh/Total Possible kWh =250kW x 696 hours)	
Approximate Gas Cost Per CCF \$0.939 (based on total bill cost & consumption)	
*Multiply X10 for CCF	

Please note electrical production data was extracted at midnight March 1, 2004. Gas meter reading was collected on March 2, 2004.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated for 648 of 696 total hours (93.1% availability). The fuel cell was offline for 48 hours February 9-11 due to disturbances on the electrical grid, which prompted the equipment into island mode and then emergency shutdown. The fuel cell was brought back online without problem once the problem was diagnosed. Monthly maintenance consisted only of those basic items/checks, which were completed by the onsite USCG personnel.

Accomplishments (during reporting period):

The final version of the MTC report was forwarded to MTC.

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 continue to await the decision regarding funding.

Upcoming Activities (for next monthly period):

1. CGHQ to provide funding decision for interconnection.
2. RDC, PPL, FCE to continue 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, ASCC, and CEU Providence personnel to meet in early March to discuss plans to turn over funding/ownership responsibility of the fuel cell to the Air Station at the beginning of fiscal year 2005 on October 1st.

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

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Post Project Report to MTC	02 Feb 2004 (Completed)
End of Year 1 Operating Report	30 June 2004

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

1. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU.
2. The USCG continues to discuss long-term maintenance plans and is currently awaiting information and proposals from PPL/FCE.
3. Significant CG R&D budget reductions for both this fiscal year and next fiscal year have resulted in the need to expedite the turn over of the responsibility of funding the fuel cell to the Airsta and cognizant CG budget and engineering oversight. These reductions have already resulted in the postponement of several anticipated public relations improvements the RDC had originally planned to complete, such as an on site information display and possible real time web access to information. Fortunately, the preliminary analysis of the fuel cell’s operating record demonstrates the overall costs of the fuel cell are less than the costs of commercially provided heat and power and there should be adequate savings to cover the near and long term operating & maintenance costs of the fuel cell.

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

Report Period: 01– 31 January 2004

Production Information

Total Accumulated MWh: **1131**

MWh This Report Period: **124**

Total Hours Run: **6807**

Total Hours Run Since Last Report: **763**

Gas Meter Reading*: **8782**

Gas Consumption This Period*: **864**

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 February 1, 2004. Gas meter reading was collected on February 2, 2004.

Fuel Cell Operational Status (during reporting period):

The fuel cell operated continuously during the month of January. Maintenance consisted only of those basic items/checks, which were completed by the onsite USCG personnel. No grid outages were reported.

Accomplishments (during reporting period):

The final version of the MTC report is complete. In accordance with the MTC grant agreement, an annual operations report will be provided to MTC each June/July with complete operations, performance, and maintenance data for the preceding year.

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. A decision regarding funding is expected in February.

Funding has been approved to cover the costs of the first year annualized restacking fee and to extend the existing maintenance period until the end of the Fiscal year.

PPL provided the final As-Built construction drawings and the heat exchanger BTU meter is now functioning.

Upcoming Activities (for next monthly period):

1. CGHQ to provide funding decision for interconnection.
2. RDC, PPL, FCE to continue 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.

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End of Year 1 Operating Report	30 June 2004

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

1. The main feeder inspection is still awaiting completion pending fiscal and personnel resource availability at the local CEU. The unusually cold winter has had a significant impact on various construction projects. As previously mentioned, the feeder is one possible cause for the lower than expected base loads.
2. 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.