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VIA E-MAIL: r-brooks@cecer.army.mil

Subject: Initial Project Description Report, Southwest Research Institute™ Project 03-05118, "Demonstration of PEM Fuel Cells in Military Residential Facilities," Contract No. DACA42-01-R-0024

1.0 SITE

The demonstration site is base housing located at Brooks Air Force Base in San Antonio, Texas. Figure 1.1, Base Housing at Brooks AFB, is a photograph that depicts typical base housing at Brooks. This photograph is representative of the type of housing that will be powered but is not of one of the specific units that will be powered with fuel cells.

Figure 1.1 Base Housing at Brooks AFB

The specific possible housing units, size and street address are shown in Table 1.2. Brooks Housing Units, Size and Address.

Table 1.2 Brooks Housing Units, Size and Address

Building 493	1467 Square Feet	111 Vinsant Circle
Building 494	1524 Square Feet	109 Vinsant Circle
Building 495	1524 Square Feet	107 Vinsant Circle
Building 496	1524 Square Feet	105 Vinsant Circle

These housing units were identified in coordination with Brooks AFB personnel and were chosen on the basis of good rear access to the residences (to minimize installation disruption to the tenants), proximity to gas and electric utilities, easy site access for servicing and possible tours, and park-like setting for public relation events. We have not yet chosen the specific three houses. We plan to choose the houses by looking at utility considerations such as trenching and metering. Primary contact at Brooks is Steven Holt, (210) 536-5015. Mr. Holt indicates that he will aid in coordinating base housing officers to assure that the houses chosen are occupied a high percentage of the time during the demonstration period.

Figure 1.3 Gas Metering and Utility House at Site, shows the easy access to natural gas and water at the site. The rear of the housing units are just out of frame to the left of the metering facility, approximately 150 feet away. One option for siting the fuel cells is to "clean up" the gas metering facility and install the fuel cells inside the fenced area. Much of the siting will be determined by CPS who will decide on pad locations based on trenching and metering criteria.

Figure 1.3 Gas Metering and Utililty House at Site

2.0 POINTS OF CONTACT

Table 2.1 lists points of contact for the project. Many additional points of contact are contained in a larger spreadsheet available by contacting Alan Montemayor.

Table 2.1 Points of Contact

First Name	Surname	Organization	Specialty	Telephone	Email
Mary-Rose	de Valladares	DCH Technologies	Fuel Cell Supplier	(301) 530-6591	Maryrose@dcht.com
Steven	Holt	Department of the Air Force	Brooks Systems	(210) 536-5015	Steven.holt@brooks.af.mil
Valerie	Harris	San Antonio City Public Service	CPS	(210) 353-3799	vvharris@cps-satx.com
Greg	Brady	St. Philips College	St. Philips Contact	(830) 537-5740	gbrady@gvtc.com
Alan	Montemayor	Southwest Research Institute	Project Manager	(210) 522-6940	amontemayor@swri.edu
Joe	Redfield	Southwest Research Institute	Fuel Cell Program Manager	(210) 522-3729	jredfield@swri.edu

3.0 ENERGY COSTS

Electric energy costs on Brooks Air Force Base are calculated by a complex formula called by City Public Service the "Super Large Power Service (SLP) Rate. This three page document contains a service availability charge, demand charges, non-summer billing charge/kW and an energy charge per kW. The net effect of all these charges is that Brooks pays approximately $0.037/kW.

Natural gas at Brooks Air Force Base is supplied by El Paso Natural Gas, not the local utility. We have not yet been able to track down this number.

We do not plan to utilize waste heat from our fuel cells, therefore our energy balance for the system will be relatively straightforward. It is premature to attempt to calculate the energy balance at this time, as we do not have realistic numbers for reformer and fuel cell efficiency. Also, we are currently in discussion among the partners concerning the way in which the fuel cells will be controlled. The control algorithm(s) will determine the efficiencies of the units as well as the total energy generated and consumed during the demonstration. We will provide estimates as soon as some of these questions are answered.

4.0 STATUS

As of today, we are very close (within days) of having DCH Technology under subcontract to provide the fuel cells. Our project kickoff meeting was held yesterday, February 14, 2002 with representatives from SwRI, CPS, Brooks AFB, St. Philips College and DCH Technology (via teleconference) present. We inspected the site with an eye to preparing initial site drawings. We discussed permitting activities and interactions with the local fire marshal. We have begun looking at communication modes to take data and issue commands to the fuel cells. CPS has fiberoptic cable at a nearby substation and has agreed to let us use it, although ultimately, installation cost and bandwidth may make DSL or cable modem more attractive.

Our immediate plans are to complete the subcontracting efforts with DCH Technology, begin communications with their technical people to pin down electrical interface criteria and possible emissions numbers (for permitting), initiate permitting with the City of San Antonio, and contact the local fire marshal.

Our plans call for completing fabrication of the fuel cell units no later than September 30, 2002. We intend to complete installation of the units no later than October 31, 2002. We anticipate initiation of service November 1, 2002. We intend to prepare and submit a midpoint project status report two months after the fuel cells are installed, nominally. We intend to prepare and submit a final report no later than two months after the completion of the demonstration period, nominally December 31, 2003

If you have any questions, please feel free to call me at (210) 522-6940. My email address is amontemayor@SwRI.edu. For your convenience, my fax number is (210) 522-5720.

Reviewed by:

Scott T. McBroom, Manager
Advanced Vehicle Technology
Vehicle Systems Research Department

Sincerely,

Alan Montemayor, Principal Engineer
Advanced Vehicle Technology
Vehicle Systems Research Department

Approved by:

Gary L. Stecklein, Director
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