

**OPERATION OF A PUBLIC  
GEOLOGIC CORE AND SAMPLE  
REPOSITORY IN HOUSTON, TEXAS**

**Technical Progress Report**

Reporting Period June 1, 2005 – May 31, 2006

by

Scott W. Tinker  
Director and Principal Investigator  
and  
Beverly Blakeney DeJarnett  
Research Associate and HRC Curator

October, 2006

for

Department of Energy  
Award No. DE-FG26-02NT15290

Bureau of Economic Geology  
John A. and Katherine G. Jackson School of Geosciences  
The University of Texas at Austin  
P.O. Box X, University Station  
Austin, TX 78713-8924

## **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 not necessarily state or reflect those of the United States Government or any agency thereof.

## **EXECUTIVE SUMMARY**

The Bureau of Economic Geology's Houston Research Center (HRC) is well established as a premier regional research center for geologic research serving not only Houston, but geoscientists from around Texas, the U. S., and even the world. As reported in the 2004-2005 technical progress report to the DOE, the HRC provides a state-of-the-art core viewing facility, two fully equipped conference rooms, and a comprehensive technical library, all available for public use. In addition, the HRC currently now houses over 600,000 boxes of rock material, and has space to hold approximately 300,000 more boxes. Use of the facility has remained strong during this fourth year of operation; the number of patrons averaged nearly 150 per month from June 1, to 2005 May 31, 2006. This usage is a combination of individuals describing core, groups of geoscientists holding seminars and workshops, and various industry and government-funded groups holding short courses, workshops, and seminars. These numbers are in addition to the numerous daily requests from patrons desiring to have rock material shipped offsite to their own offices.

The BEG/HRC secured several substantial donations of rock materials and cash totaling approximately \$2.2 million during the 2005-2006 operating period. All of these funds went directly into an endowment that will, when complete, endow the HRC in perpetuity. Specific details regarding the funds in the endowment are addressed in a table later in this report.

Outreach during 2005 and 2006 included many technical presentations and several publications on the HRC. Several field trips to the facility were held for geoscience professionals and grade school students alike.

Goals for the upcoming year include securing donations of rock material and cash to approach full funding of the HRC endowment. Thanks to donations totaling \$2.2 million from Shea Homes (heritage Unocal rock material), Chevron and others this operating year, the HRC endowment now totals \$8,015,621. A major project underway for the HRC in FY2007 is improvement of the existing online core/log database into a Geoinformatics-compatible, GIS-driven online system. Usage of the HRC has gone up every year and is now very respectable. This year we will strive to raise awareness of the HRC's 100,000-volume geoscience technical library.

Our original business model targeted \$10 million in endowment; after several years of operation we realize we require an \$11 million endowment. We are "on plan" and need only \$3 million to fully fund the endowment. To meet these goals in the 2006-2007 operating year will require DOE support for the fifth and final year. DOE support will allow for ~\$600k in endowment growth and save using the fund for operation; lack of support will result in a net negative spread of up to \$1 million, and set the plan way back.

We recognize that DOE budgets for oil and gas research, against best efforts, have been cut substantially this year. **Any support available for HRC operation, during continuing resolution or otherwise, would have a very positive impact on this critical final year of the original business plan.**

## TABLE OF CONTENTS

Disclaimer.....	ii
Executive Summary.....	iii
The Facility and Staff.....	1
Equipment additions/upgrades.....	4
Activities .....	5
Meetings/conferences .....	5
Technical Presentations .....	9
Publications.....	9
Outreach .....	9
Database.....	10
Goals for the upcoming Year (2006-2007) .....	10



## **The Facility and Staff**

The Bureau of Economic Geology's Houston Research Center (HRC) is now established as a premier regional center for rock-based geologic research serving not only Houston, but geoscientists from around Texas, the U. S., and even the world. As reported in the 2004-2005 technical progress report to the DOE, the HRC provides a state-of-the-art core viewing facility, two fully equipped conference rooms, and a comprehensive technical library, all available for public use. In addition, the HRC currently houses over 600,000 boxes of rock material, and has space to hold approximately 300,000 more boxes. Use of the facility has remained strong during this fourth year of operation; the number of patrons using the HRC has averaged nearly 150 per month. This usage is a combination of individuals describing core, groups of geoscientists holding seminars and workshops, and various industry and government-funded groups holding short courses, workshops, and seminars.



Figure1. Part of the core examination room at the HRC

There are currently five people on staff at the HRC. One part-time geologist curates the material and provides technical support to patrons. One geologist is an oil and gas resources specialist. A warehouse and facilities foreman and two full-time warehouse staff members coordinate all logistics of operating the entire facility and handle patrons' requests for rock material.

#### Major Donations to BEG/HRC (from June 2005-May 2006)

The BEG/HRC has secured several major donations of rock material and cash during 2005 and 2006. These funds go directly into the BEG/HRC endowment established to ultimately fund the facility and its operations off of the interest earned in the endowment.

- Shea Homes donated approximately 50,000 boxes of rock material (formerly Unocal's collection stored in a warehouse in La Brea,



CA). The donation included a cash donation of approximately \$400,000.

- Chevron is donating 190,000 boxes of rock material with an accompanying cash contribution of \$1.51 million dollars.

Table 1 summarizes the cash flow in the HRC endowment since its inception in 2002. Only \$3 million from a combination of endowment growth, new donations and bridging grants is required to fully fund the endowment for the amount required to operate the HRC in the reasonable future.

Year	Startup	2003	2004	2005	2006	2007
<b>Operating Expenses</b>	(\$350,000)	(\$364,000)	(\$450,000)	(\$461,250)	(\$472,781)	(\$484,601)
Bridging Grants	\$300,000	\$350,000	\$450,000	\$461,250	\$472,782	\$484,601
<b>Total Endowment (Year End)</b>	\$1,781,692	\$3,354,005	\$4,054,325	\$5,096,871	\$8,015,621	\$10,816,871
Endowment Contributions	\$1,500,000	\$1,037,400	\$250,000	\$500,000	\$2,200,000	\$2,000,000
Other Income (use/leaseback)	\$149,715	\$299,431	\$150,000	\$165,000	\$125,000	\$0
Endowment Growth	\$131,977	\$249,482	\$300,320	\$377,546	\$593,750	\$801,250
Endowment Payout Used	\$0	(\$14,000)	\$0	\$0	\$0	\$0
% Endowment Used	0.00%	0.42%	0.00%	0.00%	0.00%	0.00%
Potential Annual Payout	\$80,176	\$150,930	\$182,445	\$229,359	\$360,703	\$486,759
<b>Variables</b>						
Op Exp Growth Rate	2.50%					
Endowment Interest Rate	4.50%					
Endowment Growth Rate	8.00%					

Green: bridging grant and endowment needed

Table 1. Summary of HRC Endowment Cash Flow since Fund Inception

## Equipment Upgrades and Additions

The following list summarizes equipment upgrades and additions that were made at the HRC from June 2005 through May 2006.

### Equipment Upgrades and Additions

- PTTC provided funding for the HRC to completely refurbish its large conference room with new conference tables and chairs and two new ceiling-mounted projectors.
- The Society for Exploration Geophysicists and the Geophysical Society of Houston have provided display cases and historical geophysical equipment for display at the HRC.
- BEG purchased a state-of-the-art conference call phone for use in the conference rooms.
- The HRC was equipped with wireless capabilities throughout the office spaces and conference rooms.



Figure 2. HRC Large conference room

## HRC Activities

### Conferences held at HRC and Patrons utilizing HRC from 06/1/05 - 5/31/06)

#### June 2005

University of Houston – Mary Canino  
PETEX  
Mary van der Loop  
Nautilus U.S.A. - 5-day geological short course for 17 people  
Oxy  
Shell Oil  
Anadarko Petroleum Corp.  
American Oil (David Willson)

#### July 2005

FutureGen meeting (80 participants)  
Samson Oil  
LNG  
Presco  
Marathon Oil Co.  
Anadarko Petroleum Corp.

#### August 2005

Anadarko (3 occasions)  
Halliburton  
University of Houston  
DOE (75 participants)  
Brazos Royalty  
Newfield Exploration  
Baker Energy (3 day course for 40 geoscientists)

#### September 2005

Baker Energy (40 participants)  
BP (4 occasions)  
Oxy  
SIPES (63)  
Halliburton (15)  
Shell Oil  
Houston Geological Society (68 short course attendees)



Figure 3. Participants examine core at a core workshop held at the HRC.

**October 2005**

PEICE (4-day course for 21)

Future Gen – 35

University of Houston

Halliburton

Mary Canino

PEICE - 2 day course for 20

BP

Univ. of Utah

Rogers Energy

**November 2005**

Oxy

BEG

Halliburton

BP

DOE/PTTC (34)

Cabot Oil and Gas

**December 2005**

PEICE (68 for 2- day course)

PEICE 4-day course for 17)

Marathon

USGS

BEG  
NASA

**January 2006**

Hawr Zhad  
Jim Edwards  
Mary Van der Loop (3 times)  
IHS Energy  
Brazos Royalty  
Eric Nelson  
BEG

**February 2006**

Advantage Resources  
Brazos Royalty  
Mike Brandos  
BEG  
PTTC (35)  
Kerogen (17)  
Nohring (10)  
University of Houston  
PTTC (110)  
PTTC 10)

**March 2006**

Halliburton  
Cobb and Associates  
PEICE (4-day course for 22)  
Oxy  
ConocoPhillips  
Decker Operations  
Anadarko  
Aspect Energy  
Kerogen Resources  
Castex Energy  
PTTC (50)  
BP  
ConocoPhillips (50 geoscientists– new hire training)

**April 2006**

Samson  
EMD of AAPG - short course for 50  
GSCSEPM  
SEPM (2 day course for 40)  
BEG

Kerogen  
PEICE (2 days for 40)  
Santos  
University of Texas



Figure 4. FutureGen Seminar held in the HRC large conference room.

**May 2006**

Halliburton  
PTTC (42)  
Kerogen  
PEICE (2 day for 40)  
Oxy  
PEICE (5)  
Marathon  
Daystar Oil and Gas  
Oxy

## **Technical Presentations**

Blakeney-DeJarnett, Beverly, 2005, The Bureau of Economic Geology, University of Texas at Austin: Core and Sample Repositories. Geological Society of America Annual Meeting, Salt Lake City, UT, Oct. 2005.

Dutton, Shirley P., Goldstein, Steven L., and Blakeney DeJarnett, Beverly, 2005, Curation of Terrestrial Scientific Cores, Samples, and Collections. Geological Society of America Annual Meeting, Salt Lake City, UT, Oct. 2005.

Blakeney DeJarnett, B. and Scott, Alan J., 2005, Tidally influenced sedimentation in the Almond Formation, Patrick Draw Field , SW Wyoming, Rocky Mountain Section of American Association of Petroleum Geologists, Jackson Hole, WY, Sept. 34-26, 2005.

### **Invited speaker**

The Bureau of Economic Geology, University of Texas at Austin Core, Sample and Log Repositories – October monthly meeting for the Houston Gem and Mineral Society

### **Other Lectures/Addresses**

Organized entire DOSECC Annual meeting held in Austin, June 2005.

## **Publications**

Blakeney-DeJarnett, Beverly, 2005, The Bureau of Economic Geology, University of Texas at Austin: Core and Sample Repositories. Abst., Geological Society of America Annual Meeting, Salt Lake City, UT, Oct. 2005.

Dutton, Shirley P., Goldstein, Steven L., and Blakeney DeJarnett, Beverly, 2005, Curation of Terrestrial Scientific Cores, Samples, and Collections. Abst., Geological Society of America Annual Meeting, Salt Lake City, UT, Oct. 2005.

Blakeney DeJarnett, B. and Scott, Alan J., 2005, Tidally influenced sedimentation in the Almond Formation, Patrick Draw Field , SW Wyoming, Abst., Rocky Mountain Section of American Association of Petroleum Geologists, Jackson Hole, WY, Sept. 34-26, 2005.

## **Outreach**

½ day Field Trip at the HRC for CAST – October 2005. Rocks Don't Lie: The Importance of Rocks in the Petroleum Industry.

Co-led field trip for TX Region VI science teachers to "Blue Lagoon Quarry" in Huntsville, TX – May 2006

BBD spoke to 5<sup>th</sup> graders on rocks, minerals and fossils at Coulson Tough School, The Woodlands, TX – November 3, 2005

BBD spoke to 6<sup>th</sup> graders on plate tectonics, Coulson Tough School, TX – November 2005

BBD spoke to all of 1<sup>st</sup> grade at Coulson Tough School – March 21, 2006

### **Database Update**

BEG launched major initiative for focused effort directed toward significant improvements in the BEG's online core/log database. Continued progress being made in configuring our database to be compatible with other well-designed geospatial databases under the Geoinformatics initiative (John Els, J. Kipper, B. DeJarnett)

Continuing to improve the internal data quality in our database (John Els, B. DeJarnett; Nika MacElroy – summer intern funded by PTTC in summer 2005))

Continuing to move toward a GIS-driven database (J. Kipper, John Els, B. DeJarnett)

### **Goals for the Upcoming Year (2006-2007)**

Goals for the fifth year of operation include building the endowment until the majority of funds needed to fully fund the endowment are in place (Table 1). Discussions with several large companies are very far along, and we expect to receive at least 200,000 boxes of donated rock material (with cash donations of approximately \$1.6 million dollars) in 2006-2007. If we succeed in securing these donations, the BEG/HRC endowment will meet our 5-year plan, be fully funded and be able to operate off of the interest generated from this endowment in approximately one year.



The BEG/HRC received its first shipment of cores from an NSF-funded project in mid to late-2005. An HRC advisory council has been formed under the provision required in the NSF contract that supports the HRC as the national repository for Terrestrial Cores, Cuttings and Samples. A proposal for the next five years of funding is currently under review at NSF.

A major goal for the HRC, and BEG in general, for this upcoming year is the significant improvement of our existing online core/log database. This is a major initiative within the BEG for the next year and beyond. Continuous improvement (including, but not limited to the construction of a new database schema, defining and standardization of metadata, ensuring compatibility with online Geoinformatics search engines, and correction of incorrect or incomplete data entries within the database itself) will result in a robust geospatial database for the 2 million boxes of publicly available rock material housed in the BEG three core research centers and the 925,000 digital geophysical well logs housed in Austin.

Goals for the HRC Technical Library include continuing to catalog all uncataloged materials with the ultimate goal of having the collection online and searchable by the geoscience community at large.

The BEG greatly appreciates the support of the DOE in providing critical operational funds that have allowed the facility not only to be saved from loss for the scientific and academic community, but also to thrive and operate in the public domain well into the future.