

(17) Determination of CO₂ Storage Capacity and ECBM Potential of Lignite Coals

This three-year effort will seek to develop estimates of the gas content and CO₂ storage capacity of lignite coals in the Fort Union Group of the North Dakota and Montana portions of the Williston Basin and to determine the potential for application of the CO₂-based ECBM in those coals.

Total project cost: \$500,000

Funding request: \$400,000

Project Lead: University of North Dakota, Energy and Environment Research Center

Project Participants: North Dakota Industrial Commission Oil and Gas Division; the North Dakota Department of Commerce Division of Community Services, State Energy Program; and the Montana Board of Oil and Gas

Start Date: May 23, 2005

End Date: May 23, 2008

Patents:

No patents or applications for patents related to this project have been filed.

Publications/Presentations:

A presentation entitled "Lignite Field Validation Test in Burke County, North Dakota" was presented to the North Dakota Association of Oil and Gas Counties (NDAOGC) at their annual meeting in Williston, North Dakota, on September 27, 2007. The presentation provided the NDAOGC with an overview of the goals and objectives of the project and a brief summary of recent and future project-related activities.

Progress in Past Quarter and Current Status:

Well drilling and coal sample collection activities were conducted during the past quarter. Specifically, below is a list of specific project activities conducted between July 1 and September 31, 2007.

- Core and cuttings samples of a lignite seam in Burke County were collected in mid-August, 2007. The core sample is approximately 10 feet in length, and was collected from an exploration well at a depth of approximately 1,100 ft. Cuttings samples were collected from four other wells on the same location, located in close proximity (<1,000 ft) to the exploration well.
- Laboratory-based tests on portions of the core were initiated to determine gas (methane) content, gas specific gravity, methane and CO₂ sorption isotherms, coal ash and moisture contents, coal density and compressibility, porosity, and permeability.
- Well log data was collected for the wells from which the core and cuttings were collected to determine in-situ reservoir conditions.

It is anticipated that the laboratory-based analytical activities will take three to six months to complete.

Photographs documenting some of the key field-based activities conducted in August, 2007 are provided in Figures 1-5 below. A sample of well log data gathered during the field-based activities is also presented in Figure 6.



Figure 1 – Photograph of the drilling rig used to collect the core from the coal seam exploratory well in Burke County, North Dakota. The photograph shows the rig at the location from which the core was collected.



Figure 2 – Photograph of the coal core sample immediately after collection. The sample is being rinsed prior to the initiation of canister testing for gas content analysis.



Figure 3 – Close-up photograph of the lignite coal core collected in Burke County, North Dakota.



Figure 4 – Photograph of the core being prepared for canister testing.



Figure 5 – Photograph of the canister testing apparatus used to initiate gas analysis activities in the field immediately after collection of the lignite core sample.

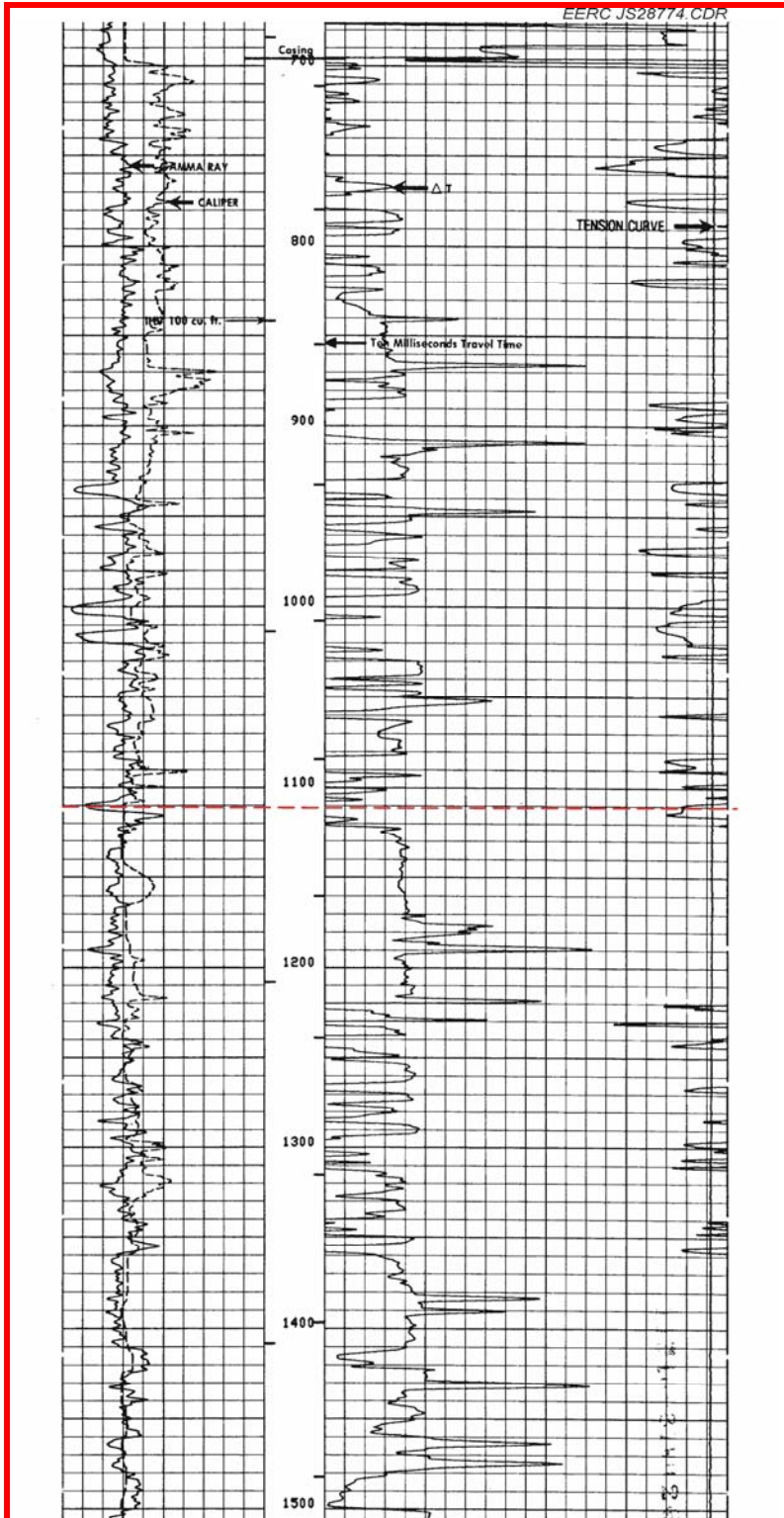


Figure 6 – Portion of a sonic log collected as part of the well logging activities at the well site. The red dashed line indicates the approximate depth of the coal seam from which the core was collected.

Plans for Next Quarter:

It is anticipated that analyses of the core and cuttings samples collected in August, 2007, will continue to be analyzed during the next quarter.