

**Development of an Advanced Approach for Next  
Generation, High Resolution, Integrated Reservoir  
Characterization**

**Quarterly Technical Progress Report  
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## **Abstract**

During this reporting period work on Task 4: Develop Integrated Engineering Model was completed, incorporating the results from Log Clustering. A series of Topical Reports were prepared on Seismic Data Processing, Rock Physics modeling, Log Clustering, and the Integrated Engineering Model. These Topical Reports have been submitted to the test site field operator for review before submission to NETL staff in Tulsa. Work continues on development of the Broadband Seismic Transform Function.

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## **1.0 Executive Summary**

During this reporting period work on Task 4: Develop Integrated Engineering Model was completed, incorporating the results from Log Clustering. A series of Topical Reports were prepared on Seismic Data Processing, Rock Physics modeling, Log Clustering, and the Integrated Engineering Model. These Topical Reports have been submitted to the test site field operator for review before submission to NETL staff in Tulsa. Work continues on development of the Broadband Seismic Transform Function.

## **2.0 Work Performed**

### **Task 1: Select Test Site**

Task completed. No work was performed on this task during the reporting period.

### **Task 2: Collect and Process Data**

Task completed. A Topical Report on this work was prepared during this reporting period, as outlined under Task 6: Technology Transfer.

### **Task 3: Develop Broadband Seismic Transform Function**

During this report period work continued on data manipulation and conversion to load the seismic attribute files into a database system. This database will be used by the software that constructs the broadband transform. There are ten seismic attributes (plus amplitude, for a total of eleven) per seismic tract, and over 30,000 seismic traces in the two square mile project area. For this reason data manipulation and conversion is a large undertaking.

However, prioritization of the data conversion and loading process allowed the seismic data in the region around the cross-well seismic profiles to be loaded first. During this reporting period investigative attempts to relate data at the various scales were made to insure that the data model used in database construction was correct, and that the broadband transform software could access the data properly. The experience gained during these efforts will help speed actual construction of the transform function itself.

### **Task 4: Develop Integrated Engineering Model**

During this reporting period work to integrate the results of Log Clustering into the Integrated Engineering Model was completed. A Topical Report on this work was prepared during this reporting period, as outline under Task 6: Technology Transfer.

### **Task 5: Reservoir Characterization and Modeling**

No work was performed on this task during the reporting period.

### **Task 6: Technology Transfer**

During this reporting period the various project participants expended efforts to finalize reports on the various tasks involved in the project. The result was a series of Topical Reports on Seismic Processing, Rock Physics Modeling, Log Data Clustering, and Engineering Model creation. These Topical Reports were assembled by the Project Manager and prepared for transmittal to the field operator for review before submission to NETL staff in Tulsa.

### **3.0 Results and Discussion**

At the conclusion of this reporting period work to construct the broadband transform function was well underway. The foundational tasks have been completed and reports prepared on that work. Those reports have been transmitted to the field operator for review and approval prior to submission to NETL staff in Tulsa. This step is necessary under the confidentiality provisions of the agreement whereby the operator released the project dataset.

### **4.0 Conclusions**

The process of creating the seismic broadband transform is well underway. Initial steps consist of converting and manipulating massive amounts of data to load a project database. This database will be used by the broadband transform software. Topical Reports on the project tasks completed to data have been prepared and are in the review process prior to submittal to NETL staff in Tulsa.

### **5.0 References**

None.