**Basin Analysis of the Mississippi Interior Salt Basin and
Petroleum System Modeling of the Jurassic Smackover
Formation, Eastern Gulf Coastal Plain**

**Quarterly Report
January 1 - December 31, 1998**

**By:
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*"Basin Analysis of the Mississippi Interior Salt Basin and Petroleum System
Modeling of the Jurassic Smackover Formation, Eastern Gulf Coastal Plain"*

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Modeling of the Jurassic Smackover Formation, Eastern Gulf Coastal Plain"***

Second Quarterly Report for Year 2
January 31, 1998—March 31, 1998

Project Objectives

Part 2 (Basin Analysis of the Mississippi Interior Salt Basin) objectives are to provide a comprehensive analysis of the Mississippi Interior Salt Basin in Years 2 and 3 of the project and to transfer effectively the research results to producers through workshops and topical reports.

Work Accomplished

Task 1—Tectonic History

The regional base map for the oil and gas fields, land grid map, field and reservoir productivity tabulation and well location and formation top database have been prepared. The well database consists of over 3,000 oil and gas wells that penetrated Jurassic strata in the Mississippi Interior Salt Basin area. Subsurface structure maps and isopach maps have been constructed on key stratigraphic horizons. The structure maps and isopach maps have been compared to reconstruct the tectonic history of the basin. The wells for four of the cross sections have been selected and interpreted.

Task 2—Depositional History

The biostratigraphy for the selected well has, in part, been completed. The well logs for four of the regional cross sections have been interpreted. The isopach maps have been compared for reconstruction of the basin history.

Task 3—Burial History

Standard burial and thermal history software has been acquired. Select well profiles have been modeled to determine crucial values for critical parameters for burial history modeling. Sedimentation and subsidence rate determinations have been made for several of the selected wells.

Task 4—Thermal History

Oil and source rock analysis data have been tabulated to determine the need for additional analyses. Select well samples have been examined to assess the amount of organic matter available for vitrinite reflectance study of kerogen for crucial stratigraphic intervals. Geothermal gradient and heat flow data from the literature for the basin have been evaluated.

Task 5—Technology Transfer

Planning workshops were held in Tuscaloosa, Alabama, on September 26, 1997, and in Jackson, Mississippi, on November 6, 1997, to discuss with producers the research plan for Part 2 of the project. The recommendations received at the workshops have been incorporated into the research plan. Technology transfer workshops focusing on carbonate reservoir characterization and modeling were held in Tuscaloosa, Alabama, on March 3, 1998, and in Jackson, Mississippi, on March 4, 1998.

The first year report, field production data, and a case history study of the Smackover Formation at Appleton Field have been posted on the website of the Eastern Gulf Region of the Petroleum Technology Transfer Council.

Work Planned

Task 1—Tectonic History

The wells for the five regional cross sections will be checked and the cross sections will be finalized. Interpretation of the tectonic history of the basin will be made from the structure and isopach maps and regional cross sections.

Task 2—Depositional History

The biostratigraphy for the selected well and the well cutting/core study will be completed. Sequence stratigraphic analysis will be initiated. Interpretation of the depositional history of the basin will be made utilizing the isopach maps, regional cross sections, well cuttings/core descriptions from selected wells, and sequence stratigraphic analysis.

Task 3—Burial History

Interpretation of the burial histories for the wells selected for the regional cross sections will be finalized. Sedimentation and subsidence rate determinations will be completed.

Task 4—Thermal History

Interpretation of the thermal histories for the wells selected for the regional cross sections will be finalized. Geothermal gradient, heat flow, and subsurface temperature grid constructions will be completed. The thermal maturation level interpretation utilizing the reflectance values for vitrinite particles (vitrinite reflectance technique) will be completed.

Tasks	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
Planning Workshop														
Tectonic History														
Depositional History														
Burial History														
Thermal History														
Technology Transfer Workshop														
Topical Reports														
Planned														
Completed														