
Oil & Natural Gas Projects

Exploration & Production Technologies

Resource Assessment of Deep Natural Gas Resource of the Onshore Salt Basins NE Gulf of Mexico

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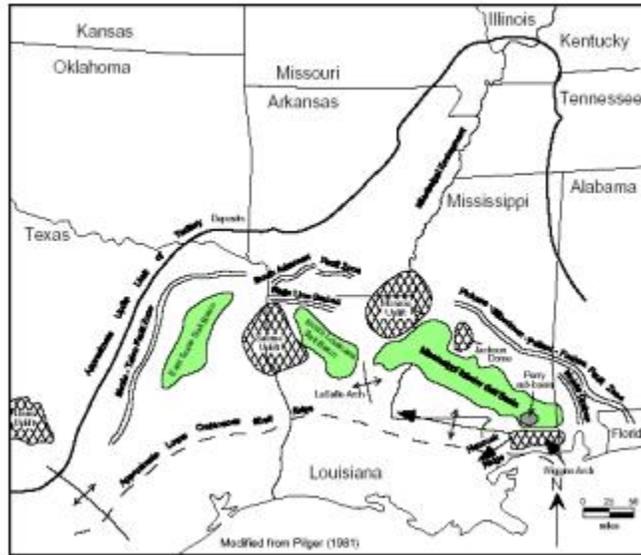
Goal:

The goal of this project is to improve the potential for recovery of deep natural gas resources from the onshore interior salt basins of the North Central and Northeastern Gulf of Mexico.

Background:

The North Central and Northeastern Gulf of Mexico onshore areas remain essentially an under-explored region for hydrocarbon accumulations in deep (below 15,000 feet) natural gas reservoirs. In the 1997 United States Geological Survey (USGS) study of the world's oil and gas provinces, the hydrocarbon pore volume for the major basins (Mississippi Interior Salt Basin and North Louisiana Salt Basin) in this region ranked in the top eight percent (33 out of 406) of the most petroliferous basins in the world. Based on USGS resource estimates and production, five to six trillion cubic feet of gas remain to be recovered from these basins. In 2002, the USGS reported that the geoscientific knowledge gained from a petroleum system approach to assessing the oil and gas resources of a basin resulted in information and data that could be used to target wildcat drilling in a basin in addition to providing an improved assessment of the oil and gas resources of a basin. To date, this advanced technology and methodology have not been applied to the onshore interior salt basins in the North Central and Northeastern Gulf of Mexico areas.

This three-year project will assess in-place deep (below 15,000 feet) natural gas resources with an emphasis on the North Louisiana Salt Basin, the Mississippi Interior Salt Basin, the Manila Sub-basin, and the Conecuh Sub-basin of Louisiana, Mississippi, Alabama, and the Florida panhandle. This effort includes: 1) identification of the petroleum systems in these basins, and 2) characterization of the overburden, source, reservoir and seal rocks of the petroleum systems and of the associated petroleum traps. The project will then model the petroleum system and conduct an assessment of the in-place resource. The modeling effort will include timing of deep gas generation, expulsion, migration, entrapment, and alteration (thermal cracking of oil to gas). Resource assessment will include volumetric calculation of the total estimated in-place hydrocarbon, the portion below 15,000 feet, estimation of the volume of deep gas that has been expelled, migrated and entrapped, and calculation of the potential recoverable deep gas resource. The project's final task will be to identify those areas in the onshore interior salt basins with high potential to recover commercial quantities of the deep gas resource and to recommend exploration strategies.



Interior Salt Basins and Uplifts in the Northern Gulf Coastal Plain

Performer: University of Alabama

Location:

Tuscaloosa, Alabama 35487

Potential Impact:

In order to assess the hydrocarbon resource of a basin and to target more effectively specific areas of the basin for hydrocarbon exploration drilling, it is necessary to know the amount and type of hydrocarbons generated by a particular active source rock in a given sedimentary basin. This information is generally lacking for the deeply buried natural gas resources of the onshore interior salt basins of the North Central and Northeastern Gulf of Mexico areas. In addition to hydrocarbon generation, it is important to accurately estimate the amount and type of hydrocarbons expelled, migrated, entrapped, and altered, in order to reduce drilling risks for deep gas. This information is also lacking for these onshore interior salt basins.

The results of this advanced methodology resource assessment project will contribute to the understanding of the petroleum systems that have acted to produce the deeply buried natural gas resources of these onshore interior salt basins of the North Central and Northeastern Gulf of Mexico areas. This information should serve to enhance oil and gas exploration efforts by domestic companies in their search for new and underdeveloped natural gas resources and should support the domestic industry's efforts to increase the supply of clean, reliable and affordable fossil fuels for the citizens of our country.

Accomplishments:

Data Compilation – Digitization of the well logs for the onshore Gulf of Mexico Salt Basins was completed. Stratigraphic cross sections were constructed for the North Louisiana Salt Basin, the Mississippi Interior Salt Basin, the Manila Sub-basin, and the Conecuh Sub-basin of Louisiana, Mississippi, Alabama, and the Florida panhandle. Analysis of potential source rocks for the sub-basins was completed.

Petroleum System Identification – The project team completed the Petroleum System Analysis of the North Louisiana Salt Basin, Mississippi Interior Salt Basin, Manila Sub-basin, and Conecuh Sub-basin prior to October 1, 2005.

Current Status and Remaining Tasks:

The final year of the project will use the results of the Petroleum Systems Analysis to conduct a resource assessment of the North Louisiana Salt Basin, the Mississippi Interior Salt Basin, the Manila Sub-basin, and the Conecuh Sub-basin of Louisiana, Mississippi, Alabama, and the Florida panhandle.

Project Start Date: September 29, 2003

Project End Date: September 30, 2006

DOE Contribution: \$ 745,620

Performer Contribution: \$ 209,133

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Additional Information:

Basin Analysis Aids Exploration in the Mississippi Interior Salt Basin - PTTC.ORG

Pertinent Publications:

"Petroleum Source Rocks of the Onshore Interior Salt Basins, North Central and Northeastern Gulf of Mexico"
(Ernest A. Mancini, Peng Li; Donald A. Goddard; Ronald K. Zimmerman)