

HGS LUNCHEON MEETING

A Petroleum System's Lifecycle Hatter's Pond Field, Mobile County, Alabama:

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HGS LUNCHEON MEETING – November 24, 1993
Social Period, 11:30 a.m., Luncheon and Meeting, 12:00 p.m.
The Houston Club

Petroleum system assessment has become a means to establish the temporal and spatial inter-relationships of geologic factors which result in a hydrocarbon accumulation. By analogy, it is 'geologic bookkeeping.' Our understanding of a petroleum system undergoes a series of evolutionary changes from pre-discovery through abandonment phases of a field, parallel to the development of a 'reservoir lifecycle' model. Data made available during each stage of a system's lifecycle (i.e., pre-discovery, discovery, development, and abandonment), when integrated with the available geologic model enhances the focus and effectiveness of the exploratory and development programs. The petro-

leum system evolves from a speculative to either a known or hypothetical system depending on the data which become available. An example of such a lifecycle is presented for the Hatter's Pond field.

The initial exploration concept for the Hatter's Pond prospect was based on the Jay Field of Florida, which had been discovered just a few years earlier. A structural anomaly was identified using seismic data. Hydrocarbon source rocks were assumed to be present in the Smackover Fm. as a consequence of stratigraphic analysis, although their existence had not been proven. The extent of hydrocarbon generation and preservation was estimated using numeric modeling. Initially, the reservoir objective was

Smackover regressive carbonate grainstones.

Newly acquired data from the Getty Peter Klein 3-14 No. 1 discovery well were merged with the original exploration model. These data confirmed the presence of a source and dramatically altered the understanding of the reservoir by establishing underlying Norphlet sandstones as a primary target. Produced fluids suggested cross-formational flow.

Data obtained during the development phase resulted in continuous refinement of trap geometry, connectivity of pay-zones, and development of porosity and permeability models.

LOUIS M. LIRO - Biographical Sketch



Louis M. Liro received a Master's degree in geology from the University of Chicago in 1979. Since then, he has

worked in Texaco's research department, first in geophysical research and currently in geologic research. His specialty is stratigraphic interpretation from seismic and well log data, incorporated into regional studies. He is currently working in a self-managed, multi-disciplinary team investigating critical exploration and exploitation attributes of petroleum systems worldwide. He is a member of AAPG, SEPM, SEG, and GSA as well as a number of professional organiza-

tions in the Rocky Mountain and Gulf Coast regions.



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