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3-D Seismic Results in the Discovery of Significant Reserves Bypassed for 55 Years

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The Chocolate Bayou Field is located 25 miles south of Houston, in southeast Brazoria County, Texas. Discovered in 1938, the field has produced over 2 trillion cubic feet of natural gas and 65 million barrels of oil from approximately 30 sands and 300 wellbores. The majority of the production is from the sands of the upper and middle Frio (Oligocene) section. Accumulation is found on structural highs on both the downthrown and upthrown side of a major basinward growth fault.

A 3-D seismic survey was conducted over the field in 1988 in an effort to locate bypassed reserves. Interpretation of the data revealed an unexpected paleostructure associated with a buried and previously undetected

counter-regional fault located almost three miles south of the structural crest at the Upper Frio level. Detailed structural and isochron mapping with adequate depth conversions indicated that the structure was prospective for trapping in the lower Frio sands which were well developed but wet under the Upper Frio structural crest.

Although the feature was located on the absolute edge of the survey, the data was adequate to locate two wells which have now been completed in the lower Frio section. The sands range in thickness from 65 to 115 feet of net pay with porosities from 27 to 30%, with sustained production rates in excess of 10,000 million cubic feet of gas and 140 barrels of oil per day per completion.

Biographical Sketches



Alan S. Pennington earned his Bachelor of Science degree in Geology from Texas A & M University in 1976. Presently he is the Senior Vice President of Geology for Texas

Meridian Resources Corporation in Houston, Texas. Aside from managing three generating geologists at Texas Meridian, he also screens, evaluates, and markets Gulf Coast prospects. Alan has extensive trend experience in the Gulf Coast Frio-Miocene and Southeast Texas Yegua. He is a Certified Petroleum Geologist and a member of the AAPG and the HGS.



Craig Davis graduated from Indiana University in 1980 with a Bachelor's degree in Geology. He first worked for Texaco then in 1982 joined Monsanto Oil as an exploration geophysicist prospecting in

the Gulf of Mexico. His work there led to the discovery and development of the Green Canyon Block 18 Field. Following a transfer to Monsanto's London office, he worked on the computer-aided 3-D development of the Ivanhoe/Rob Roy Field.

Craig consulted with TRI-D A/S for the Danish government in Copenhagen; then spent four years with Landmark Graphics as support manager for Europe, Africa, the Middle East, and North America. In 1990, Craig co-founded INEXS which has grown to a staff of 11 geologists and geophysicists working on 3-D interpretation projects worldwide. He has presented more than 20 papers on interactive case histories and techniques to professional societies.