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ERNEST A. MANCINI — Biographical Sketch

Ernest A. Mancini, State Geologist and Oil and Gas Supervisor of Alabama, is a stratigrapher who specializes in the stratigraphy and petroleum geology of the Gulf Coastal Plain.

Dr. Mancini was educated at Albright College, Reading, Pennsylvania, (B.S., Biology, 1969); Southern Illinois University (M.S., Zoology, 1972); and Texas A&M University (Ph.D., Geology, 1974). Employed as an exploration geologist by Cities Services Company from 1974 to 1976, he worked on both the onshore and offshore areas of California and Alaska.

He has been a member of the Department of Geology at the University of Alabama since 1976, where he teaches graduate courses in petroleum geology and paleontology. The author of numerous publications, he has explored several areas of interest, such as the petroleum geology of Alabama and the stratigraphy and paleontology of Texas, Alabama, and Alaska.

Dr. Mancini is listed in American Men and Women of Science and Who's Who in Technology Today. He is a member of *Phi Kappa Phi, Sigma Xi,* Society of Economic Paleontologists and Mineralogists, American Association of Petroleum Geologists, Alabama Geological Society, Association of Gulf Coastal Plain Geologists, and International Geologic Correlation Program.

In the spring of 1982, Dr. Mancini was awarded the prestigeous A. I. Levorsen Memorial Award and first place for Best Paper by the Gulf Coast Association of Geological Societies for his paper on the petroleum geology of southwest Alabama.

PETROLEUM PRODUCTION AND POTENTIAL OF ALABAMA'S COASTAL PLAIN AND TERRITORIAL WATERS

Ernest A. Mancini and John H. Masingill

With the discovery of oil in 1944 at the Gilbertown Field in Choctaw County, Alabama became an oil-producing state. Since that discovery, Alabama's coastal plain and territorial waters have become important oil and gas areas. Production is from the Upper Jurassic, Lower Cretaceous, Upper Creataceous, and Miocene. Cumulative production from these units includes more than 227 million barrels of oil, 59 million barrels of condensate, and 513 billion cubic feet of gas. To date over 2600 wells have been drilled in the region, resulting in the discovery of 52 oil and gas fields.

Since the late 1960's, the primary exploration targets have been the Jurassic Smackover and Norphlet Formations. These two formations are the most prolific hydrocarbon reservoirs in the state with 39 Upper Jurassic petroleum fields having been discovered. Petroleum traps are principally combination traps involving favorable stratigraphy and salt anticlines, faulted salt anticlines, or extensional faults associated with salt movement. Smackover reservoir rocks include reefal boundstones; grainstones; leached and dolomitized wackestones, packstones, and grainstones; and dolostones. Porosity is facies-selective and is developed chiefly in lithofacies of Upper Smackover lithologies. Norphlet reservoir rocks include sublitharenites and subarkoses. These primary reservoirs include shoreface, dune, and fluvial lithofacies. The algal mudstones of the lower Smackover are probably the source rocks for much of the Upper Jurassic petroleum in the region.

Although there has not been a Cretaceous petroleum field discovered in Alabama for over 18 years, the largest oil field in the state continues to be the lower Cretaceous Citronelle Field which consists of over 50 separate producing sands in the "Donovan" interval. Over 134 million barrels of oil and 12 billion cubic feet of gas have been produced from the Lower Cretaceous "Donovan" sandstones. The "Donovan" fluvial sandstones accumulated as part of a meandering stream complex. The petroleum trap at Citronelle is a salt anticline. Lower Cretaceous production also has occurred at Tensaw Lake Field, while the Upper Cretaceous is productive at four fields. The petroleum traps in these fields involve favorable stratigraphy and salt anticlines or extensional faults associated with salt movement. Production is from the Selma chalk, Eutaw sandstones, and Tuscaloosa sandstones. Selma and Eutaw sediments are shelf deposits, while the Tuscaloosa sandstones include both marine bars and deltaic deposits. The Tuscaloosa marine claystones have potential as petroleum source rocks.

Since the discovery of gas in the Tertiary in 1979, seven Miocene gas fields have been established in Baldwin County. The type of petroleum trap in these fields appears to be primarily stratigraphic. Production is from the Amos, Escambia, and Meyers sands. These sands probably accumulated as part of a marine bar complex. The Miocene marine clays located downdip have potential as petroleum source rocks. Of the other Tertiary units in Alabama, the Upper Paleocene and Lower Eocene appear to have the most petroleum potential. Upper Paleocene deltaic sands of 50 feet in thickness are present updip. Lower Paleocene marine clays which can attain a thickness of 450 feet have potential as petroleum source rocks.

Alabama should continue to be an excellent region to explore for oil and gas in the years ahead. Much of Alabama's coastal plain and territorial waters remain untested. The key to successful prospecting in the region is the delineation of petroleum traps associated with salt movement and the recognition of favorable stratigraphy.