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Michael Clark¹, Dale Beeson² (1) ChevronTexaco Overseas Petroleum Company, San Ramon, CA (2) ChevronTexaco,

Reservoir Characterization Workflow for the Tombua Field Turbidite Channel System- Block 14, Offshore Angola

ChevronTexaco and its Block 14 partners (Sonangol P&P, TotalFinaElf, AGIP and Petrogal) have developed and applied a reservoir characterization workflow to produce integrated and detailed geologic models that have been used to reach consensus on OOIP, recoveries and development plans for the Tombua field in the deepwater Angola. Tombua is located in the eastern central portion of Block 14 in 300 meters of water and contains 10 turbidite-channel complexes of Miocene age. The pools are combination structural, fault, and stratigraphic traps with cumulative STOOIP approaching 800 million barrels. The resource base is defined by a discovery well drilled in 2001 followed by 7 appraisal penetrations drilled over the past 2 years.

The characterization workflow incorporates all well data along with high resolution 3D seismic to construct detailed reservoir maps and geologic models for each zone and channel. Routine core analysis and wireline log analysis were integrated with core derived reservoir facies in an iterative approach to define effective porosity, irreducible water saturation, and permeability for reservoir and non-reservoir. Seismic attribute extractions and depositional models provided a sound basis for spatial distribution of reservoir properties for detailed 3D geological models as well as for high quality mapped based OOIP estimates.

Results from fluid flow simulation of the 3D geological models were used to determine recoveries for the channels, define the details of displacement and subsurface development options. Use of this well defined characterization workflow and decision making process have been key for the Tombua Field reaching the current phase of Development Analysis.