

Using Advanced Chemistry of Basin Modeling to Predict Produced Oil Flow Properties for Deepwater Oil Production

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Conventional basin modeling techniques generally attempt to predict the timing and volume of hydrocarbon generation within a basin while the chemistry of the resource is largely disregarded. However, for deepwater oil exploration and production, it is extremely important to predict oil flow properties before drilling since flow assurance problem might cause significant problem for deepwater oil production. Recent advances in our ability mathematically describe the kinetics of hydrocarbon generation and have led to the development of an advanced tool for the prediction of many geochemical and physical properties of generated petroleum products. Integration of this kinetic model into standard basin models allows for the prediction of key physicochemical properties of oil flow properties, such as dead oil API gravity, viscosity, wax and asphaltene content. In this presentation, we will use immature kerogen samples from GOM (Tertiary, Cretaceous and Jurassic source rock) to quantify the fluid flow properties and predict the dead oil viscosity through laboratory pyrolysis.