عنوان مقاله:

ASPHALTENE PRECIPITATION DUE TO PRESSURE DEPLETION IN UNDERSEA PIPELINES

محل انتشار:

دهمین همایش بین المللی سواحل، بنادر و سازه های دریایی (سال: 1391)

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خلاصه مقاله:

Crude oil is a complex mixture. It consists of four main hydrocarbon groups: saturated hydrocarbons, aromatics, resins and asphaltenes. Asphaltenes are defined as the crude oil fraction that precipitates upon the addition of an n-alkane (usually n-pentane or n-heptane) but remains soluble in toluene. Asphaltene precipitation and deposition is one of the most important problems in different stages of petroleum production. It causes the plugging of wellbore,pipelines and production equipments. To maintain the production of well and avoid pressure reduction due to asphaltene deposition, so many mechanical and chemical methods have been applied. These methods are expensive and need sufficient time; therefore it is better to find a condition to reduce possibility of asphaltene precipitation. There is a stable condition among asphaltene, resins and maltenes and it disturbs according to various changes in temperature, pressure or composition. This work studies the asphaltene precipitation due to pressure depletion for a giant Iranian oil reservoir and through undersea pipelines. In this method the solid thermodynamic model presented by Nghiem et al. (1993) was utilized which was then tuned using the PVT data available for this oil reservoir. The model was able to simulate asphaltene precipitation in thisreservoir and through pipeline under different production schemes. To study the effect of pressure depletion on asphaltene precipitation, solid molar volume was used as the most important matching parameter. Also, Interaction coefficient between recipitating components and light component was found to influence the amount of asphaltene precipitation especially below the saturation pressure. As a result of this study, an excellent agreement achieved between experimental data and tuned model.

کلمات کلیدی:

Asphaltene precipitation, reservoirs, pipelines, solid model, pressure effects, temperature effects