

## **An Integrated Modular Approach Based Simulation of Cold Heavy Oil Production**

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**Abstract :** In this paper, the authors display an incorporated secluded way to deal with quantitatively foresee volumetric sand generation and improved oil recuperation. This model is in light of blend hypothesis with erosion mechanics, in which multiphase hydrodynamics and geo-mechanics are coupled in a predictable way by means of principal unknowns, for example, saturation, pressure, porosity, and formation displacements. Foamy oil is demonstrated as a scattering of gas bubbles caught in the oil, where these gas air bubbles keep up a higher repository weight. A secluded methodology is then received to adequately exploit the current propelled standard supply and stress-strain codes. The model is actualized into three coordinated computational modules, i.e. erosion module, store module, and geo-mechanics module. The stress, stream and erosion mathematical statements are understood independently for every time addition, and the coupling terms (porosity, penetrability, plastic shear strain, and so on) are gone among them and iterated until certain union is accomplished on a period step premise. The framework is capable regarding its abilities, yet practical in terms of computer requirements and maintenance. Numerical results of field studies are displayed to show the capacities of the model. The impacts of foamy oil stream and sand generation are additionally inspected to exhibit their effect on the upgraded hydrocarbon recuperation.

**Keywords :** oil recuperation, erosion mechanics, foamy oil, erosion module.

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