An Empirical Cost and Benefit Analysis of Enhanced Oil Recovery

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Abstract

In this paper, we have developed and updated an empirical cost and benefit analysis of Enhanced Oil Recovery (EOR) for the state of Wyoming. Conventional EOR methods are employed in an economic analysis of 100 reservoirs from 35 fields in Wyoming. The results of this research indicate that a majority of fields are currently appropriate for polymer augmented waterflooding and carbon dioxide(CO_2)flooding based on an average price of $.65 per mscf for CO_2 flood and $3.5/lb for polymers. At a base price of $22 per barrel of oil, these floods were economically viable in reservoirs less than 6000 ft deep for polymer and 12000 ft deep for CO_2 floods. These findings are consistent with the prediction of a previous study done by Varma in 1985. The total amount of oil recoverable by currently available EOR methods is estimated to be 1.5 billion barrel. If one-third of the potential target of 500 million barrel is recovered in the next 30 years, as assumed in the previous study, the present value of the state revenue at 8about $1.215 billion. Inclusion of pollution control cost (as a proxy for environmental costs of implementing EOR projects in Wyoming) in the above cost and benefit analysis will make these projects less economically viable.

Keywords: Enhanced Oil Recovery, Cost and Benefit Analysis.