

Identification of Enhanced Oil Recovery Potential in Alberta

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Summary

The performance of EOR projects in Alberta was examined and screening criteria were developed. A range of oil recovery factors for successful projects was also established. The screening criteria were applied to over 11,000 oil pools in the Alberta Reserves Summary to identify pools with EOR potential.

Using the OOIP from the Reserves Summary and the ranges of the recovery factors for each EOR scheme, the range of potential incremental recovery by EOR was estimated.

Introduction

The aim of the study was to develop a quantitative estimate of the potential oil recovery in Alberta by EOR methods. The scope of the study was limited to Alberta projects in the “conventional oil” areas. Two additional constraints were that only technical factors were considered and the data used were publicly available.

Within these constraints, only miscible and chemical EOR methods could be evaluated, since for other schemes, there were too few projects (e.g., thermal)—or none at all (e.g., microbial)—for any useful conclusions to be made. In some cases, projects in the Oil Sands areas were added to the data used, where these projects provided an extension to the information available from the conventional oil areas.

Method

The data on all the EOR projects in Alberta were collected from ERCB summary records, regular project progress reports and published literature. In total, 102 projects were examined, of which 78 were miscible floods and 22 were chemical floods. These groups were subdivided into types, taking into account both geological and process factors.

For each project, a short summary was prepared, which included the production and injection performance of the pool as well as the geological parameters and the incremental recovery as listed in the Alberta Reserves Summary (where possible).

Criteria based on the results and on the available data were then used to screen all the oil pools in Alberta for potential under the different miscible and chemical schemes. The potential recovery by EOR for all the pools was estimated by summing the OOIP for the pools in each category and applying the range of recovery factor for each category. The overall potential for the province was then estimated by adding the potential for each category, taking care not to “double count” where a pool was amenable to several different types of EOR.

In addition, several types and individual pools were highlighted as having high potential for incremental oil recovery.

Conclusions

There is considerable potential for EOR in Alberta, with over 4000 pools identified as being candidates for EOR. The potential incremental oil recovery is comparable to the remaining conventional oil reserves in Alberta.

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