OAPEC Joint Seminar ***"Improved Oil Recovery (IOR) Techniques and Their Role In Boosting The Recovery Factor"*** **Rueil-Malmaison, France, 26-28 June 2007**

Effect of Gas cycling on the enhancement of condensate recovery, case Study: Hassi R'mel Field, Algeria

Benkarrad Mounir and Bencherif Djaouid – Sonatrach, Algiers, Algeria.
Bmm35bm@yahoo.fr , dd_bencherif@yahoo.com

Introduction

The study of gas-condensate reservoirs has been a fertile area of research in the last decades, especially because of their singular depletion behavior which case them apart from other types of oil and gas reservoirs. The low condensate recovery, in gas condensate reservoirs, is due essentially to the pressure decline. In such case, the gas production should be balanced with a pressure maintain in the reservoir.

To handle this problem, pressure maintenance by gas cycling is the common practice used in gas condensate fields. The injection of dry gas into a gas condensate reservoir helps in minimizing retrograde condensation.

This paper discusses a case study done on Hassi R'mel field-Algeria, and provides an insight into the effect of gas cycling on condensate recovery

Key features

The Hassi R'mel Field, located at 550 km South from Algiers, was discovered in 1956 by the drilling of HR001. The field came on production in 1958 and has since been established as one of the world's largest gas fields. It extends 70 km from North to South and 50 Km from East to West.

To represent the field, a simulation model was built. The simulation model uses a grid system comprising of 7380 cells (41x60x3), and was history matched with pressure and production data. An equation of state (EOS) with 6 pseudo components was used to characterize the complexity of hydrocarbon column. Overall, fifteen different production scenarios were analyzed during this study.

This talk is on:

- The analysis of the field's production history.
- The optimization of injected gas and
- The necessity of the boosting installation.

Conclusions:

- The integration of the facilities network with the reservoir model allowed us to obtain the optimum recovery scheme by introducing the boosting at 2003.
- The condensate recovery is appeared to hardly increase with a high cycling rate.
- Improving reservoir characterization is a continue challenge, such as introducing new technologies of the 3-D seismic.

References and Bibliography:

- Internal report on a reservoir simulation of the Hassi R'mel field (Sept 1998).

- Internal report on preliminary results of deliverability forecasts with gas cycling on Hassi R'mel field (Sept 1975).

Speaker's Biography:

Mounir BENKARRAD, a Reservoir Engineer with Sonatrach Petroleum Engineering and Development Division in the Department Hassi R'mel, which I joined in March 2005. I hold a production and drilling engineer from the Hydrocarbon National Institute (INH), Boumerdes, Algeria (2001), and an Msc in Petroleum engineering from the University of Oklahoma, U.S. (2005). My current interests are field characterization and simulation, oil rim development and monitoring.