

Recovery Factor Increase in Areas under Gas Injection: Re-evaluation of the Geological Model

Eloy Coronado¹ and Javier Dextre¹

¹Savia Peru

Abstract

Litoral Field is located in the south part of Block Z-2B and is the oldest producing field in the block. The Parinas formation is responsible for 90 percent of the total field production, accumulating 43 MMBO to-date. For more than 40 years, gas injection has been carried out in this formation in most of the reservoir blocks. As a result of gas injection, approximately 6 MMBO were recovered, resulting in a recovery factor increase of 6%.

In order to optimize the Secondary Recovery in the field, Savia was decided to evaluate the feasibility of injecting gas selectively, since, historically, injection was carried out in the entire Parinas section. To achieve selective injection, a static model was built and an analysis of faults transmissibilities performed. Likewise, for the net sand maps and petrophysical properties, a lateral variability relationship using experimental variograms and vertical distribution curves was determined. The construction of the Static Model helped to reduce the structural and sedimentary uncertainty and also represent the structural and net sand maps used in a 3D model.

With the static Model, a numerical reservoir simulation was built where the production - injection and reservoir pressures were re-constructed and led to establish new injection scenarios to increase the recovery factor. As result, a pilot project for selective gas injection was proposed and implemented in January 2015. Since the implementation, response is being observed and if continued as expected, the project could be extended to the whole field.