geoconvention
Calgary • Canada • May 7-11 2018

Relationship Between Geologic Variability in a Deltaic Setting and Production Variability in the Dunvegan Formation, Kaybob South Field Area, Alberta, Canada

David Law and Per Kent Pedersen

Summary

A large degree of production variability is observed in the producing sandstones of the D1 allomember of the Dunvegan Formation within the Kaybob South field area (T60 to 61 and R18-20 W5). The goal of this study is to determine if geological variability in a complex deltaic setting can be used to describe the production variability observed within the Kaybob South field area. To achieve this goal, seven cores were studied which resulted in the identification of ten lithofacies. Lithofacies proportions and assemblage were used to deduce depositional environment. Lithofacies assemblages were corroborated with six well log signatures, and for each well log signature a depositional interpretation was provided. The depositional interpretations within the field area are: wave dominated delta, fluvial dominated delta, barrier bar sandstone, distributary channel deposits, storm deposits above storm wave base and crevasse splay deposits. A depositional environment was correlated with the well log signatures from 336 wells which were used to create facies maps and net sandstone maps in the field area to better understand the geological variability of the D1 allomember. The geological variability was used to explain production variability, and it was found that drilling a well in a wave dominated deltaic setting and in a distributary channel will result in better production compared to drilling in a fluvial dominated deltaic setting. Understanding the cause of production variation could help with risk mitigation and geological confidence in future exploration in the Dunvegan Formation.Article text should be Arial 11pt. The maximum number of pages allowed is four (4), excluding references.