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## The benefits of updates on geological and Petrophysical understanding of Lower Burgan reservoir in Sabiriyah field, north Kuwait

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The Burgan formation in Sabiriyah field, a layered clastic reservoir deposited in Lower Cretaceous time is underlain and overlain by Shuaiba and Mauddud carbonates. The reservoir is divided into lower, middle and upper Burgan. Lower Burgan the most prolific of the three consists of lower massive sands and upper layered channel sands. The lower massive sand section more than 250ft in thickness consists of medium to coarse grained well sorted sand deposited by fluvial system. The upper sand shale intercalated section comprising of relatively of less thickness and lower quality of reservoir is interpreted to be deposited under estuarine and river channel system where the marine influence increases towards top of the reservoir.

The reservoir is under production for more than four decades and as on date most of the oil reserves of the massive section is produced. The major share of present day production is from layered upper section where most of available reserve lies in. Both massive and layered reservoirs are produced under natural active water drive energy. The encroachment of formation water in producing wells and limited surface facilities for handling produced water along with sands of limited aerial extent poses a great challenge in predicting infill drilling locations having good reservoir quality and thickness.

Detailed geological studies on cores cut in recently drilled wells leading to better understanding of depositional system upgraded the existing geological knowledge of the reservoir. Analysis done on cores for rock and fluid properties along with advanced logging techniques adopted and periodical mapping of water encroachment pattern down to the level of flow units have resulted in aggressive infill drilling plan. The development scheme of the reservoir has been modified and resulted in accretion of production and reserves.

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