

The Mauddud Reservoir of the Greater Burgan Oil Field: Integrating New Technology to Promote Reserves

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New work processes and technology have helped KOC add proven reserves in the forgotten Mauddud Formation at Burgan Field. A 2003 review identified the thin, shale encased limestone as an under-developed reservoir and a multi-disciplinary team began studies to “prove” the significant development opportunity. The Mauddud Team faced a daunting challenge overcoming the failure of a similar attempt in the mid-90’s and struggling with the sheer size of the field and data: more than 700 km², 3000 3-D seismic lines, 300 mapped faults, 800 wells and 2100 completions in various reservoirs.

The recent successes have been achieved by combining several new and improved technologies including: 1) Horizontal and Multi-Lateral Drilling, 2) 3-D Seismic and 3-D Visualization, 3) Real time Geophysical and Petrophysical Monitoring while drilling, 4) Geo-Steering including Schlumberger’s Periscope tool, 5) Improved Petrophysical Analysis with NMR and ADN, 6) fracture modelling and analysis including FMI images to aid in well placement and prediction of well performance. Conventional Development Geology, Geophysical and Engineering studies were also important to correctly design and place the new wells.

To date, SEK Field Development and Drilling have successfully completed three of six planned Mauddud horizontal wells. Already more than 10,000 feet of horizontal section has been drilled within the thin 15’ vertical target including the first multi-lateral well in Kuwait. These wells have tested a range of reservoir conditions with initial flow rates of approximately 1500, 3100 and 3967 BOPD from each well; a significant and consistent improvement over their 16 predecessors.

This success had led to renewed confidence that KOC can prepare a Mauddud Development Plan that will significantly increase proven reserves in the reservoir and impact the long term production targets of the SEK asset. The techniques used to design and steer these wells may have considerable application in other reservoirs/ areas.