

Successful Integrated Reservoir Management Leads to Doubling of Production: A Case Study of Upper Burgan Reservoir, Raudhatain Field, Kuwait

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ABSTRACT

Successful Integrated Reservoir Management Leads to Doubling of Production: A Case Study of Upper Burgan Reservoir, Raudhatain Field, Kuwait Abstract In the current and future scenario of increasing demand for hydrocarbons, Multi-Disciplinary Integrated Reservoir Management team is the key to achieve maximum production rates and ultimate recovery. In Raudhatain Upper Burgan reservoir production started in 1959 with initial reservoir pressure of 3850 psi. Decline in reservoir pressure with sustained rate of production indicated weak aquifer support and initiated water injection during the year 2001 with three flank injectors. Production rate was sustained at 30 to 35 MBOPD for long time and it was decided that to go the next level of production and to meet KOC's strategic production target. Various alternative pressures – production plans were scrutinized by the multi-disciplinary team consists of Geologists, Reservoir Engineers, Petrophysicists and Petroleum Engineers and identified bottlenecks, constraints and action plan to address the problems and to accelerate the production. Some of the bottlenecks to accelerate the production were decreasing pressure, unavailability of required volume of water for injection, delay in commissioning of effluent water injection facility and low productivity of flank wells with viscous oil. The integrated Reservoir management team initiated number of projects to increase the productivity like Paradigm shift in drilling practice by way of drilling Horizontal, Multilateral wells and completing with ICD's for better production and injection sweep efficiency. Liquidated the sick wells with no potential in any other Reservoirs (Multiple Reservoirs) are identified for Horizontal Sidetracking to sweet spot areas. Decreasing Reservoir pressure and Voidage Replacement Ratio has been addressed by changing the water injection strategy and aligning the injectors in right areas. The results were rewarding as the production rate doubled from a sustained level of 35 MBOPD to more than 100 MBOPD in a span of 3 to 4 years. The initiatives taken to convert the producers to injectors resulted in increased water injection volume and doubled the Voidage Replacement Ratio. This paper presents the details of Integrated Reservoir Management team efforts and what are the initiatives and strategic actions taken by overcoming the current constraints to double its production. It