

Water Injection for Enhanced Oil Recovery at Kuwait Oil Company

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Abstract

Water produced from oil and gas production is one of the most significant effluent streams due to its large volume and strategic importance. The amount of produced water, the constituents present in produced water usually vary significantly over the lifetime of a field. During early life of the field, water cut can be very low, but it gradually increase and becomes multiple times of oil production rate as the field matures. In terms of composition, the changes are complex because they are a function of the geological formation, the oil and water chemistry, reservoir behavior and additives / chemicals injected for reservoir maintenance. Properly treated produced water can be recycled and used for produced water re-injection and other applications, such as crop irrigation, wildlife and livestock consumption, aquaculture, agriculture, industrial processes, vehicle and equipment washing, power generation and fire suppression etc. These beneficial reuses decrease reliance on potable water / brackish water, which are highly valuable commodity in water-scarce regions of the world. Thus, for oil and gas production facilities located in water-scarce regions, re-injection of treated produced water for improved oil recovery has emerged as a viable option but its implementation has challenges related to injection water quality, injectivity and safety issues. In addition, strict environmental regulations require extensive treatment of produced water before safe disposal making reinjection of produced water even more viable alternative. The specification of injection water quality is of prime importance and optimization of injection water quality vis-à-vis the cost of treatment is the key factor for reservoir health maintenance without sacrificing the injectivity loss or excessive increase of backpressure from the well. Thus, the role of produce water treatment and injection facility is vital for sustaining well injectivity over field life while maintaining reservoir health for an effective Improved Oil Recovery program. This paper provides an overview of the various challenges, opportunities and resolutions for utilizing produced water in Kuwait for Improved Oil Recovery.

Biography:

Mahdi Ashkanani is Senior Mechanical Engineer at Kuwait Oil Company. He Worked as Mechanical Engineer in Maintenance Team for the first 8 years at Kuwait Oil Company. At recent time, my position is Snr. Mechanical Engineer working in Operations Technical Services handling Oil & Gas projects in all Kuwait oil fields.



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