THE IMPACT OF INTERACTION BETWEEN THE INJECTED WATER AND RESERVOIR MINERALS AND FLUIDS ON THE FORMATION

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ABSTRACT

Water injected into productive formation, to enhance the recovery by maintaining the reservoir pressure, must exhibit good gas and/or oil-driving properties. It should neither enter into chemical reactions with formation waters to yield insoluble salts sediments nor promote the swelling of formation clays. Furthermore, it should contain the lowest possible quantities of mechanical suspended particles and oil products and should be free of microorganisms. The objective of this work is to study the effect of violating one or more of injected water requirements on plugging up the filtration channels of producing beds and lowering the injectivity of wells so much that they completely stop taking water in. Example of the field history that shows how the intake capacity of injection wells gradually decreased and the pressure within the bottom-hole zone increased will be discussed. Different possible scenarios of mechanical impurities clogging filtration surfaces and bicarbonates undergoing disintegration will be discussed. The results will show how the injected water quality will contribute to the formation damage.

KEYWORDS: Formation Damage; Injected Water; Impurities; Chemical; Microorganisms.

AREA OF INTEREST: Reservoir Engineering; Tight Gas