Application Guide

SureFlo
Water Flood/Intelligent Dumpflood Application

Problems

With the global demand of oil continuously increasing, the ultimate recovery would be to drain every drop of the oil from the reservoir. In order to do this, an alternative fluid has to be used to migrate the oil from the reservoir to the production zone/well. Also a fluid has to be used to maintain the pressure within the reservoir. Typically water is used in both these cases. Water can be used as an agent to encourage oil migration toward the production bore (as shown in the image below). Also there is another configuration whereby oil is being produced from the upper zone. However to ensure well pressure is maintained to enable natural lift to the surface, water from the lower zone is being pumped to the upper zone (this is known as dumpflood). In order to ensure accurate fluid migration and adequate pressure containment, the amount of water injected/dumped into the reservoir has to be monitored. If too little water is injected, it is possible to drop the well pressure to the extent that gas breaks out and creates a gas cap thus minimizing production. Alternatively too much water may mean water production in the production well and a poor migration of the oil to the producing wellbore.

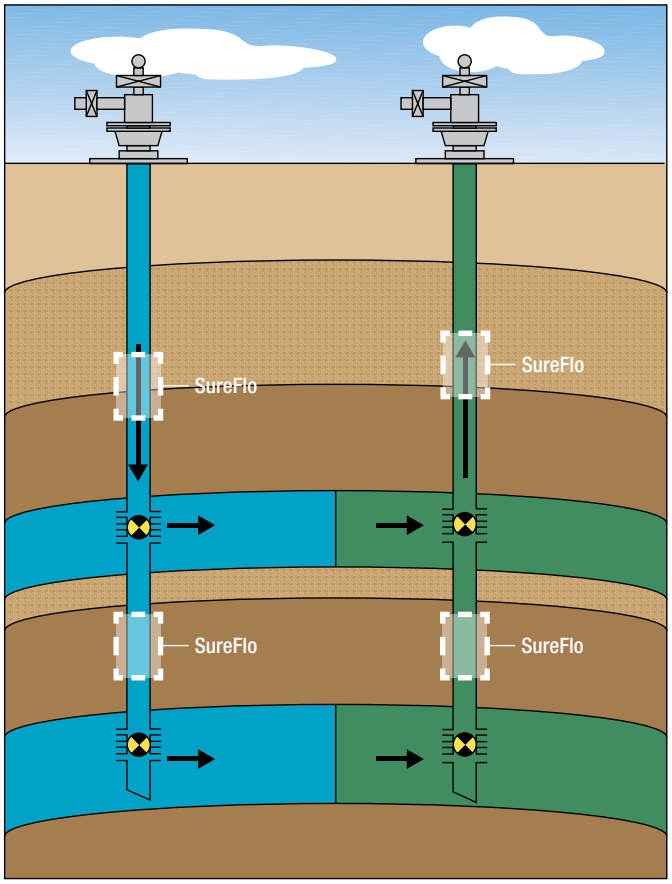
Solution

The SureFlo™ downhole flowmeter is designed to measure water injection rates to the different zones and provide accurate real-time data of both flow rates and pressure. SureFlo 298 ensures high accuracy injection measurement whereas SureFlo 290 provides a cost effective method of injectivity measurement.

Results and Benefits

The deployment of downhole flowmeter to monitor injection water rates will enable a more accurate water/oil front migration model to be created. The real-time pressure measurement will ensure that the well pressure is maintained during the water injection process thus mitigating gas breakout in the reservoir. This process will help prolong the recovery of the well and thus maximize the amount of hydrocarbon recovered from the reservoir.

- Minimal well intervention
- Gas producer and gas sequestration application
- Multiphase flow.



In intelligent well completion, the injection rate into each zone can be controlled by means of downhole chokes. The ability to monitor the injection rate into each zone is therefore important to ensure a constant and controlled migration of the water front.

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