Modeling of Reservoir Souring

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BTS
Training & Consultancy

1st floor, Incubator Building, Masdar City, Abu Dhabi, UAE

00971-2-6452630

00971-50-6652671

info@btsconsultant.com

www.btsconsultant.com

Introduction:

As reservoirs age and water injection is implemented for pressure maintenance, there is an inherent risk of reservoir souring due to the co-mingling of injection waters and formation waters. Souring occurs as a result of the down hole activity by a specialized group of micro-organisms, the sulphate -reducing bacteria (SRB).

The prediction of reservoir souring requires assessment of three key factors:

- Microbial generation of H_2S
- Transport and scavenging of microbial generated H_2S in the reservoir
- Partitioning of H_2S between the oil, gas and water phases.

Generic computer-based predictive models currently exist which, although based on the same fundamental principles, take different approaches to assessing the level of H_2S generation. Each model has its own strengths and weaknesses.

Course Outline:

Chapter 1: Introduction

1.1 Reservoir Souring

2.1 Microbial Reservoir Souring

2.1.1 Sulfate-Reducing Bacteria

2.1.2 Souring Mechanism

2.1.3 H_2S Transport

2.2 Reservoir Souring Remediation Methods