

## Abstract



### **Oilfield Scale: A new Integrated Approach to Tackle an Old Foe**

Author: Dr. Eric J. Mackay. Flow Assurance and scale Team (FAST), Institute of Petroleum Engineering, Heriot-Watt University, Edinburgh Scotland.

Mineral scale formation in oilfield production systems has been a problem in the industry for almost 50 years this “old foe” has been viewed very much as a “production” problem. Although oilfield scale is a long standing problem, we are constantly facing new challenges in managing it, such as those created by operating in deepwater and other harsh environments, or from the need to integrate scale management with other technical disciplines and perform appropriate economic evaluation. The key is to demonstrate that proper scale management adds value to a project, and the challenge we face is to develop a comprehensive scale management strategy as early as possible in project life to make best use of the novel and exciting technological options that are now available. Thus, scale management is becoming more proactive rather than reactive. Limited field data must be used optimally to make scale management decisions during the early stages of a project.

## Abstract



### **Oilfield Scale: A new Integrated Approach to Tackle an Old Foe**

Author: Dr. Eric J. Mackay. Flow Assurance and scale Team (FAST), Institute of Petroleum Engineering, Heriot-Watt University, Edinburgh Scotland.

We will describe how this is carried out making novel use of various reservoir simulation and thermodynamic scale prediction tools. These allow us to identify the severity of the potential scaling regime, and to quantify the impact of the scaling problem in the field. This in turn helps us to identify the various scale management options that are available practically, and the new (and conventional) technology that can be deployed. Thus we predict and preempt the problem by taking a wider “reservoir and fluid system” approach rather than simply seeing scale as a “production” problem. In effect, the reservoir produced brine compositions are “telling a story” and this is extremely valuable information when correctly interpreted using various modeling and prediction tools. However, the appropriate use of these predictive tools requires a thorough understanding of their potential and their limitations, and should always be validated by monitoring of appropriate field indicators once a field is under production.

## Abstract



### **Oilfield Scale: A new Integrated Approach to Tackle an Old Foe**

Author: Dr. Eric J. Mackay. Flow Assurance and scale Team (FAST), Institute of Petroleum Engineering, Heriot-Watt University, Edinburgh Scotland.

This lecture outlines the potential threats to production and safety that oilfield scale may present if not managed appropriately, and then discusses the criteria for analysing and selecting the optimum control strategy. The general approach is illustrated by several field examples from the North Sea, West Africa, the Gulf of Mexico and the Campos basin which the author has worked on in very close collaboration with a number of international oil companies.