

# CASE HISTORY

## HPHT PRODUCTION LOGGING WITH FLUID IDENTIFICATION

### APPLICATION

Cased Hole Logging, Production Logging

### TECHNOLOGY

Vulcan FLS 1.75 with TFD & Capacitance

### LOCATION

North Sea

### CUSTOMER CHALLENGE

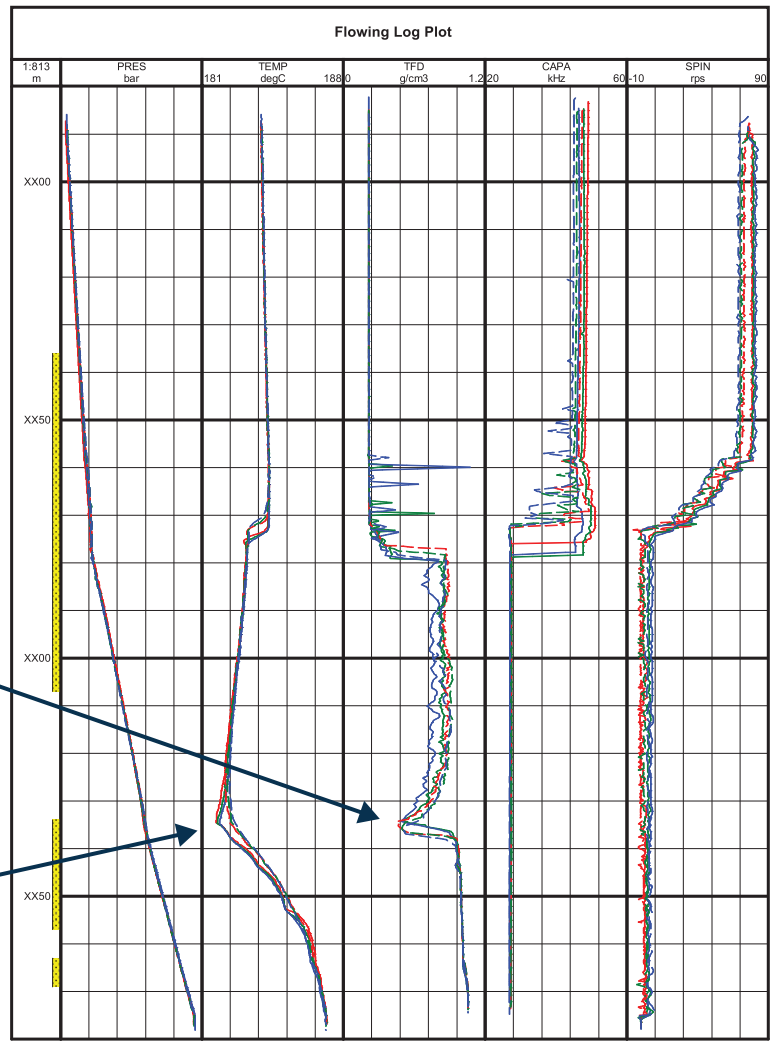
The customer needed to obtain information on the production performance of the perforated reservoir zones with the additional objective of identifying the source of water entry. The key challenge for the customer to overcome was obtaining the PLT log pass data at bottom hole temperatures of up to 186°C, along with a 6-hour build-up period to estimate the reservoir properties (skin, KH & permeability) resulting in a run duration approaching 20 hrs.

### SCIENTIFIC SOLUTION

A fit-for-purpose memory production logging tool was provided to the customer, enabling the acquisition of basic production logging parameters such as GR/CCL, Pressure, Temperature & Spinner, with the key addition of Fluid Density and Fluid Capacitance sensors rated to 220°C.

Because of the expected run duration, the decision was taken to deploy the Vulcan FLS 1.75" system to maximize the duration the tool-string could remain safely downhole. Multiple passes were run in shut-in and flowing conditions with complete and excellent data quality acquired.

The V-shaped temperature profile – also observed in the TFD response - is caused by a gas 'jetting' effect into the static water column. The formation is tight here, so the pressure is much higher than the borehole pressure (larger pressure differential). This causes a large cooling signature even though there is only a small amount flow here (Joules Thompson Cooling is due to size of pressure differential and not the amount of flow).



### CUSTOMER VALUE

The Vulcan FLS 1.75" system offered the customer the opportunity to perform shut-in and flowing passes in a single run. This meant that production downtime could be limited with the consequent saving of hundreds of thousands of dollars in lost production.

SDI's Tuning Fork Density and Fluid Capacitance sensors offered unparalleled insight into the downhole fluid mixtures across the producing interval.