TripleSat™ Model

This unique interpretation model is specifically designed for use with Halliburton's reservoir monitoring tools. The TripleSat model employs a combination of C/O and sigma measurements and is used to calculate saturation when three fluids are present in the reservoir.

TripleSat Model Features

The TripleSat model contains the following features:

- Utilizes simultaneously-recorded sigma and C/O measurements
- Provides more accurate interpretation in oil producing reserves where steam or gas is present
- Contains selectable sets of equations that can be optimized for one of the following:
  - Steam flood
  - Oil drainage from gas cap
  - Gas flood
  - Sea water flood
- Allows additional optimizations to be readily constructed, some using a Halliburton adaptation of the Chevron gas correction to carbon/oxygen logs
- Permits inclusion of open hole porosity and clay volume analyses
- Allows stand-alone analysis using porosity and clay indicators from cased hole monitoring tools or any available source

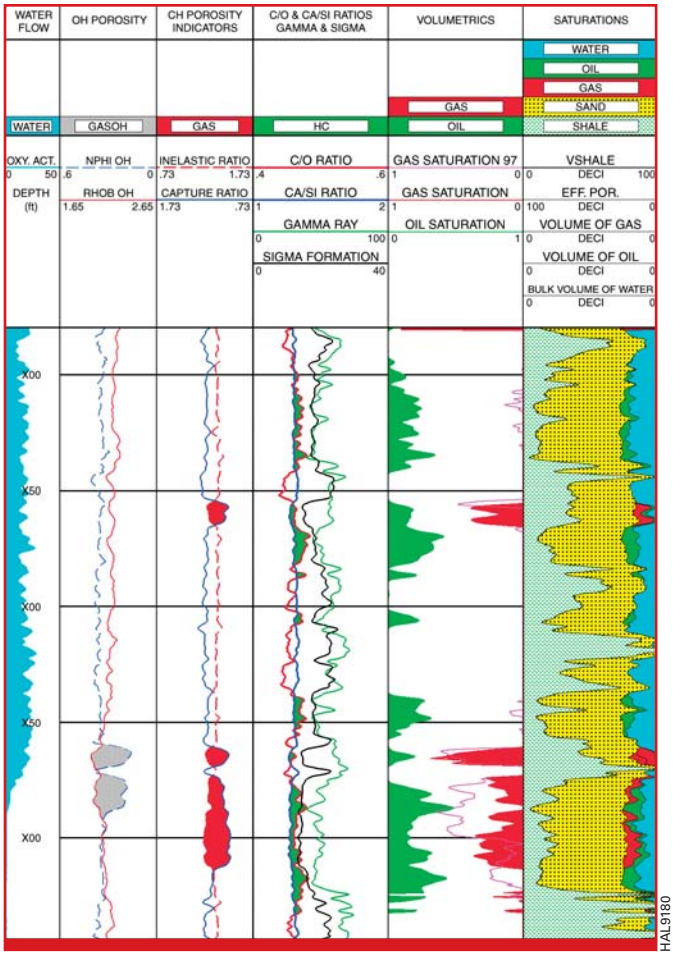
TripleSat Model Benefits

The TripleSat model includes the following benefits:

- Allows accurate interpretation in reservoirs that have gas cap development or are under steam flood or gas flood
- Permits interpretation in reservoirs with retrograde condensate production

Associated Answer Products and Pre-Processing Software

- SigmaSat™ – Neutron decay time saturation analysis
- CarbOxSat™ – carbon/oxygen saturation analysis



KernSat Interpretation Example. This well located in Kern County, California in the Kern River Field, is in an active steam-flood hydrocarbon recovery project. This log is an example of our customized interpretation model KernSat. Track 4 of the example displays the computed oil saturation (shaded in green) and the gas saturation (shaded in red). These saturations were computed using a combination of Carbon-Oxygen ratio and formation Sigma. Track 3 displays the Carbon Oxygen and the Calcium Silicon ratio curves. The green shading between the two curves indicates hydrocarbons in the formation. Also displayed in the track are the natural gamma ray measurement and the simultaneous recorded formation sigma. Tracks 1 and 2 display a comparison of the open hole density and neutron porosities and the porosity ratio indicators measured by the RMT Elite™. Track 1 is the open hole density neutron porosity. Steam measured in the formation at the time of the log is indicated by the gray shading between the curves. Tracks 2 displays the inelastic and capture ratios measured from the RMT Elite. The red shading indicates the current location of steam in the reservoir. This example indicates that the steam chest has expanded when compared to the original formation contacts. The depth track recorded at the far left side of the log displays water flow measured by the RMT Elite outside the casing.

TripleSat™ Model	
Inputs	Clay Volume, Total Porosity, Effective Porosity, Environmentally Corrected Carbon/Oxygen and Calcium/Silica Ratios, Environmetally Corrected Sigma
Outputs	Individual and Combined Clay Volume, Total Porosity, Effective Porosity, Capture-Ratio Porosity, Inelastic Ratio Porosity, Volume of Oil, Total and Effective Oil Saturations, Water Volumes, Corrected Three-Phase Saturations

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