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RESERVOIR CHARACTERISATION USING FMI AND CORES OF AN ORDOVICIAN PLAY, ILLIZI BASIN

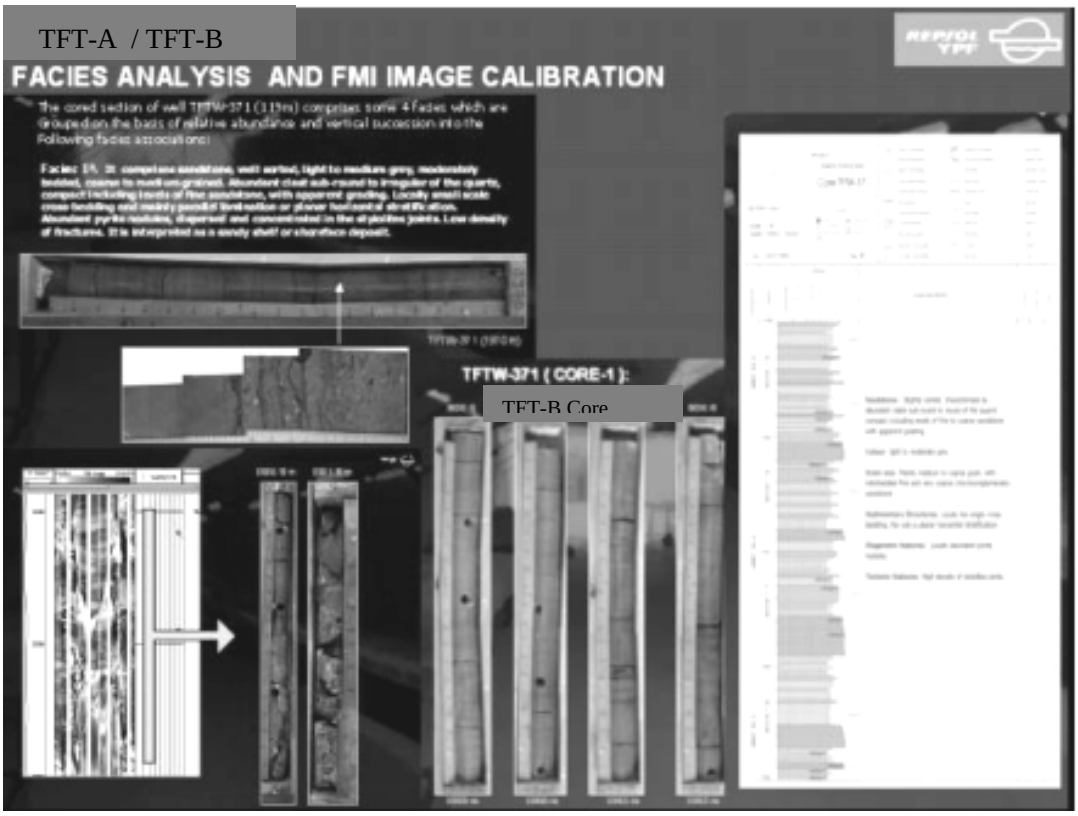
José A. VARELA, Israel POLONIO, Marc JONES, Alan CHAMBERS, Jesús E. SOTOMAYOR
REPSOL-YPF

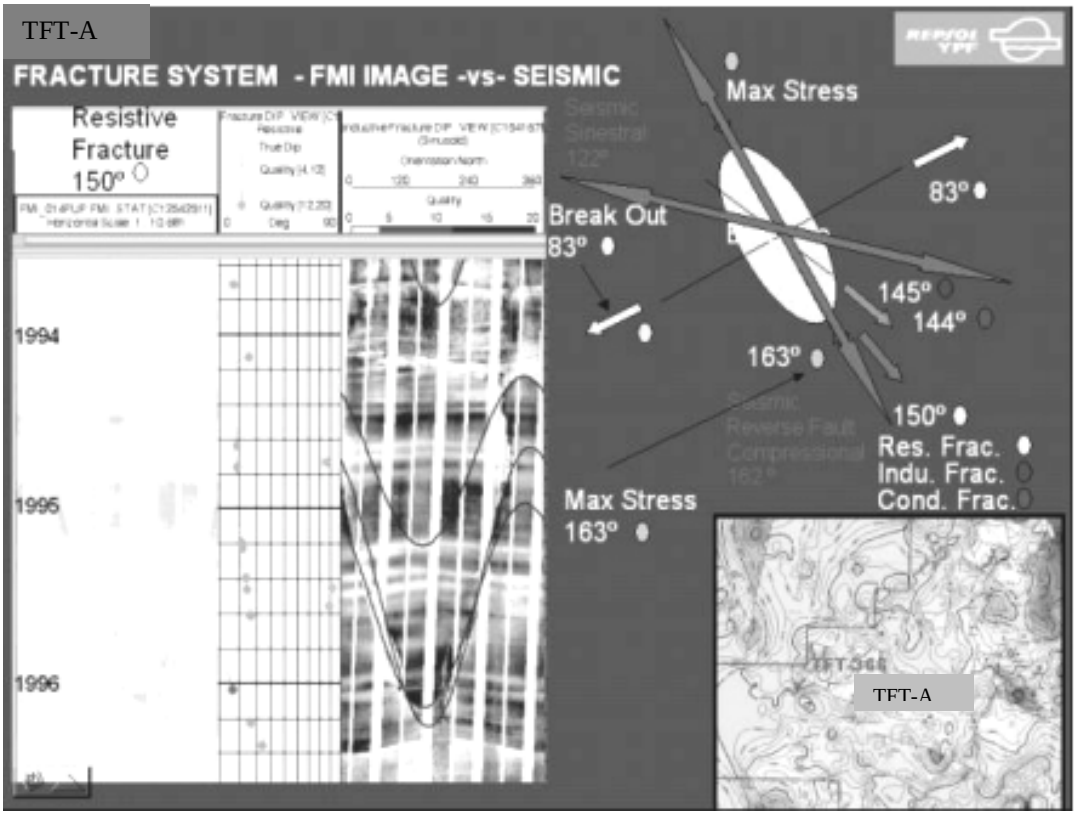
The Unit IV of the Late Ordovician is the main reservoir of many oil and gas fields within the Illizi Basin. It is constituted by a succession of clastic sediments that filled the paleovalleys generated during a glacial period that widely affected the Saharan Platform.

Traditionally it has been subdivided into three subunits, IV-1 to IV-3, being considered this last the best reservoir in this part of the basin. However this distribution is difficult to establish in the subsurface environment even if cores and wireline logs are available.

Two wells have been recently drilled in the TFT gas field and had shown a new vertical distribution of the reservoir properties. A full set of logs, core and log images are available. From the core, the main facies and fractures were identified and used to calibrate the FMI interpretation with the intention of improving log interpretation where conventional cores are unavailable. Conventional log crossplots have been used to evaluate facies and their relationship and accuracy when compared with core facies interpretation. The fractures observed in the wells have been incorporated into a model consistent with the seismically observed fault pattern and our regional tectonic model.

A preliminary study of the cores and its correlation with the FMI images, together with log and seismic information has helped us to understand the relationship between facies and reservoir quality as well as the fractures distribution. This study will help us to improve a depositional and geological model for the field.


TFT-A / TFT-B
FACIES ANALYSIS AND FMI IMAGE CALIBRATION
TFTW-371 (CORE-1):
TFT-B Core


TFT-A
FRACTURE SYSTEM - FMI IMAGE -vs- SEISMIC
Resistive Fracture 150º
Break Out 83º
Max Stress
83º
145º
144º
163º
150º
Res. Frac.
Indu. Frac.
Cond. Frac.
Max Stress 163º
1994
1996
1996
TFT-A