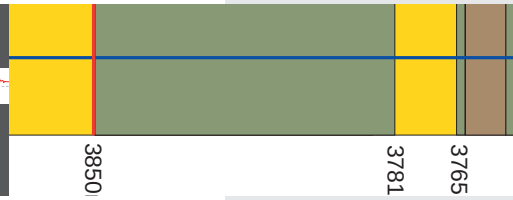
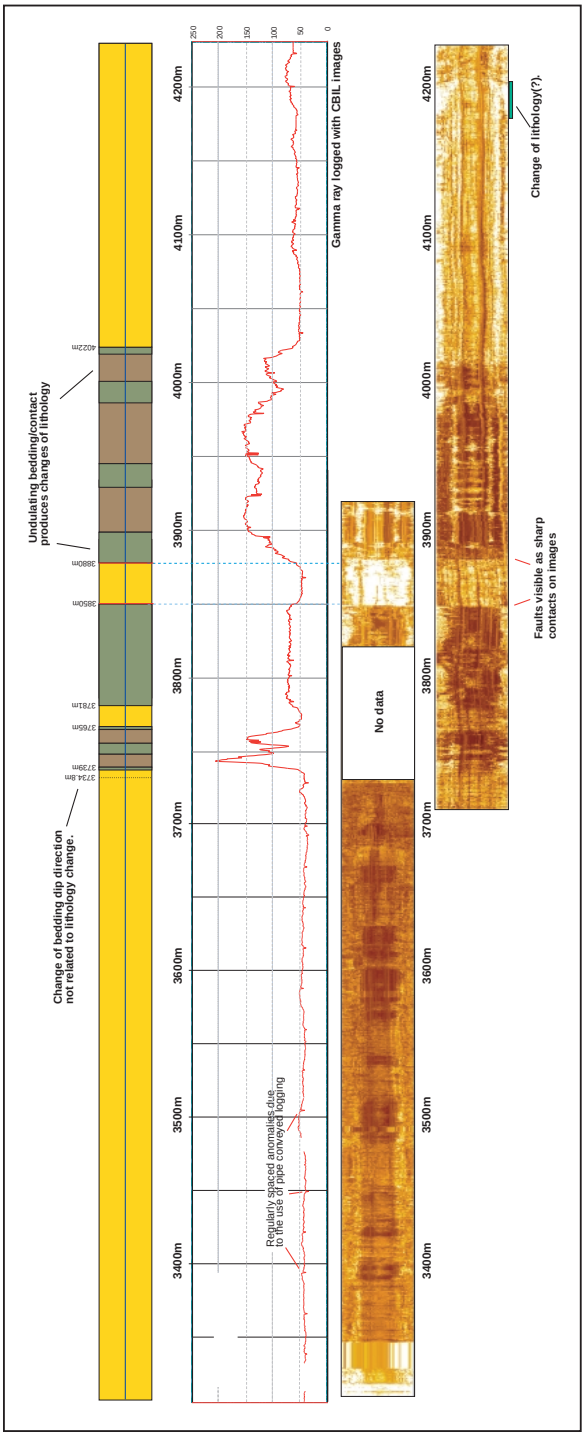
Geological interpretation in horizontal and highly deviated wells from open hole and acoustic image logs (CBIL)



Acoustic image data combined with conventional openhole log data can provide valuable geological and structural information even in horizontal and highly deviated wellbores.

Block Section with Interpreted features



Situation

A field development includes several highly deviated and horizontal wells. The production performance of the existing well does not match the planned performance.

Objectives

Identify and determine structural features in the highly deviated wellbore that will effect permeability and well performance.

Image data acquired in the highly deviated wellbore is presented with the gamma and basic lithology interpretation.

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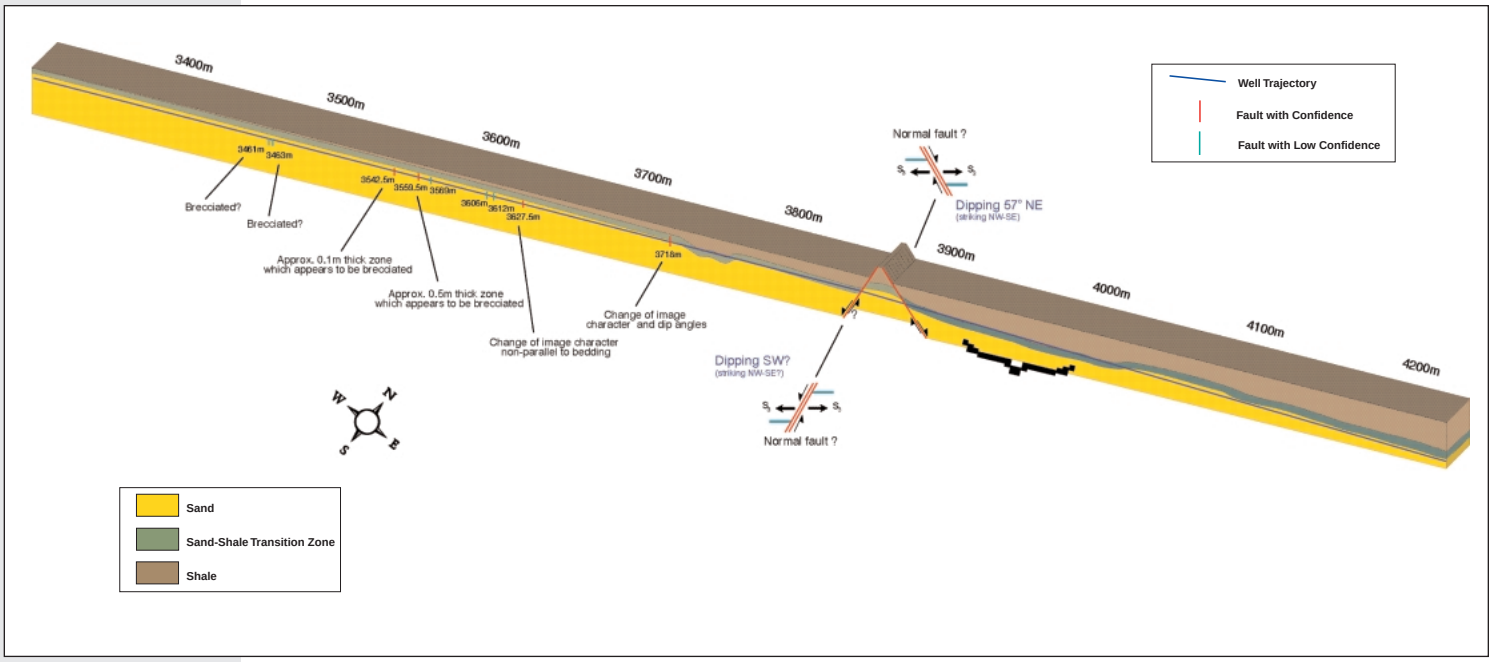
Gamma Ray



The block section displays the well trajectory and basic reservoir geometry and indicates the interpreted structural features identified by the image and open hole data.

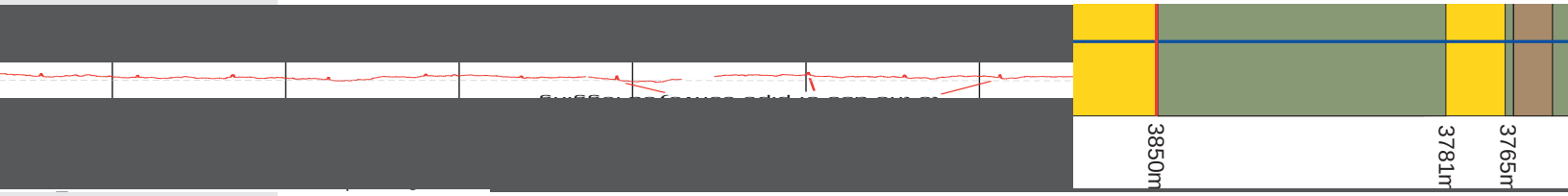
Solution

Borehole image (CBIL[SM]) and open hole log data was acquired in the highly deviated development well using Baker Atlas Pipe Conveyed Logging System (PCLS).

The acoustic image data was matched to the trajectory of the well and a structural interpretation performed on the combined data set.

Results

Image data indicated two major normal fault zones which pushed the upper reservoir boundary below the well trajectory, reducing the lateral extent ofthe horizontal pay zone by 140 m. In addition several small faults were indicated by brecciated zones which acted as permeability barriers. This would effect the drainage pattern of the reservoir relative to the wellbore. Awareness of this faulting activity helped improve reserve estimations of production rate forecasts. Future well ttrajectory plans can also be.



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