TG06
The Quest of the Key hidden signal
L. Pauget* (Total)

SUMMARY
Several approaches were integrated in order to improve reservoir characterization in field A and optimize the planning of additional delineation and field development. A dense 3D seismic data was acquired on this field. The elastic (IP/IS) impedance inversion of the PrSTM 3D seismic dataset was performed with the objective of providing suitable datasets for reservoir characterization. An evaluation of the main results had the objective of establishing a workflow for delineating potential sweet spots in the main reservoir. In addition, the IP/PR cross plots demonstrate a good discrimination of sandy and shaly facies.
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A long duration well test was performed and the interpretation of the derivative shows that the extension of the sweet spot derived from the seismic attributes is consistent with the results of the test.

Further work has demonstrated an increased structural complexity (fracturation and lineaments) and geological synthesis allowed defining a possible range characterizing the fracture corridor pattern. Well tests were reviewed in the light of these findings and better match of the derivatives were obtained.

Further reprocessing of the 3D survey provided additional information: a clear pattern of lineaments could be observed. This was unexpected because the fracturation observed on wells and cores is scarce and poorly developed.

Another synthesis was launched with a structural geologist. Coming back to analogs, field burial and stress history, it provides an explanation and a possible range of characteristics for that lineament pattern.

A 3D fine gridded dynamic model was built incorporating both porosity from seismic attribute, permeability and the pattern of lineaments, in the vicinity of the well. In two trials, well test was perfectly matched.

The structural geologist brought another assessment: according to the structural and geomechanical scenario, if this pattern of fracture corridor exists over the structure, it should be present also on neighboring fields, on which no such 3D surveys are available. Thus, on these structures, all tests with a significant radius of investigation, larger than the average fracture corridor spacing, were reviewed. Again it comes out that, from the tests, the effect of corridor, even tiny, is not only possible but provides a more consistent interpretation to the derivative.

This new integrated vision throws light on subtle clue which had not been considered before.