

ADVANCED LOGS AND CORE ANALYSES IMPROVING RESERVOIR EVALUATION IN CAMPOS BASIN, BRAZIL.

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This paper focuses on advanced logging technologies used to characterize a tertiary turbidite reservoir in a well recently drilled to inject water. The best position to drill a bilateral well was chosen from an anomaly in the seismic amplitude map, to inject water toward an existing producer. In the first leg, advanced technology as NMR, image and dipole sonic logs, besides formation testers and core sampling, were run. At the second leg, only conventional logs were run, due to the closer extensive acquisition. Cores taken from the reservoir revealed very thin interbedding of clean sand and shally sand facies. Air porosities and permeabilities are up to 36% and 2183 mD in the clean sands, and vary in the shally sands according to the amount of clay. Despite a relatively high amount of clay, NMR logs indicate highly porous intervals, with low clay volume, high free fluid content and high permeability index. Gamma ray logs are not very affected, due to the small amount of potassium-rich clays in total clay composition. Compressional and shear waves from sonic log discriminate two distinct patterns related to clean and shally facies. The occurrence of clays as patches, between well connected areas, explain the high amount of free fluids and high permeability index. Injectivity tests confirm the high permeability values estimated from logs, and pressure data are the same for both injectors and producer wells suggesting their communication. The advanced logging program revealed the best quality reservoir ever found in this oilfield.