

## **Reservoir appraisal in the rocks encountered in the southeastern Punjab Platform, Central Indus Basin, Pakistan**

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### **Abstract**

This study deals with reservoir characterization of the rock formations penetrated in the southeastern Punjab Platform using the wireline logs data. The wireline logs data of three wells i.e. Bijnot-01, Fort Abbas-01 and Bahawalpur East-01 were acquired from Directorate General Petroleum Concession (DGPC) to evaluate the reservoir potential of the rocks drilled in these wells. The significant reservoir intervals are absent in Bijnot-01 and Fort Abbas-01, this can be attributed either to the lack of the development of the reservoir facies or post depositional porosity and permeability including diagenetic processes in the southeastern part of the Punjab Platform.

Possible reservoir intervals occurs in Salt Range Formation, Samana Suk Formation and Sakesar Formation encountered in Bahawalpur East-01. These reservoir zones are dominantly composed of carbonates with various carbonate porosities dominant being chalky. Hydrocarbon saturated (54-64%), clean (Vsh, 4-25%) and high effective porosity holding reservoir zones occur in Salt Range Formation. These zones will produce hydrocarbons combined with water as the BVW values in these zones are not constant. Three excellent reservoir zones occurs in both Samana Suk Formation and Sakesar Formation as evident from low shale volumes (14-29% for Samana Suk Formation and 18-26% for Sakesar Formation), high hydrocarbon saturation (61-67% for Samana Suk Formation and 44-58% for Sakesar Formation) and high effective porosities (12-17% for Samana Suk Formation and 14-29% for Sakesar Formation). The constant BVW values in the reservoir zones of both Samana Suk and Sakesar formations suggest that the produced hydrocarbons will be water free. The MHI values in all the analyzed reservoir units are much high and thus the hydrocarbons present are unconventional.