

## **Role of Innovative Wire Line Technologies in Unconventional Reservoir Formation Evaluation**

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### **Abstract**

The unconventional oil and gas reservoirs represent a long term source for new supplies. Optimization of the capacity and recovery is required for unconventional reservoirs identified in Pakistan.

To determine the total organic carbon (TOC), reservoir mineralogy, adsorbed gas fraction, free gas fraction within the pores, fracture permeability, and frac-ability, application of new and innovative Wireline logging technologies with a novel interpretation approach is required.

Advance Wireline measurements have been acquired such as high definition spectroscopy, Nuclear Magnetic Resonance (NMR), acoustic and high definition resistivity images to fully evaluate the reservoir and Hydraulic-frac potential in a deep exploration well drilled in Lower Indus basin. Two unconventional source rocks namely Talhar Shale and Sembar Formation Shales have been encountered in the well.

A newly developed shale gas interpretation platform has been utilized to integrate direct High Definition Spectroscopy total organic carbon, NMR pore size distribution, High definition resistivity images with conventional triple combo log measurements to accurately quantify clay content, mineralogy, Kerogen volume, porosity, and saturations.

In this paper shale gas reservoir complexity and newly developed Wireline log measurements along with interpretation techniques will be explained for a better understanding of Shale Gas reservoir potential.