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# Estimation of Permeability using Hydraulic Flow Unit for Dahab Oil Field

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## ABSTRACT

The Permeability determination in Carbonate reservoir is a complex problem, due to their capability to be tight and heterogeneous, also core samples are usually only available for few wells therefore predicting permeability with low cost and reliable accuracy is an important issue, for this reason permeability predictive models become very desirable. The main aim of this is to develop the permeability predictive model for Dahab oil field from core data for three wells C5, C3 and C9 using the principle of Hydraulic Flow Units (HFUs). HFU is a function of Flow Zone Indicator (FZI) which is a good parameter to determine (HFUs).

In this work, regression analysis were used to fit porosity and permeability data by using different models (e.g. linear, exponential and power models). found that Flow Zone Indicator (FZI) is an effective and suitable parameter in correlating rock properties and for determining Hydraulic Flow Units (HFUs).Based on histogram analysis, the number of hydraulic unit for well C5 are three with high correlation coefficient ($R^2$equal to 0.95) for each HFU and for well C3, the hydraulic units are three correlation with high correlation coefficient ($R^2$ equal to 0.92) and for well C9, the hydraulic units are two correlation with high correlation coefficient ($R^2$ equal to 0.97). Permeability profile predicted by HFUs agree well with core permeability which clarify the applicability of this method.

**Keywords:** Hydraulic Flow Units, permeability , Flow Zone Indicator, correlation coefficient.