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Introduction

Bai Hassan eld occupies a stratigraphically complex area comprising multiple facies developments of a complicated diagenetic history [1]. Abundant and variable porosity and permeability exist which, although primarily lithology dependent, are enormously enhanced by the development of intensive faults, fractures and joints, this combination of uncommonly high porosity and permeability gives rise to enormously high and continuous production. e maximum reservoir thickness is generally taken as approximately 225 m comprising six main facies types:

Transition zone limestone:

ese are normally too thin and variable to be included in the gross reservoir, though free communication with the main reservoir exists via fractures.

e basal fars conglomerate:

ese are normally non-porous and impermeable, but produce where fractured.

Back-reef and reef limestone facies:

ese are highly fossiliferous, but completely cemented. Blue clays of the Lower Fars now in ll cavities and ssures in the upper part of these beds, sealing any possible porosity. With recrystallization, minor matrix porosity occurs, but production is only possible where the rock is cut by fractures penetrating deeper, more saturated formations.

Fore-reef and shoal facies:

ese are the best reservoirs, with large volumes of apparently unaltered rock with high porosity and rich in oil; where selective recrystallization has taken place, porosity varies from vugular to intergranular, with wide ranging di erences in size and permeability.

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is matrix is set up to solve for calcite (VLMST), dolomite (VDOLO), and water (PHIT) and is an over determined case. ere are response equations for the density (RHOB) measurement, the sonic (DT) measurement, the neutron (NPHI) measurement, and the gamma ray (GR) measurement. Once the system of equations is set up with the matrix values for the selected mineral assemblages and the

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