



Carbonate Reservoir Characterization

INTRODUCTION

A brief introduction to Carbonate rocks and carbonate Reservoirs
Carbonate Production

CARBONATE RESERVOIR ROCK PROPERTIES

Fundamental Rock Properties (carbonate mineralogy, and non-skeletal & skeletal particles)
Fundamental differences between Carbonates and Siliciclastics

CARBONATE DEPOSITIONAL ENVIRONMENTS

Carbonate sedimentary processes
Modern World Carbonates
Concept of Depositional Environment
Generalized Carbonate Depositional Model
Facies Distribution Exercise

CARBONATE ROCKS CLASSIFICATIONS

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Folk's Classification
Dunham's Classification
Embry & Klovan's Classification
Dunham/Embry & Klovan's Classification
Wright's Classification
Carbonate Classification Exercise

HETEROGENEITY IN CARBONATE RESERVOIRS

A review on carbonate reservoirs heterogeneity

PORE TYPES AND POROSITY CLASSIFICATION FOR CARBONATE RESERVOIRS

Pore types and pore architecture in carbonate reservoirs
Exercise on Carbonate Pore types and Porosity
Towards Understanding Velocity and Permeability of Carbonates
Exercise

CARBONATE DIAGENESIS

Carbonate meteoric, marine, and burial diagenesis
Dolomitization
Case Study, Dolomite (HTD) Reservoirs in Ghawar Field, Saudi Arabia

PERMEABILITY IN CARBONATES

Estimating Permeability in Carbonates Using the Rock-Fabric Method
Rock-Fabric/Petrophysical Relationships
Procedure for Rock Classification and Permeability Prediction



METHODS FOR PERMEABILITY ESTIMATION

Models based on empirical or theoretical equations,
Models based on porosity and facies,
Models based on soft computing techniques

PETROPHYSICAL PROPERTIES OF CARBONATE RESERVOIRS

Well log response, limitations, and strengths in carbonates
Lithology determination, porosity, and permeability
Saturation, Wettability, and Capillarity
Capillary Pressure and Reservoir Performance

FRACTURED RESERVOIRS

Basic Fracture Definitions, Attributes and Fracture Origin
Mechanical fracturing and the critical role of lithology
Genetic Classification of Natural Fracture
Fracture Permeability, Porosity, and Sw
Fracture Identification using Image Logs

WORKFLOW FOR INTEGRATED RESERVOIR CHARACTERIZATION OF CARBONATES

Integrated Reservoir Characterization
Case Studies

INDIVIDUAL CONSULTATIONS AND PRESENTATIONS