

1. Record Nr.	UNINA9910130589803321
Titolo	Petrophysics [[electronic resource] ] : fundamentals of the petrophysics of oil and gas reservoirs // Leonid Buryakovsky ... [et al.]
Pubbl/distr/stampa	Salem, Mass., : Scrivener Hoboken, N.J., : Wiley, c2012
ISBN	1-5231-1027-9 1-299-31473-2 1-118-47272-1 1-118-47268-3 1-118-47275-6
Descrizione fisica	1 online resource (398 p.)
Altri autori (Persone)	BuryakovskyLeonid
Disciplina	553.28
Soggetti	Oil reservoir engineering Gas reservoirs Petrology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Petrophysics: Fundamentals of the Petrophysics of Oil and Gas Reservoirs; Contents; Preface; List of Contributors; Acknowledgement; 1. Introduction; 1.1 Characterization of Hydrocarbon Reservoirs; 1.1.1 Geographical and Geological Background of the South Caspian Basin; 1.1.2 Sedimentary Features of Productive Horizons in the South Caspian Basin; 1.1.3 Depositional Environment of Productive Series, Azerbaijan; 1.2 Reservoir Lithologies; 1.2.1 Clastic Rocks; 1.2.2 Pore Throat Distribution in Carbonate Rocks; 1.2.3 Carbonate Rocks; 1.2.4 Carbonate versus Sandstone Reservoirs 1.2.5 Volcanic/Igneous Rocks 1.2.6 Classification of Hydrocarbon Accumulations Based on the Type of Traps; 2. Characterization of Hydrocarbon Reservoirs; 2.1 Petrophysical Parameters; 2.2 Porosity, Void Ratio, and Density; 2.2.1 Quantitative Evaluation of Porosity in Argillaceous Sediments; 2.3 Permeability; 2.3.1 Porosity /Permeability Relationship; 2.4 Specific Surface Area; 2.4.1 Derivation of Theoretical Equation Relating Porosity, Permeability, and Surface Area; 2.4.2

Relationship Between Specific Surface Area (Area Per Unit of Pore Volume) and Permeability of Carbonate Rocks  
2.4.3 Relationship Between Specific Surface Area and Residual Water Saturation of Carbonate Rocks  
2.5 Interrelationship Among Porosity, Permeability, and Specific Surface Area; 2.5.1 Vuktyl'skiy Gas-Condensate Field, Russia; 2.5.2 Central Asia; 2.5.3 Kuybyshev, Along-Volga Region, Russia; 2.5.4 Orenburg Field, Russia; 2.6 Wettability - Capillarity; 2.6.1 Interfacial Tension and Contact Angle; 2.6.2 Capillary Pressure Curves; 2.6.3 Compressibility; 2.7 Elastic Properties; 2.7.1 Classification of Stresses; 2.8 Acoustic Properties; 2.8.1 Borehole Seismic and Well Logging Methods  
2.8.2 Practical Use of Acoustic Properties of Rocks  
2.9 Electrical Resistivity; 2.9.1 Spontaneous Potential; 2.10 Radioactivity; 2.10.1 Atomic Structure; 2.10.2 Radioactivity Logging Applications; 2.11 Chemistry of Waters in Shales versus those in Sandstones; 3. Seismic Parameters; 3.1 Introduction; 3.2 Elastic Properties; 3.3 Velocity and Rock Properties; 3.4 Pore Pressure; 3.5 Seismic Anisotropy; 3.5.1 Effective Medium Theories; 3.5.2 The Effect of Pore Space and Pore Geometry on Moduli; 3.5.3 Gassmann's Equations; 3.5.4 Bounding Average Method; 3.5.5 Kuster and Toksoz Theory  
A. Historical Review  
A.1 Introduction; A.2 Initial Phases of Development; A.3 Gus Archie's Equations and the Dawn of Quantitative Petrophysics; A.4 Air-Filled Boreholes, Oil-Based Muds, and Induction Logs; A.5 World War II Technology Legacy; A.6 Cased-Hole Correlation and Natural Gamma Ray Logs; A.7 Seismic Velocities, Acoustic Logs, and Jessie Wylie's Time Average Equation; A.8 The Manhattan Project and Nuclear Logging; A.9 Space Program Technology Legacy; A.10 SANDIA Geothermal Log Program and Hardened Microcircuits  
A.11 Extended-Reach Directional Drilling, Horizontal Wells, Deep Water, Ultra Deep Wells and Measurements While Drilling

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Sommario/riassunto

Written by some of the world's most renowned petroleum and environmental engineers, *Petrophysics: The Fundamentals of Oil and Gas Reservoirs* is the first book to offer the practicing engineer and engineering student these new cutting-edge techniques for prediction and forecasting in petroleum engineering and environmental management.

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