1. Record Nr. UNINA9911004768003321

| | |
|---|---|
| Autore | Chilingar George V. <1929-> |
| Titolo | Origin and prediction of abnormal formation pressures / / G.V. Chilingar, V.A. Serebryakov, J.O. Robertson, Jr |
| Pubbl/distr/stampa | Amsterdam ; ; New York, : Elsevier, 2002 |
| ISBN | 1-281-04859-3<br>9786611048594<br>0-08-053821-5 |
| Edizione | [1st ed.] |
| Descrizione fisica | 1 online resource (391 p.) |
| Collana | Developments in petroleum science, , 0376-7361 ; ; 50 |
| Altri autori (Persone) | SerebriakovV. A (Vladimir Aleksandrovich)<br>RobertsonJohn O |
| Disciplina | 622/.3382 |
| Soggetti | Reservoir oil pressure<br>Oil well drilling<br>Gas well drilling |
| 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 indexes. |
| Nota di contenuto | Front Cover; ORIGIN AND PREDICTION OF ABNORMAL FORMATION PRESSURES; Copyright Page; CONTENTS; Preface; List of Contributors; CHAPTER 1. INTRODUCTION TO ABNORMALLY PRESSURED FORMATIONS; Introduction; Abnormal pressures; Origin of vertical barriers resulting in abnormal formation pressures; Reservoir engineering concepts in abnormal pressure environments; Economics in overpressure environments; Summary; Bibliography; CHAPTER 2. ORIGIN OF ABNORMAL FORMATION PRESSURES; Introduction; Compaction process; State of stress in compacting shales; Compaction models<br>Creation and maintenance of abnormal pressuresMechanisms generating abnormal formation pressures; Conclusions; Bibliography; CHAPTER 3. ORIGIN OF FORMATION FLUID PRESSURE DISTRIBUTIONS; Introduction; Factors causing fluid flow and pressure distributions; Presentation of pressure as the additive sum of two components; Some major factors of underground fluid forced convection and characteristics for correlation; Definitions of terms as used in this chapter; Conclusions; Bibliography; CHAPTER 4. SMECTITE-ILLITE |

TRANSFORMATIONS DURING DIAGENESIS AND CATAGENESIS AS RELATED TO OVERPRESSURES
IntroductionBurst's compaction model; Origin of abnormally high formation pressure; Clay-mineral transformation; Effect of thermobaric conditions; Effect of hydrochemical factors; Discussion; Summary; Conclusions; Bibliography; CHAPTER 5. METHODS OF ESTIMATING AND PREDICTING ABNORMAL FORMATION PRESSURES; Introduction; Prediction of abnormally high pressure in regions with nonequilibrium compaction; Abnormal pressure due to temperature variations; Estimation and prediction of abnormally low pressures in basins in permafrost regions
Formation pressure in regions with upthrown and downthrown blocks (uplift and subsidence of sedimentary rocks)Calculation of abnormal pore pressure during drilling; Radioactivity study of zones with abnormally high formation pressure; Pulsed neutron capture logs; Shale water influx - driving mechanism; Various geophysical well logging methods - a summary; Conclusions; Bibliography; CHAPTER 6. DRILLING PARAMETERS; Drilling rate (penetration); Drilling rate equations; Porosity and formation pressure logs; Logging while drilling; Torque; Drag; Drilling mud parameters; Shale cuttings parameters
Other pressure indicator methodsDrilling concepts in overpressured environments; Bibliography; CHAPTER 7. SEISMIC METHODS OF PRESSURE PREDICTION; Introduction; Prediction of abnormal pressure from geophysical data; Empirical relationships; Practical applications; Bibliography; CHAPTER 8. TECTONICS AND OVERPRESSURED FORMATIONS; Introduction; Faulting as a cause of overpressured formations; Shale diapirism (mud lumps, mud volcanoes); Prediction of tectonically caused overpressures by using resistivity and density measurements of associated shales
Origin and distribution of overpressures in carbonate reservoirs

Sommario/riassunto

Knowledge of the presence of abnormally-high pressure zones (AHFP) prior to drilling into them can prevent considerable economic losses and, possibly, save human lives. The various origins (undercompaction, tectonics, etc.) of AHFPs are discussed, followed by the description of predictive techniques in clastic, carbonate and salt-bearing formations. In addition to the well-logging predictive techniques, the authors discuss smectite-illite transformation and the chemistry of interstitial solutions. Other topics covered include (a) abnormally low formation pressures and subsidence, and (b)