1. Record Nr. UNINA9910789695103321

Autore	Caenn Ryen
Titolo	Composition and properties of drilling and completion fluids [[electronic resource] /] / Ryen Caenn, H.C.H. Darley, George R. Gray
Pubbl/distr/stampa	Waltham, Mass., : Elsevier Inc., 2011
ISBN	1-283-19603-4 9786613196033 0-12-383859-2
Edizione	[6th ed.]
Descrizione fisica	1 online resource (721 p.)
Altri autori (Persone)	DarleyH. C. H GrayGeorge R
Disciplina	622 622.338
Soggetti	Drilling muds
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	Front Cover; Composition and Properties of Drilling and Completion Fluids; Copyright; Dedication; Table of Contents; Preface; Chapter 1. Introduction to Drilling Fluids; Functions of Drilling Fluids; Composition of Drilling Fluids; Properties of Drilling Fluids; Drilling Fluid Selection; Mud Handling Equipment; Optimization; References; Chapter 2. The Development of Drilling Fluids Technology; Water-Based Drilling Fluids Technology; Oil-Based Drilling Fluids Technology; Gas-Based Drilling Fluids Technology; References Chapter 3. Equipment and Procedures for Evaluating Drilling Fluid PerformanceSample Preparation; Properties Measured; Multifunctional Circulating Systems; Aging at High Temperature; Particle Size Determination; Identification of Mineral Constituents; Determination of Gas, Oil, and Solids Content; Electrical Properties; Materials for Regaining Lost Circulation; Maintenance of Hole Stability; Lubricity; Factors Affecting Differential-Pressure Sticking of Drill Pipe; Corrosion Tests; Flocculants; Foams and Foaming Agents; Aniline Point; Chemical Analysis; Evaluation of Drilling Fluid Materials ReferencesChapter 4. Clay Mineralogy and the Colloid Chemistry of Drilling Fluids; Characteristics of Colloidal Systems; Clay Mineralogy;

Origin and Occurrence of Clay Minerals; Ion Exchange; Clay Swelling Mechanisms; The Electrostatic Double Layer; Particle Association; The Mechanism of Gelation; Polymers; References; Chapter 5. The Rheology of Drilling Fluids; Laminar Flow Regime; Turbulent Flow Regime; Influence of Temperature and Pressure on the Rheology of Drilling Fluids; Application of Flow Equations to Conditions in the Drilling Well Rheological Properties Required for Optimum PerformanceThe Importance of Hole Stability; Notation; References; Chapter 6. The Filtration Properties of Drilling Fluids; Static Filtration; The Filter Cake; Dynamic Filtration; Filtration in the Borehole; Notation; References; Chapter 7. The Surface Chemistry of Drilling Fluids; Surface Tension; Wettability; Surface Free Energy; Adhesion; Surfactants; Emulsions; Oil-Wetting Agents; Foams; Defoamers; The Effect of Electrochemical Environment on Rock Failure; Notation; References; Chapter 8. Hole Stability; The Mechanics of Borehole Stability
Hole Instability Caused by Interaction between the Drilling Fluid and Shale FormationsNotation; References; Chapter 9. Drilling Problems Related to Drilling Fluids; Drill String Torque and Drag; Differential Sticking of the Drill String; Slow Drilling Rate; Loss of Circulation; High Temperatures; Corrosion of Drill Pipe; Notation; References; Chapter 10. Completion, Reservoir Drilling, Workover, and Packer Fluids; Expense versus Value; The Skin Effect; Prevention of Formation Damage; Selection of Completion and Workover Fluids; Tests for Potential Formation Damage by Completion Fluids
Packer Fluids and Casing Packs

Sommario/riassunto

The petroleum industry in general has been dominated by engineers and production specialists. The upstream segment of the industry is dominated by drilling/completion engineers. Usually, neither of those disciplines have a great deal of training in the chemistry aspects of drilling and completing a well prior to its going on production. The chemistry of drilling fluids and completion fluids have a profound effect on the success of a well. For example, historically the drilling fluid costs to drill a well have averaged around 7% of the overall cost of the well, before completion. The success