Petroleum Rock Mechanics

Description: Petroleum Rock Mechanics: Drilling Operations and Well Design covers the fundamentals of solid mechanics and petroleum rock mechanics and their application to oil and gas-related drilling operations and well design. More specifically, it examines the role of formation, strength of rock materials, and wellbore mechanics, along with the impact of in-situ stress changes on wellbore and borehole behavior. Practical examples with solutions and a comprehensive glossary of terminologies are provided. Equations are incorporated into well-known failure criteria to predict stresses and to analyze a range of failure scenarios throughout drilling, well operation, and well completion processes.

The book also discusses stress and strain components, principal and deviatoric stresses and strains, materials behavior, the theories of elasticity and inelasticity, probabilistic analysis of stress data, the tensile and shear strength of rocks, wellbore stability, and fracture and collapse behavior for both single and multi-lateral wells.

Both inexperienced university students and experienced engineers will find this book extremely useful.

Clearly applies rock mechanics to on and off shore oil and gas drilling

Step by Step approach to the analyze wellbore instabilities

Provides worked out examples with solutions to everyday problems

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