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| Nota di contenuto | Cover; Title Page; Copyright Page; Dedication; Contents; Foreword; Preface; Acknowledgements; Summary; 1 Introduction; 1.1 Introduction; 1.2 Introduction of Drilling Engineering; 1.3 Importance of Drilling Engineering; 1.4 Application of Drilling Engineering; 1.5 History of Oil Discovery; 1.6 An Overview of Drilling Engineering; 1.6.1 Licensing, Exploration and Development; 1.6.2 Role of Drilling during Field Development; 1.6.3 Types of Drilling Wells; 1.6.4 Sequences of Drilling Operations; 1.7 Organization Chart and Manpower Requirements during Drilling Operations<br>1.8 Aspect of Sustainability in Drilling Operations1.9 Summary; References; 2 Drilling Methods; 2.1 Introduction; 2.2 Types of Drilling Methods; 2.2.1 Cable Tool Drilling; 2.2.2 Rotary Drilling; 2.3 Rotary Drilling Rig and its Components; 2.4 Drilling Process; 2.4.1 Power System; 2.4.2 Hoisting System; 2.4.3 Circulation System; 2.4.4 Rotary System; 2.5 Types of Rotary Drilling Rigs; 2.6 Nature and Need for Sustainable Drilling Operations; 2.7 Current Practice in the Industries; 2.7.1 Derrick and Substructure; 2.7.2 Hoisting System; 2.7.3 Pressure Control System |

2.8 Future Trend in Drilling Methods2.9 Summary; 2.10 Nomenclature; 2.11 Exercise; Appendix 2A; Rig Floor (Conventional Rotary Rig); Rig Floor (Top Drive); Blowout Preventer Stack And Wellhead; Drilling Fluid Equipment; References; 3 Drilling Fluids; 3.1 Introduction; 3.2 Drilling Fluid Circulating System; 3.3 Classification of Drilling Fluids; 3.3.1 Water-base Mud; 3.3.2 Oil-based Mud; 3.3.3 Air or Gas-base Mud; 3.3.4 Foam; 3.3.5 Special Types of Muds; 3.4 Composition of Drilling Fluids; 3.5 Mud Additives; 3.5.1 Chemical Additives; 3.5.2 Additives for Water-based Mud
3.5.3 Additives for Oil-based Mud3.6 Measurement of Drilling Fluids Properties; 3.6.1 Mud Density; 3.6.2 Mud Viscosity; 3.6.3 Gel Strength; 3.6.4 pH Determination; 3.6.5 Filtration Tests; 3.6.6 Sand Content; 3.6.7 Determination of Liquid and Solids Content; 3.6.8 Alkalinity; 3.6.9 Water Hardness; 3.6.10 Water Analysis; 3.6.11 Chemical Analysis; 3.6.12 Chloride Concentration; 3.6.13 Cation Exchange Capacity of Clays; 3.6.14 Electrical Properties; 3.7 New Drilling Mud Calculations; 3.8 Design of Mud Weight; 3.9 Current Developments in Drilling Fluids; 3.9.1 Formulation of WBM
3.9.2 Formulation of OBM3.9.3 Formulation of Gas-based Mud; 3.9.4 Development of Environment-Friendly Mud System; 3.9.5 Application of Nanotechnology; 3.9.6 Application of Biomass; 3.10 Future Trend on Drilling Fluids; 3.10.1 Cost Analysis; 3.10.2 Development of Environment Friendly Mud Additives; 3.10.3 Sustainability; 3.10.4 Development of Mud and/or Additives for HTHP Applications; 3.11 Summary; 3.12 Nomenclature; 3.13 Exercises; References; 4 Drilling Hydraulics; 4.1 Introduction; 4.2 Types of Fluids; 4.2.1 Newtonian Fluid; 4.2.2 Non-Newtonian Fluid; 4.3 Flow Regimes; 4.3.1 Laminar Flow
4.3.2 Turbulent Flow

Sommario/riassunto

The book clearly explains the concepts of the drilling engineering and presents the existing knowledge ranging from the history of drilling technology to well completion. This textbook takes on the difficult issue of sustainability in drilling engineering and tries to present the engineering terminologies in a clear manner so that the new hire, as well as the veteran driller, will be able to understand the drilling concepts with minimum effort. This textbook is an excellent resource for petroleum engineering students, drilling engineers, supervisors & managers, researchers and environmental en