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| | Nota di contenuto | Front Cover; subsidence Due to Fluid Withdrawal; Copyright Page; CONTENTS; Preface; List of Contributors; CHAPTER 1. INTRODUCTION |

TO COMPACTION/SUBSIDENCE-INTRODUCTION TO TECTONICS AND SEDIMENTATION; Introduction to tectonics; Composition of the globe; Movement of sections (plates) of the lithosphere; Continental margins; Introduction to sedimentation; Source and fragmentation of rocks; Classification of sands; Genetic classification of sands on the basis of grain-size distributions; Physical properties of sands and sandstones; Nomenclature; References

CHAPTER 2. COMPACTION OF ARGILLACEOUS SEDIMENTSIntroduction;

Clay mineral diagenesis; Mathematical description of compaction; Restoration modeling; Flow of fluids through argillaceous media; Chemistry of interstitial fluids; Fluid chemistry compaction - diagenetic models; Compaction effects on the expulsion of hydrocarbons; Experimental compaction results; Hydrocarbons - geochemical and migration models; Stresses in sediments; Tectonic overcompaction; Compressibilities of sand and clayey sediments; Experimental values; Compaction of carbonates; References; CHAPTER 3. STRESSES IN

SEDIMENTS

CompactionLaboratory and mathematical analysis of compaction; Subsidence of depositional basins; Basins and geosynclines; Hydrogeological cycle; Subsidence as a result of fluid withdrawal; Nomenclature; Recommended bibliography; References; CHAPTER 4.

POSSIBLE IMPACT OF SUBSIDENCE ON GAS LEAKAGE TO THE SURFACE FROM SUBSURFACE OIL AND GAS RESERVOIRS; Introduction; Current

theories of fluid-solid force interaction: a critical review; Fracturing due to subsidence; Mechanisms of gas seepage from pools; Summary; References; CHAPTER 5. SUBSIDENCE STUDIES IN ITALY; General introduction; Measurements

The geotechnical features of sedimentsModelling of the phenomenon; Impact of subsidence on an area and remedies; Case history of the Po Delta; Venice case history; Ravenna case history; Bologna case history; Modena case history; Other cases of subsidence; Acknowledgements; References; CHAPTER 6. SUBSIDENCE IN THE WILMINGTON OIL FIELD, LONG BEACH, CALIFORNIA, USA; Introduction; Geology; Structure; Drilling and completion methods; Subsidence; Results of laboratory tests; Field measurement of compaction and subsidence; Repressurization and rebound; Effects of water injection

References and bibliographyCHAPTER 7. SUBSIDENCE IN VENEZUELA;

Introduction; Bolivar coastal fields (Tfa Juana, Lagunillas, Bachaquero); Orinoco Belt subsidence; References; CHAPTER 8. RESERVOIR COMPACTION AND SURFACE SUBSIDENCE IN THE NORTH SEA EKOFISK FIELD; Introduction; Discovery and exploration in the North Sea; Production; Ekofisk Field description; Platforms sinking; Causes of subsidence; Measurements of subsidence; Temporary remedial measures; Permanent remedial measures; Characteristics of the Ekofisk reservoir rocks; Mechanics of the Ekofisk reservoir rocks

Constitutive modeling of the reservoir rocks

Sommario/riassunto

Subsidence of geologic surface structures due to withdrawal of fluids from aquifers and petroleum reservoirs is a phenomenon experienced throughout the world as the demand for water and hydrocarbons increases with increasing population growth. This book addresses the definition and theories of subsidence, and the influences of unique conditions on subsidence; it includes discussions of specific field cases and a basic mathematical model of reservoir compaction and accompanying loss of porosity and permeability. The book is designed as a reference for readers giving immediate access to the geol
