1. Record Nr. UNINA9910806871303321

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Titolo	Measurement while drilling (MWD) signal analysis, optimization and design / / by Wilson C. Chin [and five others] ; cover design by Kris Hackerott
Pubbl/distr/stampa	Hoboken, New Jersey : , : Scrivener Publishing : , : Wiley, , 2014 ©2014
ISBN	1-118-83169-1 1-118-83172-1 1-118-83170-5
Descrizione fisica	1 online resource (382 p.)
Disciplina	622/.33810287
Soggetti	Oil well logging, Electric Oil well drilling Orientation - Measurement Wells - Fluid dynamics Flow meters
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	Cover; Title Page; Copyright Page; Contents; Opening Message; Preface; Acknowledgements; 1 Stories from the Field, Fundamental Questions and Solutions; 1.1 Mysteries, Clues and Possibilities; 1.2 Paper No. AADE-11-NTCE-74, "High-Data-Rate Measurement-While-Drilling System for Very Deep Wells," updated; 1.2.1 Abstract; 1.2.2 Introduction; 1.2.3 MWD telemetry basis; 1.2.4 New telemetry approach; 1.2.5 New technology elements; 1.2.5.1 Downhole source and signal optimization; 1.2.5.2 Surface signal processing and noise removal; 1.2.5.3 Pressure, torque and erosion computer modeling 1.2.5.4 Wind tunnel analysis: studying new approaches 1.2.5.5 Example test results; 1.2.6 Conclusions; 1.2.7 Acknowledgements; 1.2.8 References; 1.3 References; 2 Harmonic Analysis: Six-Segment Downhole Acoustic Waveguide; 2.1 MWD Fundamentals; 2.2 MWD Telemetry Concepts Re-examined; 2.2.1 Conventional pulser ideas explained; 2.2.2 Acoustics at higher data rates; 2.2.3 High-data-rate

Sommario/riassunto

Trade magazines and review articles describe MWD in casual terms, e. g., positive versus negative pulsers, continuous wave systems, drilling channel noise and attenuation, in very simple terms absent of technical rigor. However, few truly scientific discussions are available on existing methods, let alone the advances necessary for high-data-rate telemetry. Without a strong foundation building on solid acoustic principles, rigorous mathematics, and of course, fast, inexpensive and efficient testing of mechanical designs, low data rates will impose unacceptable quality issues to real-time