

Title (en)

Apparatus and method for information transmission by electromagnetic waves

Title (de)

Vorrichtung und Verfahren zur Übertragung von Nachrichten mittels elektromagnetischer Wellen

Title (fr)

Méthode et système de transmission d'informations par onde électromagnétique

Publication

EP 0995877 A1 20000426 (FR)

Application

EP 99402571 A 19991019

Priority

FR 9813304 A 19981023

Abstract (en)

Electromagnetic cased well information transmission comprises electrical insulation of metal casing tubes adjacent low resistivity formation layers. Information transmission from a cased well, using a downhole transmitter/receiver operating by guided electromagnetic waves created by electrical signal injection by a dipole connected to the metal casing tubes which guide the emitted waves comprises identifying low resistivity formation layers which cause transmission attenuation, and electrically insulating the tubes located at these layers. An Independent claim is also included for a system for carrying out the above information transmission method. Preferred Features: A mathematical model is used to calculate the minimum length to be insulated, taking into account the minimum characteristics of the electromagnetic transmission, especially the transmission distance and/or the information output rate. Insulation is effected by providing a cement-type insulating material in the gap between the casing tubes and certain formations. The transmitter/receiver is positioned near the lower end of a production tubing string, for transmitting bottom measurements or bottom equipment commands, or is positioned near the lower end of a well casing for transmitting bottom or drilling parameters or location measurements.

Abstract (fr)

La présente invention concerne une méthode et un système de transmission d'informations depuis un puits (1; 20) foré à travers des couches (3) de formation géologique et cuvelé au moins en partie par des tubes métalliques (4; 23, 24; 31). La méthode comprend la mise en place dans ledit puits d'un émetteur/récepteur d'informations (E) fonctionnant par le moyen d'ondes électromagnétiques créées par l'injection d'un signal électrique par un dipôle (P1-P2) relié conductivement aux tubes métalliques servant au guidage des ondes émises. Dans la méthode, on identifie l'atténuation de la transmission par certaines couches de formation (3a, 3b; 25; 30) ayant une faible résistivité, puis on isole électriquement au moins partiellement les tubes métalliques disposés au droit des couches de faible résistivité. <IMAGE>

IPC 1-7

E21B 47/12

IPC 8 full level

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CPC (source: EP US)

E21B 47/13 (2020.05 - EP US)

Citation (search report)

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DOCDB simple family (application)

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