[19] PATENT OFFICE OF THE COOPERATION COUNCIL FOR THE ARAB STATES OF THE GULF

[19] مكتب براءات الاختراع لمجلس التعاون لدول الخليج العربية

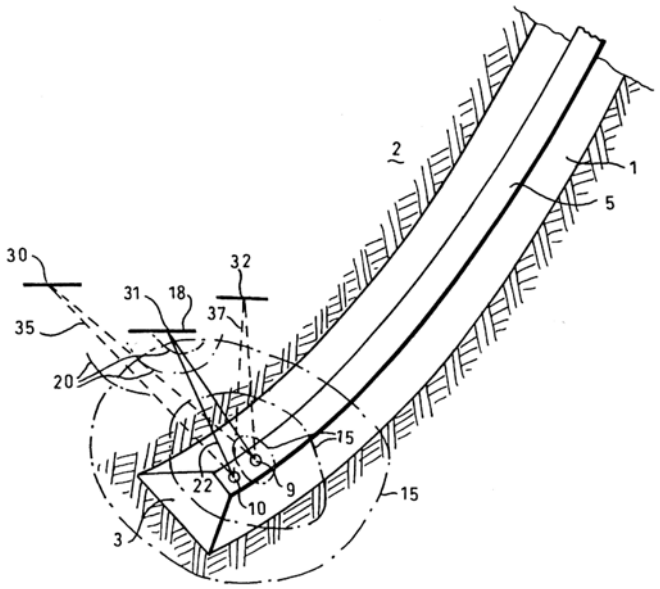
[12] Patent

[11] Patent No.: GC 0000206 [45] Date of Publishing the Grant of the Patent: 29/03/2006 5/2006	Number of the Decision to Grant the Patent: 5/1061 Date of the Decision to Grant the Patent: 13/07/2005
[21] Application No.: GCC/P/2000/947 [22] Filing Date: 10/10/2000 [30] Priority: [31] Priority No. [32] Priority date [33] State 99308119.9 14/10/1999 EP [72] Inventors: 1- Alphonsus Paulus Eduard Ten Kroode, 2- William Alexander Mulder, 3- Pleun Marinus Van Der Sman [73] Owner: Shell Internationale Research Maatschappij B.V., Carel van Bylandtlaan 30, 2596 HR, The Hague, The Netherlands [74] Agent: Suleiman Ibrahim Al-Ammar	[51] Int. Cl.[7]: G01V 1/50 [56] Cited Documents: - US 5300929 A (MACLEOD MARK K) 05 April 1994 - WO 99/19749 A (INPUT OUTPUT INC) 22 April 1999 - US 5170377 A (MANZUR AKKAS et al.) 08 December 1992 - US 5081611 A (HORNBY BRIAN E) 14 January 1992

[54] OBTAINING AN IMAGE OF AN UNDERGROUND FORMATION

[57] Abstract: An image of an underground formation (2) around a borehole (1) is obtained by activating an omnidirectional source (9) and recording with a three-component receiver (10) the components of the reflected energy (15); determining therefrom the components the directions from which the energy arrives at the three-component receiver (10) as a function of two-way travel time; selecting a first underground position (30); assuming a reflector to be present at position (30) and calculating the arrival direction of a ray (35) extending from the source (9) via the reflector (30) to the receiver (10) and two-way travel time along the ray (35); accepting the data if the calculated arrival direction is substantially equal to an arrival direction that has the same two-way travel time, and attributing the data on the position (30); and selecting a next position (31 or 32) and repeating steps (e) and (f) until the last underground position to obtain the image of the underground formation comprising a set of reflectors attributed to positions.

No. of claims: 5 No. of figures: 1



Note: Any interested individual may, within 3 months of publication of the grant, file objection thereof with the Grievance Committee after payment of grievance fees.