

Title (en)

CLOSED LOOP FLUID-HANDLING SYSTEM FOR USE DURING DRILLING OF WELLBORES

Title (de)

SYSTEM ZUR SPÜLUNGS-AUFBEREITUNG IM GESCHLOSSENEN KREISLAUF ZUM EINSATZ IN BRUNNENBOHRUNGEN

Title (fr)

SYSTEME DE MANUTENTION DE FLUIDES EN BOUCLE FERMEE UTILISE AU COURS DU FORAGE DE PUIT

Publication

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Application

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Priority

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Abstract (en)

[origin: WO9742395A1] This invention provides a fluid-handling system for use in underbalanced drilling operations. The system includes a first vessel which acts as a four phase separator. The first vessel includes a first stage for separating solids. Oil and gas are separated at a second stage. A pressure sensor provides signals to a pressure controller, which modulates a gas flow valve coupled to the vessel for discharging gas from the first vessel. The pressure controller maintains the pressure in the first vessel at a predetermined value. An oil level sensor placed in the first vessel provides a signal to an oil level controller. The oil level controller modulates an oil flow valve coupled to the vessel to discharge oil from the first vessel into a second vessel. Water is discharged into a third vessel. Water from the third vessel is discharged via a water flow control valve, which is modulated by a level controller as a function of the water level in the third vessel. Any gas in the third vessel is discharged by modulating a gas control valve as a function of the pressure in the third vessel. In an alternative embodiment, a central control unit or circuit is utilized to control the operations of all the flow valves. During operations, a control unit maintains the pressure and the levels of the fluids in such vessels at their respective predetermined values according to programmed instructions. The fluid-handling system also controls the wellbore pressure as a function of downhole-measured parameters and the drilling fluid mix as a function of selected operating parameters.

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