



New connection on: : 26-04-2018 : 23:45:33 - Last disconnection on: : 26-04-2018 : 22:29:00

V 4.0.0.44358(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#(D201802)) (RPM D201802)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 2] ..fi EPODOC

 Database: EPODOC

[EPODOC: SS 2] (drill+)AND method

Results in EPODOC **89.079**

[SS 3] (drill+)AND method AND pump AND control+ AND measur+

Results in EPODOC **144**

[SS 4] ..v

[EPODOC: SS 4] ..li



1/144 © EPODOC / EPO

PN - [DK201670742](#) A1 20180115

PNFP - DK179179B B1 20180115

PR - DK2016PA70742 20160921

AP - DK2016PA70742 20160921

DT - I

CT - || STSE (A1 B1)

[US2008068210](#) A1 20080320 [] (SCHLUMBERGER TECHNOLOGY CORP [US]);

[US4866680](#) A 19890912 [] (SCHERBATSKOY SERGE ALEXANDER [US]);

[US2009120689](#) A1 20090514 [] (BAKER HUGHES INC [US])

CCI - [E21B47/18](#)

CUI - [G01V11/002](#)

PA - (A1 B1)
ADVANCETECH APS [DK]

TI - (A1 B1)
System and **method** for transmission of pulses

AB - (A1 B1)

The invention relates to a **method** and a system for monitoring one or more **control** parameters in a borehole, wherein a downhole tool is mounted in a **drill** string and is able to **measure** at least one **control** parameter using suitable sensor units. The downhole tool generates at least one pulsating signal based on the **measurements**, wherein this pulsating signal comprises a single pulse where the pulse length is determined as function of the value of the **measured control** parameter. The pulse length may further be determined using a selected resolution for that **control** parameter. The pulsating signal is then transmitted to ground level via the **drilling** fluid where it can be read by simply monitoring the **pump** pressure. A simple test can be performed before starting the operation of the **drill** string.

2/144 © EPODOC / EPO

PN - [CN107513995](#) A 20171226

PR - CN20171667140 20170807

AP - CN20171667140 20170807

DT - I

CNOI - [E02D5/36](#) ; [E02D15/04](#)

CNOA - [E02D2250/003](#)

PA - SINOHYDRO BUREAU 11 CO LTD

TI - Post-grouting construction **method** of bridge cast-in-place pile

AB - The invention discloses a post-grouting construction **method** of a bridge cast-in-place pile. The **method** comprises the following steps of (1) grouting nozzle manufacturing, (2) grouting pipe installing, (3) grouting pipe water testing and (4) **pump**-in test and **pump**-in plug opening. The **method** has the advantages that the structural reliability of the pile bearing capacity is improved, the **method** can be used as an effective remedial **measure** for a cast-in-place pile with quality defect, a grouting pipe can be piled in the pile-forming side for grouting to improve the single-pile bearing capacity, the single-pile bearing capacity of the **drilled** grouting pile can be improved, and the settlement of pile foundation can be **controlled** effectively.

3/144 © EPODOC / EPO

PN - [WO2017213513](#) A1 20171214

PR - GB20160009894 20160607

AP - WO2017NO50143 20170602

DT - **

CT - |XN| ISR (A1)

[US2005092523](#) A1 20050505 [A] (MCCASKILL JOHN W [US], et al)

[A] 1-36

* Paragraphs [0002], [0023], [0024], [0026], [0027], [0029], [0033], [0034] and [0035]; figures 1-3. *;

[WO2014204316](#) A1 20141224 [A] (NAT OILWELL VARCO NORWAY AS [NO])

[A] 1-36

* Page 1 lines 2-25. *;

[WO2015179408](#) A1 20151126 [A] (POWER CHOKES [US])

[A] 1-36

* Paragraphs [0002] and [0030]-[0032]. *;

[WO2016140650](#) A1 20160909 [A] (HALLIBURTON ENERGY SERVICES INC [US])

[A] 1-36

* Paragraphs [0002], [0003], [0007], [0008], [0011], [0019] and [0022]; figures 1-2. *

- CCI - [E21B21/08](#)
- PA - STATOIL PETROLEUM AS [NO]
- TI - **METHOD AND SYSTEM FOR MANAGED PRESSURE DRILLING**
- AB - A **method** for use with a managed pressure **drilling** (MPD) system, the system comprising a **drill** string having a **drill** bit, an annulus defined outside of the **drill** string, a mud **pump** for pumping mud down through the **drill** string and back up through the annulus, a **control** choke in an extraction path coupled to the annulus, a back pressure **pump** also coupled to the extraction path, and a programmable logic **controller** (PLC) for **controlling** the **control** choke, the **method** comprising: a) performing **measurements** to determine a dataset comprising, for each of a plurality of time steps k: a value of fluid flow rate through the **drill** bit q bit [k], a value of fluid flow rate through the **control** choke q c [k], a value of fluid flow rate from the back pressure **pump** q bpp [k] and a value of fluid pressure at the **control** choke p c [k]; b) executing an inversion algorithm on the PLC to obtain a value for the bulk modulus of a fluid within the annulus, the inversion algorithm taking the dataset as an input, wherein the inversion algorithm accounts for a **measurement** bias b q in one or more of said **measurements**; c) updating one or more **control** parameters of the PLC based on the value for the bulk modulus; and d) manipulating the **control** choke using the PLC to attain a desired pressure in the system.

4/144 © EPODOC / EPO

- PN - [CN107449628](#) A 20171208
- PR - CN20171944653 20171012
- AP - CN20171944653 20171012
- DT - I
- CNOI - [G01M99/005](#)
- PA - UNIV SOUTHWEST PETROLEUM
- TI - Device for testing impact parameters of high-frequency torsional-impact **drilling** tool and **method**
- AB - The invention relates to a device for testing impact parameters of a high-frequency torsional-impact **drilling** tool and a **method**. The device consists of a power system, a mud circulating system, an impact system and a data acquisition system and is mainly used for testing the impact parameters of the high-frequency torsional-impact **drilling** tool under the condition of different flows, including impact frequency, impact force and impact acting time. According to the **method**, the **pump**-stroke length is changed through gradually increasing a revolution rate of a diesel engine, thus, the impact parameters under the condition of different flows are determined, and the acquisition of the impact parameters is achieved by a data acquisition system consisting of elements such as an impact sensor and a PLC **control** system. According to the device and the **method**, the cost is low, the operation is convenient, and the impact parameters of the high-frequency torsional-impact **drilling** tool can be

accurately **measured**; real mud is adopted as a fluid medium, and thus, a test result can be directly applied to on-site production.

5/144 © EPODOC / EPO

- PN - [US2017260820](#) A1 20170914
- PR - US201615066094 20160310
- AP - US201615066094 20160310
- DT - *; Rep
- CCI - [F04B15/02](#) ; [F04B23/04](#) ; [F04B49/065](#)
- CUI - [E21B21/106](#) ; [F04B47/02](#) ; [F04B49/22](#) ; [E21B21/01](#)
- CUA - [F04B2205/063](#) ; [F04B2205/09](#) ; [E21B2021/007](#)
- PA - SAUDI ARABIAN OIL CO [SA]
- TI - **Method** and Apparatus for Suction Monitoring and **Control** in Rig Pumps
- AB - A pumping system includes a primary suction tank including a first pressure sensor operatively connected to a first portable suction **control** for **measuring** a first pressure of a fluid coming from the primary suction tank, and a first flow meter operatively connected to the first portable suction **control** for **measuring** a first flow rate of the fluid coming from the primary suction tank, wherein an output of the primary suction tank is **controlled** by a first valve, a secondary suction tank, a rig **pump** operatively connected to the primary suction tank, and the secondary suction tank, and a rig stand pipe connected to a **drilling** well, and a **controller** operatively connected to the first portable suction **control**, the first valve, and a second flow meter configured to **measure** a second flow rate of the fluid coming out of the rig **pump**.

6/144 © EPODOC / EPO

- PN - [WO2018054436](#) A1 20180329
- PR - DK2016PA70742 20160921
- AP - WO2017DK50273 20170825
- DT - *; Rep
- CCI - [E21B47/18](#)
- CUI - [G01V11/002](#)
- PA - ADVANCETECH APS [DK]
- TI - SYSTEM AND **METHOD** FOR TRANSMISSION OF PULSES
- AB - The invention relates to a **method** and a system for monitoring one or more **control** parameters in a borehole (6), wherein a downhole tool (8) is mounted in a **drill** string (2) and is able to **measure** at least one **control** parameter using suitable sensor units. The downhole tool generates at least one pulsating signal (24) based on the **measurements** , wherein this pulsating signal comprises a single pulse where the pulse length is determined as function of the value of the **measured control** parameter. The pulse length may further be determined using a selected resolution for that **control** parameter. The pulsating signal is then transmitted to ground level via the **drilling** fluid where it can be read by simply monitoring the **pump** pressure. A simple test can be performed before starting the operation of the **drill** string.

7/144 © EPODOC / EPO

PN - [CN106950149](#) A 20170714
PR - CN20171269402 20170424
AP - CN20171269402 20170424
DT - I
CNOI - [G01N7/16](#)
PA - UNIV SOUTHWEST PETROLEUM
TI - Experimental device and **method** for **measuring** solubility of overflowed gas
AB - The invention relates to an experimental device and an experimental **method** for **measuring** solubility of overflowed gas. A **measuring** device comprises a reaction unit and a **measuring** unit. Core equipment comprises an intermediate container, a high-temperature high-pressure sample preparer, a separation bottle, a gasometer flask and a constant pressure **pump**. The **method** comprises the following steps: filling the high-temperature high-pressure sample preparer with a certain amount of **drilling** fluid; injecting excessive gas into the high-temperature high-pressure sample preparer through the intermediate container; **controlling** the temperature and pressure of the high-temperature high-pressure sample preparer by means of a heating element and the constant pressure **pump**; continuously rotating the high-temperature high-pressure sample preparer, wherein gas and the **drilling** fluid are in full contact; when dissolving balance is achieved, reversing the high-temperature high-pressure sample preparer; taking out a proper amount of dissolved saturated **drilling** fluid for gas-liquid separation and separately metering the gas volume and the mass of the **drilling** fluid; and calculating the solubility at the temperature and pressure condition. The device and **method** provided by the invention have the beneficial effects that a dissolving reaction of the overflowed gas in the **drilling** fluid in a wellbore flow condition can be simulated, multiple times of **measurement** can be realized by sample transferring at a single time, and the testing efficiency is increased.

8/144 © EPODOC / EPO

PN - [CN106932041](#) A 20170707
PR - CN201511022190 20151230
AP - CN201511022190 20151230
DT - I
CNOI - [G01F7/00](#)
PA - BEIJING RES INST URANIUM GEOLOGY
TI - High-accuracy **measuring** device for multiple stages of flow for water pressure test in boreholes and **method**
AB - The invention belongs to the technical field of pressurized-water flow **measuring**, in particular to a high-accuracy **measuring** device for multiple stages of flow for water pressure test in boreholes and **method**. The high-accuracy **measuring** device comprises a valve of a water return pipe of a submersible **pump**, a pressurized-water pressure **control** valve, a high-pressure glue pipe, a pre-**control** valve of a flowmeter, the flowmeter, a post-**control** valve of the flowmeter, a pressurized-water test **drill** rod, a high-pressure-resistant sealing container, an electric balance and the submersible **pump**. The high-accuracy **measuring method** is a water pressure test on

the basis of the high-accuracy **measuring** device. The high-accuracy **measuring** device for multiple stages of flow for water pressure test in boreholes and **method** help solve the existing problems so that a flow **measuring** system has high accuracy and a plurality of flows in orders of magnitudes can be **measured** at the same time.

9/144 © EPODOC / EPO

PN - [CN106979008](#) A 20170725
 PR - CN20171353541 20170518
 AP - CN20171353541 20170518
 DT - I
 CNOI - [E21B49/005](#) ; [E21B49/08](#)
 PA - UNIV HANGZHOU DIANZI
 TI - **Control** device and **method** for logging while **drilling**
 AB - The invention discloses a **control** device and **method** for logging while **drilling**. The process of **measuring** information of shaft returns such as solid, liquid and gas in the **drilling** process is called logging. A traditional logging mode has hysteretic nature and is low in efficiency. The **control** device for logging while **drilling** comprises a **control** module, a motor driver, a hydraulic **pump**, a storage battery, a power conversion module, a valve body set, an A/D convertor, a first sampling and discharging device, a pressure sensor and a second sampling and discharging device. 'Sampling and discharging devices applied to a logging while **drilling** instrument' disclosed in the invention patent with the patent number of 201610437867.2 are used as the first sampling and discharging device and the second sampling and discharging device. Detection of oil gas content of **drilling** liquid can be completed under the shaft without taking the **drilling** liquid to the ground, the **control** device has realtime performance and high efficiency and solves the problems that traditional ground **measurement** has hysteretic nature and is low in efficiency.

10/144 © EPODOC / EPO

PN - [CN106850477](#) A 20170613
 PR - CN2017169342 20170208
 AP - CN2017169342 20170208
 DT - I
 CNOI - [E21B47/182](#) ; [H04L27/0008](#)
 CNOA - [H04L27/04](#) ; [H04L27/12](#) ; [H04L27/20](#)
 PA - CHINA NAT OFFSHORE OIL CORP; CHINA OILFIELD SERVICES LTD
 TI - Downhole signal modulation **method** and device
 AB - The invention discloses a downhole signal modulation **method** and device. The **method** comprises the following steps: acquiring downhole **measurement** signals during **drilling**; and selecting modulation modes according to the **drilling** operation conditions and requirements, and modulating the downhole **measurement** signals according to the selected modulation modes, wherein the modulated downhole **measuring** signals are used to **control** a shear valve type mud pulse generator. According to the scheme disclosed by the invention, the modulation modes can be selected according to the **drilling** operation conditions and requirements, the

degree of signal distortion can be reduced, and on the premise of ensuring the demodulation effect, the fundamental wave frequency of the signals can be reduced to a maximum extent, and the data transmission rate can be increased; and additionally, the influence of the channel on the attenuation of mud pressure waves can be reduced to a maximum extent, the influence of **pump** noises on the signals can be effectively avoided, and the denoising difficulties can be reduced.

11/144 © EPODOC / EPO

PN - [CN106759297](#) A 20170531

PR - CN201611026446 20161122

AP - CN201611026446 20161122

DT - I

CNOI - [E02D5/46](#) ; [E02D15/04](#) ; [E02D17/04](#)

CNOA - [E02D2250/003](#) ; [E02D2300/0023](#)

PA - JIANGNAN FOUND ENG CORP OF GUANGZHOU ZHONG-MEI

TI - Construction **method** for deep foundation pit with support piles and three-pipe high-pressure jet grouting piles

AB - The invention discloses a construction **method** for a deep foundation pit with support piles and three-pipe high-pressure jet grouting piles. According to the construction **method**, operation is conducted according to the design requirements, and after a cast-in-place pile is completed, a placing **measurement** hole position is determined; **drilling** is conducted through a **drill** machine, a high-pressure jet grouting pile machine is put in place and aligned with the hole position, slurring is conducted through a stirring cylinder backstage, slurry supplied by a grouting **pump**, compressed air supplied by an air compressor and water supplied by a high-pressure **pump** are tried to be sprayed under the design parameters, debugging is conducted to the normal state, water supplied by the high-pressure **pump** is reduced to 2.0-3.0 MPa, pipes are sunken to the designed depth, and spraying and grouting are conducted; and after spraying construction is completed, machines and tools are transferred to the next hole position till all hole positions are completed. By the adoption of the construction **method**, decent and supply of underground water are **controlled** effectively, meanwhile the reinforcement and advance support functions on miscellaneous fill, silt, silty-fine sand and medium-coarse sand containing gravel are achieved, the stability of the edge walls of the foundation pit and the normal use and safety of surrounding buildings (structures) are guaranteed, the whole support stability is guaranteed, the cost investment is reduced, the benefits are increased, and the construction cost is reasonably distributed.

12/144 © EPODOC / EPO

PN - [CN106769501](#) A 20170531

PR - CN201611075230 20161129

AP - CN201611075230 20161129

DT - I

CNOI - [G01N3/06](#) ; [G01N3/12](#)

CNOA - [G01N2203/0048](#) ; [G01N2203/0682](#)

PA - POWERCHINA HUADONG ENGINEERING CORP LTD

TI - **Method** for **measuring** deformation modulus values of rock masses at different depths

AB - The invention relates to a **method** for **measuring** deformation modulus values of rock masses at different depths. The **method** utilizes a light device easy to assemble on site, can carry out **measurement** in most engineering environments and especially in underground construction, realizes simultaneous **measurement** of deformation modulus values of rock masses at different depths and prevents influence caused by cracks, a fault fracture zone and a weak interlayer on the **measurement** result. The **method** comprises (1) arranging a deformation modulus **measuring** point, (2) arranging a **measuring** hole at the selected **measuring** point, (3) grinding and cleaning the pressure-bearing surfaces of the **measuring** hole, (4), arranging a loading device in the **measuring** hole, (5), **drilling** the two pressure-bearing surfaces of the **measuring** hole to obtain **drill** holes, carrying out cleaning and putting multi-point displacement meters into the **drill** holes, and (6), **controlling** oil **pump** output pressure through an oil **pump** switch connected to the oil **pump**, and transmitting pressure to a pressing plate through a jack so that the pressure acts surrounding rock masses. The **method** is suitable for the field of rock engineering.

13/144 © EPODOC / EPO

PN - [US2017122822](#) A1 20170504

PR - CN20141379604 20140804; WO2015CN85648 20150731

AP - US201515318877 20150731

DT - *; Rep

CT - || R141 (A1)
[US9885218](#) B2 20180206 [] (HEIJEN WILHELMUS HUBERTUS PAULUS MARIA [DE], et al)

CCI - [E21C39/00](#) ; [E21F17/18](#) ; [G01L5/0004](#)

PA - UNIV CHINA MINING & TECH [CN]

TI - Multipoint Coal and Rock Mass Stress Real-Time Monitoring Device and **Method**

AB - A multipoint coal and rock mass stress real-time monitoring device. The device is composed of a plurality of capsule pressure sensors (1), connection rods (2), three-way valves (3), a multichannel monitor (4), a multichannel **control** valve (5), first high-pressure oil pipes (6), second high-pressure oil pipes (7), third high-pressure oil pipes (8), a four high-pressure oil pipe (9), a high-pressure oil **pump** (10) and monitoring substations (11). The present invention also relates to a multipoint coal and rock mass stress real-time monitoring **method**. Oil is injected into each capsule pressure sensor (1) that is arranged in a **drilled** hole through the multi-channel **control** valve (5), so that oil pressure inside each capsule pressure sensor (1) reaches the preset pressure, and the capsule pressure sensors and the coal and rock mass are well coupled; monitoring signals are synchronously collected, converted, stored and displayed by the multichannel monitor (4) or are transferred to a remote monitoring center through the monitoring substations (11). The device and **method** can be used for coal and rock dynamic disaster monitoring early warning such as coal and rock mass stress monitoring, mine pressure analysis, rock burst and coal and gas rush, and the stress and changes of the stress of multiple **measuring** points can be **measured** at the same time in the multiple **drilled** holes of the coal and rock mass.

14/144 © EPODOC / EPO

PN - [US2017095261](#) A1 20170406

PR - AT20140050342
20140515; WO2015AT50123
20150515

AP - US201515311197 20150515

DT - **

CCI - [A61B17/1626](#) ; [A61B17/1644](#) ;
[A61B17/1673](#) ; [A61C1/0061](#) ;
[A61C1/0084](#)

CUI - [A61C3/02](#) ; [A61C8/0089](#) ;
[A61C1/0069](#) ; [A61C1/0092](#) ;
[A61C1/12](#)

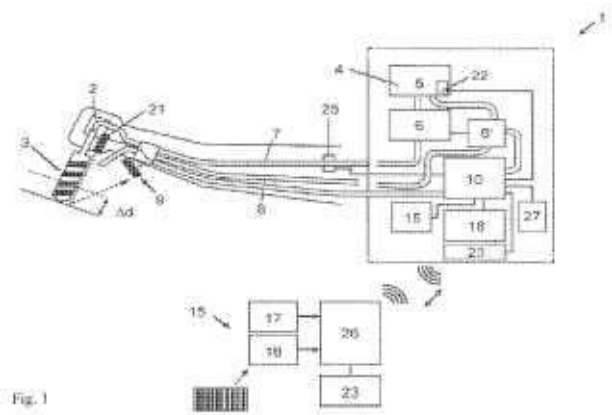
CCA - [A61B2017/1651](#)

CUA - [A61B2017/00199](#)

PA - MEDIZINISCHE UNIV WIEN [AT]

TI - SURGICAL BONE-**DRILLING**
DEVICE, HANDPIECE FOR SUCH A
SURGICAL BONE-**DRILLING**
DEVICE, AND **METHOD** FOR
COOLING SUCH A SURGICAL BONE-
DRILLING DEVICE

AB - The invention relates to a
surgical bone- **drilling** device (1)
comprising a **drill** (3) connected
to a drive (2), a container (4) for
a coolant (5), at least one **pump**
(6) for delivering the coolant (5),
a first conduit (7) for delivering
the coolant (5) from the
container (4) into the interior of
the **drill** (3), and a second
conduit (8) for delivering the
coolant (5) from the container
(4) to the outside of the **drill** (3),
and also a handpiece (19), a **drill**
guide (20), and a
cooling **method** for such a bone-
drilling device (1). To improve the
cooling action, a **measuring**
device (9) is provided for
detecting the **drilling** depth (Δd)
of the **drill** (3), which **measuring**
device (9) is connected to
a **control** device (10)
for **controlling** transport of the
coolant (5), such that the quality



of the coolant (5) in the first conduit (7) and in the second conduit (8) can be **controlled** as a function of the **drilling** depth (Δd) of the **drill** (3).

15/144 © EPODOC / EPO

- PN - [WO2017156353](#) A1 20170914
- PR - US201615066094 20160310
- AP - WO2017US21710 20170310
- DT - **
- CT - |EP| ISR (A1)
[GB2032981](#) A 19800514 [A] (EXXON PRODUCTION RESEARCH CO)
 [A] 1-20
 * page 4, lines 1-34; figures 1,2 *;
[US4295366](#) A 19811020 [A] (GIBSON JOSEPH T, et al)
 [A] 1-20
 * column 5, lines 8-49; figure 1 *
 * column 4, lines 18-65 *;
[US4042025](#) A 19770816 [A] (SKINNER DAVID R, et al)
 [A] 1-20
 * column 2, line 41 - column 3, line 15 *
- CCI - [F04B15/02](#) ; [F04B23/04](#) ; [F04B49/065](#)
- CUI - [E21B21/106](#) ; [F04B47/02](#) ; [F04B49/22](#) ; [E21B21/01](#)
- CUA - [F04B2205/063](#) ; [F04B2205/09](#) ; [E21B2021/007](#)
- PA - SAUDI ARABIAN OIL CO [SA]; ARAMCO SERVICES CO [US]
- TI - **METHOD** AND APPARATUS FOR SUCTION MONITORING AND **CONTROL** IN RIG PUMPS
- AB - A pumping system includes a primary suction tank including a first pressure sensor operatively connected to a first portable suction **control** for **measuring** a first pressure of a fluid coming from the primary suction tank, and a first flow meter operatively connected to the first portable suction **control** for **measuring** a first flow rate of the fluid coming from the primary suction tank, wherein an output of the primary suction tank is **controlled** by a first valve, a secondary suction tank, a rig **pump** operatively connected to the primary suction tank, and the secondary suction tank, and a rig stand pipe connected to a **drilling** well, and a **controller** operatively connected to the first portable suction **control**, the first valve, and a second flow meter configured to **measure** a second flow rate of the fluid coming out of the rig **pump**.

16/144 © EPODOC / EPO

- PN - [CN106122740](#) A 20161116
- PR - CN20161440101 20160620
- AP - CN20161440101 20160620
- DT - I
- CT - || STSE (A)
[CN1153133](#) A 19970702 [Y] (UNIV XI AN JIAOTONG [CN])

[Y] 1-3
 * 说明书第2页第3段-第3页最后1段以及附图1 *;
[CN101042047](#) A 20070926 [A] (DAQING PETROLEUM ADMIN [CN])
 [A] 1-3
 * 全文 *;
[CN201318171Y](#) Y 20090930 [A] (SHANGHAI SK PET & CHEM EQUIP [CN])
 [A] 1-3
 * 全文 *;
[CN102080534](#) A 20110601 [A] (SHANGHAI SK PETROLEUM & CHEMICAL EQUIPMENT CO LTD, et al)
 [A] 1-3
 * 全文 *;
[CN201915950U](#) U 20110803 [A] (AEROSPACE SCIENCE & IND INERTIAL TECHNOLOGY CO LTD)
 [A] 1-3
 * 全文 *;
[CN202297104U](#) U 20120704 [A] (BEIJING XIONGYUE HOUMING TECHNOLOGY CO LTD, et al)
 [A] 1-3
 * 全文 *;
[CN202789862U](#) U 20130313 [Y] (UNIV ZHEJIANG)
 [Y] 1-3
 * 说明书第19-34段以及附图第1-3幅 *;
[CN103016453](#) A 20130403 [A] (UNIV ZHEJIANG)
 [A] 1-3
 * 全文 *;
[CN104741016](#) A 20150701 [A] (STATE GRID CORP CHINA, et al)
 [A] 1-3
 * 全文 *;
[US2016102517](#) A1 20160414 [A] (IBANEZ RUTH [US])
 [A] 1-3
 * 全文 *

- CNOI - [E21B47/02](#) ; [E21B47/18](#) ; [F16N7/40](#) ; [F16N17/06](#) ; [F16N23/00](#) ; [F16N29/02](#) ; [F16N39/002](#)
- CNOA - [F16N2250/18](#) ; [F16N2280/02](#)
- PA - 718TH RES INST CN SHIPBUILDING IND CORP
- TI - Mud pulse generator oil feeding device and use **method**
- AB - The invention belongs to the technical field of **measurement** while **drilling** inclinometers, and particularly relates to an oil feeding device. The mud pulse generator oil feeding device comprises a vacuum oil cup, a vent filter, a circulating **pump**, an oil storage tank, a solenoid valve, a vacuum **pump** and a negative pressure assembly, and peripheral equipment is a pulse generator. One end of the vent filter is chained with the vacuum **pump**, the other end of the vent filter is chained with the vacuum oil cup, and oil is effectively prevented from being sucked into the vacuum **pump**. A liquid level sensor is installed inside the vacuum oil cup, and **controls** the amount of oil inside the vacuum oil cup. The negative pressure assembly is installed outside a compensation film of the pulse generator, and the upper portion of the negative pressure assembly is provided with a slow release valve and a connector

chained with the vacuum **pump**. A circuit **control** assembly **controls** the operation of the vacuum **pump** and the circulating **pump** and turning on and off of the solenoid valve, so that repeated oil feeding into the pulse generator is achieved. The mud pulse generator oil feeding device is easy to operate, can effectively remove air left inside a pulse cavity through repeated oil feeding, is high in oil feeding efficiency, prolongs the maintenance period of the pulse generator and saves well **drilling** and maintenance cost.

17/144 © EPODOC / EPO

PN - [CN106120717](#) A 20161116

PR - CN20161488748 20160628

AP - CN20161488748 20160628

DT - I

CT - || STSE (A)

[CN101435209](#) A 20090520 [Y] (UNIV SOUTHEAST [CN])

[Y] 1

* 说明书具体实施方式、图1-2 *;

[CN104652435](#) A 20150527 [Y] (JINAN RAIL TRANSIT GROUP CO LTD)

[Y] 1

* 说明书第[0049]段、图1 *;

[CN105019483](#) A 20151104 [A] (UNIV PLA SCIENCE & TECHNOLOGY)

[A] 1

* 全文 *;

[CN203603145U](#) U 20140521 [A] (QINGZHOU YONGGU FOUNDATION ENGINEERING CO LTD)

[A] 1

* 全文 *;

[JPS6095024](#) A 19850528 [A] (SHIYOUJI HATSUO, et al)

[A] 1

* 全文 *

CNOI - [E02D5/36](#) ; [E02D33/00](#)

PA - UNIVSOUTHEAST

TI - Under-pressure balance pile forming **method** for **control** modulus pile

AB - The invention discloses an under-pressure balance pile forming **method** for a **control** modulus pile. The **method** comprises the steps that (1) according to requirements of deformation **control**, the strength of a pile body and the like, concrete is prepared; (2) the front portion of a **drill** bit (1) is provided with a pressure sensor (11) and connected with an under-pressure balance **control** valve (10), and the lateral pressure of a soil layer is **measured** in real time in the **drilling** process; (3) in the **drilling** process, a **drill** rod (5) is filled with the concrete, the pressure of the concrete in the **drill** rod is **controlled** and adjusted in real time according to the lateral pressure value **measured** by the pressure sensor, and balance is kept; and (4) **drilling** is stopped after conducted to the design depth, the **drill** bit is lifted by 20 cm, the feeding pressure of a concrete **pump** (8) is increased, a valve for concrete output is opened automatically after pressurization, the **drill** bit is lifted uniformly while the concrete is pressed into a **drill** hole, lifting is conducted at the speed being 1.0-1.5 m/min until the ground elevation is reached, and pile forming is completed. Through the **method**, uniformity and pile forming quality of long pile forming of the **control** modulus pile are

ensured.

18/144 © EPODOC / EPO

- PN - [CN105840186](#) A 20160810
- PR - CN20161293712 20160505
- AP - CN20161293712 20160505
- DT - I
- CNOI - [E21B47/12](#)
- PA - CNPC BOHAI DRILLING ENG CO LTD
- TI - Downhole low-power-consumption **control method** and circuit based on pressure wave awakening
- AB - The invention provides a downhole low-power-consumption **control** circuit based on pressure wave awakening. The **control** circuit comprises a pressure **pump**, a pressure wave dormancy awakening system, a downhole **measuring control** system and a power supply management system; the pressure **pump** is used for generating a coded pressure pulse signal; the pressure wave dormancy awakening system receives the coded pressure pulse signal sent by the pressure **pump** and sends the signal subjected to data processing and decoding to the downhole **measuring control** system; the power supply management system is used for providing power for the pressure wave dormancy awakening system and the downhole **measuring control** system. According to the downhole low-power-consumption **control** circuit based on pressure wave awakening, the dormancy or awakening function of the downhole **measuring control** system is **controlled** by ground equipment, the power use efficiency of the downhole **measuring control** system is improved, the useless power loss is reduced, **measurement** and storage of useless data are greatly reduced, and the downhole working time of an intelligent **drilling** tool is prolonged.

19/144 © EPODOC / EPO

- PN - [GB2551141](#) A 20171213
- PR - GB20160009894 20160607
- AP - GB20160009894 20160607
- DT - *; Rep
- CT - || STSE (A)
[GB2473672](#) A 20110323 [] (STATOILHYDRO ASA [NO])
- CCI - [E21B21/08](#)
- CNOI - [E21B21/08](#)
- PA - STATOIL PETROLEUM AS [NO]
- TI - **Method** and system for managed pressure **drilling**
- AB - A **method** of **controlling** a choke valve in a managed pressure **drilling** (MPD) system comprising: a) performing **measurements** to determine a dataset comprising, for each of a plurality of time steps: a value of fluid flow rate through the **drill** bit, a value of fluid flow rate through the **control** choke, a value of fluid flow rate from the back pressure **pump** and a value of fluid pressure at the **control** chokes S2; b) executing an inversion algorithm on the PLC to obtain a value for the bulk modulus of a fluid within the annulus, the inversion algorithm taking the dataset as an input, wherein the

inversion algorithm accounts for a **measurement** bias in one or more of said **measurements** S3; c) updating one or more **control** parameters of the PLC based on the value for the bulk modulus S4; and d) manipulating the **control** choke using the PLC to attain a desired pressure in the system S5.

20/144 © EPODOC / EPO

PN - [RU2590918](#) C1 20160710
 PR - RU20150132603 20150805
 AP - RU20150132603 20150805
 DT - I
 PA - PUBLICHNOE AKTSIONERNOE OBSHSHESTVO TATNEFT IM V D SHASHINA [RU]
 TI - **METHOD** OF DEVELOPING WELL OIL RESERVOIR WITH HORIZONTAL TERMINATION
 AB - FIELD: oil and gas industry.SUBSTANCE: invention can be used in developing heterogenous terrigenous or carbonate producing beds with horizontal wells. In **method** of oil formation development with horizontal wells **drilling** or selection of already **drilled** horizontal well are carried out. Extracted at horizontal shaft intervals of productive formation, differing in properties. Tubing string is run in well with packer. Separated intervals of productive formation with packer. **Pump, control** devices in form of electric valves and pressure gauges-thermometers are lowered into well. Product is lifted to surface using **pump** via inter-tube space. Preliminary between intervals of productive formation there equipment for well local reinforcement is installed. Layout is lowered into well, consisting of packer, tubing string, casing valve equipment with lower electric valve for regulation of inflow via tubing string, pressure gauge-thermometer for **measurement** of pressure in tubing string in front of housing, upper electric valve for regulation of inflow from annular space in cavity of housing, pressure gauge-thermometer for **measurement** of annulus pressure, pressure gauge-thermometer for **measurement** of **pump** suction pressure and tubing string to wellhead. Development of well is performed in three stages with extraction of product via tubing string and annular space, only via tubing string and then only through annular space. Results of yields and water cut **measurements** are analysed. Interval of well is operated with lower water cut at shutdown interval with high water cut at initial high flow rate until bottom hole pressure and fluid level below optimum and during subsequent working flow rate with maintenance of stable bottom hole pressure. Well is operated to excess water cut of operated interval above water cut of second interval. Then both intervals are operated simultaneously and watering of both intervals is maintained at same level. EFFECT: improvement of oil resources withdrawal along horizontal shaft of production well.1 cl, 1 ex, 1 dwg

21/144 © EPODOC / EPO

PN - [CN105716576](#) A 20160629
 PR - CN20161186396 20160329
 AP - CN20161186396 20160329
 DT - I
 CT - || STSE (A)
[US5237384](#) A 19930817 [Y] (FUKUNAGA NOBUYUKI [JP], et al)
 [Y] 1-7

* 说明书第3-6栏及图1-3 *;
[TW3217048](#) B 19971201 [Y] (RET SER ENGINEERING AGENCY [TW])
 [Y] 1-7
 * 说明书1-16页及图1-5 *;
[CN1262378](#) A 20000809 [A] (SHANGHAI SCIENCE AND ENGINEERI [CN])
 [A] 1-7
 * 说明书全文 *;
[CN101067375](#) A 20071107 [A] (WUHAN INST OF ROCK & SOIL MECH [CN])
 [A] 1-7
 * 说明书全文 *;
[CN103003713](#) A 20130327 [A] (FARO TECH INC)
 [A] 1-7
 * 说明书全文 *;
[CN204495350U](#) U 20150722 [A] (CHINACOAL PINGSHUO GROUP CO LTD)
 [A] 1-7
 * 说明书全文 *;
[CN205785190U](#) U 20161207 [R] (BEIJING PETROSOUND TECH CO LTD, et al)
 [R] 1-5
 * 权利要求1-5 *

CNOI	- G01C7/06
PA	- BEIJING PETROSOUND GEOSERVICES CORP; XIE SHUANG; LIU BAOXU
TI	- Remote projection type laser profiler and use method thereof
AB	- The invention provides a remote projection type laser profiler and a use method thereof. The remote projection type laser profiler comprises a case, a laser transmitting part, a galvanometer system and a power supply part, wherein the laser transmitting part comprises a wireless Bluetooth module, a laser range finder, a control pump laser system, a laser transmitting antenna unit and a special laser power supply; the laser range finder is connected with the wireless Bluetooth module; the galvanometer system is connected with the laser transmitting antenna unit. The remote projection type laser profiler and the use method thereof can be used for projecting and guiding laser positioning on a tunnel face according to a drilling and blasting design drawing during tunnel and roadway drilling and blasting as well as laser positioning of a grid steel frame during preliminary bracing, so that a worker can mount the arch frame accurately according to design, a large amount of measurement and positioning time is saved, and the cycle operation time is remarkably shortened.

PN - [US2016138350](#) A1 20160519

PR - US201314649782
20131205; US201261733828P
20121205; WO20131B60672
20131205

AP - US201314649782 20131205

DT - **

CT - || R141 (A1)
[US2994373](#) A 19610801 [
] (LOSSON STONE HERBERT);
[US7350597](#) B2 20080401 [
] (REITSMA DONALD GORDON
[US], et al)

CCI - [E21B43/122](#) ; [E21B21/08](#)

CUI - [E21B21/16](#) ; [E21B21/062](#) ;
[G05B11/42](#)

CUA - [E21B2021/005](#) ; [E21B2021/006](#)

PA - SCHLUMBERGER TECHNOLOGY
CORP [US]

TI - **CONTROL OF MANAGED
PRESSURE DRILLING**

AB - **Method** for **controlling**
bottomhole pressure in a
borehole during managed
pressure **drilling**. In the **drilling**
procedure fluid is circulated
down a **drillstring** and to surface
through an annulus between
the **drillstring** and an inner-wall
of the borehole. A
compressor/ **pump** is used to
inject gas into the
returning **drilling** fluid at a gas
injection point. The **method**
comprises receiving a target
bottomhole pressure;
determining actual bottomhole
pressure during the procedure;
and adjusting a variable as
directed by a
feedback **controller**, which
operates to reduce the difference
between the target pressure and
the **measured** pressure. The
manipulated variable may be
one or any combination of: (1)
pressure of **drilling** fluid at the

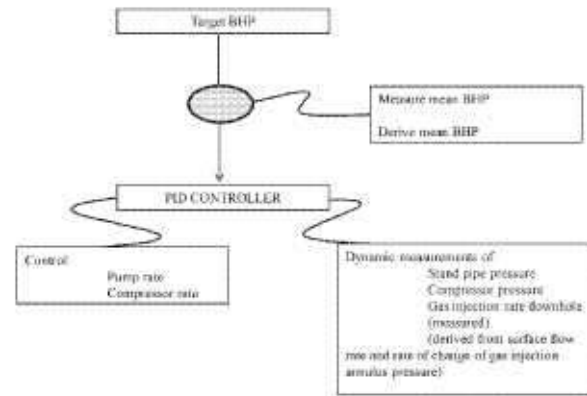


Fig. 3

entry of the fluid into
the **drillstring**, (2) the flow rate
of **drilling** fluid out of
the **drillstring** into the annulus,
(3) pressure of the gas exiting
from the compressor, and (4) the
injection rate of the gas.

23/144 © EPODOC / EPO

- PN - [CN105525905](#) A 20160427
- PR - CN20141507798 20140928
- AP - CN20141507798 20140928
- DT - I
- PA - XCMG CONSTRUCTION MACHINERY CO
- TI - Power self-adaptive **control** system of rotary **drilling** rig and power self-adaptive **control method** of rotary **drilling** rig
- AB - The invention discloses a power self-adaptive **control** system of a rotary **drilling** rig. The power self-adaptive **control** system comprises a pressure sensor and a **controller**, wherein the pressure sensor is used for **measuring** the outlet pressure of a variable **pump** and transmitting the outlet pressure to the **controller**; and the **controller** is used for obtaining the outlet pressure and the target rotating speed of an engine, finding the **pump control** current value according to the corresponding relationship of the target rotating speed of the engine, the outlet pressure and the **pump control** current value, and outputting the **pump control** current to the variable **pump** so as to regulate the absorption power of the variable **pump**. Therefore, the power self-adaptive **control** system realizes the following of the variable **pump** absorption power with the engine output power, and the oil consumption is reduced.

24/144 © EPODOC / EPO

- PN - [CN105484266](#) A 20160413
- PNFP - CN105484266B B 20170929
- PR - CN2016105954 20160107
- AP - CN2016105954 20160107
- DT - I
- CT - || STSE (A)
[US4079625](#) A 19780321 [A] (MANN ADRIAAN B)
[A] 1-10
* 全文 *;
[CN201074320Y](#) Y 20080618 [A] (JIMIN MA [CN])
[A] 1-10
* 全文 *;
[CN102002932](#) A 20110406 [A] (SHANGHAI URBAN CONSTR DESIGN)
[A] 1-10
* 全文 *;
[CN201896321U](#) U 20110713 [Y] (SHANGHAI MUNICIPAL ELEC POWER, et al)
[Y] 3

* 说明书第[0033]段及附图1 *;

[CN104480926](#) A 20150401 [A] (TIANJIN VOCATIONAL INST)

[A] 1-10

* 全文 *;

[CN204690758U](#) U 20151007 [A] (ZHEJIANG ZHONGTAI MUNICIPAL GARDEN ENGINEERING CO LTD)

[A] 1-10

* 全文 *;

[CN205296167U](#) U 20160608 [R] (JIANGSU JIANYUAN CONSTRUCTION CO LTD)

[R] 1-9

* 权利要求1-9 *;

[CN104234023](#) A 20141224 [Y] (UNIV SOUTHEAST)

[Y] 3

* 说明书第[0007]-[0008]段及附图1 *

CTNP - || STSE (A)

[Y] - 陈希哲,《土力学地基基础》, (19821231)

[Y] 3

* 第258页最后3段, 第262页图6.12 *

CNOI - (A)

[E02D1/022](#) ; [E02D15/04](#) ; [E21B17/042](#) ; [E21B17/18](#)

CNOA - (A)

[E02D2250/003](#)

PA - (A)

JIANGSU JIANYUAN CONSTRUCTION CO LTD

TI - (A)

Multifunctional informationalized grouting device and construction **method** thereof

AB - (A)

The invention discloses a multifunctional informationalized grouting device and a construction **method** thereof. The multifunctional informationalized grouting device comprises a pulp supply system and a grouting system. The pulp supply system and the grouting system are connected through a rubber pipe. The pulp supply system mainly comprises a grouting **pump**, a stirring barrel, a **control** cabinet, an operation table and a power device and further comprises a **measuring** and **controlling** device.

The **measuring** and **controlling** device is connected with the grouting system through a cable. The grouting system comprises a jack, a base, ground anchors, a fixing plate, a **drill** rod and a static touch probe. A side friction Ps curve that a **drill** bit passes a soil body is **measured** according to a **measuring** element arranged in the static touch probe. According to the **measured** side friction Ps curve and the comparison with a static touch sounding curve referenced during design, the soil layer difference situation is judged, and according to the soil layer difference situation, whether grouting is needed or not and the grouting amount are judged. According to the soil property difference, the grouting amount is accurately **measured** in real time, the foundation strengthening effect is improved, and the foundation pit water leakage accident is rapidly treated.

25/144 © EPODOC / EPO

PN - [CN105480378](#) A 20160413

PR - CN20151816907 20151123

AP - CN20151816907 20151123

DT - I

CT - || STSE (A)
[CN1144290](#) A 19970305 [A] (MCDERMOTT INT INC [US])
 [A] 1-2
 * 全文 *;
[CN101544270](#) A 20090930 [A] (ZHIRONG WU)
 [A] 1-2
 * 全文 *;
[CN102167141](#) A 20110831 [A] (CHINA SHIP DESIGN & RES CT CO LTD)
 [A] 1-2
 * 全文 *;
[CN204527563U](#) U 20150805 [A] (CIMC OFFSHORE ENGINEERING INST CO LTD, et al)
 [A] 1-2
 * 全文 *

CTNP - || STSE (A)
 [X] - 王欢, "基于海洋平台钻井设备安装及完工调试的研究", 《科技信息》,
 [X] 1-2
 * 第112页 *

CNOI - [B63B9/00](#) ; [B63B35/4413](#)

PA - CHINA OILFIELD SERVICES LTD; CHINA NAT OFFSHORE OIL CORP

TI - Equipment maintenance **method** during **drilling** platform building process

AB - The invention discloses an equipment maintenance **method** during a **drilling** platform building process. The equipment maintenance **method** during the **drilling** platform building process comprises the following steps of during the **drilling** platform building process, performing protection, cleaning, surface painting, waxing and plastic packaging of anti-corrosion protective film on mechanical equipment; performing sand blasting, chemical washing and grease fabric winding on pipelines to protect joints and plug openings; flushing and turning bearing lubricating points of a diesel engine; performing driving protection on a **pump** shaft of the **pump**; filling gases into a pressure container and a hydraulic energy accumulator to protect the pressure container and the hydraulic energy accumulator; spraying waxes on the surface of a stainless steel **control** box to protect the stainless steel **control** box; placing drying agents and gas-phase sustained release anti-corrosion transmitters in an electric appliance cabinet and a junction box; electrifying and heating space heater equipment; periodically performing insulation **measurement** on a motor winding; coating acid-free vaseline on a sealing rubber strip of the electric appliance cabinet to protect the sealing rubber strip; plugging a spare cable hole in the electric appliance cabinet; and protecting a mechanical instrument by using a wood box. Therefore, each part for building the **drilling** platform is prevented from being damaged before being mounted.

26/144 © EPODOC / EPO

PN - [CN105332688](#) A 20160217

PR - CN20151703756 20151027

AP - CN20151703756 20151027

DT - I

CT - || STSE (A)
[CN102536192](#) A 20120704 [A] (CHINA NAT OFFSHORE OIL CORP, et al)
 [A] 1-2
 * 全文 *;
[CN103277048](#) A 20130904 [A] (UNIV YANGTZE)
 [A] 1-2
 * 全文 *;
[CN104141482](#) A 20141112 [A] (CNPC BOHAI DRILLING ENG CO LTD)
 [A] 1-2
 * 全文 *;
[US2004222023](#) A1 20041111 [A] (HACI MARC [US], et al)
 [A] 1-2
 * 全文 *;
[WO2004101944](#) A2 20041125 [A] (NOBLE DRILLING SERVICES INC [US], et al)
 [A] 1-2
 * 全文 *;
[WO2004104358](#) A2 20041202 [X] (NOBLE DRILLING SERVICES INC [US], et al)
 [X] 1-2
 * 说明书第0024-0055段, 图1-4 *;
[CN201474688U](#) U 20100519 [A] (BAOJI PETROLEUM MACH CO LTD)
 [A] 1-2
 * 全文 *

PA - CNPC BOHAI DRILLING ENG CO LTD

TI - Ground **control method** of directional **drilling** adopting mud motor

AB - The invention discloses a ground **control method** of directional **drilling** adopting a mud motor. The ground **control method** includes: using signals collected by four sensors which are underground and overground as input and **control** variables, wherein the sensors include a **measurement** while **drilling** (MWD) tool face angle sensor, a top drive **drilling** rod torque sensor, a **pump** pressure or standpipe pressure sensor and a top drive spindle **drilling** rod direction or angle displacement sensor; through feedback information displayed overground, adopting a computer system and a user intervention mode to monitor directional **drilling** process overground in real time; executing a **drilling** rod rotating program, and **controlling** a **drilling** rod rotating **controller** to **control** a top drive spindle motor to act. A ground assisting system **controlling** directional **drilling** by a computer has obvious effect, the ground **control method** is an optimal choice adopting the mud motor for directional **drilling** currently, except for a rotating guide system, and **drilling** efficiency of slide **drilling** can be improved remarkably by using the ground **control method**.

27/144 © EPODOC / EPO

PN - [WO2016019824](#) A1 20160211

PR - CN20141379604 20140804

AP - WO2015CN85648 20150731

DT - **

CT - |CN| ISR (A1)

[CN104132761](#) A 20141105

[PX] (UNIV CHINA MINING)

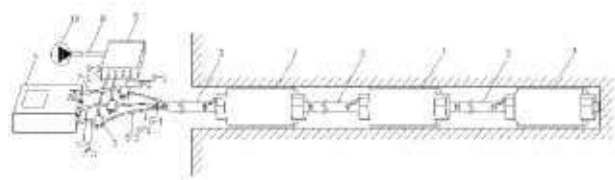


图 1 / Fig. 1

[PX] 1-2
 * , claims 1-2, and description,
 paragraphs 0007-0014 *;
[CN103512693](#) A 20140115
 [Y] (UNIV CHINA MINING)
 [Y] 1
 * description, paragraphs 0006-
 0038 *;
[CN101514926](#) A 20090826
 [Y] (UNIV CHINA MINING [CN])
 [Y] 1
 * , description, pages 2-4 *;
[CN102230375](#) A 20111102
 [A] (UNIV CHINA MINING)
 [A] 1-2
 * , the whole document *;
[CN202485845U](#) U 20121010
 [A] (TIANDI SCIENCE &
 TECHNOLOGY CO)
 [A] 1-2
 * . the whole document *;
[JP2004012183](#) A 20040115
 [A] (HONDA MOTOR CO LTD)
 [A] 1-2
 * , the whole document *;
[US2010050762](#) A1 20100304
 [A] (NOLD III RAYMOND V [US], et
 al)
 [A] 1-2
 * , the whole document *

CCI - [E21C39/00](#) ; [E21F17/18](#) ;
[G01L5/0004](#)

PA - WANG ENYUAN [CN]

TI - MULTIPOINT COAL AND ROCK
 MASS STRESS REAL-TIME
 MONITORING DEVICE
 AND **METHOD**

AB - A multipoint coal and rock mass
 stress real-time monitoring
 device. The device is composed
 of a plurality of capsule
 pressure sensors (1), connection
 rods (2), three-way valves (3), a
 multichannel monitor (4), a
 multichannel **control** valve (5),
 first high-pressure oil pipes (6),
 second high-pressure oil pipes
 (7), third high-pressure oil pipes

(8), a four high-pressure oil pipe (9), a high-pressure oil **pump** (10) and monitoring substations (11). The present invention also relates to a multipoint coal and rock mass stress real-time monitoring **method**. Oil is injected into each capsule pressure sensor (1) that is arranged in a **drilled** hole through the multi-channel **control** valve (5), so that oil pressure inside each capsule pressure sensor (1) reaches the preset pressure, and the capsule pressure sensors and the coal and rock mass are well coupled; monitoring signals are synchronously collected, converted, stored and displayed by the multichannel monitor (4) or are transferred to a remote monitoring center through the monitoring substations (11). The device and **method** can be used for coal and rock dynamic disaster monitoring early warning such as coal and rock mass stress monitoring, mine pressure analysis, rock burst and coal and gas rush, and the stress and changes of the stress of multiple **measuring** points can be **measured** at the same time in the multiple **drilled** holes of the coal and rock mass.

28/144 © EPODOC / EPO

PN - [CN105317432](#) A 20160210

PR - CN20141378168 20140801

AP - CN20141378168 20140801

DT - I

CT - || STSE (A)

[US2003139916](#) A1 20030724 [A] (CHOE JONGGEUN [KR], et al)
[A] 1-11

* 全文 *;

[CN201184130Y](#) Y 20090121 [A] (PETROCHINA CO LTD [CN])
[A] 1-11

* 全文 *;

[CN102562040](#) A 20120711 [A] (UNIV SOUTHWEST PETROLEUM)

[A] 1-11

* 全文 *

- CTNP - || STSE (A)
[X] - 舒刚等, "重力置换式漏喷同存机理研究", 《石油钻探技术》
[X] 1-11
* 第6-11页 *
- PA - CHINA PETROLEUM & CHEMICAL; SINOPEC RES INST PETROLEUM; UNIV SOUTHWEST PETROLEUM
- TI - Test **method** for research on overflow and leakage coexistence occurrence mechanism
- AB - The invention discloses a test **method** for a research on an overflow and leakage coexistence occurrence mechanism. The test **method** comprises the following steps: filling a simulated formation with a certain amount of simulated formation fluid, and filling a simulated shaft with a certain amount of **drilling** fluid; based on test conditions, **controlling** states of the simulated formation fluid and the **drilling** fluid by turning on/off a first pressure limiting device, a second pressure limiting device, a first **pump**, a second **pump**, an oil inlet valve, an oil drain valve, a fluid inlet valve and a fluid drain valve to simulate states of formation fluid and **drilling** fluid in an actual **drilling** process; based on the display of simulated formation fractures, **measuring** a leakage amount of the **drilling** fluid at the oil drain valve at an interval of predetermined time to analyze the overflow and leakage coexistence occurrence mechanism. By setting fixed-volume and fixed-pressure test conditions and changing test parameters in a test process to simulate different states of a formation fluid end and a **drilling** end, the influence of external factors on test results is effectively reduced, the operation is simple, the maintenance is facilitated and a very good effect on the research of fractured formations is obtained.

29/144 © EPODOC / EPO

PN - [MX2015007067](#) A 20150928

PR - US201261733828P
20121205; WO2013IB60672
20131205

AP - MX20150007067 20131205

DT - I

CCI - [E21B43/122](#) ; [E21B21/08](#)

CUI - [E21B21/16](#) ; [E21B21/062](#) ;
[G05B11/42](#)

CUA - [E21B2021/005](#) ; [E21B2021/006](#)

PA - SCHLUMBERGER TECHNOLOGY BV
[NL]

TI - **CONTROL OF MANAGED
PRESSURE DRILLING.**

AB - **Method** for **controlling**
bottomhole pressure in a
borehole during managed

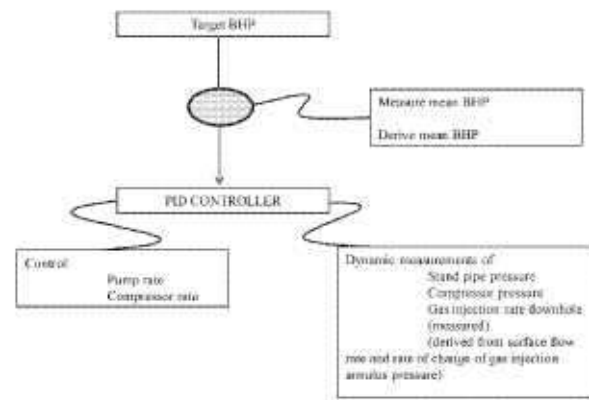


Fig. 3

pressure **drilling**. In the **drilling** procedure fluid is circulated down a **drillstring** and to surface through an annulus between the **drillstring** and an inner-wall of the borehole. A compressor/ **pump** is used to inject gas into the returning **drilling** fluid at a gas injection point. The **method** comprises receiving a target bottomhole pressure; determining actual bottomhole pressure during the procedure; and adjusting a variable as directed by a feedback **controller**, which operates to reduce the difference between the target pressure and the **measured** pressure. The manipulated variable may be one or any combination of: (1) pressure of **drilling** fluid at the entry of the fluid into the **drillstring**, (2) the flow rate of **drilling** fluid out of the **drillstring** into the annulus, (3) pressure of the gas exiting from the compressor, and (4) the injection rate of the gas.

30/144 © EPODOC / EPO .

PN - [CN105113987](#) A 20151202

PNFP - CN105113987B B 20171128

PR - CN20151395955 20150708

AP - CN20151395955 20150708

DT - I

CT - || STSE (A)

[CN101725342](#) A 20100609 [A] (XI AN INST OF COAL SCIENCE RES)
[A] 1-9
* 全文 *;

[CN102606145](#) A 20120725 [YX] (XI AN RES INST OF CHINA COAL TECH & ENG GROUP CORP, et al)
[Y] 1-4
* 说明书第29-31段及图1-3 *
[X] 5-9;

[CN102777172](#) A 20121114 [A] (SONDEX WIRELINE LTD)
[A] 1-9
* 全文 *;

[CN103233722](#) A 20130807 [A] (XI AN RES INST OF CHINA COAL TECH & ENG GROUP CORP)
 [A] 1-9
 * 全文 *;
[CN203271600U](#) U 20131106 [Y] (HUAINAN HONGCHANG SCIENCE AND TECHNOLOGY CO LTD)
 [Y] 1-4
 * 说明书第5-10及图1 *

- PA - (A)
 XI AN RES INST OF CHINA COAL TECH & ENG GROUP CORP
- TI - (A)
 Soft-hard interbedding coal seam bedding **measurement** while **drilling** (MWD) orientation **drilling** equipment and construction **method** thereof
- AB - (A)
 Soft-hard interbedding coal seam bedding **measurement** while **drilling** (MWD) orientation **drilling** equipment and a construction **method** thereof are provided; the equipment comprises an orientation **drill** bit, a hole bottom motor, a nonmagnetic variable wire joint, a nonmagnetic **drilling** rod, a nonmagnetic apparatus positioning joint, a nonmagnetic apparatus outer pipe, a nonmagnetic water pulse generator, a variable wire joint, a three-edge notch **drilling** rod, a non-cable water feeder, a flow switch, a **measurement** and **control** pipe nipple, a cell cylinder, a driving pipe nipple, a high pressure water pipe, a three-way joint, a pressure sensor, a communication cable, a data processor and a slurry **pump**; a middle-hardness coal seam hole segment combines slide orientation **drilling** with composite **drilling**; a soft coal seam hole segment uses composite **drilling**; a pressure water pulse MWD device can do **measurement** in **drilling**; the hole bottom motor can regulate a locus; the three-edge notch **drilling** rod can reinforce slag removal, thus realizing soft-hard interbedding coal seam bedding **measurement** while **drilling** (MWD) orientation **drilling**, and improving soft-hard interbedding coal seam **drilling** depth and locus regulation and **control** precision.

31/144 © EPODOC / EPO

- PN - [CN105064979](#) A 20151118
- PNFP - CN105064979B B 20170804
- PR - CN20151408236 20150713
- AP - CN20151408236 20150713
- DT - I
- CT - || STSE (A)
[US2003168257](#) A1 20030911 [A] (ALDRED WALTER D [GB], et al)
 [A] 1-3
 * 全文 *;
[CN102536192](#) A 20120704 [A] (CHINA NAT OFFSHORE OIL CORP, et al)
 [A] 1-3
 * 全文 *;
[CN202544834U](#) U 20121121 [A] (CHINA NAT OFFSHORE OIL CORP, et al)
 [A] 1-3
 * 全文 *;

[WO2013002782](#) A1 20130103 [A] (HALLIBURTON ENERGY SERV INC [US], et al)

[A] 1-3

* 全文 *;

[CN104632184](#) A 20150520 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357349U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357350U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357415U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357418U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357422U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *;

[CN204357423U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *

CTNP

- || STSE (A)

[A] - 武广瑗等, "工具面动态控制钻井系统的室内研究", 《石油机械》

[A] 1-3

* 全文 *

PA

- (A)

CHINA NAT OFFSHORE OIL CORP; CNOOC RES INST

TI

- (A)

Turntable type **drilling** machine system based on tool surface dynamic **control** of underground **drilling** tool and **drilling method** based on tool surface dynamic **control** of underground **drilling** tool

AB

- (A)

The invention relates to a turntable type **drilling** machine system based on tool surface dynamic **control** of an underground **drilling** tool and a **drilling method** based on the tool surface dynamic **control** of the underground **drilling** tool. The **drilling** machine system comprises a dynamic **control** system and a **drilling** system, wherein the dynamic **control** system comprises a dynamic **measuring** sub system, a feedback **control** sub system, a user interaction sub system and an execution sub system; a user inputs **drilling** tool information, **drilling** fluid information, stratum information and **control** strategies through the user interaction sub system; the feedback **control** sub system builds a many-body dynamics model of the **drilling** system according to the received **drilling** tool information, **drilling** fluid information and stratum information; the dynamic **measuring** sub system **measures** various kinds of information of the **drilling** system in the **drilling** process, and transmits the information to the feedback **control** sub system; the feedback **control** sub system judges whether the tool surface of the underground **drilling**

tool exceeds a set threshold or not, calculates the required rotating angle of a turntable, the position of a large hook and the **pump** speed of a slurry **pump** through multi-body dynamics simulation, and drives the turntable, the large hook and the slurry **pump** to act; the **drilling** is continuously carried out so that the tool surface of the underground **drilling** tool returns to a design position, and the dynamic regulation **control** on the tool surface of the underground **drill** tool is completed.

32/144 © EPODOC / EPO

- PN - [KR101564220B](#) B1 20151029
- PR - KR20140065931 20140530
- AP - KR20140086660 20140710
- DT - I
- PA - SAM YANG ECO ENERGY CO LTD [KR]
- TI - OPEN TYPE GEOTHERMAL HEAT EXCHANGING APPARATUS AND FLOW RATE **CONTROLLING METHOD** OF COOLING AND HEATING WATER FOR ROOM USING THIS
- AB - The present invention relates to an open type ground heat exchanging apparatus comprising: a heat **pump** for supplying cooling and heating water to the inside of a building; a deep well **pump** arranged in a tubular well **drilled** in the ground for pumping up water in the tubular well; a heat exchanger for exchanging the heat of water discharged from the heat **pump** and returned with water pumped up to the deep well **pump** and returned to the tubular well; a temperature sensor installed in the outlet of the heat exchanger for discharging water pumped up to the deep well **pump** and returned to the tubular well for **measuring** a temperature in real-time; and an inverter electrically connected to the deep well **pump** and the temperature sensor, for varying a frequency according to a flow rate and a water temperature in an outlet of the heat exchanger capable of maintaining the optimal state of a cooling and heating coefficient of performance (COP) of the inside, and **controlling** the flow rate of the deep well **pump**. The present invention has an effect of ensuring stability of a system through flow rate **control** of a deep well **pump** optimized for heating and cooling efficiency. Moreover, the present invention relates to a **method** for **controlling** a flow rate of cooling and heating water using the same.

33/144 © EPODOC / EPO

- PN - [IN3970CHENP2014](#) A 20151023
- PR - WO2011JP75038 20111031
- AP - IN2014CHENP3970 20140527
- DT - I
- CCI - [B23Q11/1015](#) ; [B23Q11/1038](#) ; [F04B49/065](#) ; [F04C14/08](#)
- CQI - [B23Q11/126](#)
- CCA - [F04C2/10](#) ; [F04B2203/0209](#) ; [F04B2205/05](#) ; [F04C2270/18](#)
- PA - NIPPON OIL PUMP CO LTD [JP]
- TI - COOLANT SUPPLY DEVICE AND SUPPLY **METHOD**
- AB - The purpose of the invention is to provide a coolant supply device and supply **method** that can appropriately **control** the spraying of coolant using a single parameter. To that end the invention is provided with a **pump** (101) that supplies coolant to a tool (D)

a **measurement** device (22) that **measures** the discharge pressure of the **pump** (101) and a **control** device (50). The **control** device (50) has a function for determining from the rotation rate of the **pump** (101) the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.

34/144 © EPODOC / EPO

PN - [CN105003245](#) A 20151028

PNFP - CN105003245B B 20171003

PR - CN20151409602 20150713

AP - CN20151409602 20150713

DT - I

CT - || STSE (A)

[US2003168257](#) A1 20030911 [A] (ALDRED WALTER D [GB], et al)

[A] 1-3

* 全文 *;

[CN102063541](#) A 20110518 [A] (CHINA NAT OFFSHORE OIL CORP, et al)

[A] 1-3

* 全文 *;

[CN102536192](#) A 20120704 [A] (CHINA NAT OFFSHORE OIL CORP, et al)

[A] 1-3

* 全文 *;

[WO2013002782](#) A1 20130103 [A] (HALLIBURTON ENERGY SERV INC [US], et al)

[A] 1-3

* 全文 *;

[CN103277048](#) A 20130904 [A] (UNIV YANGTZE)

[A] 1-3

* 全文 *;

[CN104141482](#) A 20141112 [A] (CNPC BOHAI DRILLING ENG CO LTD)

[A] 1-3

* 全文 *;

[CN104632184](#) A 20150520 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1-3

* 全文 *

CTNP - || STSE (A)

[A] - 武广瑗 等, "工具面动态控制钻井系统的室内研究", 《石油机械》

[A] 1-3

* 全文 *

PA - (A)

CHINA NAT OFFSHORE OIL CORP; CNOOC RES INST

TI - (A)

Dynamic **control** system and dynamic **control method** for underground directional power **drill** tool surface

AB - (A)

The invention relates to a dynamic **control** system and a dynamic **control method** for an underground directional power **drill** tool surface. The dynamic **control** system comprises a dynamic **measurement** sub system, a feedback **control** sub system, a user

interaction sub system and an execution sub system, wherein a user inputs **drill** tool information, **drilling** fluid information, stratum information and **control** strategies through the user interaction sub system; the feedback **control** sub system builds a many-body dynamics model of a **drilling** system according to the received **drilling** tool information, the **drilling** fluid information and the stratum information; the dynamic **measurement** sub system **measures** various kinds of information of the **drilling** system in the **drilling** process and transmits the information to the feedback **control** sub system; the feedback **control** sub system judges whether the **drill** tool surface exceeds a set threshold or not; the rotating angle required by a top drive/turntable, the position of a traveling block/large hook and the **pump** speed of a slurry **pump** are calculated through many-body dynamics simulation; the top drive/turntable, the traveling block/large hook and the slurry **pump** are driven to act; the **drilling** is continuously carried out so that the underground **drill** tool surface returns to the design position; and the dynamic regulation **control** on the underground **drill** tool surface is completed.

35/144 © EPODOC / EPO

PN - [CN105003203](#) A 20151028

PNFP - CN105003203B B 20170315

PR - CN20151409604 20150713

AP - CN20151409604 20150713

DT - I

CT - || STSE (A)

[US2003168257](#) A1 20030911 [A] (ALDRED WALTER D [GB], et al)

[A] 1—3

* 全文 *;

[CN102063541](#) A 20110518 [A] (CHINA NAT OFFSHORE OIL CORP, et al)

[A] 1—3

* 全文 *;

[CN102493766](#) A 20120613 [A] (CNPC DRILLING RES INST)

[A] 1—3

* 全文 *;

[CN102536192](#) A 20120704 [A] (CHINA NAT OFFSHORE OIL CORP, et al)

[A] 1—3

* 全文 *;

[WO2013002782](#) A1 20130103 [A] (HALLIBURTON ENERGY SERV INC [US], et al)

[A] 1—3

* 全文 *;

[CN102900365](#) A 20130130 [A] (UNIV SOUTHEAST)

[A] 1—3

* 全文 *;

[CN103277048](#) A 20130904 [A] (UNIV YANGTZE)

[A] 1—3

* 全文 *;

[CN104141482](#) A 20141112 [A] (CNPC BOHAI DRILLING ENG CO LTD)

[A] 1—3

* 全文 *;

[CN204126628U](#) U 20150128 [A] (BEIJING HUANDING ENERGY SERVICES)

[A] 1—3

* 全文 *;

[CN204357422U](#) U 20150527 [A] (SICHUAN HONGHUA ELECTRIC CO LTD)

[A] 1—3

* 全文 *

PA

- (A)

CHINA NAT OFFSHORE OIL CORP; CNOOC RES INST

TI

- (A)

Top drive type **drilling** machine system based on dynamic **control** of tool surface of underground **drilling** tool and well **drilling method**

AB

- (A)

The invention relates to a top drive type **drilling** machine system based on dynamic **control** of a tool surface of an underground **drilling** tool and a well **drilling method**. The **drilling** machine system comprises a dynamic **control** system and a well **drilling** system, wherein the dynamic **control** system comprises a dynamic **measuring** subsystem, a feedback **control** subsystem, a user interaction subsystem and an execution subsystem; a user inputs **drilling** tool information, well **drilling** fluid information, stratum information and a **control** strategy through the user interaction subsystem; a many-body dynamics model of a well **drilling** system is established by the feedback **control** subsystem according to the received **drilling** tool information, well **drilling** fluid information and stratum information; various information of the well **drilling** system in a well **drilling** process is **measured** by the dynamic **measuring** subsystem and is transferred to the feedback **control** subsystem; and the feedback **control** subsystem judges whether the tool surface of the underground **drilling** tool exceeds a set threshold value or not, calculates the required rotating angle of a top drive, the position of a traveling block and the pumping speed of a slurry **pump** in a many-body dynamics simulating manner, and drives the top drive, the traveling block and the slurry **pump** to run. The top drive type **drilling** machine system continues **drilling** until the tool surface of the underground **drilling** tool returns to a design position, and dynamic adjustment **control** on the tool surface of the underground **drilling** tool is finished.

36/144 © EPODOC / EPO

PN

- [CN104847287](#) A 20150819

PNFP

- CN104847287B B 20180302

PR

- CN2014157517 20140219

AP

- CN2014157517 20140219

DT

- I

CT

- || STSE (A)

[RU2301319](#) C2 20070620 [A] (SHELL INT RESEARCH [NL])

[A] 1-5

* 全文 *;

[CN101929331](#) A 20101229 [Y] (KELAMAYI WELL DRILLING TECH INST OF CNPC WESTERN DRILLING ENGINEERING CO LTD)

[Y] 1-5

* 说明书具体实施方式, 附图1 *;

[CN202493232U](#) U 20121017 [Y] (CNPC GROUP WESTERN DRILLING ENG CO LTD)

[Y] 1-5
 * 说明书具体实施方式，附图1 *;
[CN202755927U](#) U 20130227 [A] (CHINA NAT PETROLEUM CORP, et al)
 [A] 1-5
 * 全文 *;
[CN103061698](#) A 20130424 [A] (CHINA PETROLEUM & CHEMICAL, et al)
 [A] 1-5
 * 全文 *;
[CN203285370U](#) U 20131113 [A] (CHINA NAT PETROLEUM CORP, et al)
 [A] 1-5
 * 全文 *;
[CN203756087U](#) U 20140806 [R] (CHINA PETROCHEMICAL CORP, et al)
 [R] 1-2
 * 权利要求1-2 *

CNOI - (A)
[E21B21/08](#)

PA - (A)
 CHINA PETROCHEMICAL CORP; DRILLING TECH RES INST XIN

TI - (A)
 Balanced pressure **drilling** pressure **control** device and **method**

AB - (A)
 The invention provides a balanced pressure **drilling** pressure **control** device and a **method** for conducting well **drilling** pressure **control** through the balanced pressure **drilling** pressure **control** device. In the balanced pressure **drilling** pressure **control** device, a wellhead rotary blowout preventer is installed at the upper end of a wellhead blowout preventer set, and the wellhead rotary blowout preventer and a pressure **control** throttling pipe manifold are connected through a high-pressure pipeline, and a kill manifold is connected with a well **drilling** fluid filling system through a wellhead four-way part. A filling **pump**, a gate valve and a check valve are installed on the well **drilling** fluid filling system in sequence at the outlet end of the kill manifold, and the filling **pump** is connected with a well **drilling** fluid circulating tank through a pipeline. The pressure **control** throttling pipe manifold is connected with a liquid-gas separator through a pipeline, and then is connected to the well **drilling** fluid circulating tank, so that the well **drilling** fluid cycle is formed. Compared with an existing pressure **control** well **drilling** **method**, the **method** has the advantages that facilities and devices such as a return pressure **pump** and a flowmeter are not arranged on the ground, no pressure **measuring** transmission devices exist in a well, and matching is easy; and due to the fact that **control** is conducted according to the stability of the amount of fluid in the well **drilling** fluid circulating tank in **drilling** operation, and the size of a **drilling** stem in tripping operation, and **measurement**, metering and operation are quite easy and convenient.

37/144 © EPODOC / EPO

PN - [CN104846800](#) A 20150819

PR - CN20151128967 20150324

AP - CN20151128967 20150324

DT - I

CT

- || STSE (A)

CN1955380 A 20070502 [X] (RAILWAY NO 3 PROSPECTION DESIG [CN])

[X] 1-9

* 说明书第5页第2-11行、第6页第9-10行、第10页第9-22行、第11页第14-30行，附图1*；

CN102031771 A 20110427 [A] (3RD RAILWAY SURVEY & DES INST)

[A] 1-10

* 全文 *;

JP2014218824 A 20141120 [A] (TAISEI CORP)

[A] 1-10

* 全文 *

CNOI

- E02D1/00

PA

- BEIJING MUNICIPAL ENGINEERING RES INST

TI

- Deep-stratum in-situ penetrometer, penetration sounding trolley comprising the same and using **method** thereof

AB

- The invention discloses a deep-stratum in-situ penetrometer which can carry out continuous, quick and accurate **measuring** on a hard, thick and deep stratum. The penetrometer comprises a diesel engine, a hydraulic **pump** station, a water **pump**, a water tank, an operation **control** disc, a **drilling** rig, a power head, sensors, a **drill** bit **drill** rod, a moving conveying frame, a data collecting and storing system and a data processing system. The diesel engine and the hydraulic **pump** station are connected with the power head. The water **pump** and the water tank are used for cooling the **drill** bit **drill** rod. The operation **control** disc is used for **controlling** the depth of a **drill** bit **drilled** into a stratum. The sensors comprise a torque sensor, a propulsive force sensor and a displacement sensor. The sensors transmit torque data, propulsive force data and **drilling** speed data to the data collecting and storing system. The data processing system receive the data of the data collecting and storing system for processing. A penetration sounding trolley and a using **method** of the deep-stratum in-situ penetrometer and the penetration sounding trolley are further provided.

38/144 © EPODOC / EPO

PN - [CA2896287](#) A1 20131003

PR - US201213368997
20120821; WO2013US25323
20130208

AP - CA20132896287 20130208

DT - 1

CCI - [E21B47/06](#) ; [E21B47/18](#) ;
[E21B21/10](#)

PA - MACDONALD ROBERT [US];
VECSERI GABOR [US]; JENNINGS
BENJAMIN [US]

TI - **CONTROLLED** FULL FLOW
PRESSURE PULSER
FOR **MEASUREMENT**
WHILE **DRILLING** (MWD) DEVICE

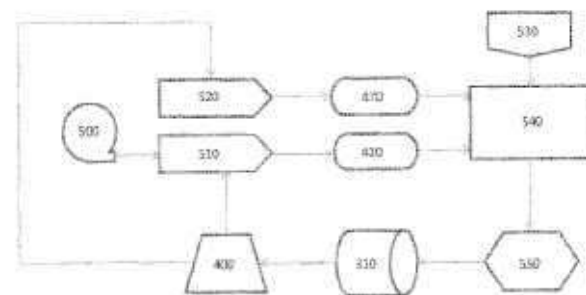


FIG. 5

AB

- An apparatus, **method**, and system is described for generating pressure pulses in a **drilling** fluid utilizing a flow throttling device longitudinally and axially positioned within the center of a main valve actuator assembly which includes a **controllable** pulser that operates sequentially within a downhole assembly within a **drill** string of a **drill** pipe, that enhances operational efficiency in the removal of hydrocarbon deposits, the system includes a **drilling** fluid, fluid flow, and a fluid **drilling pump** which when combined creates fluid flow into a bore pipe annulus within said downhole assembly such that a base line bore pipe pressure is created wherein the bore pipe pressure is sensed via a sensor sensing a pressure increase when said the **pump** is operating such that the sensor sends information to a Digital Signal Processor (DSP) that interprets the information and said the DSP also receives information from an annulus pressure sensor that senses **drilling** fluid (mud) pressure as it returns to the **pump** in an annular outside portion of the **drill** pipe such said the DSP recognizes pressure variation input obtained from the annulus pressure sensor and the bore pipe pressure sensor and detects pressure variation exhibited between pulsing pressures and a **pump** base line pressure thereby providing signals that are sent as data information to said the DSP such that said DSP determines required action to properly adjust pulser operation settings.

39/144 © EPODOC / EPO

PN - [CN104727810](#) A 20150624

PNFP - CN104727810B B 20170707

PR - CN20131717950 20131223

AP - CN20131717950 20131223

DT - I

CT - || STSE (A)
[EP0088402](#) A2 19830914 [A] (EXPLORATION LOGGING INC [US])
[A] 1-10
* 全文 *;
[CN85108732](#) A 19870429 [X]
[X] 1、5-7、10
* 说明书第18页第16行-第19页第20行、第64页第6行-第73页第9行、附图3、4、31-36 *;
[EP0744527](#) A1 19961127 [A] (BAKER HUGHES INC [US])
[A] 1-10
* 全文 *;
[GB2349404](#) A 20001101 [A] (BAKER HUGHES INC [US])
[A] 1-10
* 全文 *;
[GB2413138](#) B 20060222 [A] (HALLIBURTON ENERGY SERV INC [US])
[A] 1-10
* 全文 *;
[GB2430215](#) B 20090930 [A] (SCHLUMBERGER HOLDINGS [VG])
[A] 1-10
* 全文 *;
[GB2464263](#) A 20100414 [A] (SCHLUMBERGER HOLDINGS [VG])
[A] 1-10
* 全文 *;
[CN102644458](#) A 20120822 [A] (CHINA NAT OFFSHORE OIL CORP)
[A] 1-10
* 全文 *

CNOI - (A)
[E21B47/185](#)

PA - (A)
CHINA PETROCHEMICAL CORP; DRILLING TECH RES INST XIN

TI - (A)
Downstream communication device of **measurement**-while-**drilling** system and downlink communication **method** of downstream communication device

AB - (A)
The invention discloses a downstream communication device of a **measurement**-while-**drilling** system and a downlink communication **method** of the downstream communication device. The downstream communication device comprises a ground **control** mechanism (13), a downstream communication mechanism (14) and a signal receiving and data processing mechanism, wherein the downstream communication mechanism (14) is arranged in a mud conveying manifold (4) between a mud **pump** (5) with a pressure buffer mechanism or a hydraulic energy storage

mechanism and a **drill** pipe; the signal receiving and data processing mechanism is arranged in a **drilling** assembly, is arranged in a well and is connected with a **drill** pipe; the ground **control** mechanism (13) is electrically connected with the downstream communication mechanism (14); and the downstream communication mechanism (14) is connected with the signal receiving and data processing mechanism through the mud conveying manifold (4). By the downstream communication device, downstream communication can be established or implemented on the premise that the delivery capacity of the current circulating system is not changed and normal **drilling** operation is not interrupted.

40/144 © EPODOC / EPO

PN - [CN104680766](#) A 20150603

PR - CN20141468182 20140915

AP - CN20141468182 20140915

DT - I

CT - || STSE (A)

[CN103790576](#) A 20140514 [YX] (DONGYING TIANGENG PETROLEUM TECHNOLOGY CO LTD)

[Y] 5-10

* 说明书第0002-0009、0011-15段和附图1-2 *

[X] 1-4;

[CN103899301](#) A 20140702 [Y] (22ND RES INST CHINA ELECTRONICS TECHNOLOGY GROUP CORP)

[Y] 5-10

* 说明书第0002-0025、0043-0067、0070-0088、0092-0097、0111-0161段和附图1-15 *;

[CN203729985U](#) U 20140723 [A] (CHENGDU WESTERN UNIONPETRO ENGINEERING TECHNOLOGY CO LTD)

[A] 1-10

* 全文 *;

[CN204045014U](#) U 20141224 [R] (BEIJING RES INST PRECISE MECHATRONIC CONTROLS)

[R] 1-7

* 权利要求1-7 *

PA - BEIJING RES INST PRECISE MECHATRONIC CONTROLS

TI - Underground information acquisition system and underground information acquisition **method** thereof

AB - The invention relates to an underground information acquisition system; the underground information acquisition system comprises a slurry **pump**, wellhead equipment and an industrial personal computer, wherein the slurry **pump** is connected with the wellhead equipment through a pipeline; a pressure sensor is arranged on the pipeline; the wellhead equipment is connected with a **drill** rod; the lower end of the **drill** rod is connected to a **drill** collar; a pulse generator is arranged in the upper part of the **drill** collar; the lower part of the pulse generator is connected to an exploration pipe; the exploration pipe can be configured to **measure drilling** state information, code the **drilling** state information and **control** the pulse generator to send the coded information to the wellhead equipment according to a coding interface; and the wellhead equipment can be configured to receive underground slurry pressure

information and decode the underground slurry pressure information. The underground information acquisition system and the underground information acquisition **method** thereof disclosed by the invention are capable of obviously increasing the data transmission capability of the existing slurry pulse data transmission mode.

41/144 © EPODOC / EPO

PN - [CN204165805U](#) U 20150218
PR - CN20142675600U 20141112
AP - CN20142675600U 20141112
DT - I
PA - NANJING INST ENVIRONMENTAL SCIENCES MINISTRY ENVIRONMENT PROT
TI - Gas autosampler for soil profile of refuse landfill
AB - The utility model discloses a gas autosampler for a soil profile of a refuse landfill and belongs to the technical field of gas collecting equipment. The gas autosampler comprises a **drill** bit device, a gas taking device, a buffer device, a fixing device and a vacuum **pump** box. The sampling **method** of the gas autosampler for the soil profile of the refuse landfill mainly comprises the following steps: before use, separating gas through the gas taking device and the buffer device; **controlling** the falling depth by applying external force to flange plates on the fixing device; pumping excess gas out of the gas taking device by the vacuum **pump** box; **controlling** the opening and closing of a gas inlet through the opening and closing of valves and the rotation of the gas taking device; **controlling** the gas through a tee joint so that the profile gas is pumped according to a certain time. The gas autosampler provided by the utility model can be used for **measuring** the gas release conditions of soil profiles of different depths and effectively improving the sample collection efficiency and is simple to operate, compact in structure, convenient to maintain and carry.

42/144 © EPODOC / EPO

PN - [CN104343433](#) A 20150211
PNFP - CN104343433B B 20171124
PR - CN20141605668 20141031
AP - CN20141605668 20141031
DT - I
CT - || STSE (A)
[JPH06200905](#) A 19940719 [A] (KAYABA INDUSTRY CO LTD)
[A] 1-5
* 全文 *;
[CN103697000](#) A 20140402 [Y] (SHANGHAI ZOOMLION HEAVY INDUSTRY PILING MACHINERY CO LTD, et al)
[Y] 1-2
* 说明书第3-4段, 附图1 *;
[CN103758803](#) A 20140430 [Y] (SUNWARD INTELLIGENT EQUIPMENT)
[Y] 1-2
* 说明书第26-31段, 附图1-3 *;
[CN203717495U](#) U 20140716 [A] (SUNWARD INTELLIGENT EQUIPMENT)
[A] 1-5

* 全文 *;

[CN204283398U](#) U 20150422 [R] (SUNWARD INTELLIGENT EQUIPMENT)

[R] 1-4

* 权利要求1-4 *;

[CN102747948](#) A 20121024 [Y] (SHANHE INTELLIGENT EQUIPMENT CO LTD)

[Y] 1-3

* 说明书第16-19段, 附图1-2 *;

[CN102747950](#) A 20121024 [Y] (SHANHE INTELLIGENT EQUIPMENT CO LTD)

[Y] 1-3

* 说明书第26-31段, 附图1-3 *

- CNOI - (A)
[E21B44/06](#) ; [F15B11/17](#) ; [F15B13/06](#)
- PA - (A)
SUNWARD INTELLIGENT EQUIPMENT
- TI - (A)
Full-hydraulic adaptive coupling **control** loop for rotation and propelling of rock **drilling** machine and **control method**
- AB - (A)
The invention discloses a full-hydraulic adaptive coupling **control** loop for the rotation and propelling of a rock **drilling** machine and a **control method**. A first load-sensitive variable **pump**, a first load-sensitive proportional multi-way valve, a propelling execution mechanism and the like form a main propelling **control** oil way, and a propelling unit and a load-sensitive external **control** port of the propelling unit of the first load-sensitive proportional multi-way valve, a coupling **control** valve block, a rotation pressure feedback pipeline and the like form a propelling pressure independent hydraulic remote **control** and rotation hydraulic stepless **control** propelling loop. According to the **control** loop and the **control method**, technical **measures** of hydraulically and remotely **controlling** propelling pressure, coupling set values of two overflow valves through a balance valve, steplessly **controlling** the opening of the balance valve by virtue of rotation pressure and the like are adopted for realizing steplessly coupling **control** over the rotation and propelling of the rock **drilling** machine, the **control** loop and the **control method** are full-hydraulic, adaptive and high in reliability, and the functional loops are clear and simple; the propelling pressure is independently, hydraulically and remotely **controlled** without influence with other working units by virtue of the special matched design of the propelling unit, the overflow valves, the load-sensitive variable **pump** and the like, and the reliability of the hydraulic functional loops is improved.

43/144 © EPODOC / EPO

PN - [CN104316368](#) A 20150128

PNFP - CN104316368 B 20170111

PR - CN20141635134 20141112

AP - CN20141635134 20141112

DT - I

CT - || STSE (A)

[US4261203](#) A 19810414 [A] (SNYDER VONA L)

[A] 1-10

* 全文 *;
[CN201513175U](#) U 20100623 [A] (UNIV CHINA GEOSCIENCES WUHAN)
 [A] 1-10
 * 全文 *;
[CN204165805U](#) U 20150218 [R] (NANJING INST ENVIRONMENTAL SCIENCES MINISTRY ENVIRONMENT PROT)
 [R] 1-8
 * 权利要求第1-8项 *;
[CN101236141](#) A 20080806 [A] (CHINA PETROLEUM & CHEMICAL [CN])
 [A] 1-10
 * 全文 *;
[CN102998143](#) A 20130327 [A] (UNIV ZHEJIANG)
 [A] 1-10
 * 全文 *;
[JP2001272315](#) A 20011005 [A] (TAKENAKA KOMUTEN CO, et al)
 [A] 1-10
 * 全文 *;
[CN1414362](#) A 20030430 [A] (SHENYANG APPLIC ECOLOGICAL I C [CN])
 [A] 1-10
 * 全文 *;
[CN103698167](#) A 20140402 [A] (SHANGHAI ACADEMY ENVIRONMENTAL SCIENCES)
 [A] 1-10
 * 全文 *;
[CN101131352](#) A 20080227 [A] (GAO CHENGDA SUN XIANGYANG BEIJ [CN])
 [A] 1-10
 * 全文 *;
[CN1611743](#) A 20050504 [A] (CHINA PETROCHEMICAL CO LTD [CN])
 [A] 1-10
 * 全文 *;
[US5922974](#) A 19990713 [A] (DAVISON J LYNNE [US], et al)
 [A] 1-10
 * 全文 *

PA - (A)
 NANJING INST ENVIRONMENTAL SCIENCES MINISTRY ENVIRONMENT PROT

TI - (A)
 Automatic sampler and sampling **method** for soil profile gas of refuse landfill

AB - (A)
 The invention discloses an automatic sampler and a sampling **method** for the soil profile gas of a refuse landfill, and belongs to the technical field of gas collection equipment. The automatic sampler for the soil profile gas of the refuse landfill comprises a **drill** bit device, a gas sampling device, a buffer device, a fixing device and a vacuum **pump** case. The sampling **method** adopted by the automatic sampler for the soil profile gas of the refuse landfill comprises the following main steps: cutting off the gas by using the gas sampling device and the buffer device before gas sampling; applying external force to a flange plate on the fixing device to **control** a descending depth; sucking and removing redundant gas in the gas sampling device by using the vacuum **pump** case; opening and closing a valve and rotating the gas sampling device to **control** the opening and closing of a gas inlet; **controlling** the gas by virtue of a T

joint, and sucking the profile gas according to a certain time interval. According to the automatic sampler and the sampling **method**, a gas releasing condition of soil profiles at different depths can be **measured**, and meanwhile, the sample collection efficiency is effectively improved; moreover, the automatic sampler is easy to operate, compact in structure and convenient to maintain and carry.

44/144 © EPODOC / EPO

PN - [CN104235087](#) A 20141224

PNFP - CN104235087B B 20160824

PR - CN20141354496 20140723

AP - CN20141354496 20140723

DT - I

CT - || STSE (A)
[CN204003689U](#) U 20141210 [R] (BEIJING SANY HEAVY MACH CO LTD);
[CN101253334](#) A 20080827 [A] (CATERPILLAR INC [US]);
[JPH0633907](#) A 19940208 [Y] (CKD CORP);
[JP2006009540](#) A 20060112 [Y] (SANWA KIZAI CO LTD)

PA - (A)
 BEIJING SANY HEAVY MACH CO LTD

TI - (A)
Control system and **method** for **drilling** bucket and piling machinery

AB - (A)
 The invention discloses a **control** system and a **control method** for a **drilling** bucket and piling machinery. The **control** system for the **drilling** bucket is used for **controlling** the **drilling** bucket with an enlarged flank, and comprises a hydraulic **pump**, a reversing valve and a driving oil cylinder for driving the enlarged flank, wherein the hydraulic **pump**, the reversing valve and the driving oil cylinder are sequentially connected through a hydraulic oil way; the driving oil cylinder is mechanically connected with the enlarged flank; hydraulic oil is selectively fed into a rod cavity and a rodless cavity of the driving oil cylinder to drive the extension or the contraction of the enlarged flank by the hydraulic **pump** through the reversing valve; a flow meter is also connected to the hydraulic oil way, and is used for **measuring** the flow of the hydraulic oil in the hydraulic oil way; a programmable logic **controller** is connected to the flow meter, and an extension angle of the enlarged flank is calculated according to the flow, **measured** by the flow meter, of the hydraulic oil. According to the system, the **method** and the piling machinery, the flow of the hydraulic oil in the hydraulic oil way is **measured** by the flow meter, and the extension angle of the enlarged flank is calculated according to the flow of the hydraulic oil, so that an operator is allowed to know the real-time extension angle of the enlarged flank, and can conveniently **control** the enlarged flank, and the construction efficiency is improved.

45/144 © EPODOC / EPO

PN - [CN104196518](#) A 20141210

PR - CN20141312172 20140702

AP - CN20141312172 20140702

DT - I

CTNP - || STSE (A)
 [A] - 樊洪海,《实用钻井流体力学》,
 [A] 1-10
 * 第231-248页 *

PA - UNIV CHINA PETROLEUM

TI - Device and **method** for **measuring** slippage among gas phase, liquid phase and solid phase in shaft annulus

AB - The invention provides a device and **method** for **measuring** slippage among a gas phase, a liquid phase and a solid phase in a shaft annulus. The device is composed of an annulus shaft, an improved PIV system, a constant-current **method** device, a high-speed camera, a stirring pool, an impurity **pump**, an air compressor, a pressure sensor, a flow meter, a pipeline and a valve. The PIV system, the laser induction technology, the refraction index matching technology, the constant-current **method** and the high-speed camera recording technology are combined for the first time, and the slippage characteristics in flowing of the air phase, the liquid phase and the solid phase in the shaft annulus are systemically studied through transparent **drilling** fluid and transparent rock debris. According to the device and the **method**, the specific expressions of the laws and the slippage speeds of slipping modes when debris and gas flow in the gas phase, the liquid phase and the solid phase in the shaft annulus are obtained through tests for studying the stickness of different types of **drilling** fluid, **drilling** fluid flow, debris concentration and the section air voids factors, and effective technology support is provided for process design and well **control** safety of well **drilling**.

46/144 © EPODOC / EPO

PN - [CN204008296U](#) U 20141210

PR - CN20132440733U 20130722

AP - CN20132440733U 20130722

DT - I

PA - CHANGJIANG WATERWAY INST PLANNING DESIGN & RES

TI - Servo-**control** deep rock deformation test device adopting rigid bearing plate center hole **method**

AB - The utility model discloses a servo-**control** deep rock deformation test device adopting a rigid bearing plate center hole **method**. The device comprises a load **control** device, a force transmission device and a deformation **measurement** device, and is characterized in that the load **control** device comprises an electric oil **pump**, a pressure **controller**, a pressure converter, a **control** valve, a voltage stabilizer and a pressure sensor which are connected through hydraulic pipes, and one end of the pressure sensor is connected with jacks; the deformation **measurement** device comprises a **drill** hole vertically downwards formed in the rock surface, a **measuring** bar and anchor heads are arranged in the **drill** hole, one end of a first displacement sensor is connected with a **measuring** frame, and the other end is connected with a **measuring** head and connected with the anchor heads on the **measuring** bar; and the pressure **controller**, the pressure sensor, second displacement sensors and third displacement sensors are connected with a collection **control** instrument and a computer respectively, deep displacement deformation **measurement** is performed according to displacement of different depth points in the rock **drill** hole, servo **control**

of pressure is performed in real time, data is collected automatically, and a data graph is formed.

47/144 © EPODOC / EPO

PN - [EA201491425](#) A1 20141128

PNFP - EA028646 B1 20171229

PR - US201213358872
20120126; WO2013US20559
20130107

AP - EA20140091425 20130107

DT - I

CT - || STSE (B1)
[XP055060505](#) A[];
[US4557142](#) A 19851210 [] (HENSLEY
GARY L [US], et al);
[US2006070426](#) A1 20060406 [
] (PELLETIER MICHAEL T [US]);
[GB2479450](#) A 20111012 [] (WOOD
DAVID [GB]);
[US2010139387](#) A1 20100610 [
] (JAMISON DALE E [US], et al);
[US2011000713](#) A1 20110106 [
] (MEETEN GERALD H [GB], et al)

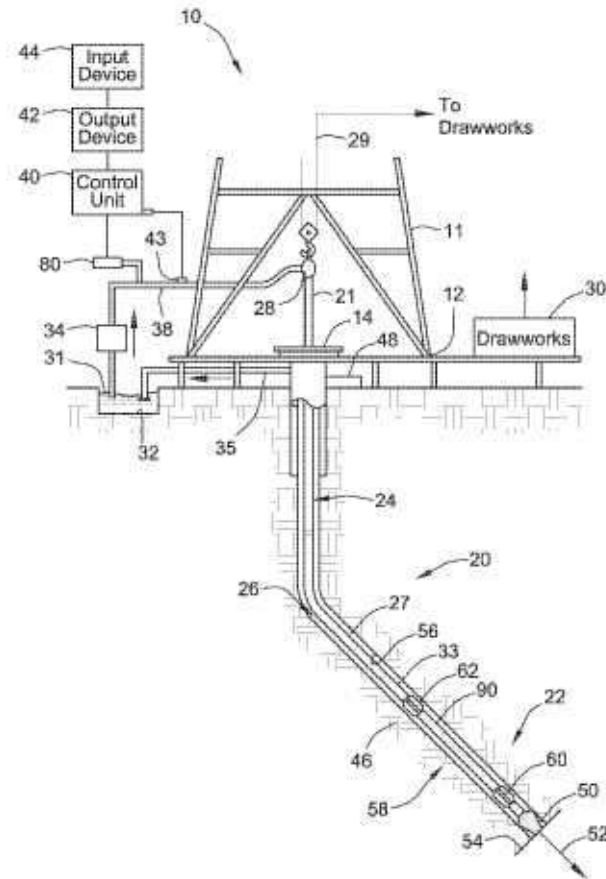
CTNP - || STSE (B1)
[] - "Chapter F-4, Drilling Fluids",
EM 1110-1-1804, (20010101),
URL: [http://140.194.76.129/
publications/eng-manuals/EM_1110-1-1804_sec/EM_1110-1-1804_Sections/appendF-04.pdf](http://140.194.76.129/publications/eng-manuals/EM_1110-1-1804_sec/EM_1110-1-1804_Sections/appendF-04.pdf),
(20130422), XP055060505

CCI - [E21B21/00](#) ; [G01N33/2823](#)

PA - (B1)
HALLIBURTON ENERGY SERVICES INC
[US]

TI - (B1)
SYSTEM, **METHOD** AND DEVICE FOR
ANALYZING **DRILLING** FLUID

AB - (B1)
System, methods and devices for
analyzing **drilling** fluids are
presented herein. A fluid analysis
system for determining at least one
characteristic of a **drilling** fluid is
disclosed. The system includes
a **pump** and two reversible fluid



ports each configured, when in a first state, to intake **drilling** fluid into the fluid analysis system and, when in a second state, to expel **drilling** fluid from the fluid analysis system. A valve fluidly couples the reversible fluid ports to the **pump**. The valve **controls** the respective states of the reversible fluid ports. At least one **measurement** module is fluidly coupled to the **pump** to receive **drilling** fluid therefrom. The at least one **measurement** module is configured to determine at least one characteristic of the **drilling** fluid. Filters can be fluidly coupled with each of the reversible fluid ports. The filters prevent solids of a predetermined size from entering the fluid analysis system.

48/144	© EPODOC / EPO
PN	- CN104132761 A 20141105
PNFP	- CN104132761B B 20160127
PR	- CN20141379604 20140804
AP	- CN20141379604 20140804
DT	- I
CT	- STSE (A) CN101514926 A 20090826 [Y] (UNIV CHINA MINING [CN]) [Y] 1 * 说明书第2-4页 *; JP2004012183 A 20040115 [A] (HONDA MOTOR CO LTD) [A] 1-2 * 全文 *; CN102230375 A 20111102 [A] (UNIV CHINA MINING) [A] 1-2 * 全文 *; CN202485845U U 20121010 [A] (TIANDI SCIENCE & TECHNOLOGY CO) [A] 1-2 * 全文 *; CN103512693 A 20140115 [Y] (UNIV CHINA MINING) [Y] 1 * 说明书第0006-0038段及附图1-6 *
CCI	- E21C39/00 ; E21F17/18 ; G01L5/0004
PA	- (A) UNIV CHINA MINING
TI	- (A)

Multipoint coal and rock mass stress real-time monitoring device and **method**

AB

- (A)

The invention provides a multipoint coal and rock mass stress real-time monitoring device and **method**. The device is composed of a plurality of capsule pressure sensors, connection rods, three-way valves, a multichannel monitor, a multichannel **control** valve, first high-pressure oil pipes, second high-pressure oil pipes, third high-pressure oil pipes, a four high-pressure oil pipe, a high-pressure oil **pump** and monitoring substations. According to the requirement of a testing scheme, the multiple capsule pressure sensors are arranged in **drilled** holes, and oil is injected into the capsule pressure sensors through the multi-channel **control** valve, so that oil pressure inside each capsule pressure sensor reaches the preset pressure, and the capsule pressure sensors and the coal and rock mass are well coupled. Monitoring signals are synchronously collected, converted, stored and displayed through the multichannel monitor or are transferred to a remote monitor center through the monitoring substations. The multipoint coal and rock mass stress real-time monitoring device can be used for coal and rock dynamic disaster monitoring early warning such as coal and rock stress monitoring, mine pressure analysis, rock burst and coal and gas rush, and the stress and changes of the stress of multiple **measure** points can be **measured** at the same time in the multiple **drilled** holes of the coal and rock mass.

49/144 © EPODOC / EPO

PN - [US2014305705](#) A1 20141016

PNFP - US9435162 B2 20160906

PR - US201313863883
20130416; WO2007US82245
20071023; US20060862558P
20061023

AP - US201313863883 20130416

DT - *; Rep

CCI - [E21B44/00](#) ; [E21B21/08](#)

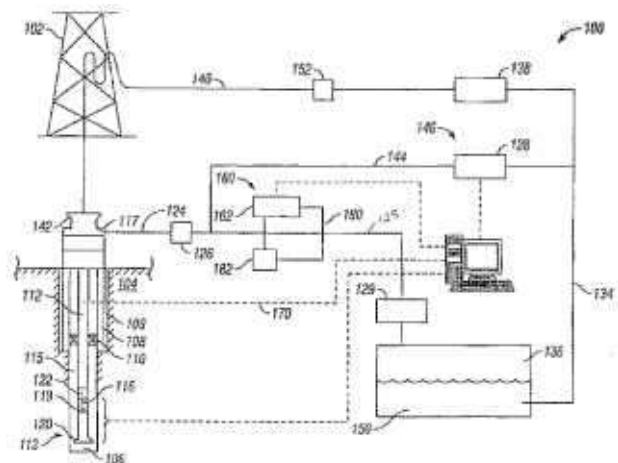
CUI - [E21B47/06](#)

PA - (A1)
DUHE JASON [US]; MAY JAMES [US]

- (B2)
M-I L L C [US]; SMITH
INTERNATIONAL [US]

TI - (A1)
**METHOD AND APPARATUS
FOR CONTROLLING BOTTOM
HOLE PRESSURE IN A
SUBTERRANEAN FORMATION
DURING RIG PUMP OPERATION**

- (B2)
Method and apparatus
for **controlling** bottom hole
pressure in a subterranean



formation during rig **pump** operation

AB - (A1 B2)

A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, **controllably** bleeding pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for **controllably** bleeding off pressurized fluid from the wellbore annulus. A backpressure **pump** for applying a set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** are also disclosed.

50/144 © EPODOC / EPO

PN - [CN104100219](#) A 20141015

PNFP - CN104100219B B 20160803

PR - CN20131114422 20130403

AP - CN20131114422 20130403

DT - I

CT - || STSE (A)

[CN102536191](#) A 20120704 [A] (CNPC GROUP WESTERN DRILLING ENG CO LTD)
[A] 1-10

* 全文 *;

[US2012247831](#) A1 20121004 [A] (KAASA GLENN-OLE [NO], et al)

[A] 1-10

* 全文 *;

[WO2012027245](#) A1 20120301 [A] (HALLIBURTON ENERGY SERV INC [US], et al)

[A] 1-10

* 全文 *;

[CN102434120](#) A 20120502 [A] (CNPC XIBU DRILLING ENG CO LTD)

[A] 1-10

* 全文 *;

[CN203285370U](#) U 20131113 [L] (CHINA NAT PETROLEUM CORP, et al)

[L] 1-10

* 全文 *;

[CN102359353](#) A 20120222 [A] (CNPC CHUANQING DRILLING ENGINEERINTG COMPANY LTD)

[A] 1-10

* 全文 *

- CTNP - || STSE (A)
[A] - 蒋宏伟等, "控压钻井关键技术研究", 《石油矿场机械》, (20120131), vol. 41, no. 1, pages 1 - 5
[A] 1-10
* 1-5 *
- PA - (A)
CHINA NAT PETROLEUM CORP; CNPC DRILLING RES INST
- TI - (A)
Single-throttling-channel pressure **control drilling method** and device suitable for high-flow change
- AB - (A)
The invention relates to a single-throttling-channel pressure **control drilling method** and a single-throttling-channel pressure **control drilling** device suitable for high-flow change, and is applied to the field of well tube pressure and flow **control** during petroleum and natural gas **drilling**. The device consists of a vertical pipe **measurement** system, a back pressure compensation manifold and flow **measurement** system, a connection manifold, an automatic throttling manifold, a wellhead return flow **measurement** system and a signal acquisition and logic **control** system. The device can precisely **measure** the pressure at the bottom of a well, the vertical pressure at a wellhead, the sleeving pressure and **pump**-in and returning flow of **drilling** fluid; furthermore, due to the analysis of the logic **control** system, a working condition of the bottom of the well is judged, and a closed-loop **control** or block experience mode is selected according to the working condition, so that the back pressure applied by the throttling manifold to the wellhead is automatically adjusted in real time, and perfect well shaft pressure **control** is implemented; therefore the complicated underground problems of a narrow density window, spraying and leakage coexistence and the like are effectively solved.

51/144 © EPODOC / EPO

PN - [CN104080576](#) A 20141001

PNFP - CN104080576B B 20160525

PR - WO2011JP75038 20111031

AP - CN2011874594 20111031

DT - I

CT - || STSE (A)
[US2003147708](#) A1 20030807 [X] (COOK JAMES E [US], et al);
[DE102006052602](#) A1 20080410 [A] (MAUCH WALTER [DE]);
[JP2004306230](#) A 20041104 [A] (DAIKIN IND LTD);
[WO9915298](#) A1 19990401 [A] (ANTOUN GREGORY S [US]);
[JP2004036421](#) A 20040205 [A] (NIKUNI KK)

CCI - [B23Q11/1015](#) ; [B23Q11/1038](#) ; [F04B49/065](#) ; [F04C14/08](#)

CQI - [B23Q11/126](#)

CNOI - (A)
[B23Q11/1038](#) ; [F04B49/065](#) ; [F04C14/08](#)

CCA - [F04C2/10](#) ; [F04B2203/0209](#) ; [F04B2205/05](#) ; [F04C2270/18](#)

CNOA - (A)
[F04C2/10](#) ; [F04B2203/0209](#) ; [F04B2205/05](#) ; [F04C2270/18](#)

PA - (A)
NIPPON OIL PUMP CO LTD

TI - (A)
Coolant supply device and supply **method**

AB - (A)
The purpose of the invention is to provide a coolant supply device and supply **method** that can appropriately **control** the spraying of coolant using a single parameter. To that end, the invention is provided with a **pump** (101) that supplies coolant to a tool (D), a **measurement** device (22) that **measures** the discharge pressure of the **pump** (101), and a **control** device (50). The **control** device (50) has a function for determining, from the rotation rate of the **pump** (101), the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.

52/144 © EPODOC / EPO

PN - [CN104074511](#) A 20141001

PR - CN20131188942 20130521; CN20131686361 20131216

AP - CN20131686361 20131216

DT - I

CT - || STSE (A)
[CN1435678](#) A 20030813 [A] (UNIV DONGBEI [CN])
[A]
[CN101255952](#) A 20080903 [A] (PETROCHINA CO LTD [CN])
[A]
[CN101852076](#) A 20101006 [Y] (CNPC DRILLING RES INST, et al)
[Y]
[US6212942](#) B1 20010410 [A] (HARA HIDEAKI [JP], et al)
[A]
[JPH10281921](#) A 19981023 [Y] (HITACHI LTD, et al)

[Y]
[CN1321846](#) A 20011114 [A] (SHENGTON NEW SCIENCE & TECHNOL [CN])
 [A]
[CN1123894](#) A 19960605 [A] (CALDON CO [US])
 [A]
[US5708193](#) A 19980113 [A] (LEDEEN HOWARD L [US], et al)
 [A]
[CN102359353](#) A 20120222 [A] (CNPC CHUANQING DRILLING ENGINEERINTG COMPANY LTD)
 [A]

CTNP - || STSE (A)
 [] 余东亮等,
 "基于压力波技术的管道泄漏监测系统", <<石油机械>>, (20100731), vol. 38, no. 07

PA - UNIVYANGTZE

TI - Pressure wave leakage layer detection experiment device and use **method** of pressure wave leakage layer detection experiment device

AB - The invention relates to a pressure wave leakage layer detection experiment device and a use **method** of the pressure wave leakage layer detection experiment device. The pressure wave leakage layer detection experiment device consists of a main body part, a throttle manifold, a **control** system and a signal collecting system, wherein the main body part can be realized by adopting various means in the prior art, and preferably, the main body part comprises a water tank, a cement pier, a **drilling pump**, a water supply pipe, a well shaft, a water outlet pipe, a water return pipe, a cross joint and a throttle manifold. The pressure wave leakage layer detection experiment device and the use **method** of the pressure wave leakage layer detection experiment device can solve the problems of the conventional **drilling** well shaft pressure **control** and detection device and **method** that the structure is complicated, and the connection relationship of all elements and components is complicated, so the structure is complicated, the cost is high, the **measuring** precision is limited, the operation is complicated, and the **measuring** responsivity and the efficiency cannot meet the actual operation requirements. Therefore the actual **drilling** operation requirements are met.

53/144 © EPODOC / EPO

PN - [US2014284041](#) A1 20140925

PNFP - US9566681 B2 20170214

PR - WO2011JP75038 20111031

AP - US201114353371 20111031

DT - **

CT - || R141 (A1)
[US5951216](#) A 19990914 [] (ANTOUN GREGORY S [US])

CCI - [B23Q11/1015](#) ; [B23Q11/1038](#) ; [F04B49/065](#) ; [F04C14/08](#)

CQI - [B23Q11/126](#)

CCA - [F04C2/10](#) ; [F04B2203/0209](#) ; [F04B2205/05](#) ; [F04C2270/18](#)

PA - (A1 B2)
 KAWANO YUJI [JP]; NIPPON OIL PUMP CO LTD [JP]

- TI - (A1)
COOLANT SUPPLY DEVICE AND SUPPLY **METHOD**
- (B2)
Coolant supply device and supply **method**
- AB - (A1)
The purpose of the invention is to provide a coolant supply device and supply **method** that can appropriately **control** the spraying of coolant using a single parameter. To that end, the invention is provided with a **pump** (101) that supplies coolant to a tool (D), a **measurement** device (22) that **measures** the discharge pressure of the **pump** (101), and a **control** device (50). The **control** device (50) has a function for determining, from the rotation rate of the **pump** (101), the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.
- (B2)
A coolant supply device and supply **method** that can appropriately **control** the spraying of coolant using a single parameter. A **pump** (101) supplies coolant to a tool (D), and a **measurement** device (22) **measures** the discharge pressure of the **pump** (101). A **control** device (50) has a function for determining, from the rotation rate of the **pump** (101), the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.

54/144 © EPODOC / EPO

PN - [CN103899283](#) A 20140702

PR - CN20121575138 20121226

AP - CN20121575138 20121226

DT - I

CT - || STSE (A)
[US4575154](#) A 19860311 [A] (MAYS WALLACE M [US])
[A]
[CN101092873](#) A 20071226 [A] (WUHAN INST OF ROCKS MECHANICS [CN])
[A]

CTNP - || STSE (A)
[X] 李岗等,
"砂浆泵投砾法在某砂岩型铀矿地浸钻孔中的应用", <<西部探矿工程>>,
(20070331), PAGE 136 - 137
[X] 1-3
136-137

PA - XINJIANG TIANSHAN URANIUM INDUSTRY CO LTD CNNC

TI - Gravel **pump** gravel filling **method**

AB - The invention belongs to the technical field of in-situ leaching mine gravel filling type structure **drilling** construction, and particularly relates to a gravel **pump** gravel filling **method**. According to the technical scheme, a gravel **pump** (11) is used for injecting water and throwing gravels into a gravel throwing pipe (19), when gravels are thrown, gravel (13) filling heights are **measured**, when the gravels (13) reach the required height position as designed, cement is used for sealing holes, and the gravel throwing pipe (19) is used for **measuring** the gravel filling height. Due to the fact that

injection pressure of the gravel **pump** (11) is small, once the filling gravels (13) are flush with an opening of the gravel throwing pipe (19), the gravel **pump** (11) stops throwing gravels, water returns from a gravel throwing funnel (12), the gravel throwing height can be **measured** according to the principle, and quantification **control** of gravel throwing is achieved. By means of the technical scheme, gravel filling speed is high, efficiency is high, gravel filling position is precise, and pollution of mud on ore beds is reduced due to the fact that **drilled** holes are flushed when gravel is thrown.

55/144 © EPODOC / EPO

PN - [WO2014087370](#) A1 20140612

PR - US201261733828P 20121205

AP - WO20131860672 20131205

DT - *; Rep

CT - |KR| ISR (A1)

[US2006175090](#) A1 20060810

[X] (REITSMA DONALD G [NL], et al);

[WO2012027245](#) A1 20120301

[A] (HALLIBURTON ENERGYSERV INC [US], et al);

[WO2010101473](#) A1 20100910

[A] (DRILLTRONICS RIG SYSTEM AS [NO], et al);

[US2007227774](#) A1 20071004

[A] (REITSMA DONALD G [US], et al);

[US2004244972](#) A1 20041209

[A] (SAYERS COLIN M [US], et al)

CCI - [E21B43/122](#) ; [E21B21/08](#)

CUI - [E21B21/16](#) ; [E21B21/062](#) ;
[G05B11/42](#)

CUA - [E21B2021/005](#) ; [E21B2021/006](#)

PA - SCHLUMBERGER TECHNOLOGY BV [NL]; SCHLUMBERGER HOLDINGS; SCHLUMBERGER CA LTD [CA]; SCHLUMBERGER SERVICES PETROL [FR]; PRAD RES & DEV LTD; SCHLUMBERGER TECHNOLOGY CORP [US]

TI - **CONTROL OF MANAGED PRESSURE DRILLING**

AB - **Method for controlling** bottomhole pressure in a borehole during managed pressure **drilling**. In the **drilling** procedure fluid is circulated down a **drillstring** and and to

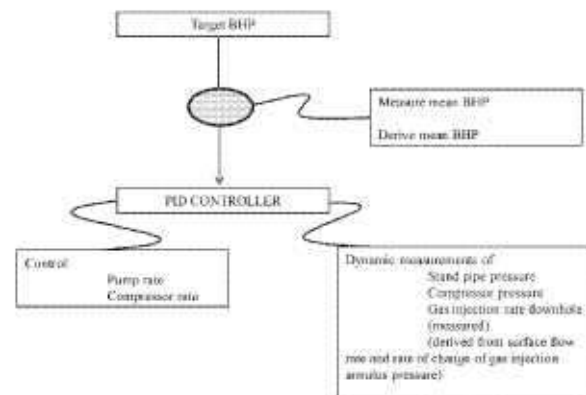


Fig. 3

surface through an annulus between the **drillstring** and an inner-wall of the borehole. A compressor/ **pump** is used to inject gas into the returning **drilling** fluid at a gas injection point. The **method** comprises receiving a target bottomhole pressure;determining actual bottomhole pressure during the procedure;and adjusting a variable as directed by a feedback **controller**,which operates to reduce the difference between the target pressure and the **measured** pressure. The manipulated variable may be one or any combination of: (1) pressure of **drilling** fluid at the entry of the fluid into the **drillstring**, (2) the flow rate of **drilling** fluid out of the **drillstring** into the annulus, (3) pressure of the gas exiting from the compressor, and (4) the injection rate of the gas.

- 56/144** © EPODOC / EPO
- PN - [CN103722207](#) A 20140416
- PNFP - CN103722207B B 20160420
- PR - CN20131713396 20131223
- AP - CN20131713396 20131223
- DT - I
- CT - || STSE (A)
[CN102216008](#) A 20111012 [A] (YAMAZAKI MAZAK CORP)
 [A]
[CN200954556Y](#) Y 20071003 [A] (XINZHENG NUMERICAL CONTROL MAC [CN])
 [A]
[CN201399599Y](#) Y 20100210 [A] (WORLDWIDE IND MACHINERY DONGGUAN CO LTD)
 [A]
[US3735459](#) A 19730529 [A] (ALLEN W)
 [A]
[JPH1080904](#) A 19980331 [A] (SYNX KK)
 [A]
- CTNP - || STSE (A)
 [] 张平等,
 "壁板类/组件/零件数字化柔性装配,智能制孔系统", <<航空制造技术>>,

(20101215), no. 23

[A] 张安清,

"一种立式车铣复合加工中心的研制", <<组合机床与自动化加工技术>>,

(20110131), no. 1, PAGE 109 - 112

[A] 1-3

109-112

[] 林琳等,

"民用飞机装配自动制孔设备探讨", <<航空制造技术>>, (20111130), no. 22

[] 王丽秀,

"飞机柔性装配制孔设备的工件坐标系建立方法", <<机械设计与制造>>,

(20120430), no. 4

- CNOI - (A)
[B26F1/16](#)
- PA - (A)
SHENYANG AIRCRAFT CORP
- TI - (A)
Automatic hole forming equipment and hole forming **method** for composite airfoil components
- AB - (A)
The invention relates to automatic hole forming equipment for composite airfoil components. The automatic hole forming equipment is five-axis linkage numerically **controlled** equipment, and comprises a main rack, a B-axis support, an A-axis rotary table, a Z-axis subassembly, a Y-axis drag chain, a Z-axis drag chain, a scrap suction device, a knife lubricating system and an oil **pump** of the lubricating system, wherein a spindle is arranged on the Z-axis subassembly; a component knife which can be used for **drilling** holes, reaming holes and reaming pits is hydraulically clamped on the spindle; four laser distance **measuring** sensors are symmetrically arranged at ends of the Z-axis subassembly and are distributed on four quadrants; a pressure foot support is arranged below the Z-axis subassembly; and pressure feet are arranged on the periphery of a center hole of the pressure foot support, and are provided with pressure foot sensors. By using the automatic hole forming equipment and the hole forming **method**, the clamping and positioning precision is high, the accuracy of formed holes is high, and damage to composites in a hole forming process is reduced, so that the quality of a product is improved while the work efficiency is improved.

57/144 © EPODOC / EPO

PN - [RU2012129120](#) A 20140120

PNFP - RU2505671 C1 20140127

PR - RU20120129120 20120710

AP - RU20120129120 20120710

DT - I

CT - || STSE (C1)

[RU2333351](#) C1 20080910 [];

[SU1719626](#) A1 19920315 [] (SP KT B GEONEFTEAVTOMATIKA N P [SU]);

[SU1265295](#) A1 19861023 [] (INST BUROVOI TEKHNİK [SU]);

[US2002124652](#) A1 20020912 [] (SCHULTZ ROGER L [US], et al)

PA - (C1)
FEDERAL NOE G BJUDZHETNOE OBRAZOVATEL NOE UCHREZHDENIE VYSSHEGO
PROFESSIONAL NOGO OBRAZOVANIJA TJUME [RU]

TI - (C1)
METHOD OF BIT LOAD CONTROL DURING LATERAL DRILLING

AB - (C1)
FIELD: oil and gas industry. SUBSTANCE: following equipment is installed preliminary: a) uncontrolled acoustic rejection filter in injection line in order to suppress interfering noises in wash liquid which are generated by **drill pump**; b) **controlled** acoustic rejection filter - rotational velocity sensor for hydroturbine motor shaft in order to carry out amplitude modulation of total sound, sound generated by rotor blades at hydroturbine motor shaft and sound generated by bit blows against rock to wash liquid filling **drill-rod** string; c) hydrophone with **measurement** tools between gooseneck in-built into swivel and **drill** hose. Turbine motor with bit at butt-end of **drill-rod** string is landed to the well with subsequent stop at distance of 10-20 metres from the bottom in order to **measure** rotational velocity of turbine motor shaft under no-load conditions. **Drill pump** is switched on to deliver wash liquid through **drill-rod** string to turbine motor for the purpose of rotor blades rotation. At that rotation of rotor blades generates sound in wash liquid. Then receipt is made by hydrophone from wash liquid by modulated **controlled** acoustic rejection filter - rotational velocity sensor for turbine motor shaft against noise amplitude proportional to rotational frequency of hydroturbine motor under no-load conditions in the band of suppressed interfering noise generated by **drill pump**, uncontrolled acoustic rejection filter. At that **measurement** devices convert processed audio information about rotational velocity of hydroturbine motor under no-load conditions in order to plot actual full-load characteristic by shifting plant characteristic in order to select optimal bit load at actual load characteristic of hydroturbine motor less friction of **drill-rod** string against walls of the horizontal well at minimum energy of sound propagated in the **drill-rod** string in wash liquid for this oil-reservoir horizon according to the work order specified by geologists. Then by means of set of discreet point actual load characteristic is plotted against simultaneous data - bit load and rotational frequency of hydroturbine motor shaft under no-load conditions before its stoppage, for example, at five tons. Then lateral **drilling** is made in optimal bit load mode shifted from plant load characteristic specified in the work order. In case of deviation of lateral **drilling** from the optimal mode demonstrating increase of sound energy from two sources bit load is regulated by change of load to a lesser or bigger value according to actual load characteristic of hydroturbine motor considering minimum energy of sound propagated in wash liquid from two sound sources - sound generated by turbine blades and sound generated by bit teeth blows to wash liquid filling the **drill-rod** string. EFFECT: development of **method** for bit load regulation during lateral **drilling** against actual load characteristic of hydroturbine motor plotted against simultaneous data received in **drilling** process about rotational velocity and bit load. 6 dwg

58/144 © EPODOC / EPO
PN - [CN103510893](#) A 20140115
PNFP - CN103510893B B 20160803
PR - CN20121226318 20120629

AP	- CN20121226318 20120629
DT	- I
CT	- STSE (A) CN102162342 A 20110824 [A] (PUYANG BAIFU RUIDE OIL TECHNOLOGY CO LTD); CN101892824 A 20101124 [A] (CHINA NAT PETROLEUM CORP, et al); CN202755927U U 20130227 [R] (CHINA NAT PETROLEUM CORP, et al); CN201593387U U 20100929 [X] (CNPC DRILLING RES INST, et al); US2011139506 A1 20110616 [A] (LOVORN JAMES R [US], et al); EP1488073 B1 20060809 [A] (SHELL INT RESEARCH [NL]); CN102359353 A 20120222 [A] (CNPC CHUANQING DRILLING ENGINEERINTG COMPANY LTD)
PA	- (A) CHINA NAT PETROLEUM CORP; CNPC DRILLING RES INST
TI	- (A) Well drilling device and method for controlling bottom hole pressure by monitoring flow
AB	- (A) The invention discloses a well drilling device and method for controlling bottom hole pressure by monitoring flow. The well drilling device comprises a slime pump inlet flow measuring system, a return pressure pump inlet flow measuring system, a drilling liquid reversing-out flow measuring system, an automatic throttling pipe converging system, a rotation control head, a liquid-gas separator and a vibration screen. The inlet of the slime pump inlet flow measuring system is connected to a slime tank through a pipeline. The outlet of the slime pump inlet flow measuring system is connected to a drilling rod through a pipeline, reaches the rotation control head from a drill and a borehole by passing the bottom of the drilling rod in an annular space mode, and is communicated with an inlet pipeline of the automatic throttling pipe converging system and an outlet pipeline of the return pressure pump inlet flow measuring system. The return pressure inlet flow measuring system is connected to the slime tank through a pipeline. The outlet of the automatic throttling pipe converging system is connected with the inlet of the drilling liquid reversing-out flow measuring system. The outlet of the drilling liquid reversing-out flow measuring system is connected with the inlet of the liquid-gas separator through a pipeline. The liquid-gas separator is provided with two branches, wherein one branch is connected to the vibration screen and connected to the slime tank through the vibration screen and the other branch is connected to a combustion opening. The well drilling device and method for controlling the bottom hole pressure by monitoring the flow can effectively control or eliminate adverse affection on well drilling, wherein the adverse affection is caused by shaft bottom leakage and losses or overflowing which can cause.

PN - [WO2013148005](#) A1 20131003

PR - US201113336981
20111223; US201213368997
20120821

AP - WO2013US25323 20130208

DT - *; Rep

CT - |RU| ISR (A1)
[US7180826](#) B2 20070220
[A] (KUSKO DAVID [US], et al);
[RU2186210](#) C2 20020727
[A] (STVENNAJA SAMARSKIE
GORIZONTY, et al);
[US6002643](#) A 19991214
[A] (TCHAKAROV BORISLAV J [US],
et al);
[EP0617196](#) A2 19940928
[A] (HALLIBURTON CO [US])

CCI - [E21B47/06](#) ; [E21B47/18](#) ;
[E21B21/10](#)

PA - MACDONALD ROBERT [US];
VECSERI GABOR [US]; JENNINGS
BENJAMIN [US]

TI - **CONTROLLED FULL FLOW
PRESSURE PULSER
FOR MEASUREMENT
WHILE DRILLING (MWD) DEVICE**

AB - An apparatus, **method**, and
system is described for
generating pressure pulses in
a **drilling** fluid utilizing a flow
throttling device longitudinally
and axially positioned within the
center of a main valve actuator
assembly which includes
a **controllable** pulser that
operates sequentially within a
downhole assembly within a **drill**
string of a **drill** pipe, that
enhances operational efficiency
in the removal of hydrocarbon
deposits, the system includes
a **drilling** fluid, fluid flow, and a
fluid **drilling pump** which when
combined creates fluid flow into
a bore pipe annulus within said
downhole assembly such that a
base line bore pipe pressure is

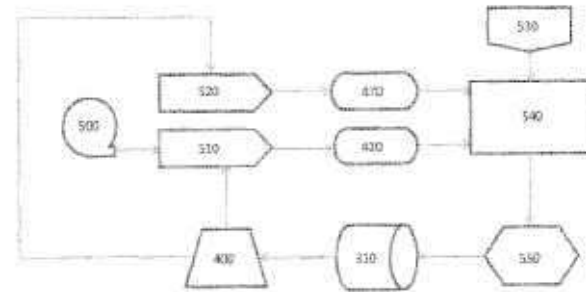


FIG. 5

created wherein the bore pipe pressure is sensed via a sensor sensing a pressure increase when said the **pump** is operating such that the sensor sends information to a Digital Signal Processor (DSP) that interprets the information and said the DSP also receives information from an annulus pressure sensor that senses **drilling** fluid (mud) pressure as it returns to the **pump** in an annular outside portion of the **drill** pipe such said the DSP recognizes pressure variation input obtained from the annulus pressure sensor and the bore pipe pressure sensor and detects pressure variation exhibited between pulsing pressures and a **pump** base line pressure thereby providing signals that are sent as data information to said the DSP such that said DSP determines required action to properly adjust pulser operation settings.

60/144 © EPODOC / EPO

PN - [CN103323413](#) A 20130925

PNFP - CN103323413B B 20160928

PR - CN20131218213 20130604

AP - CN20131218213 20130604

DT - I

CT - || STSE (A)
[CN203350179U](#) U 20131218 [R] (CHINA PETROLEUM & CHEMICAL, et al);
[CN201943685U](#) U 20110824 [Y] (CHINA PETROCHEMICAL CORP, et al);
[US4635735](#) A 19870113 [A] (CROWNOVER DONALD J [US]);
[CN202187760U](#) U 20120411 [A] (CHINA PETROLEUM & CHEMICAL);
[CN202149878U](#) U 20120222 [A] (TIANJIN LAND & OCEAN PETROLEUM EQUIPMENT SYSTEMS ENG CO LTD);
[CN101476488](#) A 20090708 [Y] (UNIV SOUTHWEST PETROLEUM [CN]);
[CN102928554](#) A 20130213 [A] (CHINA PETROLEUM & CHEMICAL, et al);
[CN201521288U](#) U 20100707 [Y] (GEOL LOGGING DEPT OF SINOPEC ZHONGYUAN PETROLEUM EXPLORATION BUREAU, et al)

CTNP - || STSE (A)
 [A] - 陶国强等, "SLA-1型光谱录井分析仪的研制与应用", 《录井工程》, (20121231),

vol. 23, no. 4

[A] - 林兆祥等, "基于差分吸收光谱法的烷烃气体检测系统的研制", 《中南民族大学学报 (自然科学版) 》, (20120331), vol. 31, no. 1

- PA - (A)
CHINA PETROLEUM & CHEMICAL; WELL LOGGING COMPANY OF SINOPEC ZHONGYUAN PETROLEUM ENGINEERING CO LTD
- TI - (A)
Spectrum continuous gas logging device and **method**
- AB - (A)
The invention relates to a spectrum continuous gas logging device and a **method**. The spectrum continuous gas logging device comprises an air extracting **pump**, a gas distribution module, an alkane component gas detection module, a carbon dioxide gas detection module, a carbon monoxide gas detection module, a hydrogen sulfide gas detection module, and a computer **control** system. Base data of a standard gas is **measured** and stored in the computer **control** system at first by utilizing the spectrum continuous gas logging device. Sample gases in **drilled** formation fluid brought by circulating **drilling** fluid are continuously sampled by an electric degasser. Every gas component in the sample gases is continuously detected through spectroscopy by the spectrum continuous gas logging device. A spectrum logging software of the spectrum continuous gas logging device uses the standard gas base data for realtime detection of alkane, carbon monoxide, carbon dioxide, and hydrogen sulfide gas content information in **drilling** formation liquid, formation liquid properties are rapidly explained by the spectrum logging software, and spectrum continuous gas logging is realized.

61/144 © EPODOC / EPO

- PN - [CN103291286](#) A 20130911
- PNFP - CN103291286B B 20160511
- PR - CN20131217672 20130604
- AP - CN20131217672 20130604
- DT - I
- CT - || STSE (A)
[CN102817607](#) A 20121212 [A] (CHENGDU HONGTIAN TELEX ENGINEERING CO LTD)
[A]
[CN203347787U](#) U 20131218 [R] (JINAN NEW GIGANANO LONG DISTANCE MEASURING & CONTROL CO LTD)
[R]
[CN1948708](#) A 20070418 [A] (XIAN PETROLEUM UNIV [CN])
[A]
[CN202510107U](#) U 20121031 [A] (JIANGYIN ZHONGKE MINING SAFETY TECHNOLOGY CO LTD)
[A]
- CTNP - || STSE (A)
[] 济南新吉纳远程测控有限公司, "无线随钻仪(LWD)使用说明书", <<<http://www.docin.com/p-20168363.html>>>, (20090524)
[Y] 權藤一德等,
"力及加速度传感器(2)", <<压电与声光>>, (19781231), no. 4, PAGE 48 - 54

PA - (A)
JINAN NEW GIGANANO LONG DISTANCE MEASURING & CONTROL CO LTD

TI - (A)
Control system and **control method** for **controlling** down-hole instrument of wireless **measurement** -while-**drilling** instrument from ground by aid of **drilling** fluid

AB - (A)
The invention discloses a **control** system and a **control method** for **controlling** a down-hole instrument of a wireless **measurement** -while-**drilling** instrument from the ground by the aid of **drilling** fluid. The **control** system comprises a vibrating plate. The vibrating plate is arranged in a centralizer, a tri-axis acceleration sensor and an MCU (microprogrammed **control** unit) are mounted on the vibrating plate, the tri-axis acceleration sensor is connected to an AD (analog-to-digital) conversion module of the MCU, and the MCU receives start and stop signals of a ground mud **pump** and transmits trigger signals to the down-hole instrument of the wireless **measurement** -while-**drilling** instrument. The **control** system and the **control method** have the advantages that the problem of instability of an existing **control** system in a **control** procedure is thoroughly solved, the down-hole instrument can be efficiently and reliably **controlled**, the well **drilling** efficiency is improved, and labor and materials are saved.

AB

- PURPOSE: An automatic **control** device for the depressurization of a pressure core is provided to prevent the partial separation of a gas hydrate of a **drilling** sample caused by releasing the pressure of the **drilling** sample including the gas hydrate and perform a production analysis and inspection of the gas hydrate by applying an automatic **control** depressurization **method** under a high pressure condition similar to an actual condition of an inspection field. CONSTITUTION: An automatic device for **controlling** the depressurization of a pressure core comprises a pressure core storage chamber(100), a post-pressure regulator(210), a post-pressure **pump**(230), a pressure regulator, a fluid sampling unit, and a data acquisition unit(400). The pressure core storage chamber stores a pressure core including a gas hydrate. The post-pressure regulator connected to a fluid outlet(110) formed on the lower part of the pressure core storage chamber

regulates the inside pressure of the pressure core storage chamber. The post-pressure **pump controls** the operation of the post-pressure regulator. The pressure regulator includes a **pump control** unit(220) to automatically **control** the post-pressure **pump**. The fluid sampling unit connected to the fluid outlet formed in the lower part of the pressure core storage chamber collects and **measures** the production fluid discharged from the pressure core by the separation of the gas hydrate.

63/144 © EPODOC / EPO

PN - [CA2801547](#) A1 20130710

PNFP - CA2801547 C 20151124

PR - RU20120100083 20120110

AP - CA20132801547 20130108

DT - I

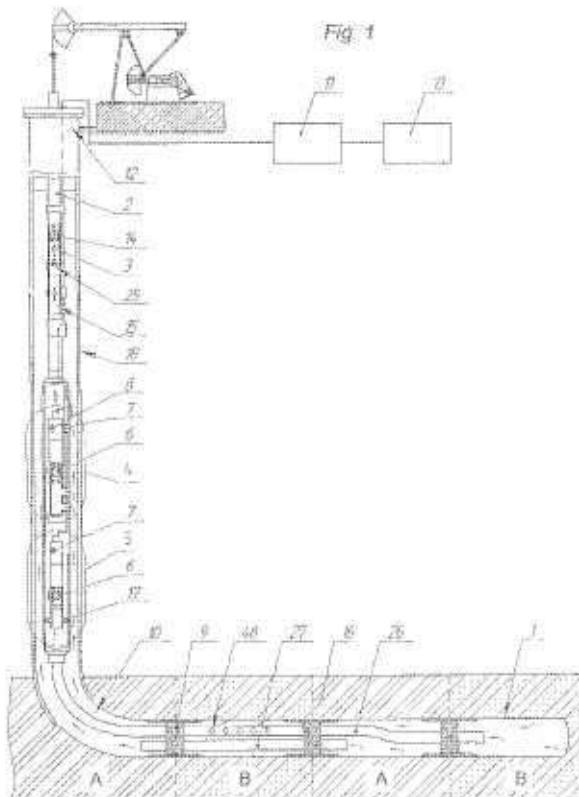
CCI - [E21B43/128](#) ; [E21B43/14](#) ;
[E21B47/12](#)

CQI - [E21B33/13](#)

PA - (A1 C)
OTKRYTOE AKTSIONERNOE
OBSHESTVO TATNEFT IM V D
SHASHINA [RU]

TI - (A1 C)
METHOD AND DEVICE FOR ZONAL
ISOLATION AND MANAGEMENT OF
RECOVERY OF HORIZONTAL WELL
DRAINED RESERVES

AB - (A1)
The invention relates to the oil
and gas production industry, in
particular, to development and
production of oil reservoirs with
various permeability zones,
specifically, with lateral/lateral
horizontal holes, **drilled** from the
production casing. The **method**
described includes running into
the well of a tubing string with a
cable, **control** devices in form of
electrical valves, **measurement**
pressure and temperature
sensors, and one or more packers
for isolation of the downhole
space, in which information from
the sensors is passed to
the **measurement** unit at the
wellhead, and signals for
opening/closing of the **control**
devices are transferred from the



wellhead **control** unit by the cable; delivery of the wellstream to the surface is performed with a **pump** through the tubing interior. Besides, a well is constructed with a horizontal section, passing through the various permeability zones of the formation, and the packers are installed in the horizontal section of the well to isolate these zones of various permeability, the tubing interior is isolated by a plug, above which the upper and lower **control** devices are located one above the other in a vertical hole, provided with **measurement** sensors; further, zones of the same/approximately the same permeability are connected to form two streams, communicating with the downhole space and inlet of the upper **control** device or the tubing interior and inlet of the lower **control** device; outlets of the **control** devices are connected to the **pump** inlet, and degree of opening of the **control** devices is **controlled** by the same cable with frequency separation, by which data from the **measurement** sensors are also transferred, and degree of opening of each **control** device is determined by these data. Besides, each **control** device is located in a housing of an electric gearmotor, the rotating shaft of which is connected, by means of a screw-nut connection, with a tappet and a valve, made to provide hermetically sealed contact with a valve seat, below which a sleeve is installed with the inlets, made in form of channels, in which a compensation chamber with flexible walls is located; the chamber is filled with lubricating fluid and communicates with

internal space of the tappet and sealed space above the tappet. Thus, application of the invention makes it possible to expand operational capabilities of production from horizontal wells, simultaneously including low-permeable and medium/high-permeable intervals of various geophysical properties, isolated by packers, via two independent streams by means of conduits, connecting them and coming through the packers, with surface **controlled** regime of production from each isolated zone. Moreover, location of the **control** devices, **measurement** sensors and a cable in the vertical section of the well provides for reduction of the equipment installation costs and improvement of quality and reliability of the installation.

- (C)

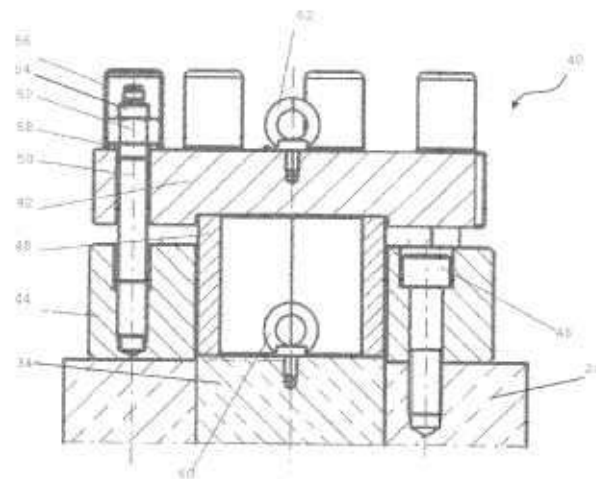
The invention relates to the oil and gas production industry, in particular, to development and production of oil reservoirs with various permeability zones, specifically, with lateral/lateral horizontal holes, **drilled** from the production casing. The **method** described includes running into the well of a tubing string with a cable, **control** devices in form of electrical valves, **measurement** pressure and temperature sensors, and one or more packers for isolation of the downhole space, in which information from the sensors is passed to the **measurement** unit at the wellhead, and signals for opening/closing of the **control** devices are transferred from the wellhead **control** unit by the cable; delivery of the wellstream to the surface is performed with a **pump**

through the tubing interior. Besides, a well is constructed with a horizontal section, passing through the various permeability zones of the formation, and the packers are installed in the horizontal section of the well to isolate these zones of various permeability, the tubing interior is isolated by a plug, above which the upper and lower **control** devices are located one above the other in a vertical hole, provided with **measurement** sensors; further, zones of the same/approximately the same permeability are connected to form two streams, communicating with the downhole space and inlet of the upper **control** device or the tubing interior and inlet of the lower **control** device; outlets of the **control** devices are connected to the **pump** inlet, and degree of opening of the **control** devices is **controlled** by the same cable with frequency separation, by which data from the **measurement** sensors are also transferred, and degree of opening of each **control** device is determined by these data. Besides, each **control** device is located in a housing of an electric gearmotor, the rotating shaft of which is connected, by means of a screw-nut connection, with a tappet and a valve, made to provide hermetically sealed contact with a valve seat, below which a sleeve is installed with the inlets, made in form of channels, in which a compensation chamber with flexible walls is located; the chamber is filled with lubricating fluid and communicates with internal space of the tappet and sealed space above the tappet. Thus, application of the invention

makes it possible to expand operational capabilities of production from horizontal wells, simultaneously including low-permeable and medium/high-permeable intervals of various geophysical properties, isolated by packers, via two independent streams by means of conduits, connecting them and coming through the packers, with surface **controlled** regime of production from each isolated zone. Moreover, location of the **control** devices, **measurement** sensors and a cable in the vertical section of the well provides for reduction of the equipment installation costs and improvement of quality and reliability of the installation.

64/144 © EPODOC / EPO

- PN - [DE102011056712](#) A1 20130620
- PR - DE20111056712 20111220
- AP - DE20111056712 20111220
- DT - *; Rep
- CT - || STSE (A1)
[DE102008060659](#) A1 20100610 [
] (BENTEC GMBH DRILLING &
 OILFIELD SYSTEMS [DE]);
[DE1061625](#) B 19590716 [
] (BENDIX AVIAT CORP);
[AT269655B](#) B 19690325 [
] (WIRTH ALFRED & CO KG [DE]);
[USRE37483E](#) E 20011225 [
] (KENNEDY GEORGE C [GB], et al);
[US4525114](#) A 19850625 [
] (HIRST JOHN A B [GB])
- CCI - [F04B53/10](#) ; [F04B53/16](#) ;
[F04B53/22](#)
- PA - BENTEC GMBH DRILLING &
 OILFIELD SYSTEMS [DE]
- TI - Clamping device for valve cover
 at scavenge **pump** for
 deep **drilling** operation, has stud
 bolt provided for attachment of



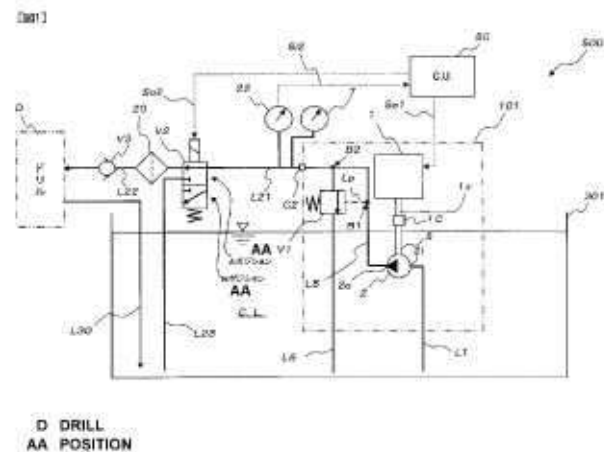
	blank holder at adjusting ring and comprising measuring unit for measuring or controlling extension tension of stud bolt
AB	- The device (40) has threaded bores surrounded by a valve seat. An axial movable clamping sleeve (48) is guided into an adjusting ring (44) attached at the valve seat. A blank holder (42) presses the clamping sleeve on a valve cover (34) that is guided into the adjusting ring, in an attached state. A stud bolt (50) is provided for attachment of the blank holder at the adjusting ring. The stud bolt comprises a measuring unit (54) for measuring or controlling extension tension of the stud bolt. The adjusting ring is attached at a pump and fixed with thread screws (46). Independent claims are also included for the following: (1) a method for attachment of a clamping device (2) a method for changing a valve in a piston- or plunger pump.
65/144	© EPODOC / EPO
PN	- EP2774719 A1 20140910
PNFP	- EP2774719 A4 20150603 - EP2774719 B1 20161221
PR	- WO2011JP75038 20111031
AP	- EP20110874906 20111031
DT	- *; Rep
CT	- STSE (A4) - US2003147708 A1 20030807 [I] (COOK JAMES E [US], et al) [I] 1-4 * paragraph [0006]; figures 1-2; claims 1-6 *; - WO9915298 A1 19990401 [I] (ANTOUN GREGORY S [US]) [I] 1-4 * paragraph [0001]; figures 1,4; claim 1 *; - JP2004036421 A 20040205 [A] (NIKUNI KK) [A] 1-4 * abstract *;

[JP2004306230](#) A 20041104 [DA] (DAIKIN IND LTD)
 [DA] 1-4
 * abstract *;
[DE102006052602](#) A1 20080410 [A] (MAUCH WALTER [DE])
 [A] 1,3
 * figure 3; claim 1 *

- CCI - [B23Q11/1015](#) ; [B23Q11/1038](#) ; [F04B49/065](#) ; [F04C14/08](#)
 CQI - [B23Q11/126](#)
 CCA - [F04C2/10](#) ; [F04B2203/0209](#) ; [F04B2205/05](#) ; [F04C2270/18](#)
 PA - (A1 A4 B1)
 NIPPON OIL PUMP CO LTD [JP]
 TI - (A1 A4 B1)
 COOLANT SUPPLY DEVICE AND SUPPLY **METHOD**
 AB - (A1)

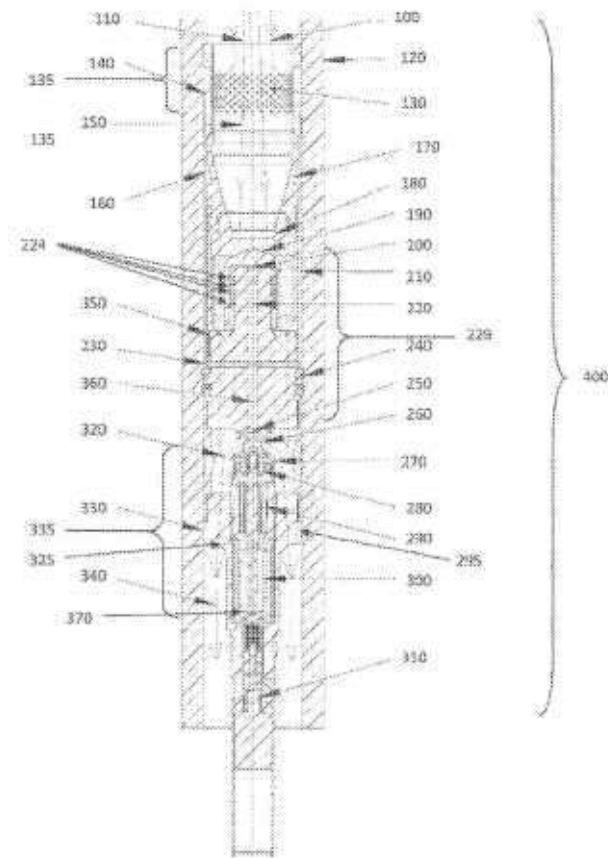
The purpose of the invention is to provide a coolant supply device and supply **method** that can appropriately **control** the spraying of coolant using a single parameter. To that end, the invention is provided with a **pump** (101) that supplies coolant to a tool (D), a **measurement** device (22) that **measures** the discharge pressure of the **pump** (101), and a **control** device (50). The **control** device (50) has a function for determining, from the rotation rate of the **pump** (101), the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.

- 66/144** © EPODOC / EPO
 PN - [WO2013065097](#) A1 20130510
 PR - WO2011JP75038 20111031
 AP - WO2011JP75038 20111031
 DT - **
 CT - [JP] ISR (A1)
[JP2004036421](#) A 20040205
 [A] (NIKUNI KK);
[JP2004338016](#) A 20041202
 [A] (DAIKIN IND LTD)
 CCI - [B23Q11/1015](#) ; [B23Q11/1038](#) ;
[F04B49/065](#) ; [F04C14/08](#)
 CQI - [B23Q11/126](#)
 CCA - [F04C2/10](#) ; [F04B2203/0209](#) ;
[F04B2205/05](#) ; [F04C2270/18](#)
 PA - NIPPON OIL PUMP CO LTD [JP];
 KAWANO YUJI [JP]
 TI - COOLANT SUPPLY DEVICE AND
 SUPPLY **METHOD**
 AB - The purpose of the invention is
 to provide a coolant supply
 device and supply **method** that



can appropriately **control** the spraying of coolant using a single parameter. To that end, the invention is provided with a **pump** (101) that supplies coolant to a tool (D), a **measurement** device (22) that **measures** the discharge pressure of the **pump** (101), and a **control** device (50). The **control** device (50) has a function for determining, from the rotation rate of the **pump** (101), the coolant flow path diameter for the tool (D) and the target value for the **pump** discharge pressure (target pressure) when the tool (D) is **drilling**.

- 67/144** © EPODOC / EPO
- PN - [US2013048379](#) A1 20130228
- PNFP - US9309762 B2 20160412
- PR - US201213368997
20120821; US201113336981
20111223; US201161529329P
20110831
- AP - US201213368997 20120821
- DT - *; Rep
- CT - || STSE (B2)
[US2003026167](#) A1 20030206 [
] (HAHN DETLEF [DE], et al)
- || R141 (A1)
[US2003026167](#) A1 []
- CCI - [E21B47/187](#)
- PA - (A1 B2)
MACDONALD ROBERT [US];
VECSERI GABOR [US]; JENNINGS
BENJAMIN [US]; TELEDRIILL INC [US]
- TI - (A1 B2)
Controlled Full Flow Pressure
Pulser for **Measurement**
While **Drilling** (MWD) Device
- AB - (A1 B2)
An apparatus, **method**, and
system described for generating
pressure pulses in **drilling** fluid



68/144 © EPODOC / EPO

PN - [US2013009784](#) A1 20130110

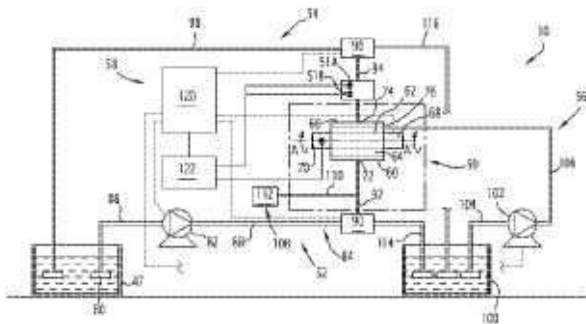
PNFP - US9638618 B2 20170502

PR - FR20100050538
 20100127; WO2011EP51082
 20110126

AP - US201113575611 20110126

DT - **

CT - || R141 (A1)
 [US3777551](#) A 19731211 [
] (WEISS W);
 [US2010250142](#) A1 20100930 [
] (ZAMORA MARIO [US], et al);
 [US2006075801](#) A1 20060413 [
] (EVRARD JEAN-FRANCOIS [FR], et
 al);
 [US4484468](#) A 19841127 [] (GAU
 GERALD S [US], et al);



[US4614236](#) A 19860930 [
] (WATKINS DAVID R [US], et al);
[US5269632](#) A 19931214 [
] (PELLETIER JOHN H [US], et al);
[US5964295](#) A 19991012 [
] (BROWN J ERNEST [US], et al);
[US6763888](#) B1 20040720 [
] (HARRIS RALPH EDMUND [GB],
 et al);
[US7531483](#) B2 20090512 [
] (PENA ALEJANDRO [US], et al);
[US7669653](#) B2 20100302 [
] (CRASTER BERNADETTE [GB], et
 al);
[US2002169085](#) A1 20021114 [
] (MILLER MATTHEW J [US], et al);
[US2002023752](#) A1 20020228 [
] (QU QI [US], et al);
[US2008020948](#) A1 20080124 [
] (RODRIGUES KLIN A [US], et al)
 - || STSE (B2)
[US3777551](#) A 19731211 [
] (WEISS W);
[US4484468](#) A 19841127 [] (GAU
 GERALD S [US], et al);
[US4614236](#) A 19860930 [
] (WATKINS DAVID R [US], et al);
[US5269632](#) A 19931214 [
] (PELLETIER JOHN H [US], et al);
[US5964295](#) A 19991012 [
] (BROWN J ERNEST [US], et al);
[US6763888](#) B1 20040720 [
] (HARRIS RALPH EDMUND [GB],
 et al);
[US7531483](#) B2 20090512 [
] (PENA ALEJANDRO [US], et al);
[US7669653](#) B2 20100302 [
] (CRASTER BERNADETTE [GB], et
 al);
[US2002023752](#) A1 20020228 [
] (QU QI [US], et al);
[US2002169085](#) A1 20021114 [
] (MILLER MATTHEW J [US], et al);
[US2006075801](#) A1 20060413 [
] (EVRARD JEAN-FRANCOIS [FR], et
 al);
[US2008020948](#) A1 20080124 [
] (RODRIGUES KLIN A [US], et al);
[US2010250142](#) A1 20100930 [
] (WATKINS DAVID R [US], et al);

	]	(ZAMORA MARIO [US], et al)
CCI	-	G01N1/14 ; G01N11/14
PA	-	(A1) VILLARD ERIC [FR]; KLIQUA NAMIC [FR]
	-	(B2) VILLARD ERIC [FR]; KLIQUA NAMIC [FR]; GEOSERVICES EQUIPMENTS [FR]
TI	-	(A1) Online Measuring Assembly of the Rheological Properties of a Drilling Fluid and Associated Measuring Method
	-	(B2) Online measuring assembly of the rheological properties of a drilling fluid and associated measuring method
AB	-	(A1 B2) This assembly includes a measuring device (50) including a container (60) and an insert (62) arranged in the container (60). The measuring device (50) includes a means (68) for driving the container (60) in rotation around a central axis, the container (60) and the insert (62) defining an intermediate space (64) between them for measuring the drilling fluid. The assembly includes a control and measurement unit (58), capable of recording information representative of the force applied by the drilling fluid on the insert (62) during the rotation of the container (60). The assembly includes an intake pipe (84) for bringing drilling fluid to be measured into the intermediate space (94) and a pump (82), comprising an inlet connected to a sampling head (80) and an outlet connected to the intake pipe (84) to pump the drilling fluid towards the

intermediate space (64).

69/144 © EPODOC / EPO

PN - [CA2788258](#) A1 20110804

PR - FR20100050538
20100127; WO2011EP51082
20110126

AP - CA20112788258 20110126

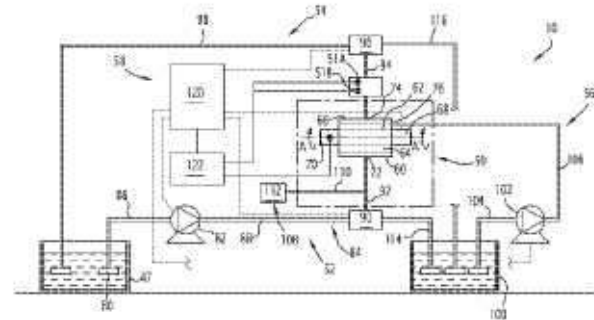
DT - I

CCI - [G01N1/14](#) ; [G01N11/14](#)

PA - GEOSERVICES EQUIPMENTS [FR]

TI - ONLINE **MEASURING** ASSEMBLY
OF THE RHEOLOGICAL
PROPERTIES OF A **DRILLING** FLUID
AND ASSOCIATED **MEASURING**
METHOD

AB - This assembly includes
a **measuring** device (50)
including a container (60) and
an insert (62) arranged in the
container (60). The **measuring**
device (50) includes a means
(68) for driving the container
(60) in rotation around a central
axis, the container (60) and the
insert (62) defining an
intermediate space (64) between
them for **measuring** the **drilling**
fluid. The assembly includes
a **control** and **measurement** unit
(58), capable of recording
information representative of the
force applied by the **drilling** fluid
on the insert (62) during the
rotation of the container (60).
The assembly includes an intake
pipe (84) for bringing **drilling**
fluid to be **measured** into the
intermediate space (94) and
a **pump** (82), comprising an inlet
connected to a sampling head
(80) and an outlet connected to
the intake pipe (84) to **pump**
the **drilling** fluid towards the
intermediate space (64).



70/144 © EPODOC / EPO

PN - [CN102678077](#) A 20120919

PR - CN20121179253 20120604

AP - CN20121179253 20120604

DT - I

CT - || STSE (A)
[US2009255728](#) A1 20091015 [A] (SPENCER ALLAN [US], et al)
 [A]
[CN102444393](#) A 20120509 [Y] (DAQING BEIYAN PETROLEUM EQUIPMENT MFG CO LTD)
 [Y]
[CN1587630](#) A 20050302 [A] (CHINA GEOLOGY UNIV BEIJING [CN])
 [A]

CTNP - || STSE (A)
 [] 于秀娥等,
 "水平井泵冲软打捞QDT-MWD技术", <<石油仪器>>, (20060531), vol. 20, no. 5

PA - UNIV CHINA GEOSCIENCES WUHAN

TI - Pumping cable fishing gear and **method**

AB - The invention relates to a pumping cable fishing gear and **method**. The fishing gear includes a motor, a cable and a fishing tool, wherein the motor is connected with a driven pulley through a transmission belt and drives a roller and the cable wound on the roller to wind and unwind; the cable enters a **drill** stem through a T-union and is connected with the fishing tool; the roller is mounted in a box body and contacted with a central shaft in the box body through a ball bearing; central shaft fixing brackets are arranged at the two ends of the central shaft; and further, one end of the roller is matched with the driven gear, and the other end thereof is a roller stopping end provided with a brake ribbon, a movable core shaft, a brake handle and the like. During the use, the fishing gear is mounted, a slurry **pump** is started, **drilling** fluid is pumped from the upper end of the **drill** stem and impacts a cylindrical pipe column at the upper part of the fishing tool, and the dropping speed of the cable is **controlled** through pressing down and releasing back the brake handle; when a fishing spear collides with a wire-line coring tool or a **measuring** instrument and gets stuck, the slurry **pump** is shut down and the motor is started, and then, the tool or the instrument can be fished up by adjusting the rotating speed of the motor. The fishing gear is simple in structure and low and cheap in cost, and has simple use **method** and high popularization value.

71/144 © EPODOC / EPO

PN - [CN102619470](#) A 20120801

PNFP - CN102619470B B 20131204

PR - CN20121122145 20120424

AP - CN20121122145 20120424

DT - I

CT - || STSE (A)
[CN101302929](#) A 20081112 [A] (HONGXIN ZHANG [CN])
 [A]
[CN102272406](#) A 20111207 [A]
 [A]
[CN201486545U](#) U 20100526 [A] (RES INST OF DRILLING ENGINEERING TECHNOLOGY

CNPC, et al)

[A]

[CN201874554U](#) U 20110622 [A] (CNPC CHUANQING DRILLING ENG CO)

[A]

[US4364587](#) A 19821221 [A] (SAMFORD TRAVIS L)

[A]

[US6662110](#) B1 20031209 [A] (BARGACH SAAD [GB], et al)

[A]

[US2005257931](#) A1 20051124 [A] (MODY RUSTOM K [US], et al)

[A]

[WO2004048745](#) A1 20040610 [A] (SMART STABILIZER SYSTEMS LTD [GB], et al)

[A]

PA

- (A B)

CHINA NAT PETROLEUM CORP; CNPC DRILLING RES INST

TI

- (A B)

Method for **controlling** transverse vibration of **drill** string in process of reaming while **drilling**

AB

- (A)

The invention discloses a **method** for **controlling** transverse vibration of **drill** string in the process of reaming while **drilling** and is applied to the field of petroleum and gas **drilling** operation. A **measuring** and transmitting pup joint is arranged above a reamer, and a transverse vibration **control** pup joint is arranged below the reamer; a transverse vibration monitoring and signal transmitting element is arranged in the **measuring** and transmitting pup joint to transmit a **measured** transverse vibration signal to a ground workstation and a bit direction; the transverse vibration **control** pup joint consists of a signal receiver, a downhole microprocessor, a solenoid valve, a hydraulic **pump** and a strengthening rib plate; and after the transverse vibration signal is received, the downhole microprocessor performs logical operation, adjusts the opening of the solenoid valve according to the intensity of the transverse vibration and **controls** extension or retraction of the strengthening rib plate. The strengthening rib plate extends to be supported on a wall of a well, so that the **drill** string is effectively straightened, and the transverse vibration amplitude of a pilot **drill** string is reduced; and moreover, the downhole closed-loop **control** of the transverse vibration of the **drill** string in the process of reaming while **drilling** can be realized.

72/144 © EPODOC / EPO

PN

- [CN102425386](#) A 20120425

PNFP

- CN102425386B B 20140326

PR

- CN20111280092 20110920

AP

- CN20111280092 20110920

DT

- I

CT

- || STSE (A)

[CN2033048U](#) U 19890222 [A] (UNIV ZHONGNAN POLYTECHNIC [CN])

[A]

[CN102071926](#) A 20110525 [A] (CNPC DRILLING RES INST)

[A]

[US4726219](#) A 19880223 [A] (PEARSON C MARK [US], et al)

	[A] US2010252259 A1 20101007 [A] (HORTON ROBERT L [US])
	[A]
CTNP	- STSE (A) [X] 鲁港等, "钻井液幂律模式非线性最小二乘参数估计的新算法", <<钻井液与完井液>>, (20070910), vol. 24, PAGE 65 - 68 [X] 65-68 [A] 刘东, "幂律钻井液流变参数估计的改进算法", <<江汉石油职工大学学报>>, (20080320), vol. 21, no. 02, PAGE 31 - 33 [A] 31-33 [A] 韩洪升等, "非牛顿流体流变特性的测量和回归分析", <<大庆石油学院学报>>, (19930910), vol. 27, no. 03, PAGE 19 - 25 [A] 19-25 [A] 王平全, "不同流变模式下钻井液剪切稀释性评价", <<天然气工业>>, (19971128), vol. 17, no. 06, PAGE 43 - 45 [A] 43-45
PA	- (A B) CHINA PETROLEUM & CHEMICAL; ENGINEERING TECHNOLOGY RES INST OF NORTH CHINA BRANCH SINOPEC
TI	- (A B) Drilling fluid rheological parameter control method meeting power law mode
AB	- (A) The invention relates to a drilling fluid rheological parameter control method meeting a power law mode. A reasonable dereferencing range of a rheological parameter is determined according to a well bore size, a borehole diameter expansion rate, an annular clearance, solid phase particles and a mud pump output volume, indications of drilling fluid under different rotating speeds are measured and converted into corresponding shearing rate and shearing stress, the rheological parameter is estimated, and an on-site small test is performed according to whether the estimated value is in the determined dereferencing range so as to determine the adjustment measures of the drilling fluid. In the method disclosed by the invention, a plurality of factors are considered to set the reasonable dereferencing range of the rheological parameter, reasonable judgment is made on the adjustment of the drilling fluid through improving the estimation precision of the rheological parameter, the maintenance measures of the drilling fluid are determined by the on-side small test, the dosage of treatment agents is saved, and the drilling cost is reduced.

73/144 © EPODOC / EPO

PN - [CN102304915](#) A 20120104

PNFP - CN102304915B B 20130501

PR - CN20111179305 20110629

AP - CN20111179305 20110629

DT - I

CT - || STSE (A)
[CN1831250](#) A 20060913 [A] (XUGONG INST XUZHOU ENGINEERING [CN])
 [A] 1-2
 全文
[CN101487252](#) A 20090722 [A] (FIRST CONSTRUCTION CO LTD [CN])
 [A] 1-2
 全文
[CN101838993](#) A 20100922 [A] (NO 3 ENGINEERING COMPANY LTD OF THE THIRTEENTH ENGINEERING BUREAU OF CREC, et al)
 [A] 1-2
 全文
[DE3343961](#) A1 19850620 [A] (GKN KELLER GMBH [DE])
 [A] 1-2
 全文
[JP2001248154](#) A 20010914 [A] (TOKYU KENSETSU KK)
 [A] 1-2
 全文
[CN101876171](#) A 20101103 [A] (CCCC TUNNEL ENGINEERING CO LTD, et al)
 [A] 1-2
 全文

CTNP - || STSE (A)
 [A] 朱万彦,
 "预留孔法清除水下灌注混凝土桩头工法", <<石家庄铁道学院学报>>, (20050630),
 vol. 18, PAGE 51 - 53
 [A] 1-2
 第51-53页
 [A] 樊功华,陈柳江,
 "桥梁桩基钻孔及混凝土灌注施工技术研究", <<科技资讯>>, (20110331), no. 3,
 PAGE 79
 [A] 1-2
 第79页
 [A] "灌注桩施工",
 中国建筑科学研究院, <<建筑桩基技术规范JGJ94-2008>>, PAGE 48-50
 [A] 1-2
 第48-50页

PA - (A B)
 FIRST ENG CO LTD CTEC GROUP

TI - (A B)
 New **method** for **controlling** top quality of **drilled** pile

AB - (A)
 The invention discloses a novel **method** for **controlling** top quality of a **drilled** pile.
 When a protecting canister is buried, the buried depth of the protecting canister is 45 to 55 centimeters below the pile top elevation, and the top of the protecting canister is 30 to 40 centimeters higher than a **drilling** platform; after the protecting canister is buried

and a hole is formed, the **drilled** pile is poured by a conventional **method**; and when the concrete height reaches the pile top elevation is determined by using a **measuring** spoon, pouring is stopped, the laitance of the top is pumped away by adopting a slurry **pump**, and dry hole pouring is performed. After the concrete is poured to the pile top elevation, vibration is performed; and after the concrete is initially set, the protecting canister is pulled out. When a bearing platform is constructed, the construction of the lower part can be performed only by clearing the concrete of the surface. By the **method**, the consumption of the concrete can be reduced, hole collapse of the loose geology at the pile top is prevented, a mushroom pile at the pile top is prevented, meanwhile, the pile breaking process is saved, the engineering cost is saved, and the work efficiency is improved. The **method** is suitable for pile foundation top pouring construction of all bridges, and is suitable for rotary **drilling**, positive and negative circular **drilling** and mechanical construction **drilling** of percussion **drills**.

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PN - [CN102109313](#) A 20110629

PNFP - CN102109313B B 20120425

PR - CN20101597513 20101221

AP - CN20101597513 20101221

DT - I

CT - || STSE (A)

[RU2129697](#) C1 19990427 [] (PERM VSEROSSIJSKOGO NI, et al)

[US7581330](#) B1 20090901 [] (REDMOND DAVID W [US])

[JP2008064576](#) A 20080321 [] (MITUTOYO CORP)

[DE102006019633](#) A1 20071031 [] (SCHWENK OSKAR GMBH & CO KG [DE])

[JP2003148901](#) A 20030521 [] (TAIYO TEKKO KK)

[JP2002131006](#) A 20020509 [] (MITUTOYO CORP)

[JP2000292161](#) A 20001020 [] (TOSHIBA CORP)

[JPH07324901](#) A 19951212 [] (MITSUBISHI MOTORS CORP)

[JPH07198303](#) A 19950801 [] (KONDO MACHINE WORKS)

[JPH03191801](#) A 19910821 [] (HITACHI ELECTR ENG)

[JPH0225701](#) A 19900129 [] (AKEBONO BRAKE IND)

[JPH0942905](#) A 19970214 [] (KOMATSU MFG CO LTD)

[JPH0743103](#) A 19950210 [] (NIPPON STEEL CORP, et al)

[CN2760505Y](#) Y 20060222 [] (LIAOHE PETROLEUM EXPLORATION [CN])

CTNP - || STSE (A)

[] <<石油矿场机械>>

19971231 张永弘等

长细非圆大变径螺旋面橡胶内孔尺寸测量 全文 1-3 第26卷, 第02期 2

PA - (A B)

UNIV SOUTHWEST PETROLEUM

TI - (A B)

Device and **method** for **measuring** small diameter of Monod **drilling** tool/**pump** stator liner inner chamber

AB - (A B)

The invention provides a device and **method** for **measuring** a small diameter of a Monod **drilling** tool/**pump** stator liner inner chamber, belonging to the technical field

of **measurement** of the small diameter of a Monod **drilling** tool/**pump** stator liner inner chamber for oil **drilling**. The device for **measuring** the small diameter provided by the invention comprises a spring, a floating support, a probe, a fixed pulley, an inner-diameter **measuring** rod, a pull wire, a pull wire **control** gate, a fixed support, a shell, a digital display **measuring** instrument and the like; when the device is used for **measuring** the small diameter, the pull wire **control** gate is pulled tightly so that the floating support is contracted; the device is placed in the liner inner chamber; the pull wire **control** gate is released; two support points of the fixed support with the length between one lead and two leads of a stator and a support point of the floating support are used for supporting and locating; the probe senses the **measuring**, and transmits the sense to the digital display **measuring** instrument via the inner-diameter **measuring** rod; and the digital display **measuring** instrument is used for **measuring** and storing the small diameter data of the stator liner. The technology provided by the invention is accurate in locating, high in **measuring** precision, convenient in use, and capable of improving the matching precision of the Monod **drilling** tool/**pump** stator and rotor, thereby promoting the scientific design and use of a Monod **drilling** tool/**pump**.

75/144 © EPODOC / EPO

PN - [CN102071690](#) A 20110525

PNFP - CN102071690B B 20120704

PR - CN20101579681 20101208

AP - CN20101579681 20101208

DT - I

CT - || STSE (A)
[CN201610544U](#) U 20101020 []
[CN101302763](#) A 20081112 [] (BINGWEN ZHOU [CN], et al)
[WQ9940260](#) A1 19990812 [] (KRISTENSEN PER HERBERT [NO], et al)

CTNP - || STSE (A)
 [] <<海洋工程>> 19931130
 陈庆等
 胜利六号近海自升式移动钻井平台的插拔桩问题的研究 84-91 1-14 第11卷, 第4期
 2

PA - (A B)
 UNIV CHINA PETROLEUM

TI - (A B)
 Offshore self-elevating **drilling** platform pile pitching and pile pulling automatic **control** device and **method**

AB - (A B)
 The invention relates to an offshore self-elevating **drilling** platform pile pitching and pile pulling automatic **control** device and **method**. The offshore self-elevating **drilling** platform pile pitching and pile pulling automatic **control** device comprises a displacement sensor, a force sensor, a computer detection **control** system, a ballast **pump** switch and a pile washing valve, wherein the displacement sensor and the force sensor are arranged on a chord member of a pile leg, the ballast **pump** switch is arranged at a ballast **pump control** system of a ballast tank, the pile washing valve is arranged on a pile shoe and is connected with a pile washing pipeline. The displacement sensor and the force sensor are respectively used for **measuring** the

driving depth of a pile body, the bearing capacity of the pile leg and a pile pulling force and transmitting the **measured** data in pile pitching and pile pulling processes into a computer detection **control** system to be processed, whether the bearing capacity of the pile in the pile pitching process is maximum or not, whether pile washing is required in the pile pulling process and whether the pile is completely pulled out are automatically judged, and the ballast **pump** switch, the pile washing valve and a pile pulling operation **control** switch are **controlled** according to the judging result, thus realizing the offshore self-elevating **drilling** platform pile pitching and pile pulling automatic **control**.

76/144 © EPODOC / EPO

PN - [WO2011092213](#) A2 20110804

PNFP - WO2011092213 A3 20111006

PR - FR20100050538 20100127

AP - WO2011EP51082 20110126

DT - **

CT - [EP] ISR (A3)

[US4484468](#) A 19841127

[DY] (GAU GERALD S [US], et al)

[DY] 1-15

* abstract *

* column 3, line 19 - column 4, line 23; figure 1; claim 1 *

* column 5, line 13 - line 23 *;

[FR2876424](#) A1 20060414

[Y] (GEOSERVICES [FR])

[Y] 1-15

* abstract *

* page 2, line 14 - page 3, line 22 *

* page 4, line 1 - page 5, line 3; figure 1; claim 1 *;

[US4703664](#) A 19871103

[A] (KIRKPATRICK LLOYD V [US], et al)

[A] 1-15

* abstract *

* column 1, line 10 - line 21 *

* column 3, line 46 - line 66 *

* column 4, line 17 - column 5, line 5 *

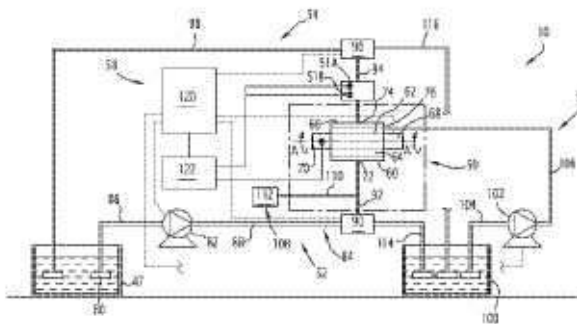
* column 5, line 57 - column 7, line 9 *

* column 8, line 15 - column 9, line 30; figure 1 *;

[FR2799790](#) A1 20010420

[A] (INST FRANCAIS DU PETROLE

[FR])



[A] 1-15
* the whole document *;
[WO2009153603](#) A2 20091223

[A] (COLQUHOUN ROSS [GB])

[A] 1-15

* abstract *

* page 5, line 24 - page 6,
line 27 *

* page 15, line 12 - page 19,
line 2; figures 1,2; claim 32 *

- CCI - [G01N1/14](#) ; [G01N11/14](#)
- PA - (A2 A3)
GEOSERVICES EQUIPMENTS [FR];
VILLARD ERIC [FR]; KLIQUA NAMIC
[FR]
- TI - (A2 A3)
ONLINE **MEASURING** ASSEMBLY
OF THE RHEOLOGICAL
PROPERTIES OF A **DRILLING** FLUID
AND ASSOCIATED **MEASURING**
METHOD
- AB - (A2 A3)
This assembly includes
a **measuring** device (50)
including a container (60) and
an insert (62) arranged in the
container (60). The **measuring**
device (50) includes a means
(68) for driving the container
(60) in rotation around a central
axis, the container (60) and the
insert (62) defining an
intermediate space (64) between
them for **measuring** the **drilling**
fluid. The assembly includes
a **control** and **measurement** unit
(58), capable of recording
information representative of the
force applied by the **drilling** fluid
on the insert (62) during the
rotation of the container (60).
The assembly includes an intake
pipe (84) for bringing **drilling**
fluid to be **measured** into the
intermediate space (94) and
a **pump** (82), comprising an inlet
connected to a sampling head
(80) and an outlet connected to

77/144 © EPODOC / EPO

PN - [US2010288507](#) A1 20101118

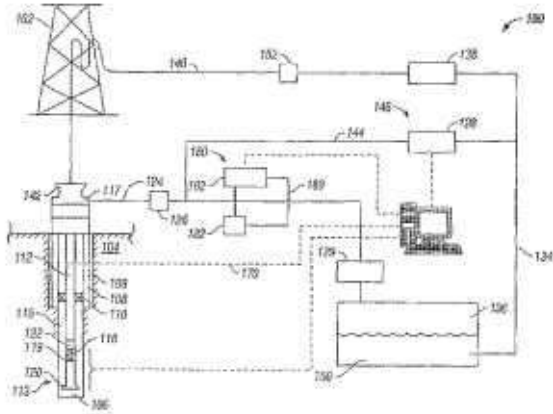
PNFP - US8490719 B2 20130723

PR - US20070445686
20071023; US20060862558P
20061023; WO2007US82245
20071023

AP - US20070445686 20071023

DT - **

CT - || STSE (B2)
[US3470972](#) A 19691007 [
] (DOWER ETHELL J)
[US3552502](#) A 19710105 [
] (WILSON WILLIAM PAUL SR)
[US3677353](#) A 19720718 [
] (BAKER GERALD S)
[US3827511](#) A 19740806 [
] (JONES M)
[US4733232](#) A 19880322 [
] (GROSSO DONALD S [US])
[US4733233](#) A 19880322 [
] (GROSSO DONALD S [US], et al)
[US4867254](#) A 19890919 [
] (GAVIGNET ALAIN [FR])
[US5070949](#) A 19911210 [
] (GAVIGNET ALAIN [FR])
[US5080182](#) A 19920114 [
] (THOMPSON MARTIN [GB])
[US6920942](#) B2 20050726 [
] (KOEDERITZ WILLIAM L [US])
[US7278496](#) B2 20071009 [
] (LEUCHTENBERG CHRISTIAN
[GB])
[US7350597](#) B2 20080401 [
] (REITSMA DONALD GORDON
[US], et al)
[US7367411](#) B2 20080506 [
] (LEUCHTENBERG CHRISTIAN
[GB])
[US7395878](#) B2 20080708 [
] (REITSMA DONALD GORDON
[NL], et al)
[US7562723](#) B2 20090721 [
] (REITSMA DONALD G [US])



[US7650950](#) B2 20100126 [] (LEUCHTENBERG CHRISTIAN [GB])

[US7828081](#) B2 20101109 [] (REITSMA DONALD GORDON [NL])

[US7836973](#) B2 20101123 [] (BELCHER GARY [CA], et al)

[US7984770](#) B2 20110726 [] (SEHSAH OSSAMA RAMZI [US])

[US8016033](#) B2 20110913 [] (IBLINGS DAVID [US], et al)

[US8122975](#) B2 20120228 [] (BELCHER GARY [CA], et al)

[US2003024737](#) A1 20030206 [] (CHANG LINGO [US], et al)

[US2003079912](#) A1 20030501 [] (LEUCHTENBERG CHRISTIAN [GB])

[US2003196804](#) A1 20031023 [] (RIET EGBERT JAN VAN [NL])

[US2004144565](#) A1 20040729 [] (KOEDERITZ WILLIAM L [US])

[US2005222772](#) A1 20051006 [] (KOEDERITZ WILLIAM L [US], et al)

[US2006175090](#) A1 20060810 [] (REITSMA DONALD G [NL], et al)

[US2007151762](#) A1 20070705 [] (REITSMA DONALD G [US])

[US2007151763](#) A1 20070705 [] (REITSMA DONALD G [US], et al)

[US2007227774](#) A1 20071004 [] (REITSMA DONALD G [US], et al)

[US2007246263](#) A1 20071025 [] (REITSMA DONALD G [US])

[US2008060846](#) A1 20080313 [] (BELCHER GARY [CA], et al)

[US2010186960](#) A1 20100729 [] (REITSMA DONALD G [US], et al)

[US2010288507](#) A1 20101118 [] (DUHE JASON [US], et al)

[US2011024189](#) A1 20110203 [] (SAEED SAAD [US], et al)

[US2011114387](#) A1 20110519 [] (BELCHER GARY [CA], et al)

[US2011139506](#) A1 20110616 [] (LOVORN JAMES R [US], et al)

[US2011139509](#) A1 20110616 []

] (POOL CHARLES M [US], et al)
[US2011214882](#) A1 20110908 [
] (SANTOS HELIO [US])
[US2011290562](#) A1 20111201 [
] (STANDIFIRD WILLIAM BRADLEY
[US], et al)
[US2011303462](#) A1 20111215 [
] (LOVORN JAMES R [US], et al)
[US2012067591](#) A1 20120322 [
] (COUTURIER YAWAN [US], et al)
[WO2008051978](#) A1 20080502 [
] (DUHE JASON [US], et al)

- || R141 (A1)

[US2003024737](#) A1 [];
[US2003196804](#) A1 [];
[US2004144565](#) A1 [];
[US6920942](#) B2 [];
[US2005222772](#) A1 [];
[US2006175090](#) A1 [];
[US2007151762](#) A1 [];
[US2007151763](#) A1 [];
[US2007227774](#) A1 [];
[US2007246263](#) A1 [];
[US2008060846](#) A1 [];
[US7395878](#) B2 [];
[US2010186960](#) A1 [];
[US2011024189](#) A1 [];
[US2011114387](#) A1 [];
[US2011139506](#) A1 [];
[US2011139509](#) A1 [];
[US2011214882](#) A1 [];
[US8016033](#) B2 [];
[US2011303462](#) A1 [];
[US2011290562](#) A1 [];
[US8122975](#) B2 [];
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[US5080182](#) A [];
[US7650950](#) B2 [];
[US4733232](#) A [];
[US4733233](#) A [];
[US7350597](#) B2 [];
[US2003079912](#) A1 [];
[US7367411](#) B2 [];
[US3677353](#) A [];
[US7562723](#) B2 [];
[US7984770](#) B2 [];
[US3827511](#) A [];

[US4867254](#) A [];
[US3470972](#) A [];
[US7278496](#) B2 [];
[US7828081](#) B2 [];
[US7836973](#) B2 [];
[US5070949](#) A [];
[US6374925](#) B1 [];
[US2002112888](#) A1 [];
[US6484816](#) B1 [];
[US6575244](#) B2 [];
[US2004007131](#) A1 [];
[US2004178003](#) A1 [];
[US2005092523](#) A1 [];
[US2005096848](#) A1 [];
[US2005098349](#) A1 [];
[US6904981](#) B2 [];
[US2006037781](#) A1 [];
[US7044237](#) B2 [];
[US2006113110](#) A1 []

- CCI - [E21B21/08](#)
- PA - (B2)
DUHE JASON [US]; MAY JAMES [US]; MI LLC [US]
- TI - (A1 B2)
METHOD AND APPARATUS FOR CONTROLLING BOTTOM HOLE PRESSURE IN A SUBTERRANEAN FORMATION DURING RIG PUMP OPERATION
- AB - (A1)
A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, **controllably** bleeding off

pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for **controllably** bleeding off pressurized fluid from the wellbore annulus, a backpressure **pump** for applying a calculated set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** is also disclosed.

- (B2)

A **method** for maintaining pressure in a wellbore during **drilling** operations includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, **controllably** bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations includes an adjustable choke for **controllably** bleeding off pressurized fluid from the wellbore annulus, a backpressure **pump** for applying a calculated set point

backpressure, and a processor
for **controlling** the adjustable
choke and backpressure **pump**.

78/144 © EPODOC / EPO

PN - [CN101871329](#) A 20101027

PNFP - CN101871329B B 20121003

PR - CN20101192919 20100603

AP - CN20101192919 20100603

DT - I

CT - || STSE (A)

[CN101328786](#) A 20081224 [] (SHENGLI OIL FIELD HAISHENG IND [CN]);

[CN1403680](#) A 20030319 [] (ZHONGHAI OIL FIELD SERVICE CO [CN]);

[CN201253914Y](#) Y 20090610 [] (CHINA XD ELECTRONIC CO LTD [CN]);

[US2005269137](#) A1 20051208 [] (SWARTOUT MATT [CA]);

[CN201396146Y](#) Y 20100203 [] (CHANGQIN WANG);

[KR20000059718](#) A 20001005 [] (LG IND SYSTEMS CO LTD [KR]);

[US5590958](#) A 19970107 [] (DEARING SR MICHAEL P [US], et al)

PA - (A B)

DAQING OILFIELD JINGTAI PETROLEUM ENGINEERING TECHNOLOGY CO LTD

TI - (A B)

Drilling fluid PLC automatic **control** system and **control method** thereof

AB - (A B)

The invention discloses a **drilling** fluid PLC automatic **control** system and a **control method** thereof, which are matched with a **drilling pump** and solid **control** equipment. The **control** system consists of a central processing unit, an A/D converter, a D/A converter, a liquid crystal display screen, an electromagnetic flowmeter, a mud flow meter, an intelligent mud level **measurement** device, a **drilling** fluid density tester, a **drilling** fluid viscosity **measuring** instrument, a blender, a clay feed inlet, a bentonite feed inlet, a weighting material feed inlet, a fluid loss agent feed inlet, a tackifier feed inlet, a water inlet, an inlet **pump**, and an outlet **pump**. The **control method** comprises that: the central processing unit sends a command to **control** the work of the water inlet, five feed inlets, the inlet **pump**, the blender and the outlet **pump**; the electromagnetic flowmeter, the mud flow meter, the intelligent mud level **measurement** device, the **drilling** fluid density tester, and the **drilling** fluid viscosity **measuring** instrument input the acquired data into a PLC; and the data subjected to PLC operation is displayed on the liquid crystal display screen. The **control method** can reduce the manpower and material resources needed by on-site liquid preparation and reduce the production cost.

79/144 © EPODOC / EPO

PN - [RU2387831](#) C1 20100427

PR - RU20090106347 20090224

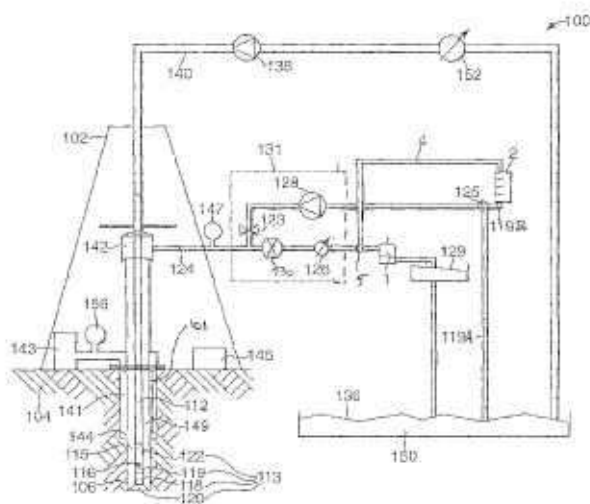
AP - RU20090106347 20090224

DT - I

PA - FEDERAL NOE GUP ZD PRIBOR [RU]

- TI - **METHOD OF TRANSMITTING AND RECEIVING WELL INFORMATION AND DEVICE TO THIS**
END
- AB - FIELD: physics, communications. ^ SUBSTANCE: invention relates to communication engineering and specifically to means of transmitting data for well devices and can be used in geophysics, particularly in oil and gas industry when extracting oil using bottom hole pumps and when **drilling** and investigating wells. Proposed are a **method** of receiving and transmitting well information and a device for realising the said **method**, consisting of a surface unit 1 and a submerged unit 2, connected through the neutral point of the power transformer of the bottom hole **pump** 3, a power triple-lead cable 4 and a neutral point of the engine of the bottom hole **pump** 5. The surface unit 1 has series-connected processing unit 6, coder 7, **controlled** dc power supply 8 connected by one terminal directly to a communication line and by the other to the input of a decoder 9, whose output is connected to the input of the processing unit 6 and to the first terminal of a current-to-voltage converter 10. The second terminal of the current-to-voltage converter 10 is connected to the neutral bus of the communication line. The submerged unit 2 has an RC filter 11 and an RC filter 12, whose inputs are connected to the communication line 4, while outputs of filter 11 are connected to a voltage divider 13 and the input of a stabiliser 14, and the second RC filter 12 is connected to the point for connecting the stabiliser 14 and a zener diode 15. The output of the voltage divider 13 is connected to the input of the decoder 16, whose output is connected to the input of the processing unit 17. The first output of the processing unit 17 is connected to the input of the coder 18, which is connected by the output to the **control** input of a switch 20 powered from the stabiliser 14 through a current setting resistor 19, where one lead of the switch is connected to the neutral bus of the communication line. The second output of the processing unit 17 is connected to a power switch 21, whose outputs are connected to **measuring** sensors 22, whose outputs are connected to inputs of a **measuring** unit 23, whose output is connected to the processing unit 17. ^ EFFECT: increased noise-immunity of receiving and transmitting and increased reliability of operation. ^ 2 cl, 2 dwg

- 80/144 © EPODOC / EPO
- PN - [EA200600444](#) A1 20060825
- PNFP - EA008422 B1 20070427
- PR - EP20030077606
20030819; WO2004EP51614
20040727
- AP - EA20060000444 20040727
- DT - I
- CT - || STSE (B1)
[US3470971](#) A 19691007 [
] (DOWER ETHELL J);
[US2001050185](#) A1 20011213 [
] (CALDER IAN DOUGLAS [US], et
al);
[US6352129](#) B1 20020305 [
] (BEST BRUNO [NL]);
[US2002112888](#) A1 20020822 [
]



	] (LEUCHTENBERG CHRISTIAN [GB])
CCI	- E21B43/122 ; E21B47/12 ; E21B21/08
PA	- (B1) SHELL INT RESEARCH [NL]
TI	- (B1) DRILLING SYSTEM AND METHOD
AB	- (B1) System (100) for drilling a bore hole into an earth formation, comprising: - a drill string (112) reaching into the bore hole leaving a drilling fluid return passage between the drill string and the bore hole inside wall; - a drilling fluid discharge conduit (124) in fluid communication with said return passage (115); - pump means (138) for pumping a drilling fluid through the drill string to said discharge conduit via said return passage; - back pressure means (123, 128, 130) for controlling the drilling fluid back pressure; - fluid injection means (141, 143) comprising supply passage (141) fluidly connecting an injection fluid supply (143) with said return passage and further comprising an injection fluid pressure sensor (156) arranged to measure injection fluid pressure in said supply passage; - back pressure control means (238) for controlling the back pressure means (123, 128, 130) whereby said control means is arranged to regulate the back.

PN - [MX2009004270](#) A 20090702

PR - US20060862558P
20061023; WO2007US82245
20071023

AP - MX20090004270 20071023

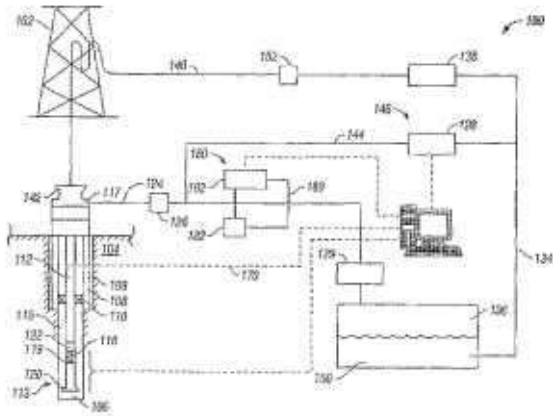
DT - I

CCI - [E21B21/08](#)

PA - MI LLC [US]

TI - **METHOD AND APPARATUS
FOR CONTROLLING BOTTOM
HOLE PRESSURE IN A
SUBTERRANEAN FORMATION
DURING RIG PUMP OPERATION.**

AB - A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, controllably bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for controllably bleeding off pressurized fluid from the wellbore annulus. a backpressure **pump** for applying a calculated set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** is



also disclosed.

82/144 © EPODOC / EPO

PN - [EA200970408](#) A1 20091030

PNFP - EA014363 B1 20101029

PR - US20060862558P
20061023; WO2007US82245
20071023

AP - EA20090070408 20071023

DT - I

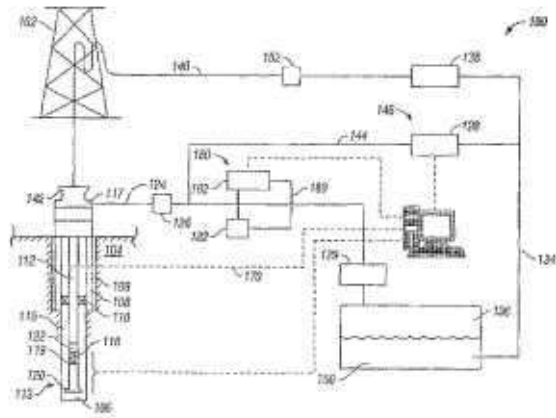
CT - || STSE (B1)
[US6904981](#) B2 20050614 [
] (VAN RIET EGBERT JAN [NL]);
[US7044237](#) B2 20060516 [
] (LEUCHTENBERG CHRISTIAN
[GB]);
[US5474142](#) A 19951212 [
] (BOWDEN BOBBIE J [US]);
[US4449594](#) A 19840522 [
] (SPARKS RONALD L [US])

CCI - [E21B21/08](#)

PA - (B1)
MI LLC [US]; SMITH
INTERNATIONAL [US]

TI - (B1)
**METHOD AND APPARATUS
FOR CONTROLLING BOTTOM
HOLE PRESSURE IN A
SUBTERRANEAN FORMATION
DURING RIG PUMP OPERATION**

AB - (B1)
A **method** for maintaining
pressure in a wellbore
during **drilling** operations is
disclosed. The **method** includes
the steps of providing fluid from
a reservoir through a **drill**
string, circulating the fluid from the **drill**
string to an annulus between
the **drill** string and the wellbore,
isolating pressure in the
annulus, **measuring** pressure in
the annulus, calculating a set
point backpressure, applying
back pressure to the annulus
based on the set point back
pressure, diverting fluid from the



annulus to a **controllable** choke, **controllably** bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations, comprising: a pressure transducer in the **drill** string to **measure** pressure in the annulus; rotating **control** device isolating pressure in the annulus and communicating fluid from the reservoir to the **drill** string and diverting fluid and solids from the annulus; an adjustable choke in fluid communication with the rotating **control** device **controllably** bleeding off pressurized fluid from the annulus; solids **control** equipment receiving fluid and solids from the adjustable choke and removing the solids from the fluid; wherein the fluid from the solids **control** equipment is directed to the reservoir; a processor receiving the **measured** pressure from the pressure transducer and calculating a set point backpressure; and a backpressure **pump** in fluid communication with the reservoir and applying a backpressure between the rotating **control** device and the automatic choke based on the calculated set point backpressure.

83/144 © EPODOC / EPO

PN - [RU2369724](#) C1 20091010
 PR - RU20080142241 20081027
 AP - RU20080142241 20081027
 DT - I

PA - TATNEFT IM V D SHASHINA AOOT [RU]
 TI - **METHOD** OF OIL DEPOSIT DEVELOPMENT
 AB - FIELD: oil and gas production. ^ SUBSTANCE: invention refers to oil industry and can be implemented at development of oil deposit. The essence of the invention is as follows: the **method** consists in pumping working agent via pressure wells, in withdrawing oil via producing wells and in boring additional producing wells into blind up- and/or stagnant holes. **Drilling** is carried out up to a producing bed, then a cased column is lowered and cementing of bottomhole space is performed; further the well is **drilled** with a bore bit of a smaller diameter up to the bottom of the bed with mineralised water used as a **drilling** agent, then the well is cemented and perforated or a slotted strainer is installed. Not later, than in 120 hours from the moment of perforation completion or lowering of the slotted strainer a flow string with an anchor shoe, a shutoff and a pusher of a ball of the shutoff is installed in the producer through a well head seal; well fluid is replaced by driving oil into the flow string at volume of well borehole; replaced well fluid is withdrawn via annular gate; and oil driving is completed with fresh water in volume equal to internal volume of the flow string from the well head to the shutoff. Change of well fluid with oil is performed at rate facilitating replacement of fluid with a piston; the process of change is **controlled** by pressure and consumption of pumped oil; also consumption of oil corresponds to less 6-8 l/sec at pressure at well head 6-7 MPa. An inserted sucker-rod **pump** is lowered on rods into the anchor shoe; simultaneously the ball of the shutoff is pressed by the pusher and the well is put into operation. ^ EFFECT: capability to perform outbreak **measures** at well, maintaining of collector properties of bed and increased yield of oil from deposit. ^ 1 ex, 3 dwg

84/144 © EPODOC / EPO

PN - [RU2008100804](#) A 20090720

PNFP - RU2369065 C1 20091010

PR - RU20080100804 20080109

AP - RU20080100804 20080109

DT - I

PA - (C1)
 G NAUCHNOE UCHREZHDIENIE VRNII [RU]

TI - (C1)
METHOD AND DEVICE FOR TILLED CROPS SOWING

AB - (C1)
 FIELD: agriculture. ^ SUBSTANCE: **method** and device for sowing tilled crops involves the following operations. The soil humidity at the depth of up to 10 cm is defined before making **drill** furrows. The **drill** furrow is made and the seeds are sown into it with simultaneous **measurement** of the soil humidity at the seed sowing depth and soil temperature in the furrow. In case the soil humidity **measured** twice before and during sowing is less than the optimal one, a solution of activated liquid for bringing the soil into the condition ensuring maximal field germination of seeds is introduced to the **drill** furrow. Afterwards the seeds are compacted in the furrow with the adjusted force of 350-700 g/cm² and are simultaneously covered. Then the soil above the furrow is compacted with the pressure not exceeding 35-50 g/cm². The smaller pressure is chosen in case the soil humidity is more than the optimal one. Soil smoothing over the furrow follows. The device for the **method** implementation comprises a clod sweep, a

coulter, a seed pipeline, a nozzle to introduce activated liquid portions to the soil, a **drilling** unit with a cell disc, a compacting wheel, a compacting roller and a smoothing harrow. The clod sweep is mounted before the coulter on an independent suspension member and a soil humidity capacitive sensor is set in its casing. The coulter is sequentially followed by the nozzle to introduce the activated liquid portions to the soil and the compacting wheel on the independent spring-loaded suspension member combined with the spring tension **controller**. The wheel tyre is matching the furrow profile. The nozzle is connected to the electric valve and electric **pump** for the activated liquid tank with the help of a pipe passing through a toroidal magnet. Additionally the **drilling** disc is fitted by a rotation sensor, the seed pipeline - by a combined seed sowing capacitive sensor, the coulter - by a temperature **measuring** sensor. The sensor of soil humidity in terms of its ohmic resistance is jointed to the coulter end face under the seed pipeline. All sensors, the spring tension **controller**, electric valve and electric **pump** are connected to an integrated chip to specify optimal soil humidity and generate managing signals for the spring tension **controller**, electric valve and electric **pump**. ^ EFFECT: invention allows for the increase of the seed field germination and uniformity of the seed distribution in the furrow as well as for the reduction of the liquid introduced to the furrow. ^ 3 cl, 3 dwg, 1 tbl

85/144 © EPODOC / EPO

PN - [CN101498210](#) A 20090805

PNFP - CN101498210B B 20121128

PR - CN20081229898 20081218

AP - CN20081229898 20081218

DT - I

PA - (A)
CHANGCHENG DRILLING ENG CO LTD [CN]
- (B)
CNPC GREATWALL DRILLING CO

TI - (A B)
Coal bed gas slim-hole hydraulic jet orienting fracturing yield increasing **method**

AB - (A B)
The invention relates to a **method** for small well-hole hydraulic jetting orientating compression-crack production increase of a coal bed well used for reformation and production increase of storage beds of a coal-bed gas well. Based on the orientating small well-hole hydraulic jetting, active water is used for adding sand and pressure crack. The jetting direction is **controlled** on the positions with the intervals of certain included angles from 30 DEG to 45 DEG in the direction of the maximum horizontal stress, the jetting diameter is 1 inch, and horizontal holes have a certain length from 50 m to 100 m; the active water of a normal coal-bed gas well is matched for adding sand and pressure crack; according to geology **measurement**, the direction of the high local horizontal stress is acquired to carry out constructional design; devices and materials used for hydraulic jetting are prepared as required. The **method** includes the following steps of hydraulic jetting constructional work, depth and direction correction, windowing **drill** descent, sleeve windowing, the hydraulic jetting **drilling** advancement, the construction of using the active water for adding sand and pressure crack, loading a well hole of pressure crack, connecting and recoiling a jetting pipe wire, casing a pipe

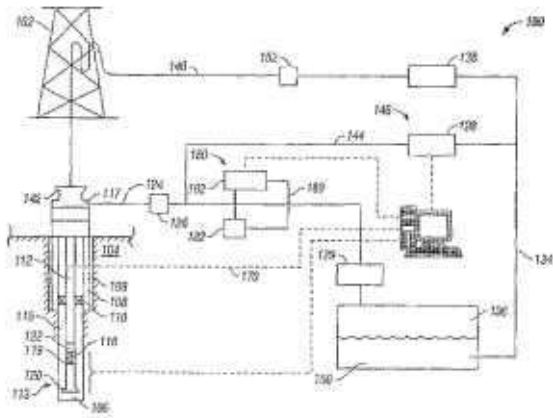
column of pressure crack, the construction of pressure crack, returning discharge of pressure crack and sand removal, and providing the **pump** for production. The invention solves the problems of the uncontrollable walking direction of the crack, the small reforming area of the storage bed and the poor effect of production increase in the prior art, and can be used for the work of the reformation and the production increase of the coal-bed gas well.

- 86/144** © EPODOC / EPO
- PN - [CA2667199](#) A1 20080502
- PNFP - CA2667199 C 20141209
- PR - US20060862558P
20061023; WO2007US82245
20071023
- AP - CA20072667199 20071023
- DT - I
- CCI - [E21B21/08](#)
- PA - (A1 C)
MI LLC [US]; SMITH
INTERNATIONAL [US]
- TI - (A1)

**METHOD AND APPARATUS
FOR CONTROLLING BOTTOM
HOLE PRESSURE IN A
SUBTERRANEAN FORMATION
DURING RIG PUMP OPERATION**

- (C)
**METHOD AND APPARATUS
FOR CONTROLLING BOTTOM
HOLE PRESSURE IN A
SUBTERRANEAN FORMATION
DURING RIG PUMP OPERATION**

- AB - (A1)
A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back



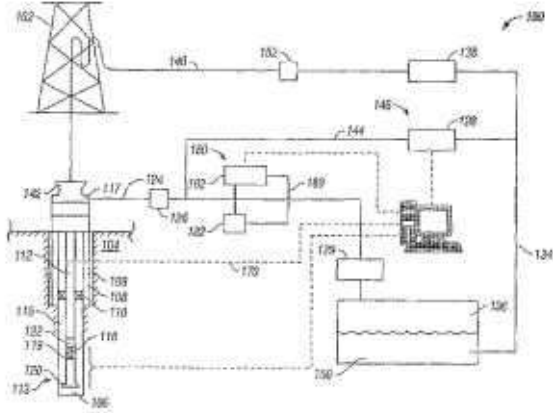
pressure, diverting fluid from the annulus to a **controllable** choke, controllably bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for controllably bleeding off pressurized fluid from the wellbore annulus, a backpressure **pump** for applying a calculated set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** is also disclosed.

- (C)

A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, controllably bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for controllably bleeding off pressurized fluid from the

wellbore annulus. a
backpressure **pump** for applying
a calculated set point
backpressure, and a processor
for **controlling** the adjustable
choke and backpressure **pump** is
also disclosed.

- 87/144** © EPODOC / EPO
- PN - [GB2456438](#) A 20090722
- PNFP - GB2456438 B 20110112
- PR - WO2007US82245
20071023; US20060862558P
20061023
- AP - GB20090006542 20071023
- DT - **
- CT - || STSE (A B)
[US4449594](#) A 19840522 [
] (SPARKS RONALD L [US]);
[US5474142](#) A 19951212 [
] (BOWDEN BOBBIE J [US]);
[US6904981](#) B2 20050614 [
] (VAN RIET EGBERT JAN [NL]);
[US7044237](#) B2 20060516 [
] (LEUCHTENBERG CHRISTIAN
[GB])
- CCI - [E21B21/08](#)
- CNOI - (A B)
[E21B21/08](#)
- PA - (A)
MI LLC [US]
(B)
MI LLC [US]; SMITH
INTERNATIONAL [US]
- TI - (A B)
Method and apparatus
for **controlling** bottom hole
pressure in a subterranean
formation during rig **pump**
operation
- AB - (A)
A **method** for maintaining
pressure in a wellbore
during **drilling** operations is
disclosed. The **method** includes
the steps of providing fluid from



a reservoir through a **drill** string, circulating the fluid from the **drill** string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, controllably bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for controllably bleeding off pressurized fluid from the wellbore annulus, a backpressure **pump** for applying a calculated set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** is also disclosed.

88/144 © EPODOC / EPO

PN - [CN101387113](#) A 20090318

PNFP - CN101387113B B 20110427

PR - CN20081211389 20080925

AP - CN20081211389 20080925

DT - I

PA - (A)
HANXIANG SHI [CN]

- (B)
HANXIANG SHI

TI - (A B)
Coastal saline soil improvement **method**

AB - (A B)
The invention relates to a **method** for improving coastal saline soil. The **method** comprises the following steps of building an anti-seepage wall to block seawater from infiltrating, cutting off salt supplement source and coordinating with other **measures** so

as to progressively desalt the coastal saline soil and then change the coastal saline soil into arable land. The anti-seepage wall is formed through the following steps that three rows of grouting holes arrayed in a regular triangle are **drilled**; cement paste is injected into the grouting holes in turn by a grouting **pump**; the cement paste permeates a rock-soil layer; the grouting speed is **controlled**; the permeation distance of the cement paste is guaranteed, so as to ensure that the cement paste injected into adjacent grouting holes is closely connected together; after the cement paste is injected into the rock-soil layer, the cement paste is condensed with the rock-soil layer together so as to form the anti-seepage wall which blocks the seawater from infiltrating. The other **measures** comprise **measures** of building a seawall, a brine drainage system and a pipeline irrigation system and applying soil conditioner.

89/144 © EPODOC / EPO

- PN - [US2009063055](#) A1 20090305
- PNFP - US8781746 B2 20140715
- PR - US20070847904 20070830
- AP - US20070847904 20070830
- DT - **
- CT - || STSE (B2)
- [US3552502](#) A 19710105 [] (WILSON WILLIAM PAUL SR)
- [US4041780](#) A 19770816 [] (ANGEHRN JORG AUGUST)
- [US4797822](#) A 19890110 [] (PETERS REX B [US])
- [US6467341](#) B1 20021022 [] (BOUCHER MARCEL [US], et al)
- [US6608565](#) B1 20030819 [] (VAN STEENWYK DONALD H [US], et al)
- [US6714138](#) B1 20040330 [] (TURNER WILLIAM EVANS [US], et al)
- [US6880634](#) B2 20050419 [] (GARDNER WALLACE R [US], et al)
- [US6990045](#) B2 20060124 [] (JACKSON JAMES C [US])
- || R141 (A1)
- [US3552502](#) A [];
- [US4797822](#) A [];
- [US6990045](#) B2 [];
- [US6714138](#) B1 [];
- [US6880634](#) B2 [];
- [US4041780](#) A [];
- [US6608565](#) B1 [];
- [US6467341](#) B1 [];

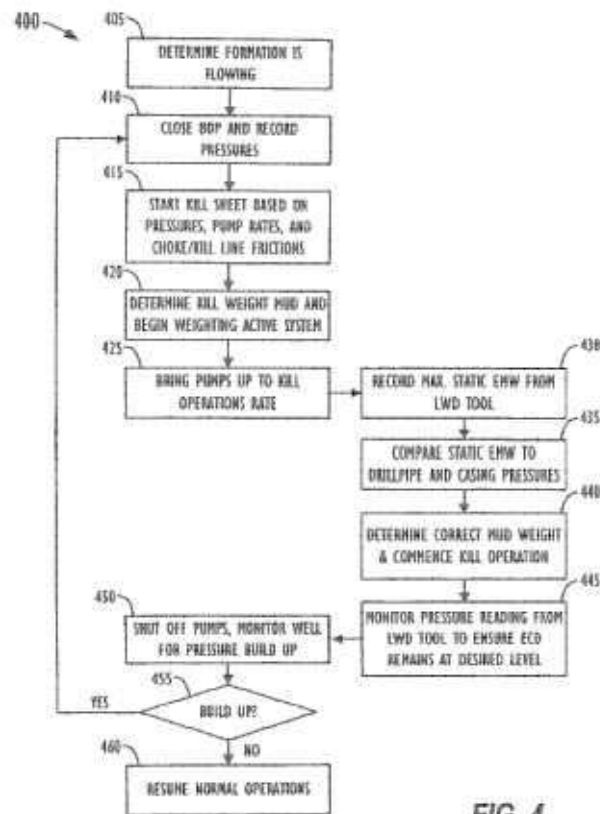


FIG. 4

[US6484816](#) B1 [];
[US2004065477](#) A1 []

- CTNP - || STSE (B2)
[] Neal Adams, "Underground blowout causes and symptoms: although always caused by a pressure differential, there are many ways that flow can be initiated and signs of a problem may not be obvious", World Oil, Jan. 2005, 8 pages
[] Adamson, Keelan, et al., "High-Pressure, High-Temperature Well Construction", Oilfield Review, Summer 1998, pp. 36-49
- CCI - [E21B44/08](#) ; [E21B47/06](#) ;
[E21B21/08](#)
- PA - (A1)
PRECISION ENERGY SERVICES INC
[US]
- (B2)
SCHNEIDER BARRY [US];
CHEATHAM CURTIS [US];
MAULDIN CHARLES [US];
PRECISION ENERGY SERVICES INC
[US]
- TI - (A1 B2)
System and **Method** for Obtaining and Using Downhole Data During Well **Control** Operations
- AB - (A1)
In a well **control** system and **method**, a tool driver on a toolstring is configured to activate a telemetry tool in response to a predetermined threshold of accelerometer data **measured** by an accelerometer. For example, the predetermined accelerometer data threshold preferably corresponds to an acceleration level expected while **drilling** mud is being pumped at a slow **pump** rate of a well **control** operation

through the **drill** pipe of the well. When a fluid influx occurs during **drilling**, the well is shut-in so that the tool driver turns off the telemetry tool. The **drill** pipe and casing pressures of the shut-in well are obtained.

Then, **drilling** mud having a first weight is pumped into the **drill** pipe at a slow mud **pump** rate. Because the tool driver is set to activate the telemetry tool in response to accelerometer data at the slow **pump** rate, the telemetry tool begins sending downhole pressure data to the surface. In this way, rig operations can change the mud weight and adjust the choke line during the kill operation based on an analysis of the downhole pressure data obtained during the well **control** operation.

- (B2)

A tool driver activates a telemetry tool when a predetermined threshold of accelerometer data **measured** by an accelerometer. The threshold preferably corresponds to an acceleration level expected while **drilling** mud is pumped at a slow **pump** rate through the well's **drill** pipe. When a fluid influx occurs during **drilling**, the well is shut-in, and the tool driver turns off the telemetry tool. The **drill** pipe and casing pressures of the shut-in well are obtained. Then, **drilling** mud having a first weight is pumped at a slow mud **pump** rate. Because the tool driver is set to activate the telemetry tool in response to accelerometer data at the slow **pump** rate, the telemetry tool begins sending downhole pressure data to the surface. In this way, rig

operations can change the mud weight and adjust the choke line during the kill operation based on an analysis of the downhole pressure data obtained.

90/144 © EPODOC / EPO

PN - CA2635448 A1 20090228

PNFP - CA2635448 C 20110920

PR - US20070847904 20070830

AP - CA20082635448 20080619

DT - I

CCI - E21B47/06 ; E21B21/08 ; E21B44/08

PA - (A1 C)
PRECISION ENERGY SERVICES INC [US]

TI - (A1 C)
SYSTEM AND METHOD FOR OBTAINING AND USING DOWNHOLE DATA DURING WELL CONTROL OPERATIONS

AB - (A1)
In a well control system and method, a tool driver on a toolstring is configured to activate a telemetry tool in response to a predetermined threshold of accelerometer data measured by an accelerometer. For example, the predetermined accelerometer data threshold preferably corresponds to an acceleration level expected while drilling mud is being pumped at a slow pump rate of a well control operation through the drill pipe of the well. When a fluid influx occurs during drilling, the well is shut-in so that the tool driver turns off the telemetry tool. The drill pipe and casing pressures of the shut-in well are obtained. Then, drilling mud having a first weight is pumped into the drill pipe at a slow mud pump rate.

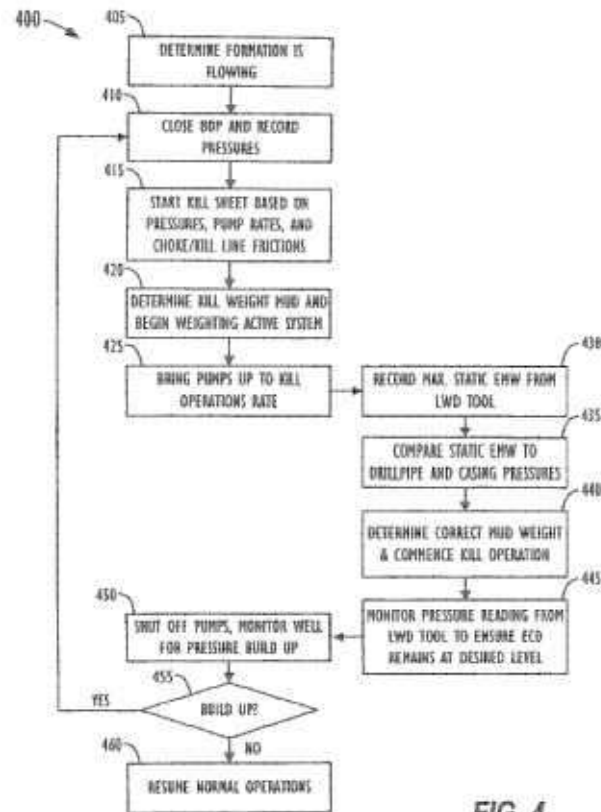


FIG. 4

Because the tool driver is set to activate the telemetry tool in response to accelerometer data at the slow pump rate, the telemetry tool begins sending downhole pressure data to the surface. In this way, rig operations can change the mud weight and adjust the choke line during the kill operation based on an analysis of the downhole pressure data obtained during the well **control** operation.

- (C)

In a well **control** system and **method**, a tool driver on a toolstring is configured to activate a telemetry tool in response to a predetermined threshold of accelerometer data **measured** by an accelerometer. For example, the predetermined accelerometer data threshold preferably corresponds to an acceleration level expected while **drilling** mud is being pumped at a slow **pump** rate of a well **control** operation through the **drill** pipe of the well. When a fluid influx occurs during **drilling**, the well is shut-in so that the tool driver turns off the telemetry tool. The **drill** pipe and casing pressures of the shut-in well are obtained.

Then, **drilling** mud having a first weight is pumped into the **drill** pipe at a slow mud **pump** rate. Because the tool driver is set to activate the telemetry tool in response to accelerometer data at the slow **pump** rate, the telemetry tool begins sending downhole pressure data to the surface. In this way, rig operations can change the mud weight and adjust the choke line during the kill operation based on an analysis of the downhole

pressure data obtained during
the well **control** operation.

91/144 © EPODOC / EPO

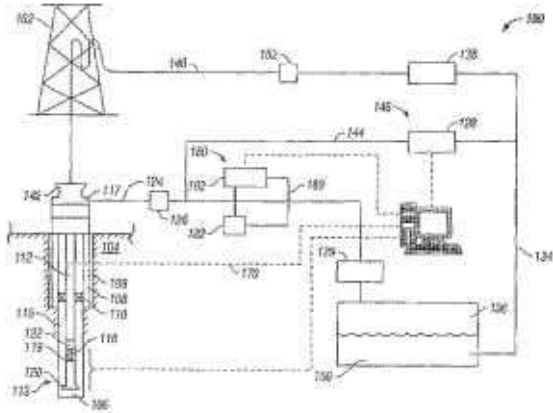
- PN - [CN101349059](#) A 20090121
- PR - CN20081196812 20080829
- AP - CN20081196812 20080829
- DT - I
- PA - ZHONGYE GROUP WUHAN ROCK FOUND [CN]
- TI - New technique of long screw **driller** for press pouring reinforced concrete
- AB - The invention relates to a new technology for pressing and filling reinforced concrete by a long spiral **driller**, which comprises the following steps: a pile setting position is **measured** and placed; the **driller** is automatically leveled in position and stops to **drill** a hole tills reaching the designed depth; a pylome of the middle part of a blade of the long spiral **driller** always passes through the bottom of a **driller** head; a valve is used to **control** the on-off; a marker for **controlling** the pile forming depth is made on a frame of a **driller** tower; the top of the blade of a long spiral **drill** stem adopts a hose with corresponding specification, which is connected with a concrete conveying pipe; a concrete conveying **pump** in the middle of the blade of the **drill** stem is used to convey concrete to the bottom of the **drilled** hole; the concrete is conveyed and the **drill** stem is upwards lifted to reach the designed height,, and then the concrete is stopped to convey; a crane lifts a reinforced steel cage; an oscillator and a steel pipe connecting device are adopted to transport the reinforced steel cage to the designed depth for pile forming; therefore, the operation is circulated. The new technology has the advantages that through a plurality of practices, when a fourth system soil layer and a loose pebble layer are **drilled**, the pile is filled by holes; with the **method**, the **method** can improve the effect by 120 percent, reduce cost for pile forming, well ensure the quality of pile forming, has remarkable effect, avoids the accident of safety and further meet the requirement of environmental protection.

92/144 © EPODOC / EPO

- PN - [JP2008231682](#) A 20081002
- PR - JP20070068972 20070316
- AP - JP20070068972 20070316
- DT - I
- CT - [JPH062474](#) A []; [JP2004190220](#) A [];
[JPH08232571](#) A []; [JP2008095404](#) A [];
[JPS445037B](#) B1 []
- FI - E21B21/08; E21B7/02
- FT - 2D129/AA00; 2D129/BA02; 2D129/BA09; 2D129/BA21; 2D129/CA04; 2D129/CA22;
2D129/CA28; 2D129/CA31; 2D129/CB03; 2D129/DA21; 2D129/DB01; 2D129/DC07;
2D129/DC15; 2D129/DC33; 2D129/DC44; 2D129/EB04; 2D129/EC37; 2D129/EC38;
2D129/FA01; 2D129/GA07; 2D129/GA21; 2D129/HB02; 2D129/HB05; 2D129/HB18
- PA - NISHIMATSU CONSTR CO LTD
- TI - **DRILLING METHOD AND DRILLING DEVICE**

- AB
- PROBLEM TO BE SOLVED: To provide a **drilling method** and a **drilling** device enabling slurry to be circulated for recycling by sufficiently supporting the wall surface of a hole under **drilling**.
 - SOLUTION: The bit 10 of a hydraulic rock **drill** 6 is inserted into a hole 98. The slurry in a slurry tank 20 is force-fed to the bit 10 by a squeeze **pump** 21 to discharge it from the bit 10. While the wall surface of the hole 98 is held by the slurry supplied into the hole 98 by a water collecting pipe 11, the slurry in the hole 98 is discharged to a separator 31 together with a flushing medium through a valve 19. The flushing medium is removed from the slurry in the separator 31, and the slurry is fed from the separator 31 into the slurry tank 20. With the slurry circulated as stated above, the hole 98 is **drilled** by the bit 10. During the **drilling**, the pressure of the slurry in the hole 98 is **measured** by a pressure sensor 16. When the pressure **measured** by the pressure sensor 16 is equal to or less than a predetermined value, the squeeze **pump** 21 is **controlled** by a **controller** 41, and the drive speed of the squeeze **pump** 21 is raised.
 - COPYRIGHT: (C)2009,JPO&INPIT

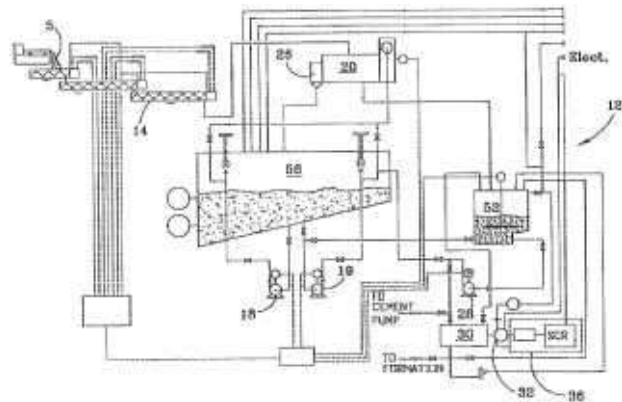
- 93/144 © EPODOC / EPO
- PN - [WO2008051978](#) A1 20080502
- PR - US20060862558P 20061023
- AP - WO2007US82245 20071023
- DT - *; Rep
- CT - |KR| ISR (A1)
[US6904981](#) B2 20050614
 [A] (VAN RIET EGBERT JAN [NL]);
[US7044237](#) B2 20060516
 [A] (LEUCHTENBERG CHRISTIAN [GB]);
[US5474142](#) A 19951212
 [A] (BOWDEN BOBBIE J [US]);
[US4449594](#) A 19840522
 [A] (SPARKS RONALD L [US])



- CCI - [E21B21/08](#)
- PA - MI LLC [US]; SMITH INTERNATIONAL [US]; DUHE JASON [US]; MAY JAMES [US]
- TI - **METHOD AND APPARATUS FOR CONTROLLING BOTTOM HOLE PRESSURE IN A SUBTERRANEAN FORMATION DURING RIG PUMP OPERATION**
- AB - A **method** for maintaining pressure in a wellbore during **drilling** operations is disclosed. The **method** includes the steps of providing fluid from a reservoir through a **drill** string, circulating the fluid from the **drill**

string to an annulus between the **drill** string and the wellbore, isolating pressure in the annulus, **measuring** pressure in the annulus, calculating a set point backpressure, applying back pressure to the annulus based on the set point back pressure, diverting fluid from the annulus to a **controllable** choke, controllably bleeding off pressurized fluid from the annulus, separating solids from the fluid, and directing the fluid back to the reservoir. An apparatus for maintaining pressure in a wellbore during **drilling** operations that includes an adjustable choke for controllably bleeding off pressurized fluid from the wellbore annulus. a backpressure **pump** for applying a calculated set point backpressure, and a processor for **controlling** the adjustable choke and backpressure **pump** is also disclosed.

94/144 © EPODOC / EPO
 PN - [US2002033278](#) A1 20020321
 PNFP - US6640912 B2 20031104
 PR - US19980461604
 19980120; US20010994522
 20011126
 AP - US20010994522 20011126
 DT - *
 CT - (B2)
[US5085277](#) A []; [US5518996](#) A [];
[US6321860](#) B1 []
 CCI - [E21B41/0057](#) ; [E21B21/066](#)
 PA - (B2)
 BAKER HUGHES INC [US]
 TI - (A1 B2)
 Cuttings injection system
 and **method**



AB

- (A1 B2)

An automated high speed **drill** cuttings processing and injection module having a relatively small foot print, capable of operation in zone one hazardous environments, for injecting **drill** cuttings into an earth formation, capable of handling high **drilling** rate cuttings surges. The process including conveying systems, holding and slurry tanks, circulating pumps, high speed grinding mill, high pressure injection **pump**, fragmentation system and automation system for **controlling** electrically driven injection **pump** having automatic speed **control** regulation with torque and horsepower limiting features. Thereby allowing high-speed injection without plugging the formation while still allowing for high-pressure formation fracturing when necessary. The processing system further insures cuttings slurry homogenization and entrained particle size to less than 100 micron for both hard and soft particles. The system reduces installation cost dramatically. An onboard computer system further provides continuous automatic **control, measures** and records continually the dry weight of cuttings removed from the hole and **controls**, slurry density and viscosity, as well monitoring and maintaining injection pressure to within established high and low pressure parameters.

PN - [US2002112854](#) A1 20020822

PNFP - US6609568 B2 20030826

PR - US20010910209
20010720; US20000219741P
20000720

AP - US20010910209 20010720

DT - **

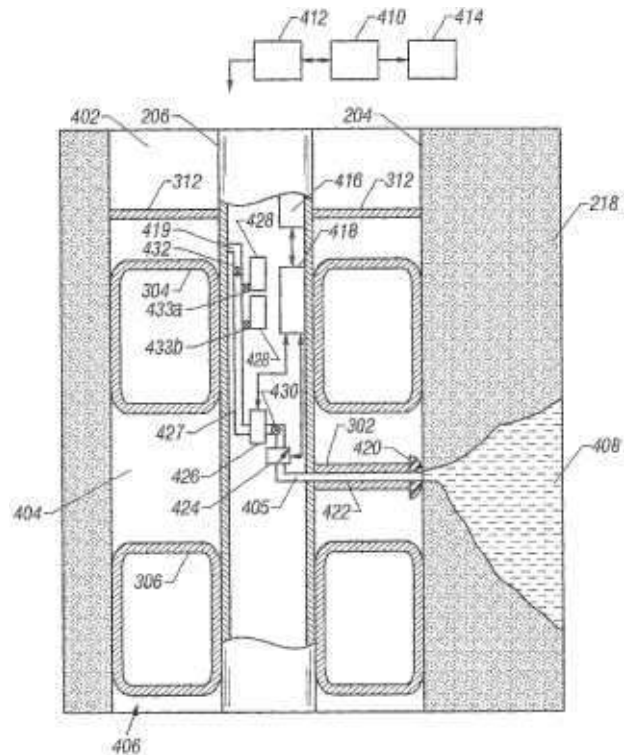
CT - || STSE (B2)
[US5703286](#) A 19971230 [
] (PROETT MARK A [US], et al)

CCI - [E21B47/06](#) ; [E21B49/008](#) ;
[E21B49/10](#) ; [G01V11/002](#)

PA - (A1 B2)
BAKER HUGHES INC [US]

TI - (A1 B2)
Closed-loop drawdown
apparatus and **method** for in-
situ analysis of formation fluids

AB - (A1 B2)
An apparatus and **method**
capable of incrementally
decreasing the borehole
pressure at a variable rate
by **controlling** a test volume
within the borehole. The system
includes an
incrementally **controllable pump**,
closed loop feedback and
a **controller** for drawing down
the pressure of a test volume to a
level just below formation
pressure. This incremental
drawdown system will
significantly reduce the
overall **measurement** time,
thereby increasing **drilling**
efficiency and safety.



PN - [US2001050185](#) A1 20011213

PNFP - US6457529 B2 20021001

PR - US20010788058
20010216; US20000183201P
20000217

AP - US20010788058 20010216

DT - *

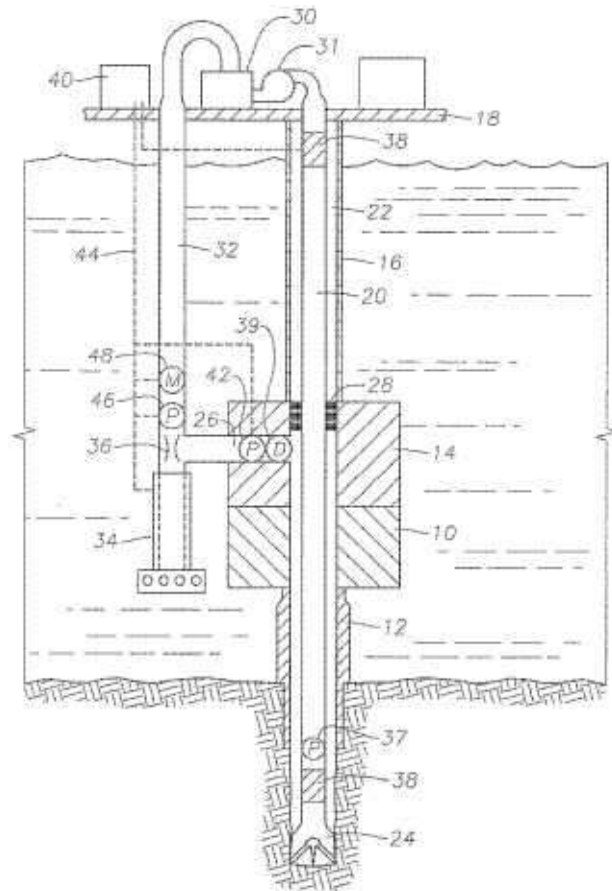
CT - (B2)
[US1758875](#) A []; [US2218533](#) A [];
[US2914306](#) A []; [US3024853](#) A [];
[US3791442](#) A []; [US4063602](#) A [];
[US4099583](#) A []; [US4291772](#) A [];
[US4577700](#) A []; [US4813495](#) A [];
[US5873420](#) A []; [US6328107](#) B1 []

CCI - [E21B21/001](#) ; [E21B21/08](#) ;
[E21B33/085](#)

PA - (B2)
VETCO GRAY INC ABB [US]

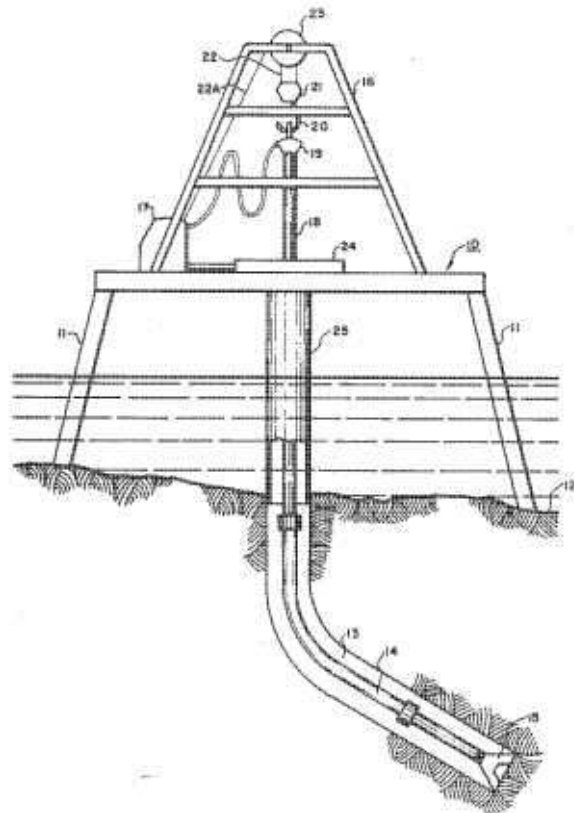
TI - (A1 B2)
Apparatus and **method** for returning **drilling** fluid from a subsea wellbore

AB - (A1 B2)
An apparatus and **method** are provided for **controlling** hydrostatic pressure in **drilling** fluid in a subsea well. A main **pump** forces **drilling** fluid down the **drill** pipe, out of the end of the **drill** pipe, and upward in an annulus surrounding the pipe. A rotating **drilling** head is attached to a wellhead assembly at the sea floor. The **drilling** head has an inner body rotatably carried in an outer body landed in a bore of a housing. An energizable gripper in a bore of the inner body grips an outer surface of the **drill** pipe. The **drilling** head diverts



the **drilling** fluid into a lateral passage in the sidewall of the housing. An auxiliary **pump** forces seawater through a venturi into a conduit, creating a lower pressure to draw **drilling** fluid into the conduit to be carried back to the surface vessel. Pressure and flow rate **measurements** are sent to a **control** system that modulates the speed of each **pump** to **control** hydrostatic pressure.

- 97/144 © EPODOC / EPO
- PN - [US4047430](#) A 19770913
- PR - US19760710974
19760802; US19760682940
19760503
- AP - US19760710974 19760802
- DT - **
- CT - || STSE (A)
[US3490149](#) A 19700120 [
] (BOWERS WILLIAM E);
[US3545266](#) A 19701208 [
] (WILSON THOMAS L)
- CCI - [E21B47/00](#) ; [E21B47/04](#) ;
[E21B47/12](#) ; [E21B49/00](#) ;
[G01V11/002](#)
- PA - DRESSER IND
- TI - **Method** and apparatus for
logging earth boreholes using
self-contained logging instrument
- AB - A self-contained, battery
powered well logging instrument
is pumped down the interior of
a **drill** pipe string having a
catcher sub at its lower end.
When the logging instrument
latches into the catcher sub, the
pumped fluid circulation is
blocked, after which
increased **pump** pressure
switches a valve assembly to
recreate circulation and energize
the logging instrument to the
standby position. An



accelerometer in the logging instrument detects the upward movement of the instrument and switches the circuitry from standby to the record mode. The output from a clock **controlled** by the downhole accelerometer is recorded along with the logging information and is synchronized with pipe footage **measurements** and with a similar such accelerometer and clock at the earth's surface which are responsive to the movement of the pipe string at the earth's surface. The recorded logging samples are thus related to true depth by correlating with the data simultaneously recorded at the earth's surface. As an alternative embodiment, the logging instrument is attached to the **drill** pipe prior to running the pipe into the borehole. As an additional embodiment, a logging instrument is provided having a variable output accelerometer and associated circuitry which provides depth information independently of the equipment at the earth's surface.

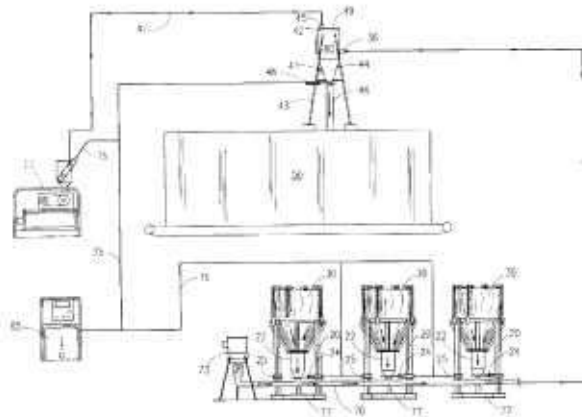
98/144 © EPODOC / EPO

- PN - [US4041780](#) A 19770816
- PR - US19760682940 19760503
- AP - US19760682940 19760503
- DT - *; Rep
- CT - || STSE (A)
[US2898088](#) A 19590804 [] (ALDER ROBERT L);
[US3149683](#) A 19640922 [] (CLEMENTS ROY J, et al);
[US3223184](#) A 19651214 [] (WEIR JONES JACK, et al);
[US3320441](#) A 19670516 [] (FRED PEHOUSHEK)
- CCI - [E21B47/00](#)
- PA - DRESSER IND
- TI - **Method** and apparatus for logging earth boreholes
- AB - A self-contained, battery powered well logging instrument is pumped down the interior of a **drill** pipe string having a catcher sub at its lower end. When the logging instrument

latches into the catcher sub, the pumped fluid circulation is blocked, after which increased **pump** pressure switches a valve assembly to recreate circulation and energize the logging instrument to the standby position. An accelerometer in the logging instrument detects the upward movement of the instrument and switches the circuitry from standby to the record mode. The output from a clock **controlled** by the downhole accelerometer is recorded along with the logging information and is synchronized with pipe footage **measurements** and with a similar such accelerometer and clock at the earth's surface which are responsive to the movement of the pipe string at the earth's surface. The recorded logging samples are thus related to true depth by correlating with the data simultaneously recorded at the earth's surface. As an alternative embodiment, the logging instrument is attached to the **drill** pipe prior to running the pipe into the borehole.

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- PN - [US5775852](#) A 19980707
- PR - US19960616700 19960315
- AP - US19960616700 19960315
- DT - *
- CT - [US3077365](#) A []; [US4249839](#) A [];
[US4345858](#) A []; [US4944347](#) A [];
[US5303998](#) A []; [US5415232](#) A [];
[US5507602](#) A []
- CCI - [B65G47/19](#) ; [B65B69/0091](#)
- PA - PRO LINE SYSTEMS INC [US]
- TI - Apparatus and **method** for adding dry materials to liquid **drilling** mud system
- AB - A **method** and apparatus (10) for delivering dry bulk material (21) to a **drilling** mud system (50) of an oil and gas well comprises a plurality of collapsible bags (30) for holding a quantity of dry bulk material (21), each bag (30) being supported on a bag storage rack (20) having a discharge outlet (22) connected to the bags (30), the discharge outlets (22) having bag discharge valves (24); a hopper (40) for receiving and collecting material from the bags (30) and for discharging material into the **drilling** mud system (50) by



means of a hopper discharge valve (48); a length of material discharge hose (70) connected to the discharge outlets (22) and to the hopper (40); and a vacuum **pump** (60) having a vacuum hose (47) to the hopper (40) for producing a vacuum in the hopper (40) and the hose (70) and thereby drawing material (21) from the bags (30) into the hopper (40) for discharge into the mud system (50). The racks have load cells (25) for **measuring** the weight of material in the bags and the load cells (25), the hopper discharge valve (48); and the bag discharge valves (24) may be connected to a programmable **control** panel (65) for remotely **controlling** the flow of material from each of the bags (30) to the hopper (40).

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PN - [US4557142](#) A 19851210

PR - US19830541725 19831013; EP19850305365 19850726

AP - US19830541725 19831013

DT - *

CT - [US2252014](#) A []; [US2977790](#) A [];
[US3147616](#) A []; [US3436968](#) A [];
[US3503267](#) A []; [US3899926](#) A []

CCI - [E21B49/005](#) ; [E21B21/08](#) ; [G01N33/2823](#)

PA - HUTCHINSON HAYES INTERNATIONAL [US]

TI - Apparatus and **method** for real-time **measurement** of **drilling** fluid properties

AB - A system for real-time **measurement** of multiple properties of **drilling** fluids from a single sampling point may comprise: a **pump** for transferring fluids in the system, the suction of which may be alternately communicated through suction conduits with a reservoir of **drilling** fluids being **measured** and the source of cleaning fluids; valves connected in the suction conduits for alternately allowing or preventing fluid communication between the **pump** and the **drilling** fluid reservoir or the source of cleaning fluids; a weight **measuring** device connected to the discharge side of the **pump** for receiving and **measuring** the weight of **drilling** fluids therefrom; and a viscosity **measuring** device connected to the discharge of the **pump** for receiving and **measuring** indices of viscosity of the **drilling** fluids therefrom. A source of power is connected to the **pump**, the weight **measuring** device, the viscosity **measuring** device and **control** apparatus. The **control** apparatus is also connected to the **pump**, the

weight **measuring** device and the viscosity **measuring** device for **controlling** the operation thereof.

101/144 © EPODOC / EPO

- PN - [US6321860](#) B1 20011127
- PR - US19980461604 19980120; US19970896205 19970717
- AP - US19980461604 19980120
- DT - **
- CT - [US4632188](#) A []; [US5085277](#) A [];
[US5400977](#) A []
- CCI - [E21B21/066](#) ; [E21B41/0057](#)
- TI - Cuttings injection system and **method**
- AB - An automated high speed **drill** cuttings processing and injection module having a relatively small foot print, capable of operation in zone 1 hazardous environments, for injecting **drill** cuttings into an earth formation. Capable of handling high **drilling** rate cuttings surges. The process including conveying systems, holding and slurry tanks, circulating pumps, high speed grinding mill, high pressure injection **pump**, fragmentation system and automation system for **controlling** electrically driven injection **pump** having automatic speed **control** regulation with torque and horsepower limiting features. Thereby allowing high speed injection without plugging the formation while still allow for high pressure formation fracturing when necessary. The processing system further insures cuttings slurry homogenization and entrained particle size to less than 100 micron for both hard and soft particles. Being unitized the system reduces installation cost dramatically. The system further provides continuous automatic **control**, **measures** and records hole cleaning, viscosity, slurry density, as well as surface and bottom-hole pressure.

102/144 © EPODOC / EPO

- PN - [US2006235618](#) A1 20061019
- PNFP - US7251566 B2 20070731
- PR - US20060308102 20060307; US20050594361P 20050331
- AP - US20060308102 20060307
- DT - **
- CT - || STSE (B2)
[US6378363](#) B1 20020430 [] (HACHE JEAN-MICHEL [US], et al)
- || R141 (A1)
[US6378363](#) B1 [];
[US4590593](#) A [];
[US6237404](#) B1 [];
[US2002180613](#) A1 [];
[US4594691](#) A [];
[US4698792](#) A [];
[US4698793](#) A [];
[US4703460](#) A [];
[US4932003](#) A [];

[US5027331](#) A [];
[US5278805](#) A [];
[US5381092](#) A [];
[US5594706](#) A [];
[US5687138](#) A [];
[US5740124](#) A [];
[US5999484](#) A [];
[US6084826](#) A [];
[US6176323](#) B1 [];
[US6220087](#) B1 [];
[US6427124](#) B1 [];
[US6449560](#) B1 [];
[US6581010](#) B2 [];
[US6611761](#) B2 [];
[US6631327](#) B2 [];
[US2004001398](#) A1 [];
[US2004006428](#) A1 [];
[US6691036](#) B2 [];
[US6714480](#) B2 [];
[US2004122595](#) A1 [];
[US2004145503](#) A1 [];
[US2004158404](#) A1 [];
[US2004176911](#) A1 [];
[US2004199331](#) A1 [];
[US6904365](#) B2 []

CCI - [G01V1/46](#)

PA - (A1 B2)
SCHLUMBERGER TECHNOLOGY CORP [US]

TI - (A1 B2)
PUMP OFF MEASUREMENTSFOR QUALITY **CONTROL** AND WELLBORE STABILITY
 PREDICTION

AB - (A1 B2)
 A **method** for obtaining high-quality well logging data acquired during a **drilling** operation includes acquiring well logging data during a **pump-off** period when a mud **pump** is turned off; and extracting a subset of data from the acquired well logging data, wherein the subset of data corresponds to a quiet period within the **pump-off** period, wherein the quiet period is substantially free of interference from turning the mud **pump** on or off.

103/144 © EPODOC / EPO

PN - [US4440239](#) A 19840403

PR - US19810306252 19810928

AP - US19810306252 19810928

DT - **

CT - [US3602322](#) A []; [US3760891](#) A [];
[US3815673](#) A []; [US3910110](#) A [];
[US3976148](#) A []; [US4253530](#) A [];

[US4282939](#) A []; [US4295366](#) A []

- CCI - [E21B21/001](#) ; [E21B21/08](#)
- PA - EXXON PRODUCTION RESEARCH CO [US]
- TI - **Method** and apparatus for **controlling** the flow of **drilling** fluid in a wellbore
- AB - A **method** for **controlling** the flow of **drilling** fluid through a subaqueous wellbore is disclosed. The **method** comprises the steps of continuously **measuring** the output flow rate (A) of the **drilling** fluid from the wellbore, the input flow rate (B) of the **drilling** fluid to the wellbore, and at least a component of the pitch and roll (P/R) of the vessel, computing a floating alarm limit (C) dependent upon the pitch and roll (P/R) signal and the roughness of the sea, filtering the periodic fluctuation of the output flow rate (A) due to the motion of the vessel, and computing the delta flow signal (D) by subtracting the input flow rate (B) from the filtered output flow rate (A). The **method** further comprises the step of generating a signal whenever the absolute value of the delta flow rate (D) exceeds the floating alarm limit (C) to provide a visible warning that the flow of **drilling** fluid is out of **control** and to either close off the wellbore in case of a kick or to stop the flow of fluid and stop **drilling** in case of lost returns. Apparatus for **controlling** the flow of **drilling** fluid through a subaqueous wellbore is disclosed while **drilling** from a floating vessel. The wellbore is connected to the lower end of the **drill** string and the lower end of an annulus by a valve through which the **drilling** fluid flows. The upper end of the annulus is connected to a conduit from which the **drilling** flows to the suction side of a **pump** which circulates the **drilling** fluid therefrom into the upper end of the **drill** string, through the wellbore, and back up the annulus into the conduit. The apparatus comprises an output flow meter connected to the exit of the conduit, an input flow meter connected between the **pump** and the upper end of the **drill** string, means mounted on the vessel for sensing the pitch and roll of the vessel, and computer means for receiving the output flow rate (A) signal from the output flow meter, the input flow rate (B) from the input flow meter, and the pitch and roll (P/R) signal from the pitch and roll sensing means. The computer means calculates an alarm limit (C) based on the pitch and roll (P/R) signal and the roughness of the sea continuously filters the periodic fluctuation of the output flow rate (A) due to the motion of the vessel, computes the delta flow signal (D) by subtracting the input flow rate (B) from the filtered output flow rate (A), and generates a signal whenever the delta flow rate (D) exceeds the floating alarm limit (C) to provide a warning of a possible blowout or lost circulation condition and to either close off the wellbore in case of a kick or to stop the flow of fluid and stop **drilling** in case of lost returns.

104/144 © EPODOC / EPO

PN - [US2003066650](#) A1 20030410

PNFP - US2006065402 A9 20060330
- US7270185 B2 20070918

PR - US20020191152 20020709; US20020094208 20020308; US19990353275
19990714; US20010303959P 20010709; US20010304160P
20010710; US20010323797P 20010920; US19980108601P
19981116; US19980101541P 19980923; US19980092908P
19980715; US19980095188P 19980803

AP - US20020191152 20020709

DT - *; Rep

CT

- || STSE (B2)

[US4046191](#) A 19770906 [] (NEATH ROBERT ARTHUR)
[US4063602](#) A 19771220 [] (HOWELL JAMES DAMRON, et al)
[US4091881](#) A 19780530 [] (MAUS LEO DONALD)
[US4291772](#) A 19810929 [] (BEYNET PIERRE A)
[US4577700](#) A 19860325 [] (DELLINGER THOMAS B [US], et al)
[US4813495](#) A 19890321 [] (LEACH COLIN P [US])
[US5848656](#) A 19981215 [] (MOEKSVOLD HARALD [NO])
[US6062313](#) A 20000516 [] (MOORE BOYD B [US])
[US6068053](#) A 20000530 [] (SHAW CHRISTOPHER K [US])
[US6102673](#) A 20000815 [] (MOTT KEITH C [US], et al)
[US6328107](#) B1 20011211 [] (MAUS L DONALD [US])
[US6415877](#) B1 20020709 [] (FINCHER ROGER W [US], et al)
[US6457529](#) B2 20021001 [] (CALDER IAN DOUGLAS [US], et al)
[US6530437](#) B2 20030311 [] (MAURER WILLIAM C [US], et al)
[US6648081](#) B2 20031118 [] (FINCHER ROGER W [US], et al)
[US6651745](#) B1 20031125 [] (LUSH DAVID [US], et al)

- || R141 (A1 A9)

[US4134461](#) A [];
[US4368787](#) A [];
[US4137975](#) A [];
[US4436166](#) A [];
[US4577700](#) A [];
[US4813495](#) A [];
[US6527513](#) B1 [];
[US6530437](#) B2 [];
[US4149603](#) A [];
[US4440239](#) A [];
[US6216799](#) B1 [];
[US6374925](#) B1 [];
[US6719071](#) B1 [];
[US3958651](#) A [];
[US4022285](#) A [];
[US4091881](#) A [];
[US4744426](#) A [];
[US6062313](#) A [];
[US6068053](#) A [];
[US3815673](#) A [];
[US2946565](#) A [];
[US3595075](#) A [];
[US3677353](#) A [];
[US4099583](#) A [];
[US4210208](#) A [];
[US5651420](#) A [];
[US5775443](#) A [];
[US6415877](#) B1 [];
[US4108257](#) A [];
[US4534426](#) A [];
[US6102673](#) A [];

[US6276455](#) B1 [];
[US2003146001](#) A1 [];
[US3603409](#) A [];
[US4046191](#) A [];
[US4049066](#) A [];
[US4223747](#) A [];
[US4291772](#) A [];
[US4613003](#) A [];
[US5150757](#) A [];
[US5355967](#) A [];
[US6457529](#) B2 [];
[US2812723](#) A [];
[US6142236](#) A [];
[US6648081](#) B2 [];
[US6651745](#) B1 [];
[US4063602](#) A [];
[US4240513](#) A [];
[US4630691](#) A [];
[US5168932](#) A [];
[US5848656](#) A [];
[US6328107](#) B1 []

- CCI - [E21B33/076](#) ; [E21B43/12](#) ; [E21B47/0001](#) ; [E21B7/12](#) ; [E21B21/001](#) ; [E21B21/08](#)
- PA - (A1 A9 B2)
BAKER HUGHES INC [US]
- TI - (A1 A9 B2)
Drilling system and **method** for **controlling** equivalent circulating density during **drilling** of wellbores
- AB - (A1 A9 B2)
A **drilling** system for **drilling** subsea wellbores includes a tubing-conveyed **drill** bit that passes through a subsea wellhead. Surface supplied **drilling** fluid flows through the tubing, discharges at the **drill** bit, returns to the wellhead through a wellbore annulus, and flows to the surface via a riser extending from the wellhead. A flow restriction device positioned in the riser restricts the flow of the returning fluid while an active fluid device **controllably** discharges fluid from a location below to just above the flow restriction device in the riser, thereby **controlling** bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line thereby providing dual gradient **drilling** while **controlling** bottomhole pressure and ECD. A **controller controls** the energy and thus the speed of the **pump** in response to downhole **measurement** (s) to maintain the ECD at a predetermined value or within a predetermined range.

105/144 © EPODOC / EPO

- PN - [US4351037](#) A 19820921
- PR - US19800110848 19800110; US19770857677 19771205
- AP - US19800110848 19800110
- DT - *; Rep
- CT - || STSE (A)

[US3711825](#) A 19730116 [] (CLAYCOMB J);
[US3736558](#) A 19730529 [] (CUBBERLY W);
[US4078620](#) A 19780314 [] (WESTLAKE JOHN H, et al)
 CCI - [E21B41/0085](#) ; [E21B47/011](#) ; [E21B47/18](#) ; [E21B47/185](#)
 CCA - [H01M2/10](#) ; [H01M6/36](#)
 PA - SCHERBATSKOY SERGE ALEXANDER
 TI - Systems, apparatus and methods for **measuring** while **drilling**
 AB - A **method** and apparatus for continuously logging while **drilling** a well bore with a rotary **drilling** rig comprising a **drill** string, a jet type **drill** bit, and mud **pump** means for circulating fluid under pressure. The apparatus generally includes means for sensing one or more downhole parameters near the **drill** bit, means for generating a sequence of electrical pulses representative of said parameter, and means for generating negative mud pressure pulses in the **drilling** fluid ("**drilling** mud") within the **drill** string in response to said electrical pulses. Receiving means at the earth's surface detect the negative mud pressure pulses and utilize the sequence of these pulses to produce signals representative of said parameter. The receiving means employ means to substantially eliminate the effects of the pressure pulsations generated by the mud **pump** and to extract the negative mud pressure pulses the sequence of which represent the downhole parameter. The means for generating the negative mud pressure pulses involves utilization of the existing energy on the high pressure side of the **drill** bit through a bypass to the low pressure side of the **drill** bit **controlled** by a valve mechanism and arrangement. The design of the valve mechanism and arrangement is such that the valve can be powered for actuation as necessary over a requisite time period by self-contained downhole power source, and is not subject to unacceptable wear.

106/144 © EPODOC / EPO

PN - [US6105690](#) A 20000822
 PR - US19980086418 19980529
 AP - US19980086418 19980529
 DT - *; Rep
 CT - || STSE (A)
[US2901685](#) A 19590825 [] (LEE ALDER ROBERT);
[US2964116](#) A 19601213 [] (PETERSON ELWIN W);
[US2973505](#) A 19610228 [] (JOHANNESSEN ODDVAR M);
[US3065416](#) A 19621120 [] (JETER JOHN D);
[US3302457](#) A 19670207 [] (MAYES FRED M);
[US3309656](#) A 19670314 [] (GODBAY JOHN K);
[US3693428](#) A 19720926 [] (PEUVEDIC JEAN PIERRE LE, et al);
[US3727179](#) A 19730410 [] (BENNETT K);
[US3732728](#) A 19730515 [] (FITZPATRICK J);
[US3736558](#) A 19730529 [] (CUBBERLY W);
[US3737843](#) A 19730605 [] (LEPEUVEDIC J, et al);
[US3739331](#) A 19730612 [] (SLOVER V, et al);
[US3742443](#) A 19730626 [] (FOSTER M, et al);
[US3764968](#) A 19731009 [] (ANDERSON R);
[US3764970](#) A 19731009 [] (MANNING K);

[US3770006](#) A 19731106 [] (SEXTON J, et al);
[US3958217](#) A 19760518 [] (SPINLER RALPH F);
[US3964556](#) A 19760622 [] (GEARHART MARVIN, et al);
[US4038632](#) A 19770726 [] (PARKER WILLIAM H);
[US4351037](#) A 19820921 [] (SCHERBATSKOY SERGE A);
[US4483394](#) A 19841120 [] (PEPPERS JAMES M [US], et al);
[US4499955](#) A 19850219 [] (CAMPBELL FRANK L [US], et al);
[US4553598](#) A 19851119 [] (MEEK DALE E [US], et al);
[US4628495](#) A 19861209 [] (PEPPERS JAMES M [US], et al);
[US4790393](#) A 19881213 [] (LARRONDE MICHAEL L [US], et al);
[US4796699](#) A 19890110 [] (UPCHURCH JAMES M [US]);
[US4856595](#) A 19890815 [] (UPCHURCH JAMES M [US]);
[US4915168](#) A 19900410 [] (UPCHURCH JAMES M [US]);
[US5079750](#) A 19920107 [] (SCHERBATSKOY SERGE A [US]);
[US5113379](#) A 19920512 [] (SCHERBATSKOY SERGE A [US]);
[US5144245](#) A 19920901 [] (WISLER MACMILLAN M [US]);
[US5280243](#) A 19940118 [] (MILLER MELVIN [US]);
[US5691712](#) A 19971125 [] (MEEK DALE E [US], et al)

CTNP - [] Ryan Energy Technologies, Inc., Electronic Flow Switch
 (EFS) , New Technology Bulletin, Offshore Technology
 Conference, Houston, TX, May 7, 1998, 1 page
 [] Piezo Kinetics Incorporated, The Piezoelectric Effect ,
 Piezoceramics Application Notes, pp. 1 8 (1994)

CCI - [E21B47/18](#)

PA - APS TECHNOLOGY INC [US]

TI - **Method** and apparatus for communicating with devices downhole in a well especially
 adapted for use as a bottom hole mud flow sensor

AB - A **method** and apparatus for communicating with a device downhole in a well, such as
 a bottom hole assembly in a **drill** string. Pressure pulses, such as those generated by the
 pistons of the mud **pump**, are transmitted through the **drilling** mud to a pressure
 pulsation sensor in the bottom hole assembly. The pressure pulsation sensor features a
 piezoceramic element that generates a varying voltage signal in response to the
 received pressure pulsations. The pressure pulsation sensor also has electronic
 components that allow it to analyze a characteristic of the pressure pulsations, such as
 their frequency. Based on its analysis of the pressure pulsations, the sensor can
 decipher a command from the surface, for example, that directs the steering of a
 steerable **drill** string, or that can determine whether the mud pumps are operating. If the
 mud pumps are not operating the sensor directs a microprocessor to reduce power to
 the bottom hole assembly electrical components, such as a **measurement** while **drilling**
 tool, thereby conserving battery power. The **method** and apparatus can also be used
 to **control** the operation of flow **control** valves in a multilateral well.

107/144 © EPODOC / EPO

PN - [US6016878](#) A 20000125

PR - SE19950002961 19950828; WO1996SE01052 19960827

AP - US19980029453 19980226

DT - **

CT - [US3613805](#) A []; [US3971449](#) A [];
[US4875530](#) A []; [US5318136](#) A [];
[US5449047](#) A []

CCI - [E21B44/00](#) ; [E21B44/02](#)

PA - ATLAS COPCO ROCKTECH AB [SE]

TI - **Method** and device for **drilling**

AB - PCT No. PCT/SE96/01052 Sec. 371 Date Feb. 26, 1998 Sec. 102(e) Date Feb. 26, 1998 PCT Filed Aug. 27, 1996 PCT Pub. No. WO97/08428 PCT Pub. Date Mar. 6, 1997 Methods and devices are provided for **drilling** with impregnated diamond **drill** bits in which the **drill** bit (30) automatically continues cutting. The speed of a **drilling** device (3) along a feed device (2) is determined, and the **measured** value is used for continuously **controlling** the feed cylinder (10) and a flushing medium **pump** (29) such that a substantially constant feed rate is achieved while simultaneously maintaining the rotational speed of the **drill** bit (30) within predetermined limits.

108/144 © EPODOC / EPO

PN - [US5963138](#) A 19991005

PR - US19980019182 19980205

AP - US19980019182 19980205

DT - **

CT - [US3971926](#) A []; [US4515225](#) A [];
[US4790393](#) A []; [US5034929](#) A [];
[US5115415](#) A []; [US5182730](#) A [];
[US5318409](#) A []; [US5799733](#) A [];
[US5812068](#) A []; [EP0617196](#) A2 []

CCI - [E21B41/00](#) ; [E21B47/18](#) ; [E21B47/187](#) ; [E21B21/08](#)

PA - BAKER HUGHES INC [US]

TI - Apparatus and **method** for self adjusting downlink signal communication

AB - An apparatus for sending signals downhole during **drilling** operations uses a main **pump** to **pump** mud from a mud pit at a substantially constant flow rate. The bulk of the pumped mud goes downhole to maintain adequate circulation for the **drill** bit. A bypass pipe is provided with a shut-off valve that is **controlled** by an electronic **controller**. By pulsing the opening and closing of the shut-off valve, the volumetric flow downhole is pulsed. The pulse amplitude and duration can be **controlled**. These pulses in the flow rate are detected by a suitable downhole device such as a flow rate **measurement** device, a pressure detector or a turbine. The initial "wake-up" pulse is made long enough so that the detection device downhole is always able to detect it. Subsequent to this wake-up pulse, adjustments are made to the pulse duration, in steps of about 2 seconds, for the smallest pulse period that is detectable downhole. In addition, the amplitude of the pulses is also **controlled** by regulating the maximum flow through the shut-off valve. The pulses are modulated by a binary sequence of numbers corresponding to the data to be transmitted.

109/144 © EPODOC / EPO

PN - [WO03006778](#) A1 20030123

PNFP - WO03006778 A3 20040226
 - WO03006778 A8 20030227

PR - US20010303959P 20010709; US20010304160P 20010710; US20010323797P 20010920

AP - WO2002US21520 20020709

DT - **

CT - |EP| ISR (A1)
WO0004269 A2 20000127 [XA] (DEEP VISION LLC [US])
 [X] 1-3,5-21,23-30
 * page 2, paragraph 2 - page 7, paragraph 1 *
 * page 11, line 11 - line 22 *
 * page 14, paragraph 2 - page 15; figures 2-4; claims 1-15 *
 [A] 4,22,48

CCI - E21B33/076 ; E21B43/12 ; E21B47/0001 ; E21B7/12 ; E21B21/001 ; E21B21/08

PA - (A1 A3 A8)
 BAKER HUGHES INC [US]

TI - (A1 A3 A8)
DRILLING SYSTEM AND METHOD FOR CONTROLLING EQUIVALENT CIRCULATING DENSITY DURING DRILLING OF WELLBORES

AB - (A1)
 A **drilling** system for **drilling** subsea wellbores includes a tubing-conveyed **drill** bit (130) that passes through a subsea wellhead. Surface supplied **drilling** fluid flows through the tubing (121), discharges at the **drill** bit, returns to the wellhead through a wellbore annulus (122), and flows to the surface via a riser (160) extending from the wellhead. A flow restriction device (164) positioned in the riser restricts the flow of the returning fluid while an active fluid device **controllably** discharges fluid from a location below to just above the flow restriction device in the riser, thereby **controlling** bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line (206) thereby providing dual gradient **drilling** while **controlling** bottomhole pressure and ECD. A **controller** (180) **controls** the energy and thus the speed of the **pump** in response to downhole **measurement** (s) to maintain the ECD at a predetermined value or within a predetermined range.

- (A3)
 A **drilling** system for **drilling** subsea wellbores includes a tubing-conveyed **drill** bit (130) that passes through a subsea wellhead. Surface supplied **drilling** fluid flows through the tubing (121), discharges at the **drill** bit, returns to the wellhead through a wellbore annulus (122), and flows to the surface via a riser extending from the wellhead. A flow restriction device (164) positioned in the riser restricts the flow of the returning fluid while an active fluid device **controllably** discharges fluid from a location below to just above the flow restriction device in the riser, thereby **controlling** bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line (206) thereby providing dual gradient **drilling** while **controlling** bottomhole pressure and ECD. A **controller** (180) **controls** the energy and thus the speed of the **pump** in response to downhole **measurement** (s) to maintain the ECD at a predetermined value or within a predetermined range.

- (A8)
 A **drilling** system for **drilling** subsea wellbores includes a tubing-conveyed **drill** bit that passes through a subsea wellhead. Surface supplied **drilling** fluid flows through the

tubing, discharges at the **drill** bit, returns to the wellhead through a wellbore annulus, and flows to the surface via a riser extending from the wellhead. A flow restriction device positioned in the riser restricts the flow of the returning fluid while an active fluid device **controllably** discharges fluid from a location below to just above the flow restriction device in the riser, thereby **controlling** bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line thereby providing dual gradient **drilling** while **controlling** bottomhole pressure and ECD. A **controller controls** the energy and thus the speed of the **pump** in response to downhole **measurement** (s) to maintain the ECD at a predetermined value or within a predetermined range.

110/144	© EPODOC / EPO	.
PN	- WO0208570 A1 20020131	
PNFP	- WO0208570 A8 20020829	
PR	- US20000219741P 20000720	
AP	- WO2001US23011 20010720	
DT	- *; Rep	
CT	- EP ISR (A1) US5803186 A 19980908 [AD] (BERGER PER ERIK [NO], et al) [AD] 1-29 * column 10, line 20 - line 53 *; US5708204 A 19980113 [AD] (KASAP EKREM [US]) [AD] 1-29 * column 5, line 8 - line 22; claim 1 *; US5233866 A 19930810 [DA] (DESBRADES ROBERT [US]) [DA] 1-29 * column 5, line 59 - column 6, line 13 *; EP0490421 A1 19920617 [A] (SCHLUMBERGER SERVICES PETROL [FR], et al) [A] 1-29 * page 1, line 58 - page 2, line 7 *; US3321965 A 19670530 [A] (JOHNSON CARLTON R, et al) [A] 1-29 * claims 1-7 *; EP0520903 A2 19921230 [A] (SCHLUMBERGER LTD [US], et al) [A] 1-29 * page 7, line 2 - line 6 *; EP0698722 A2 19960228 [A] (HALLIBURTON CO [US]) [A] 1-29 * page 11, line 42 - line 45 *	
CCI	- E21B47/06 ; E21B49/008 ; E21B49/10 ; G01V11/002	
PA	- (A1 A8) BAKER HUGHES INC [US]	
TI	- (A1 A8) DRAWDOWN APPARATUS AND METHOD FOR IN-SITU ANALYSIS OF FORMATION FLUIDS	
AB	- (A1 A8) An apparatus and method capable of incrementally decreasing the borehole pressure at a variable rate by controlling a test volume within the borehole. The system includes	

an incrementally **controllable pump**, closed loop feedback and a **controller** for drawing down the pressure of a test volume to a level just below formation pressure. This incremental drawdown system will significantly reduce the overall **measurement** time, thereby increasing **drilling** efficiency and safety.

111/144 © EPODOC / EPO

- PN - [WO9708428](#) A1 19970306
- PR - SE19950002961 19950828
- AP - WO1996SE01052 19960827
- DT - *; Rep
- CT - |SE| ISR (A1)
[US3971449](#) A 19760727 [X] (NYLUND ROGER, et al);
[US5318136](#) A 19940607 [X] (ROWSELL PHILIP J [GB], et al);
[US3613805](#) A 19711019 [A] (LINDSTAD JON R, et al);
[US4875530](#) A 19891024 [A] (FRINK TOMMY S [US], et al)
- CCI - [E21B44/00](#) ; [E21B44/02](#)
- PA - ATLAS COPCO ROCKTECH AB [SE]; JANSSON KJELL [SE]
- TI - **METHOD AND DEVICE FOR DRILLING**
- AB - The invention relates to **drilling** with impregnated diamond **drill** bits where one automatically keeps the **drill** bit (30) cutting. The speed of the **drilling** device (3) along the feed device (2) is determined and the **measured** value is used for continuously **controlling** the feed cylinder (10) and the flushing medium **pump** (29) such that a substantially constant feed rate is achieved at the same time as the rotational speed of the **drill** bit (30) is kept within predetermined limits.

112/144 © EPODOC / EPO

- PN - [RU2271528](#) C1 20060310
- PR - RU20040122261 20040709
- AP - RU20040122261 20040709
- DT - I
- TI - BUILDING STRUCTURE CONCRETE STRENGTH TEST **METHOD**, PROFILED GROOVE BORING DEVICE, ANCHORING MEANS FOR BUILDING STRUCTURE CONCRETE STRENGTH TEST AND FORCE-APPLYING DEVICE THEREFOR, AS WELL AS ORIFICE **DRILLING** JIG
- AB - FIELD: building, particularly concrete strength testing by tearing and shearing **method**.
 ^SUBSTANCE: **method** for monolithic concrete piece strength testing by force-applying device with the use of anchoring means involves installing the anchoring means in orifice preliminarily bored in the concrete piece and **measuring** tearing force applied thereto. The orifice includes bored profiled groove. Anchoring means has projection mating in shape and dimensions with that of the bored profiled groove. Device for profiled groove boring comprises fixture secured to ball bearing and installed on conical surface of basic bush having support ledge. The fixture is made as double-armed lever. The first lever arm is used as handle, another one is provided with bore head secured thereto and provided with conical generating line and hole for tool installation. The hole is formed so that hole top is in axial fixture plane. The fixture is provided with row of orifices to adjust fixture location in accordance with

predetermined groove depth. The anchoring means comprises anchor with threaded head formed at one end thereof and working part arranged at another end thereof. The head is connected with **control** rod. The working part is made as release and return cones. The anchoring means is also provided with central cylindrical part having flat spots. The means comprises segments surrounding the reverse cone and having support ledges and inner flat spots mating that of the central anchoring means part. Ends of the segments are provided with extensions shaped and dimensioned in accordance with the groove bored in the concrete orifice. The force-applying device comprises horizontal body with **control** rod extending along vertical body axis and fixedly secured to the anchoring means and anchoring means pre-stressing mechanism made as **control** rod drive steering-wheel installed on the body and mounted at upper threaded end of the **control** rod. The body is provided with slidable supports spaced equal distances from vertical body axis and piston **pump** with manual drive connected to loading device by channels formed in the body. The body is of parallelepiped shape and has central orifice for **control** rod receiving formed so that the **control** rod may perform longitudinal displacement and rotation relative the body. Slidable supports are situated in axial longitudinal body plane. The loading device is made as two hydraulic cylinders aligned with slidable supports connected to hydraulic cylinder rods. One support is U-shaped and rotationally secured to hydraulic cylinder rod. Another one is made as height-adjustable cap with cone threadedly connected to the rod. Piston **pump** axis is located in the body in parallel to longitudinal plane. The **pump** piston may perform longitudinal displacement and has threaded orifice to connect thereof with drive screw restricted from axial displacement in body orifice and attached with screw drive handle. Orifice **drilling** jig comprises guiding cylindrical bush having ledge and fixedly secured to the base. The base is made as equilateral triangle with rounded apexes, which create support extensions. The support extensions are provided with flat horizontal plate in central zone to support guiding bush ledge. ^ EFFECT: increased reliability of tests to be performed, improved test quality along with enhanced test accuracy and stability and increased convenience of test performing. ^ 16 cl, 11 dwg

113/144 © EPODOC / EPO .

PN - [RU2145382](#) C1 20000210

PR - RU19980117054 19980914

AP - RU19980117054 19980914

DT - I

PA - OOO KUB; AN GAZPROM

TI - **METHOD OF DETERMINATION OF CURRENT BOTTOM-HOLE HYDRODYNAMIC PRESSURE IN COURSE OF WELL DRILLING**

AB - FIELD: oil and gas producing industry, wells construction, particularly, methods of determination of current bottom-hole hydrodynamic pressure in course of well **drilling** with its horizontal completion in highly drained sand reservoirs of low thickness. SUBSTANCE: **method** includes lowering into well of assembly for **measuring** of pressure values with mud circulation at flow rate assumed during well **drilling**. Novelty consists in that lowered into well seating device is downhole instrument of PELENG telesystem and in the course of **drilling**, presence of sand interlayers in **drilled** section is determined by variation of values of gamma pulses of natural radioactivity in **drilled** section with the help of gamma logging transducer installed in downhole instrument.

Value of pressure in mud circulation in downhole motor and **drill** bit is determined by differential pressure pickup installed in downhole instrument. Pressure value in **drill** string with mud circulation is calculated. Mud **pump** pressure value with mud circulation is fixed by pressure gage installed on **drilling** rig or by **drilling control** station, and obtained data are used for calculation of pressure value in annular space. Then, pressure value of mud at given depth is calculated. Downhole current hydrodynamic pressure in course of **drilling** is determined by mathematical expression. EFFECT: reduced cost of determination of current hydrodynamic pressure with high efficiency of its determination.

114/144 © EPODOC / EPO

- PN - [MXPA06001754](#) A 20060512
- PR - EP20030077606 20030819; WO2004EP51614 20040727
- AP - MX2006PA01754 20040727
- DT - I
- CCI - [E21B43/122](#) ; [E21B47/12](#) ; [E21B21/08](#)
- PA - SHELL INT RESEARCH [NL]
- TI - **DRILLING SYSTEM AND METHOD.**
- AB - System (100) for **drilling** a bore hole into an earth formation, comprising: - a **drill** string (112) reaching into the bore hole leaving a **drilling** fluid return passage between the **drill** string and the bore hole inside wall; - a **drilling** fluid discharge conduit (124) in fluid communication with said return passage (115); - **pump** means (138) for pumping a **drilling** fluid through the **drill** string to said discharge conduit via said return passage; - back pressure means (123, 128, 130) for **controlling** the **drilling** fluid back pressure; - fluid injection means (141, 143) comprising supply passage (141) fluidly connecting an injection fluid supply (143) with said return passage and further comprising an injection fluid pressure sensor (156) arranged to **measure** injection fluid pressure in said supply passage; - back pressure **control** means (238) for **controlling** the back pressure means (123, 128, 130) whereby said **control** means is arranged to regulate the back.

115/144 © EPODOC / EPO

- PN - [JP2007309712](#) A 20071129
- PNFP - JP4757092B B2 20110824
- PR - JP20060137201 20060517
- AP - JP20060137201 20060517
- DT - I
- CT - (A)
[JP2004117319](#) A []; [JP2006070618](#) A [];
[JP2004012136](#) A []; [JPH06273538](#) A []
- FI - E02D1/04; G01N15/08&C; G01V9/02
- FT - 2D043/AA05; 2D043/AB09; 2D043/AC01; 2G105/AA02; 2G105/EE02; 2G105/GG01; 2G105/LL01; 2G105/LL03; 2G105/LL08
- PA - (A)
KAJIMA CORP

- TI - (A)
METHOD OF EVALUATING GROUND WATER FLOW
- AB - (A)
 PROBLEM TO BE SOLVED: To provide a **method** of evaluating a ground water flow capable of acquiring a local hydraulic gradient while retaining spatial consistency.
 - SOLUTION: A borehole 3 is **drilled** in a ground 1 to obtain a proper length of core 5. A ground water flow velocity is also acquired in an original position. Then, the core 5 is installed in triaxial testing cell 25 of a water permeable testing device 7 by flow velocity **control**, and side pressure is applied to the core 5 to be restricted at restriction pressure $[\sigma]_c$ equivalent to rock pressure. Water is injected thereafter to the core 25 inside the triaxial testing cell 25 from a water injection **pump** 17a of a syringe **pump** main body 9 via an injection pipe 21, while **controlling** a flow velocity of the injected water to the core 5 to be brought into the same condition to the ground water flow velocity acquired in the original position, drain from the core 5 is circulated (fed back) to a drain **pump** 17b via a drain pipe 23, and differential pressure is **measured** between a water injection side and a drain side. The hydraulic gradient is acquired by dividing the **measured** differential pressure with a sample body length 27, and a permeability coefficient is acquired by dividing the ground water flow velocity given to the core 5 with the hydraulic gradient.
 - COPYRIGHT: (C)2008,JPO&INPIT

116/144 © EPODOC / EPO

- PN - [JP2005213866](#) A 20050811
- PNFP - JP4113504B B2 20080709
- PR - JP20040021780 20040129
- AP - JP20040021780 20040129
- DT - I
- FI - E02D15/06&101; E02D5/34&Z
- FT - 2D041/AA01; 2D041/BA14; 2D041/BA31; 2D041/DA01; 2D045/AA02; 2D045/AA04; 2D045/CA23
- PA - (A)
 TAIYU CO LTD
- TI - (A)
METHOD AND EQUIPMENT FOR DISPOSING OF SLIME
- AB - (A)
 PROBLEM TO BE SOLVED: To provide a slime disposal **method** which enables the sure removal of even slime on the bottom of a **drilled** hole which enables the construction of a cast-in-place pile with an excellent bearing capacity, and which enables the downsizing of equipment.
 - SOLUTION: In this slime disposal **method**, slurry including the slime in the **drilled** hole B is suctioned by a **pump** 6 and let into a sedimentation tank; normal slurry in an equalizing tank which communicates with the sedimentation tank is fed into the **drilled** hole B, and the normal feeding of the slurry and the suction of the slurry including the slime are performed so that the slime in the **drilled** hole B can be replaced with the normal slurry. The physical properties of the slurry including the slimed suctioned by the **pump** 6 are directly **measured**, the descending motion of the **pump** 6 is **controlled**

based on this **measurement** result so that the slime in the **drilled** hole B can be replaced with the normal slurry.

- COPYRIGHT: (C)2005,JPO&NCIPI

117/144 © EPODOC / EPO

PN - [JPH08270388](#) A 19961015

PNFP - JP3588649B B2 20041117

PR - JP19950098050 19950330

AP - JP19950098050 19950330

DT - I

FI - A61L9/00&Z; B01D53/30; B01D53/34&116Z; B01D53/38&100; B01D53/81; E21D9/12&Z

FT - 2D054/AC18; 2D054/BA14; 2D054/DA03; 2D054/DA32; 4C080/AA07; 4C080/BB02; 4C080/CC04; 4C080/CC12; 4C080/HH03; 4C080/KK10; 4C080/LL02; 4C080/QQ11; 4C180/AA05; 4C180/BB03; 4C180/CB03; 4C180/EA23X; 4C180/KK01; 4C180/MM10; 4D002/AA03; 4D002/AB02; 4D002/AC10; 4D002/BA03; 4D002/BA05; 4D002/DA70; 4D002/GA02; 4D002/GB02

PA - (A)
PENTA OCEAN CONSTRUCTION

TI - (A)
DEODORIZING **METHOD** IN TUNNEL SHIELDING **METHOD** AND DEVICE THEREOF

AB - (A)
PURPOSE: To improve deodorizing efficiency by **measuring** odor component density in the extreme end part of a soil discharge cylinder provided in a propulsion body in rear of a **drilling** blade, and injecting a deodorizing agent into the soil discharge cylinder according to the **measured** results. CONSTITUTION: **Drilled** earth and sand are discharged to a shaft through a soil discharge cylinder 18, and a deodorizing agent is infected into the cylinder 18 through a **pump** 44 and a deodorizing agent infection passage 40. Next, the **drilled** earth and sand and the deodorizing agent are mixed by an auger provided in the cylinder 18 so as to remove the odor component. In this case, the air of an odor sampling chamber 19 on the outer circumferential part of the cylinder 18 is carried to a **measuring** chamber 33 on the shaft side, and the odor component density is **measured** by an odor sensor 53. Corresponding to the odor component density, a **controller** 50 **controls** the **pump** 44, so as to infect an appropriate quantity of deodorizing agent against the odor component content differing due to change of a stratum. Further, compressed air is always supplied to the chamber 19 so as to quickly sense the change of density of odor component. Hence an appropriate quantity of the agent can be supplied, and quick correspondence to the change of odor component can be attained.

118/144 © EPODOC / EPO

PN - [JPH03260212](#) A 19911120

PNFP - JP2711927B B2 19980210

PR - JP19900057397 19900308

AP - JP19900057397 19900308

DT - I

FI - E02D1/00; G01N3/00&D

FT - 2D043/AA01; 2D043/AB03; 2D043/AB04; 2D043/BB01; 2D043/EB02; 2D043/EB06;
2G061/AA02; 2G061/AB05; 2G061/BA01; 2G061/CA06; 2G061/DA01; 2G061/DA12;
2G061/DA16; 2G061/EA02; 2G061/EA05; 2G061/EA10; 2G061/EB03; 2G061/EB05;
2G061/EC02; 2G061/EC07

PA - (A)
KISO JIBAN CONSULTANTS CO LTD

TI - (A)
ROTARY **DRILL** BIT PRESSURE VARIABLE TYPE GROUND STRENGTH **MEASURING METHOD**
AND APPARATUS

AB - (A)
PURPOSE: To simultaneously calculate the coefficients related to a shearing resistance angle and tackiness by providing a mechanism changing the bit pressure acting on the **drilling** surface of a bit in predetermined magnitude at a predetermined cycle and a mechanism **measuring** the rotary torque and bit pressure of the bit. CONSTITUTION: A motor 4 for rotating a boring rod 2, a load cell 5 for **measuring** torque and bit pressure and an electric type depth gauge 6 for **measuring drilling** depth are mounted on the moving body 3 sliding along a guide support 1. In vibration pressure type **drilling measurement**, a **pump** 11 is operated by a power source 9 and the rotational speed of the rod is set by a flow rate **control** valve 12. Next, the average pressing force of a bit is **measured** on the basis of the fluid difference pressure due to the up-and-down movement of the piston of a cylinder 12 by flow rate **control** valves 13, 14, 15 and the cyclic variation and amplitude of bit pressure are **measured** by a solenoid valve 16 and recording, calculation and display are performed by the computer received in a **measurement control** and recording box 8.

119/144 © EPODOC / EPO

PN - [JPH11193683](#) A 19990721

PR - JP19980010006 19980105

AP - JP19980010006 19980105

DT - I

FI - E21B10/32; E21B4/06; E21B47/02; E21B47/024

FT - 2D029/EB05; 2D029/PA00; 2D029/PB02; 2D029/PC03; 2D129/AA04; 2D129/AA08;
2D129/AA09; 2D129/AB21; 2D129/BA01; 2D129/BA03; 2D129/BA16; 2D129/BA19;
2D129/BA27; 2D129/BA28; 2D129/BB03; 2D129/BB20; 2D129/CA02; 2D129/CA04;
2D129/CA13; 2D129/CA18; 2D129/CA21; 2D129/CB11; 2D129/CB13; 2D129/DA13;
2D129/DA21; 2D129/DA23; 2D129/DA24; 2D129/DC01; 2D129/DC05; 2D129/DC13;
2D129/DC46; 2D129/EA02; 2D129/EA04; 2D129/EA09; 2D129/EA21; 2D129/EA23;
2D129/EB01; 2D129/EB26; 2D129/GA02; 2D129/GA21; 2D129/GA22; 2D129/GA34;
2D129/JA01

PA - JAPAN FOUND ENG; ASAHI ENGINEERING

TI - **DRILLING** EXCAVATION AND ADVANCING **METHOD** AND DEVICE

AB - PROBLEM TO BE SOLVED: To allow accurate boring by always keeping the verticality during boring into a ground. SOLUTION: During boring a hole into a ground with a casing pipe, a housing 14 as **measuring** apparatus is set in the casing pipe to accurately keep verticality to the center of the earth, shock absorbing liquid 15 is filled

in the cylindrical housing 14 as the **measuring** apparatus in a fully filled condition, and the direction and amount of a float 8' offset to the scale of a mark plate 2' on an upper plate for the housing 14 are detected via an anchor wire 13. Compressed air is fed to an expansive bag provided at least three places in the peripheral direction of the casing pipe with a **pump** having inverter function via a **controller** to be expanded for reaction with a ground so that cured hole boring can be automatically corrected and the verticality to the center of the earth be accurately held to continue **drilling**, excavation and advancing.

120/144 © EPODOC / EPO

PN - [GB2334052](#) A 19990811

PNFP - GB2334052 B 20001108

PR - US19980019182 19980205

AP - GB19990002667 19990205

DT - *

CT - (A B)
[EP0744527](#) A1 []; [US4461359](#) A []

CCI - [E21B41/00](#) ; [E21B47/18](#) ; [E21B47/187](#) ; [E21B21/08](#)

PA - (A B)
BAKER HUGHES INC [US]

TI - (A)
Apparatus and **method** for self adjusting downhole signal communication
- (B)
Apparatus for transmitting data during **drilling**

AB - (A)
An apparatus for sending signals downhole during **drilling** operations uses a main **pump** 15 to **pump** mud from a mud pit 13 at a substantially constant flow rate. The bulk of the pumped mud goes downhole to maintain adequate circulation for the **drill** bit 12. A bypass pipe 23 is provided with a shut-off valve 24 that is **controlled** by an electronic **controller** 25. By pulsing the opening and closing of the shut-off valve 24, the volumetric flow downhole is pulsed. The pulse amplitude and duration can be **controlled**. These pulses in the flow rate are detected by a suitable downhole device such as a flow rate **measurement** device, a pressure detector or a turbine. The initial "wake-up" pulse is made long enough so that the detection device downhole is always able to detect it. Subsequent to this wake-up pulse, adjustments are made to the pulse duration, in steps of about 2 seconds, for the smallest pulse period that is detectable downhole. In addition, the amplitude of the pulses is also **controlled** by regulating the maximum flow through the shut-off valve. The pulses are modulated by a binary sequence of numbers corresponding to the data to be transmitted.

121/144 © EPODOC / EPO

PN - [GB1316617](#) A 19730509

PR - US19700058378 19700727; US19690884441 19691212

AP - GB19700057935 19701207

DT - **

CCI - [E21B47/18](#)

IDT - 42C42A10

PA - MOBIL OIL CORP

TI - **METHOD AND APPARATUS FOR SIGNAL-TO-NOISE RATIO IN A CLOSED FLUID SYSTEM**

AB - 1316617 Acoustic telemetry MOBIL OIL CORP 7 Dec 1970 [12 Dec 1969 27 July 1970] 57935/70 Heading H4D In a system for logging a downhole **drilling** parameter and/or earth formation characteristics while **drilling** a well, in which downhole data are telemetered to the surface as an acoustic pressure wave signal in the **drilling** mud, noise on the signal and generated at the surface by, e.g., surges in the output of mud **pump** 36 is substantially cancelled by **measuring** the pressure wave signal at two points A, B spaced along the signal path, time-shifting one of the two resulting **measurement** signals by an amount corresponding to the travel time of sound between the two points, and obtaining the difference between the time-shifted signal and the other **measurement** signal. The downhole acoustic signal is generated in the Fig. 1 embodiment by a known system in which the output of probe 47 **controls** the rotation rate of a valve 52 in the **drilling** mud flow path. Transducers at A and B, provided with circuitry to equalize their sensitivity, give the two **measurement** signals. The signal from A is delayed a time #, the delayed signal is polarityinverted, and the inverted signal is added to the signal from B to give a substantially noise-free sum comprising two desired signal components mutually time-shifted by 2# (because the desired signal and the noise travel in opposite directions in the mud). If the desired signal is sinusoidal, A and B may be spaced by a quarter-wavelength of the acoustic signal in the mud so that the two desired components add in phase in the sum. To enhance the noise cancellation, the signal from A may be filtered, prior to time-shifting, by a function which adds distortion similar to that undergone by the noise signal in passing from A to B via the mud; in this case the added distortion on the desired signal, and the 2# time-shift, are removed by processing the said sum with a further filter function. The resulting noise-free signal is recorded. The above time-shifting and filtering procedures may be carried out by analogue or digital techniques.

122/144 © EPODOC / EPO

PN - [GB1473233](#) A 19770511

PR - US19730358606 19730509

AP - GB19740018812 19740429

DT - **

CCI - [G01N21/86](#) ; [G01N33/346](#)

PA - INDUSTRIAL NUCLEONICS CORP

TI - GAUGING **METHOD AND APPARATUS**

AB - 1473233 **Measuring** opacity of paper photoelectrically INDUSTRIAL NUCLEONICS CORP 29 April 1974 [9 May 1973] 18812/74 Heading G1A The visual opacity of a moving paper web is **measured** by photo-electrically sensing the transmissivity of the web and modifying the detector response in accordance with the reflectivity of the paper so that the opacity **measurement** is substantially independent of compositional variations, the modified response being correlated with calibration values of visual opacity. A photo-electric gauge is mounted on a traversing mechanism which can be moved back and forth transverse to the web direction of motion, Fig. 1 (not shown) and to an off-web

position for standardization. The gauge may be, for example, of the form shown in Fig. 2. Low voltage D.C. lamp 34 is mounted in internally blackened housing and the beam is collimated by lens 38. The web 10 is sucked against steel surface 40 by vacuum **pump** 48 which also removes particles of foreign matter. Light passing through the web reaches an opal glass plate 60 which acts as a 0A5 semi-reflector, so that half the incident light is transmitted through it, while the other half is reflected back on to the underside of the web 10 to be reflected back again towards the plate 60. In this way an extra component of the light beam represents the reflectivity of the web. The light passed by plate 60 is directed by a gold-lined plastics tube 76 through a band pass filter 74 which passes only visible light. The detector 62 is a silicon photovoltaic cell having connector straps 64 and is mounted in a temperature **control** oven 66 behind a glass window 72. Zero standardization of the detector e.g. for dark current is carried out with shutter 80 blocking light reaching the photo-cell. The detector circuit, Fig. 3 (not shown), includes a electrometer and buffer amplifier, followed by a calibration amplifier and recorder. To deal with exceptional variations in reflectivity and/or opacity, the apparatus can be adapted so that the detector window 60 has a variable degree of reflectivity. In one arrangement, Fig. 7 (not shown) a plurality of different semireflectors are mounted in a turret-wheel. In another arrangement, the window 60 is substituted by a plain glass window beneath which is mounted a partial reflector, the distance of which from the window is adjustable. The particle reflector may alternatively be an array of transparent and reflective elements e.g. a mirror with a plurality of **drilled** holes. In an alternative embodiment, Fig. 9, separate detectors are used to **measure** transmitted and reflected light. Light from source 34 illuminates an integrating sphere. Light transmitted by the web is detected by detector 62 mounted in a black cavity and that reflected by the web by detector 130 mounted in the integrating sphere. The detector outputs are combined in a computer which may be of the form described with reference to Fig. 11 or Fig. 12 (not shown). A theoretical discussion of the compensation for reflectivity is given.

123/144 © EPODOC / EPO .

PN - [GB1390571](#) A 19750416

PR - US19720272819 19720718; US19720272838 19720718

AP - GB19730018468 19730417

DT - **

CCI - [E21B44/00](#) ; [E21B47/18](#) ; [E21B47/182](#)

PA - MOBIL OIL CORP

TI - **METHOD AND APPARATUS FOR CONTROLLING THE DOWNHOLE ACOUSTIC TRANSMITTER OF A LOGGING-WHILE-DRILLING SYSTEM AND METHOD AND APPARATUS FOR SURFACE-TO-DOWNHOLE COMMUNICATION**

AB - 1390571 Automatic **control** MOBIL OIL CORP 17 April 1973 [18 July 1972(2)] 18468/73
Heading G3N Down-hole operations in a borehole are **controlled** by **controlling** the conditions in a plurality of communication channels in the borehole providing subsurface detectors for detecting the conditions in the channels and producing first signals representative of the conditions and producing from the first signals at least one **control** signal which is used to **control** a down-hole operation. As shown a conventional rotary **drilling** apparatus, Fig. 1, has a **drill** string 22 fed with **drilling** fluid through a desurger 33 suppressing **pump** noise. A down-hole logging tool 40 includes

one or more transducers for **measuring** down-hole conditions and an acoustic transmitter producing a signal in the **drilling** fluid, which is received by one or more transducers 41 mounted on a swivel 30. The signals are applied to a recording system 42. The communication **control**, Fig. 4, comprises a mud flow-rate detector 80, and a comparator 81 and corresponding devices 82, 83 and 84, 85 for weight-on-**drill** and **drill** string rotary speed respectively. The mud-flow-rate is **controlled** from a **pump** 31, Fig. 1, and the detector 80 provides an electrical signal MFR which is applied to the comparator 81 which provides two output signals related to specific threshold values. The output signals from comparator 81 together with similar signals from comparators 83, 85 are fed to a **control** gate 86 in which they are selectively combined to provide a plurality of **control** signals A-E.

124/144 © EPODOC / EPO

- PN - [GB2447798](#) A 20080924
- PNFP - GB2447798 B 20090923
- PR - US20050665823P 20050329; GB20070018524 20060328; GB20080007977 20060328
- AP - GB20080007977 20060328
- DT - **
- CT - || STSE (A B)
[US5065825](#) A 19911119 [] (BARDIN CHRISTIAN [FR], et al)
[US2005209782](#) A1 20050922 [] (MORIARTY KEITH A [US])
- CCI - [E21B47/18](#)
- CNOI - (A B)
[E21B47/18](#)
- PA - (A B)
BAKER HUGHES INC [US]
- TI - (A B)
Method and apparatus for downlink communication
- AB - (A)
In a **method** and system in which signals from the surface are sent by changing flow rate of the **drilling** fluid supplied to a **drill** string during **drilling** of a wellbore, the signals are sent based on a fixed or dynamic time period schemes so that the sent signals cross a threshold value. A detector **measures** the changes in the flow rate. A **controller** downhole determines the number of times and frequency that a downhole parameter, such as voltage, relating to the changes in the flow rate crosses a predefined threshold value. Based on a **pump** or flow **control** device at the surface changing the flow rate once for each of the signals, with the change preceded by a predefined time interval, signals are assigned to commands. The **controller controls** or operates a steering device based on the commands.

125/144 © EPODOC / EPO

- PN - [GB2389130](#) A 20031203
- PNFP - GB2389130 B 20060111
- PR - WO2002US21520 20020709; US20010303959P 20010709; US20010304160P 20010710; US20010323797P 20010920

AP - GB20030005720 20020709

DT - *; Rep

CT - || STSE (B)
[EP0290250](#) A2 19881109 [] (CONOCO INC [US]);
[WO0004269](#) A2 20000127 [] (DEEP VISION LLC [US]);
[WO0050731](#) A1 20000831 [] (WEATHERFORD LAMB [US], et al)

CCI - [E21B33/076](#) ; [E21B43/12](#) ; [E21B47/0001](#) ; [E21B7/12](#) ; [E21B21/001](#) ; [E21B21/08](#)

PA - (A B)
BAKER HUGHES INC [US]

TI - (A B)
Drilling system and **method** for **controlling** equivalent circulating density during **drilling** of wellbores

AB - (A)
A **drilling** system for **drilling** subsea wellbores includes a tubing-conveyed **drill** bit that passes through a subsea wellhead. Surface supplied **drilling** fluid flows through the tubing, discharges at the **drill** bit, returns to the wellhead through a wellbore annulus, and flows to the surface via a riser extending from the wellhead. A flow restriction device positioned in the riser restricts the flow of the returning fluid while an active fluid device **controllably** discharges fluid from a location below to just above the flow restriction device in the riser, thereby **controlling** bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line thereby providing dual gradient **drilling** while **controlling** bottomhole pressure and ECD. A **controller controls** the energy and thus the speed of the **pump** in response to downhole **measurement** (s) to maintain the ECD at a predetermined value or within a predetermined range.

126/144 © EPODOC / EPO

PN - [GB2370882](#) A 20020710

PNFP - GB2370882 B 20040324

PR - WO2001US23011 20010720; US20000219741P 20000720

AP - GB20020008903 20010720

DT - **

CT - || STSE (A B)
[EP0490421](#) A1 19920617 [] (SCHLUMBERGER SERVICES PETROL [FR], et al);
[EP0520903](#) A2 19921230 [] (SCHLUMBERGER LTD [US], et al);
[EP0698722](#) A2 19960228 [] (HALLIBURTON CO [US]);
[US3321965](#) A 19670530 [] (EXXON PRODUCTION RESEARCH CO);
[US5233866](#) A 19930810 [] (GAS RES INST [US]);
[US5708204](#) A 19980113 [] (WESTERN ATLAS INT INC [US]);
[US5803186](#) A 19980908 [] (BAKER HUGHES INC [US])

CCI - [E21B47/06](#) ; [E21B49/008](#) ; [E21B49/10](#) ; [G01V11/002](#)

PA - (A B)
BAKER HUGHES INC [US]

TI - (A B)
Drawdown apparatus and **method** for in-situ analysis of formation fluids

AB - (A)
 An apparatus and **method** capable of incrementally decreasing the borehole pressure at a variable rate by **controlling** a test volume within the borehole. The system includes an incrementally **controllable pump**, closed loop feedback and a **controller** for drawing down the pressure of a test volume to a level just below formation pressure. This incremental drawdown system will significantly reduce the overall **measurement** time, thereby increasing **drilling** efficiency and safety.

127/144 © EPODOC / EPO

PN - [WO0167068](#) A2 20010913

PNFP - WO0167068 A3 20011227

PR - GB20000005152 20000303

AP - WO2001GB00913 20010305

DT - *; Rep

CT - |EP| ISR (A3)

[US4274283](#) A 19810623 [XY] (MAUS L DONALD, et al)

[X] 1-11,15

* column 2, line 61 - column 3, line 10; figure 6; claim 2 *

* column 9, line 2 - line 3 *

* column 3, line 60 - column 4, line 4 *

[Y] 13;

[US4703664](#) A 19871103 [X] (KIRKPATRICK LLOYD V [US], et al)

[X] 1-3,6,7,11,15

* column 3, line 46 - line 66; figure 3 *;

[US4557142](#) A 19851210 [X] (HENSLEY GARY L [US], et al)

[X] 1-7,11,12,14-16

* column 1, line 7 - line 16; figure 3 *

* column 4, line 57 - column 5, line 38 *

* column 7, line 54 - line 57 *

* column 7, line 29 - line 33 *;

[US3839914](#) A 19741008 [X] (MODISETTE J, et al)

[X] 1,6,7,11,15

* column 1, line 7 - line 15; figure 5 *

* column 1, line 65 - line 67 *;

[US3994166](#) A 19761130 [Y] (DOWER ETHELL J)

[Y] 13

* Abstract;; figure 1 *;

[WO9900575](#) A2 19990107 [A] (BAKER HUGHES INC [US])

[A] 1

* Abstract; page 26, line 7 - line 15; figures 3,5 *

* page 29, line 1 - line 9; claim 8 *;

[FR1587047](#) A 19700306 [A] (GEOSERVICES)

[A] 1

* page 2, line 1 - line 7; figure 1 *;

[EP0282251](#) A2 19880914 [A] (SCHLUMBERGER ELECTRONICS UK [GB])

[A] 1

* Abstract;; figure 1 *

CCI - [E21B21/01](#) ; [G01N1/2035](#)

CCA - [G01N9/00](#) ; [G01N11/00](#)

PA - (A2 A3)
MUD WATCHER LTD [GB]; COLQUHOUN ROSS LAMOND [GB]

TI - (A2 A3)
APPARATUS AND **METHOD** FOR CONTINUOUS **MEASUREMENT** OF **DRILLING** FLUID PROPERTIES

AB - (A2 A3)
The present invention relates to an apparatus (100) suitable for use in substantially continuous **measurement** of a physical property of a **drilling** mud during use thereof in a **drilling** mud flow circuit of a **drilling** device. The apparatus (100) comprises a sample chamber (114) having an inlet (113) and an outlet (122) and is arranged to allow a **drilling** mud to flow therethrough from the inlet (113) to the outlet (122). A detector device (116) such as a densimeter and/or viscometer is provided for substantially continuous **measurement** of a physical property of the **drilling** mud flowing through the sample chamber (114) in use of the apparatus (100). Supply and return conduits (103a, 126) are provided for connection of the inlet (113) and outlet (122) respectively, in use of the apparatus (100), to a **drilling** mud flow circuit for delivering at least part of the **drilling** mud flow through the apparatus (100) for **measurement** . A **pump** (112) produces a **controlled** flow of the diverted **drilling** mud through the apparatus (100) so that the properties of the mud, particularly density and viscosity can be **measured** on a more or less continuous basis.

128/144 © EPODOC / EPO

PN - [GB2349404](#) A 20001101

PNFP - GB2349404 B 20001220

PR - GB19990002667 19990205; US19980019182 19980205

AP - GB20000017893 19990205

DT - *

CT - (A B)
[EP0744527](#) A1 []

CCI - [E21B21/08](#) ; [E21B41/00](#) ; [E21B47/18](#) ; [E21B47/187](#)

PA - (A B)
BAKER HUGHES INC [US]

TI - (A)
Apparatus and **method** for self-adjusting downhole signal communication
- (B)
Apparatus for transmitting data during **drilling**

AB - (A)
An apparatus for sending signals downhole during **drilling** operations uses a main **pump** 15 to **pump** mud from a mud pit 13 at a substantially constant flow rate. The bulk of the pumped mud goes downhole to maintain adequate circulation for the **drill** bit 12. A by-pass pipe 23 is provided with a shut-off valve 24 that is **controlled** by an electronic **controller** 25. By pulsing the opening and closing of the shut-off valve 24, the volumetric flow downhole is pulsed. The pulse amplitude and duration can

be **controlled**. These pulses in the flow rate are detected by a suitable downhole device such as a flow rate **measurement** device, a pressure detector or a turbine. The downhole device is adapted to send a response signal indicating that a pulse has been detected downhole, and wherein if the **controller** fails to receive a response signal it adjusts, in use, the parameters of the pulse to increase the likelihood of detection.

129/144 © EPODOC / EPO

PN - [GB456447](#) A 19361106

PR - ATX456447 19340306

AP - GB19350007082 19350306

DT - *

CCI - [E21B19/08](#)

PA - MUELLER FRIEDRICH

TI - An improved **method** of and apparatus for **controlling** the boring tools in deep boring plants operating with rotary boring devices

AB - 456,447. Deep - boring. MULLER, F., 170, Lainzerstrasse, Vienna. March 6, 1935, No. 7082. Convention date, March 6, 1934. [Class 85] In rotary deep-boring, the torque and bottom pressure are **controlled** by regulating devices either of which is adapted to be put into or out of operation independently, while when they operate in conjunction, each is at all times effective. A further independent regulating device may be provided dependent on the speed of rotation. In Fig. 1, a motor 1 drives the boring machine 3 through a tooth-pressure or other dynamometer 2 while the free end of the **drill** cable 5 is connected to a load **measuring** device 4. The dynamometer 2 and the device 4 are connected through a pivoted lever 16 to a switch 14 **controlling** a reversible electric motor 10 driving cable drum 9 whereby variations in the torque or **drill** pressure cause raising or lowering of the **drill**. The switch 14 is also manually operable. In the form shown diagrammatically in Fig. 2, the cable drum 61 is connected through worm gearing 60 and differential gears 58 to oppositely running hydraulic turbines 52, 53, supplied by **pump** 47 through connected needle valves 54, 55, one of which carries a piston 57. The boring machine 20 is capable of yielding about the **drill** rods 21 and acts on a pivoted spring - pulled jet tube 41 through piston 22, a fluid link, piston 32, lever 37 and rod 39. The free end of the **drill** cable is connected to a piston 28 in a pivoted cylinder 27 to act on the jet tube 41 through a fluid link, piston 25, lever 36 and rod 38. Variations in torque or **drill** pressure or both move the jet tube to deliver through pipe 43 or 44 to one side of the piston 57 thereby moving the needle valves 54, 55, to vary the supply to the turbines 52, 53, and drive the drum 61 to raise or lower the **drill** rods. Cocks 24, 31 are provided in the fluid links. In a modified construction, the rods 38, 39 are arranged on opposite sides of the jet tube 41, pins on the latter entering slots in the rods. In Fig. 6, a **pump** 82 circulates fluid through pipe 83, valve box 84 containing spring-loaded cone valves 94, 95, and cooler 97; branch pipes 85, 91, are connected through valve 86 and pipes 87, 90, to opposite ends of a cylinder 89 containing a piston 88 through which the **drill** rods are raised or lowered. The valve 94 is adjusted by nuts 99, 100, according to the desired **drill** pressure while a torque-**measuring** device acts through lever 102 and cam 103 on the valve 95, variations in **drill** pressure or torque causing adjustment of the valves 94, 95, to effect raising or lowering of the piston 88. The valve 86 may be reversed to apply pressure to the **drill** when commencing boring. In Fig. 7, a further valve 108 is provided and is actuated through lever 111, cam 110 and

chain &c. 109 whereby, as when widening the boreholes, the tool is lowered a given amount at each revolution. The cam 110 may be conical and slidable to give variable action.

130/144 © EPODOC / EPO

PN - [FR2784417](#) A1 20000414

PNFP - FR2784417 B1 20001117

PR - FR19980012910 19981013

AP - FR19980012910 19981013

DT - *; Rep

CT - || STSE (A1)

[FR2400105](#) A1 19790309 [A] (ARMCO STEEL CORP [US])

[A] 1-8

* the whole document *;

[US4176986](#) A 19791204 [A] (HEILHECKER JOE K [US], et al)

[A] 1,7

* figure -; claim - *;

[US4040264](#) A 19770809 [A] (NEILON CLAUDE R)

[A] 1,7

* figure -; claim 1 *;

[US4099560](#) A 19780711 [A] (FISCHER WILLIAM, et al)

[A] 1,7

* figure -; claims 1,19 *;

[US3992889](#) A 19761123 [DA] (WATKINS BRUCE J, et al)

CCI - [E21B17/012](#)

PA - (A1 B1)

INST FRANCAIS DU PETROLE [FR]

TI - (A1)

Riser for **drilling** with a subsea wellhead has box into which a set volume of gas can be **pump** and at least one tubular element with inside and outside of box differential pressure **measurer**

AB - (A1)

The subsea wellhead has tubular elements linked by connectors, the elements having a buoyancy device consisting of a box in which a set volume of gas can be pumped so as to modify the apparent weight of the element in the water. At least one of the tubular elements has a device for **measuring** the differential pressure between the inside and the outside of the box, a device for **controlling** the filling device and a discharge device considering the differential pressure **measurement**. The differential pressure **measurement** is transmitted to the surface. An Independent claim is included for a **method** of adjusting the buoyancy of a riser for **drilling** with subsea wellhead. Preferred Features: The gas supply system has pipes parallel to the tubular elements and they are linked together by the connectors. The energy required for **control** is provided by a hydraulic line similar to the gas supply line. At least one electric conductor links the upper and lower connectors of a tubular element together, and the connectors link the conductors of the various elements together. The buoyancy of the element is calculated by **measuring** the differential pressure between the inside and outside of the box, and the devices for filling the box with gas, or for emptying it from

gas are **controlled** according to the desired buoyancy.

131/144 © EPODOC / EPO

- PN - [WO2005017308](#) A1 20050224
- PR - EP20030077606 20030819
- AP - WO2004EP51614 20040727
- DT - *; Rep
- CT - |EP| ISR (A1)
[US3470971](#) A 19691007 [A] (DOWER ETHELL J)
[A] 1,8
* abstract *;
[US2001050185](#) A1 20011213 [A] (CALDER IAN DOUGLAS [US], et al)
[A] 1,8
* paragraph [0022]; figure 2 *;
[US6352129](#) B1 20020305 [AD] (BEST BRUNO [NL])
[AD] 1,8
* column 4, line 59 - column 5, line 9; figure 2 *;
[US2002112888](#) A1 20020822 [A] (LEUCHTENBERG CHRISTIAN [GB])
[A] 1,8
* abstract *
- CCI - [E21B43/122](#) ; [E21B47/12](#) ; [E21B21/08](#)
- PA - SHELL INT RESEARCH [NL]; SHELL CANADA LTD [CA]; REITSMA DONALD GORDON [NL]; VAN RIET EGBERT JAN [NL]
- TI - **DRILLING SYSTEM AND METHOD**
- AB - System (100) for **drilling** a bore hole into an earth formation, comprising: - a **drill** string (112) reaching into the bore hole leaving a **drilling** fluid return passage between the **drill** string and the bore hole inside wall; - a **drilling** fluid discharge conduit (124) in fluid communication with said return passage (115); - **pump** means (138) for pumping a **drilling** fluid through the **drill** string to said discharge conduit via said return passage; - back pressure means (123, 128, 130) for **controlling** the **drilling** fluid back pressure; - fluid injection means (141, 143) comprising supply passage (141) fluidly connecting an injection fluid supply (143) with said return passage and further comprising an injection fluid pressure sensor (156) arranged to **measure** injection fluid pressure in said supply passage; - back pressure **control** means (238) for **controlling** the back pressure means (123, 128, 130) whereby said **control** means is arranged to regulate the back.

132/144 © EPODOC / EPO

- PN - [EP0211112](#) A1 19870225
- PR - EP19850305365 19850726
- AP - EP19850305365 19850726
- DT - *; Rep
- CT - || STSE (A1)
[US2987923](#) A 19610613 [A] (HOEPPPEL RAYMOND W, et al);
[GB1280227](#) A 19720705 [A] (MOBIL OIL CORP [US]);
[GB1422830](#) A 19760128 [A] (GARTON SONS CO LTD);

[US4510800](#) A 19850416 [A] (PRIOR MAURICE [US]);

[BE702518](#) A 19680115 [A];

[US2252014](#) A 19410812 [A] (LUPFER JAMES A)

- CCI - [E21B21/01](#)
- PA - HUTCHISON HAYES INTERNATIONAL [US]
- TI - Apparatus and **method** for real-time **measurement** of **drilling** fluid properties.
- AB - A system for real-time **measurement** of multiple properties of **drilling** fluids from a single sampling point may comprise: a **pump** (36) for transferring fluids in the system, the suction of which may be alternately communicated through suction conduits (21,23) with a reservoir (5) of **drilling** fluids being **measured** and the source of cleaning fluids; valves (44,46) connected in the suction (21,23) conduits for alternately allowing or preventing fluid communication between the **pump** (36) and the **drilling** fluid reservoir (5) or the source of cleaning fluids; a weight **measuring** device (33) connected to the discharge side of the **pump** (36) for receiving and **measuring** the weight of **drilling** fluids therefrom; and a viscosity **measuring** device (32) connected to the discharge of the **pump** (36) for receiving and **measuring** indices of viscosity of the **drilling** fluids therefrom. A source of power (34) is connected to the **pump** (36), the weight **measuring** device, (33) the viscosity **measuring** device (32) and **control** apparatus. The **control** apparatus is also connected to the **pump**, (36) the weight **measuring** device (33) and the viscosity **measuring** device (32) for **controlling** the operation thereof.

133/144 © EPODOC / EPO

- PN - [EA200101263](#) A1 20020425
- PNFP - EA002944 B1 20021226
- PR - EP19990304350 19990603; WO2000EP04996 20000530
- AP - EA20010001263 20000530
- DT - I
- CCI - [E21B23/14](#) ; [E21B43/12](#) ; [E21B4/18](#) ; [E21B7/00](#) ; [E21B21/00](#) ; [E21B21/10](#)
- CCA - [E21B2021/006](#)
- PA - (B1)
SHELL INT RESEARCH [NL]
- TI - (B1)
METHOD OF CREATING A WELLBORE
- AB - (B1)
1. A **method** of creating a wellbore in an earth formation, the wellbore including a first wellbore section and a second wellbore section penetrating a hydrocarbon fluid bearing zone of the earth formation, the **method** comprising - **drilling** the first wellbore section; - arranging a remotely **controlled drilling** device at a selected location in the first wellbore section, from which selected location the second wellbore section is to be **drilled**; - arranging a hydrocarbon fluid production conduit in the first wellbore section in sealing relationship with the wellbore wall, the conduit being provided with fluid flow **control** means and a fluid inlet in fluid communication with said selected location; - operating the **drilling** device to **drill** the second wellbore section whereby during **drilling** of the **drilling** device through the hydrocarbon fluid bearing zone, flow of hydrocarbon fluid from the second wellbore section into the production conduit is **controlled** by the fluid flow **control** means. 2. The **method** of claim 1, wherein

arranging the **drilling** device in the first wellbore section comprises suspending the **drilling** device from the production conduit, and simultaneously lowering the production conduit and the **drilling** device into the first wellbore section. 3. The **method** of claim 2, wherein the first wellbore section is provided with a casing and the production conduit is at the lower end part thereof provided with an inflatable packer for sealing the conduit relative to the casing, and wherein the **drilling** device is releasably connected to said packer during simultaneous lowering of the production conduit and the **drilling** device into the first wellbore section. 4. The **method** of any one of claims 1-3, wherein the **drilling** device is operated by electric power, and the **method** further comprises lowering an electric conductor wire through the production conduit and connecting the conductor wire to the **drilling** device. 5. The **method** of claim 4, wherein the conductor wire is lowered through the production conduit by connecting a **pump**-down element to the wire and pumping the **pump**-down element through the production conduit. 6. The **method** of claim 4 or 5, wherein the **drilling** device is provided with means for **measuring** data on at least one of a formation characteristic, a wellbore characteristic, and a **drilling** characteristic, and wherein the **method** further comprises transmitting said data through the conductor wire to surface. 7. The **method** of any one of claims 1-6, wherein the **drilling** device comprises a front member including a **drill** bit, a rear member provided with retractable anchoring means for anchoring the rear member to the borehole wall, the front member and rear member being arranged in a telescoping relationship, and thrust means for thrusting the front member in telescoping outward direction relative to the rear member, and wherein the step of operating the **drilling** device includes anchoring the rear member to the borehole wall and inducing the thrust means to thrust the front member in telescoping outward direction relative to the rear member and against the borehole bottom. 8. The **method** of any one of claims 1-7, wherein the **drilling** device comprises a **pump** system having an inlet arranged to allow **drill** cuttings resulting from the **drilling** action of the **drilling** device to flow into the inlet, and an outlet arranged to discharge said **drill** cuttings into the wellbore behind the **drilling** device. 9. The **method** of claim 8, wherein said outlet is arranged a selected distance behind the **drilling** device and at a location in the wellbore section where a fluid is circulated through the wellbore, which fluid entrains the **drill** cuttings and transports the **drill** cuttings to surface. 10. The **method** substantially as described hereinbefore with reference to the drawings.

134/144 © EPODOC / EPO

PN - [EA199900961](#) A1 20000626

PNFP - EA001119 B1 20001030

PR - NO19970001859 19970423; WO1998NO00114 19980406

AP - EA19990000961 19980406

DT - I

CCI - [E21B49/008](#)

PA - (B1)
SHORE TEC AS [NO]

TI - (B1)
A **METHOD** AND AN APPARATUS FOR USE IN PRODUCTION TESTS, TESTING AN EXPECTED PERMEABLE FORMATION

AB - (B1)

1. A **method** for use in connection with an expected permeable, first formation (4), where fluid flowing out therefrom, during the production test is subjected to i.a. pressure **measurement** and flow rate **control**, characterized in that at least one defined fluid flowing path (8) is established between said expected permeable, first formation (4) and a permeable, second formation (6), and that fluid flowing out from said first formation (4) is conducted through said fluid flowing path (8) to said second formation (6) which receives this fluid and keeps it at least temporarily. 2. A **method** according to claim 1, characterized in that the fluid flowing path(s) is(are) established by means of channel-forming pipe(s) (8) which is positioned preferably concentrically with the surrounding bore hole wall/casing face between first and second formations (4, 6) situated at different levels, and that sealing means (7, 10, 12, 11) are placed in order to prevent fluid from flowing from first formation (4) to second formation (6) outside the fluid flowing path(s) (8). 3. A **method** according to claim 1 or 2, characterized in that, after fluid has been transferred from first formation (4) to second formation (6), a reversed production test is carried out in that (transferred) fluid is returned forcibly from second formation (6) to first formation (4). 4. A **method** according to any one of the preceding claims, characterized in that a fracturing of said first formation (4) is carried out, the well in the area of first formation (4) being supplied with pressurised liquid, e.g. through a **drill** string which is connected to said fluid flowing path (8). 5. An apparatus for carrying out the **method** as defined in claim 1, and intended to be mounted into a well (1) between two formations, an expected permeable first formation (4) to be production tested, and a second permeable formation (6) comprising for the production test one or more sensors/meters/ regulators/**controllers** (15, 17) for i.a. sensing/ **measuring**, recording pressure conditions and flowing rate as well as adjusting the latter, characterized in that the apparatus comprises at least one channel-forming pipe (8) which, within the well (1), establishes a fluid flow path between a first formation (4) to be production tested and a second permeable formation (6), sealing means (7, 10, 11, 12) assigned the apparatus being placed in order to restrict the fluid flow between the formations (4, 6) to take place only in the channel or channels (8) formed to establish at least one restricted fluid flow path, so that this/these channel(s) (8) constitutes the only fluid communication between the two permeable formations (4, 6). 6. An apparatus according to claim 5, characterized in that said channel-forming pipe (8), respectively each channel-forming pipe (8), is open at the end situated closest to the formation (4) to be production tested, but closed at the opposite end, where an adjacent pipe portion situated within said second formation (6) has one or more lateral, through-going gates (13). 7. An apparatus according to claim 5, characterized in that the channel-forming pipe (8), respectively each pipe (8), has closed axial ends, and that they, adjacent each end portion, within an area surrounded by the respective formation (4, 6), has one or more lateral, through-going gates (21). 8. An apparatus according to claim 5, characterized in that each through-going lateral gate (21) respectively 13) in each portion of the channel forming pipe (8), respectively each pipe (8), surrounded by one of the formations (4 respectively 6), is assigned a movable, perforated sleeve (14) which, upon displacement in relation to lateral gate (21) respectively 13) in the channel-forming pipe, respectively each such pipe (8), can provide unthrottled or throttled ingoing/outgoing flow of fluid, respectively closure of the fluid flow. 9. An apparatus according to any one of the claims 5-8, characterized in that the channel-forming pipe (8), respectively each channel-forming pipe (8), is assigned a motor-driven **pump** means (18), preferably a reversible **pump** means, for forced displacement of the fluid between the formations (4, 6). 10. An apparatus

according to any one of the claims 5-9, characterized in that the channel-forming, fluid flow path establishing pipe (8) is assigned a remotely operable valve adapted to **control** and adjust a fluid flow through the channel (8).

135/144 © EPODOC / EPO

PN - [CN101158268](#) A 20080409

PNFP - CN100588816C C 20100210

PR - CN2007150509 20071115

AP - CN2007150509 20071115

DT - I

PA - (A)
SECOND BUREAU OF CHINA S RAILR [CN]

- (C)
CHINA RAILWAY ERJU CO LTD

TI - (A)
Construction **method** for super-long high-precision horizontal **drilling**

- (C)
Construction **method** for horizontal **drilling**

AB - (A)
The invention discloses a super-long and high-accurate horizontal boring construction plan. The plan is that a proper horizontal borer is used for driving a bit connected with a bore rod to turn to take cores and cut holes; a guiding device is used for **controlling** a decline rate; a slurry **pump** is used for pumping out the bore scraps generated in a boring process, so as to form a set-caliber super-long and high-accurate horizontal boring. The invention adopts a compound connection **measure** of combining a screw connection and a welding connection to connect the bore rod, guaranteeing the concentricity and sealing of the bore rod. When in a horizontal boring process, a freezing cut sealing and a freezer sealing are adopted. An area ranging from 8cm to 10cm is preserved as a safety layer in a tube-boring process on a concrete wall. And a strict deviation **measuring** and a deviation **controlling** are adopted to guarantee the construction safety. The form and improvement of the construction plan of the invention experiences many tests, researches and improvements, and a horizontal frozen boring bored through the construction plan of the invention can be provided with a high accuracy even when a construction horizontal length is too long.

- (C)
The invention discloses a super-long and high-accurate horizontal boring construction plan. The plan is that a proper horizontal borer is used for driving a bit connected with a bore rod to turn to take cores and cut holes; a guiding device is used for **controlling** a decline rate; a slurry **pump** is used for pumping out the bore scraps generated in a boring process, so as to form a set-caliber super-long and high-accurate horizontal boring. The invention adopts a compound connection **measure** of combining a screw connection and a welding connection to connect the bore rod, guaranteeing the concentricity and sealing of the bore rod. When in a horizontal boring process, a freezing cut sealing and a freezer sealing are adopted. An area ranging from 8cm to 10cm is preserved as a safety layer in a tube-boring process on a concrete wall. And a strict deviation **measuring** and a deviation **controlling** are adopted to guarantee the construction safety. The form and improvement of the construction plan of the invention

experiences many tests, researches and improvements, and a horizontal frozen boring bored through the construction plan of the invention can be provided with a high accuracy even when a construction horizontal length is too long.

- 136/144** © EPODOC / EPO .
- PN - [CN1654749](#) A 20050817
- PR - CN2005133300 20050228
- AP - CN2005133300 20050228
- DT - I
- PA - UNIV GUANGZHOU [CN]
- TI - Lean correcting and foundation consolidating **method** for building by filling water
- AB - The present invention is building inclination rectifying and foundation reinforcing water filling **method**. The **method** includes the following steps: 1) determining the water bag distributing density and hole **drilling** depth according to geological condition, load, foundation depth of building and water bag diameter; 2) **drilling** oblique holes in the subsidence part under the building to required depth, wall protecting treatment and feeding water bag; 3) connecting water bags with high pressure **pump** and setting sliding subsidence instrument in the building over the water bags; 4) starting the **pump** to fill water while monitoring with the sliding subsidence instrument until the difference between the **measured** point and the reference point becomes less than 5 mm; and 5) withdrawing the **pump** and the sliding subsidence instrument, sealing the mouths of water bags and refilling. The present invention is **controllable**, low in construction investment and wide application range.
- 137/144** © EPODOC / EPO .
- PN - [CA2541291](#) A1 20060930
- PNFP - CA2541291 C 20081223
- PR - US20050594361P 20050331; US20060308102 20060307
- AP - CA20062541291 20060330
- DT - I
- CCI - [G01V1/46](#)
- PA - (A1 C)
SCHLUMBERGER CA LTD [CA]
- TI - (A1 C)
PUMP-OFF MEASUREMENTS FOR QUALITY CONTROL AND WELLBORE STABILITY PREDICTION
- AB - (A1 C)
A **method** for obtaining high-quality well logging data acquired during a **drilling** operation includes acquiring well logging data during a **pump-off** period when a mud pump is turned off; and extracting a subset of data from the acquired well logging data, wherein the subset of data corresponds to a quiet period within the **pump-off** period, wherein the quiet period is substantially free of interference from turning the mud **pump** on or off.</SDO AB>

- 138/144** © EPODOC / EPO .

PN - [CA2534502](#) A1 20050224

PNFP - CA2534502 C 20111220

PR - EP20030077606 20030819; WO2004EP51614 20040727

AP - CA20042534502 20040727

DT - I

CCI - [E21B43/122](#) ; [E21B47/12](#) ; [E21B21/08](#)

PA - (A1 C)
SHELL CANADA LTD [CA]

TI - (A1 C)
DRILLING SYSTEM AND METHOD

AB - (A1)
System (100) for **drilling** a bore hole into an earth formation, comprising: - a **drill** string (112) reaching into the bore hole leaving a **drilling** fluid return passage between the **drill** string and the bore hole inside wall; - a **drilling** fluid discharge conduit (124) in fluid communication with said return passage (115); - **pump** means (138) for pumping a **drilling** fluid through the **drill** string to said discharge conduit via said return passage; - back pressure means (123, 128, 130) for **controlling** the **drilling** fluid back pressure; - fluid injection means (141, 143) comprising supply passage (141) fluidly connecting an injection fluid supply (143) with said return passage and further comprising an injection fluid pressure sensor (156) arranged to **measure** injection fluid pressure in said supply passage; - back pressure **control** means (238) for **controlling** the back pressure means (123, 128, 130) whereby said **control** means is arranged to regulate the back.

- (C)
System (100) for **drilling** a bore hole into an earth formation, comprising: - a **drill** string (112) reaching into the bore hole leaving a **drilling** fluid return passage between the **drill** string and the bore hole inside wall; - a **drilling** fluid discharge conduit (124) in fluid communication with said return passage (115); - **pump** means (138) for pumping a **drilling** fluid through the **drill** string to said discharge conduit via said return passage; - back pressure means (123, 128, 130) for **controlling** the **drilling** fluid back pressure; - fluid injection means (141, 143) comprising supply passage (141) fluidly connecting an injection fluid supply (143) with said return passage and further comprising an injection fluid pressure sensor (156) arranged to **measure** injection fluid pressure in said supply passage; - back pressure **control** means (238) for **controlling** the back pressure means (123, 128, 130) whereby said **control** means is arranged to regulate the back.

139/144 © EPODOC / EPO

PN - [CA2385376](#) A1 20020131

PNFP - CA2385376 C 20050405

PR - US20000219741P 20000720; WO2001US23011 20010720

AP - CA20012385376 20010720

DT - I

CCI - [E21B47/06](#) ; [E21B49/008](#) ; [E21B49/10](#) ; [G01V11/002](#)

PA - (A1 C)

BAKER HUGHES INC [US]

- TI - (A1 C)
DRAWDOWN APPARATUS AND **METHOD** FOR IN-SITU ANALYSIS OF FORMATION FLUIDS
- AB - (A1 C)
An apparatus and **method** capable of incrementally decreasing the borehole pressure at a variable rate by **controlling** a test volume within the borehole . The system includes an incrementally **controllable pump**, closed loop feedback and a **controller** for drawing down the pressure of a test volume to a level just below formation pressure. This incremental drawdown system will significantly reduce the overall **measurement** time, thereby increasing **drilling** efficiency and safety.

140/144 © EPODOC / EPO

- PN - [CA2230368](#) A1 19970306
- PR - SE19950002961 19950828; WO1996SE01052 19960827
- AP - CA19962230368 19960827
- DT - I
- CCI - [E21B44/00](#) ; [E21B44/02](#)
- PA - ATLAS COPCO ROCKTECH AB [SE]
- TI - **METHOD AND DEVICE FOR DRILLING**
- AB - The invention relates to **drilling** with impregnated diamond **drill** bits where one automatically keeps the **drill** bit (30) cutting. The speed of the **drilling** device (3) along the feed device (2) is determined and the **measured** value is used for continuously **controlling** the feed cylinder (10) and the flushing medium **pump** (29) such that a substantially constant feed rate is achieved at the same time as the rotational speed of the **drill** bit (30) is kept within predetermined limits.

141/144 © EPODOC / EPO

- PN - [CA1175349](#) A 19841002
- PR - US19810306252 19810928
- AP - CA19820410279 19820827
- DT - I
- CCI - [E21B21/001](#) ; [E21B21/08](#)
- PA - EXXON PRODUCTION RESEARCH CO
- TI - **METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF DRILLING FLUID IN A WELLBORE**
- AB - A **method** for **controlling** the flow of **drilling** fluid through a subaqueous wellbore is disclosed. The **method** comprises the steps of continuously **measuring** the output flow rate (A) of the **drilling** fluid from the wellbore, the input flow rate (B) of the **drilling** fluid to the wellbore, and at least a component of the pitch and roll (P/R) of the vessel, computing a floating alarm limit (C) dependent upon the pitch and roll (P/R) signal and the roughness of the sea, filtering the periodic fluctuation of the output flow rate (A) due to the motion of the vessel, and computing the delta flow signal (D) by subtracting the input flow rate (B) from the filtered output flow rate (A). The **method** further comprises the step of generating a signal whenever the absolute value of the delta flow rate (D) exceeds the floating alarm limit (C) to provide a visible warning that

the flow of **drilling** fluid is out of **control** and to either close off the wellbore in case of a kick or to stop the flow of fluid and stop **drilling** in case of lost returns. Apparatus for **controlling** the flow of **drilling** fluid through a subaqueous wellbore is disclosed while **drilling** from a floating vessel. The wellbore is connected to the lower end of the **drill** string and the lower end of an annulus by a valve through which the **drilling** fluid flows. The upper end of the annulus is connected to a conduit from which the **drilling** flows to the suction side of a **pump** which circulates the **drilling** fluid therefrom into the upper end of the **drill** string, through the wellbore, and back up the annulus into the conduit. The apparatus comprises an output flow meter connected to the exit of the conduit, an input flow meter connected between the **pump** and the upper end of the **drill** string, means mounted on the vessel for sensing the pitch and roll of the vessel, and computer means for receiving the output flow rate (A) signal from the output flow meter, the input flow rate (B) from the input flow meter, and the pitch and roll (P/R) signal from the pitch and roll sensing means. The computer means calculates an alarm limit (C) based on the pitch and roll (P/R) signal and the roughness of the sea continuously filters the periodic fluctuation of the output flow rate (A) due to the motion of the vessel, computes the delta flow signal (D) by subtracting the input flow rate (B) from the filtered output flow rate (A), and generates a signal whenever the delta flow rate (D) exceeds the floating alarm limit (C) to provide a warning of a possible blowout or lost circulation condition and to either close off the wellbore in case of a kick or to stop the flow of fluid and stop **drilling** in case of lost returns.

142/144 © EPODOC / EPO

PN - [CA1089354](#) A 19801111

PR - US19760682940 19760503

AP - CA19770275522 19770404

DT - I

CCI - [E21B47/00](#)

PA - DRESSER IND

TI - **METHOD AND APPARATUS FOR LOGGING EARTH BOREHOLES USING SELF-CONTAINED LOGGING INSTRUMENTS**

AB - . A self-contained, battery powered well logging instrument is pumped down the interior of a **drill** pipe string having a catcher sub at its lower end. When the logging instrument latches into the catcher sub, the pumped fluid circulation is blocked, after which increased **pump** pressure switches a valve assembly to recreate circulation and energize the logging instrument to the standby position. An accelerometer in the logging instrument detects the upward movement of the instrument and switches the circuitry from standby to the record mode. The output from a clock **controlled** by the downhole accelerometer is recorded along with the logging information and is synchronized with pipe footage **measurements** and with a similar such accelerometer and clock at the earth's surface which are responsive to the movement of the pipe string at the earth's surface. The recorded logging samples are thus related to true depth by correlating with the data simultaneously recorded at the earth's surface. As an alternative embodiment, the logging instrument is attached to the **drill** pipe prior to running the pipe into the borehole.

143/144 © EPODOC / EPO

PN - [CA1091471](#) A 19801216

PR - US19760682940 19760503; US19760710974 19760802

AP - CA19770275414 19770404

DT - I

CCI - [E21B47/00](#) ; [E21B47/04](#) ; [E21B47/12](#) ; [E21B49/00](#) ; [G01V11/002](#)

PA - DRESSER IND

TI - **METHOD** AND APPARATUS FOR LOGGING EARTH BOREHOLES USING SELF-CONTAINED LOGGING INSTRUMENT

AB - . A self-contained, battery powered well logging instrument is pumped down the interior of a **drill** pipe string having a catcher subs at its lower end. When the logging instrument latches into the catcher sub, the pumped fluid circulation is blocked, after which increased **pump** pressure switches a valve assembly to recreate circulation and energize the logging instrument to the standby position. An accelerometer in the logging instrument detects the upward movement of the instrument and switches the circuitry from standby to the record mode. The output from a clock **controlled** by the downhole accelerometer is recorded along with logging information and is synchronized with pipe footage **measurements** and with a similar such accelerometer and clock at the earth's surface which are responsive to the movement of the pipe string at the earth's surface. The recorded logging samples are thus related to true depth by correlating with the data simultaneously recorded at the earth's surface. As an alternative embodiment, logging instrument is attached to the **drill** pipe prior to running the pipe into the borehole. As an additional embodiment, a logging instrument is provided having a variable output accelerometer and associated circuitry which provides depth information independently of the equipment at the earth's surface.

144/144 © EPODOC / EPO

PN - [EP1676976](#) A1 20060705

PNFP - EP1676976 B1 20081119

PR - EP20010271807 20010720; US20000219741P 20000720

AP - EP20060007802 20010720

DT - **

CT - || STSE (A1)
[US5803186](#) A 19980908 [AD] (BERGER PER ERIK [NO], et al)
 [AD] 1-29
 * column 10, line 20 - line 53 *;
[US5708204](#) A 19980113 [AD] (KASAP EKREM [US])
 [AD] 1-29
 * column 5, line 8 - line 22; claim 1 *;
[US5233866](#) A 19930810 [AD] (DESBRANDES ROBERT [US])
 [AD] 1-29
 * column 5, line 59 - column 6, line 13 *;
[US5703286](#) A 19971230 [A] (PROETT MARK A [US], et al)
 [A] 1-29
 * column 9, line 41 - column 10, line 6 *
 * column 14, lines 29-54 *
 * column 15, lines 40-50 *;

[EP0490421](#) A1 19920617 [A] (SCHLUMBERGER SERVICES PETROL [FR], et al)

[A] 1-29

* page 1, line 58 - page 2, line 7 *;

[US3321965](#) A 19670530 [A] (JOHNSON CARLTON R, et al)

[A] 1-29

* claims 1-7 *;

[EP0520903](#) A2 19921230 [A] (SCHLUMBERGER LTD [US], et al)

[A] 1-29

* page 7, line 2 - line 6 *;

[EP0698722](#) A2 19960228 [A] (HALLIBURTON CO [US])

[A] 1-29

* page 11, line 42 - line 45 *

CCI - [E21B47/06](#) ; [E21B49/008](#) ; [E21B49/10](#) ; [G01V11/002](#)

PA - (A1 B1)
BAKER HUGHES INC [US]

TI - (A1 B1)
Drawdown apparatus and **method** for in-situ analysis of formation fluids

AB - (A1)
An apparatus and **method** capable of incrementally decreasing the borehole pressure at a variable rate by **controlling** a test volume (405) within the borehole (204). The system includes an incrementally **controllable pump** (426), closed loop feedback (418, 424) and a **controller** (416) for drawing down the pressure of a test volume (405) to a level just below formation pressure. This incremental drawdown system will significantly reduce the overall **measurement** time, thereby increasing **drilling** efficiency and safety.