



New connection on: : 13-10-2020 : 22:55:03 - Last disconnection on: : 13-10-2020 : 22:54:50

V 4.0.0.44803(LP,U,linux) (Rev:43856 2017-04-27 09:03:29 +0200#{D201820}) (RPM D201820)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 8] cement+ and tool and assembly and casing and shoe and failure and (control or sensor) and seal and press+

Results in EPODOC 0

[SS 9] Drill and cement+ and shoe and fail+ and differential_pressure

Results in EPODOC 0

[SS 10] pipe and drill and well and cement+ and casi+ and shoe

Results in EPODOC 17

[SS 11] ..li



1/17 © EPODOC / EPO

PN - [CN209430129U](#) U 20190924

PR - CN201822201850U 20181226

AP - [CN201822201850U](#) 20181226

DT - I

PA - CNPC CHUANQING DRILLING ENG CO LTD ENG TECH RES INST

TI - Special throttling reverse-return-preventing rotary guide shoe for casing running operation

AB - The utility model relates to the technical field of oil field development well cementation operation, in particular to a throttling reverse-return-preventing rotary guide shoe special for casing running operation. According to the utility model, the body, the rotary guide head, the slow sinking ball, the overflowing plate and the adjusting ring for adjusting the tightness matching degree between the body and the rotary guide head are arranged and designed; the casing pipe accessory is suitable for well cementation construction of a horizontal well with a long horizontal section, guarantees mutual communication of a casing pipe and a shaft, does not need regular grouting, enables casing pipe running operation to be continuously carried out, and prevents drilling fluid from returning to a drill floor surface.

2/17 © EPODOC / EPO

PN - [CN209228304U](#) U 20190809

PR - CN201821534734U 20180919

AP - [CN201821534734U](#) 20180919

DT - I

PA - INST OF EXPLORATION TECHNIQUE CHINESE ACADEMY OF GEOLOGICAL SCIENCES;
GUANGZHOU MARINE GEOLOGICAL SURVEY

TI - Power **casing** running device for long-distance horizontal **well**

AB - The utility model discloses a power **casing** running device for a long-distance horizontal **well**. The power **casing** running device comprises a guide hole repairing **drill** bit, a screw motor assembly, a float collar, a transition joint and a **casing** which are arranged from bottom to top, the long-distance horizontal **well casing** running device is designed according to the requirement of long-distance horizontal **well casing** running, a floating **shoe** is replaced by the guide hole repairing **drill** bit, and a slurry return groove is formed in the periphery of the guide hole repairing **drill** bit. The guide hole repairing **drill** bit is driven by the screw motor to rotate forwards and rotate downwards at the same time, the hole wall is repaired, mud flowing out of a center hole of the guide hole repairing **drill** bit can carry sediments in a hole to return to the outside of the hole, the function of removing the sediments is achieved, and sedimentation of the rock sediments in the hole is avoided. And a one-way valve is arranged in the float collar, so that muddy water cannot return into the sleeve due to pressure in the hole. The long-distance horizontal **well casing pipe** guiding device has the functions of guiding **casing** pipes such as holes, repairing hole walls, removing slag at the bottoms of the holes, **cementing** back pressure valves and the like, and the **casing** pipes can smoothly descend into along-distance horizontal **well** through the long-distance horizontal **well casing pipe** guiding device.

3/17 © EPODOC / EPO

PN - [CN109403883](#) A 20190301

PR - CN201811602160 20181226

AP - [CN201811602160](#) 20181226

DT - I

CI - E21B17/14 (CN)
- E21B34/14 (CN)

CA - E21B2200/04 (CN)

PA - CNPC CHUANQING DRILLING ENG CO LTD ENG TECH RES INST

TI - Throttling and anti-backflow rotary guide **shoe** special for **casing pipe** running operation and use method of throttling and anti-backflow rotary guide **shoe**

AB - The invention relates to the technical field of oilfield development **cementing** operation, in particular to a throttling and anti-backflow rotary guide **shoe** special for **casing pipe** running operation and a use method of the throttling and anti-backflow rotary guide **shoe**. According to the throttling and anti-backflow rotary guide **shoe** special for **casing pipe** running operation and the use method of the throttling and anti-backflow rotary guide **shoe**, through scheme arrangement design of a body, a rotating guiding head, a slow sinking ball, a flow passing plate and an adjusting ring for adjusting the tightness fit degree between the body and the rotating guiding head, the throttling and anti-backflow rotary guide **shoe** is suitable for **cementing** construction of a horizontal **well** with a long horizontal section, it is ensured that a **casing pipe** mutually communicates with a wellhole, regular grouting is not required, **casing pipe** running operation can be conducted continuously, and drilling fluid is prevented from being flowed back into **casing pipe** accessories of a **drill** floor surface.

4/17 © EPODOC / EPO

- PN - [CN108086943](#) A 20180529
- PR - CN201711310167 20171211
- AP - [CN201711310167](#) 20171211
- DT - I
- CT - // STSE (A)
[US7669653](#) B2 20100302 [A] (CRASTER BERNADETTE [GB], et al)
[A] 1-6
* 全文 *;
[CN104213875](#) A 20141217 [A] (CHINA NAT PETROLEUM CORP, et al)
[A] 1-6
* 全文 *;
[CN105298445](#) A 20160203 [A] (CHINA NAT PETROLEUM CORP, et al)
[A] 1-6
* 全文 *;
[CN106368633](#) A 20170201 [A] (UNIV CHINA PETROLEUM)
[A] 1-6
* 全文 *
- CTNP - // STSE (A)
[X] - 李中等, "南海西部深水钻井实践", 《石油钻采工艺》
[X] 1-6
* 第92-95页 *
- CI - C09K8/424 (CN)
- E21B33/13 (CN)
- PA - CHINA NAT OFFSHORE OIL CORP; ZHANJIANG BRANCH OF CHINA NAT OFFSHORE OIL CORPORATION
- TI - Three-spud-in deepwater-drilling annular pressure management method
- AB - The invention discloses a three-spud-in deepwater-drilling annular pressure management method. The three-spud-in deepwater-drilling annular pressure management method includes the following steps of S1, surface layer treating, wherein a **well** hole is drilled to the position 70 m to 80 m deep, and a water-secluding **pipe** is put in and fixed; S2, first spud in, wherein the **well** hole is drilled to the position 600 m to 700 m under the mud surface, then a **drill** bit is pulled out, a **casing pipe** is put in, and then **cement** slurry is poured till annular gaps are filled, and is returned to the mud surface; S3, second spud in, wherein the **well** hole is drilled to the position 1,500 m to 1,700 m under the mud surface, then the **drill** bit is pulled out, a **casing pipe** is put in, a **pipe** string is hung to the position 140 m to 160 m above an upper **casing pipe shoe**, and **cement** slurry is poured into an annular part, is returned, and is controlled to the position 10 m to 20 m under a hanger; S4, third spud in, wherein the **well** hole is drilled to a target layer, then the **drill** bit is pulled out, a **casing pipe** is put in, a **well** opening is installed, **cement** slurry is poured into the annular part, head **cement** slurry is returned to the position 90 m to 110 m under the upper **casing pipe shoe**, the annular part above the head **cement** slurry is filled with nitrogen, the length of barrier fluid between the head **cement** slurry and tail **cement** slurry is 240 m to 260 m, the full annular part under the barrier fluid is filled with tail **cement** slurry, solidification is carried out, and then solidified **cement** slurry is transferred into **well** completion. According to the three-spud-in deepwater-drilling annular pressure management method, operation safety of a three-spud-in deepwater **well** can be improved, and the method can be widely applied to the field of petroleum drilling.

5/17 © EPODOC / EPO

- PN - [CN108086942](#) A 20180529
- PR - CN201711308576 20171211
- AP - [CN201711308576](#) 20171211
- DT - I
- CT - // STSE (A)
CN205135568U U 20160406 [A] (CHINA NAT PETROLEUM CORP, et al)
[A] 1-7
* 全文 *;
[WO2016093827](#) A1 20160616 [A] (HALLIBURTON ENERGY SERVICES INC [US])
[A] 1-7
* 全文 *;
[CN106368633](#) A 20170201 [A] (UNIV CHINA PETROLEUM)
[A] 1-7
* 全文 *
- CTNP - // STSE (A)
[Y] - 李中 等, "“南海西部深水钻井实践”", 《石油钻采工艺》
[Y] 1-7
* 第92-95页 *
[Y] - Ping Chen 等, "“A review of the evaluation methods and control technologies for trapped annular pressure in deepwater oil and gas wells”", 《Journal of Natural Gas Science and Engineering》
[Y] 1-7
* 第85-105页 *
- CI - C09K8/424 (CN)
- E21B33/13 (CN)
- PA - CHINA NAT OFFSHORE OIL CORP; ZHANJIANG BRANCH OF CHINA NAT OFFSHORE OIL CORPORATION
- TI - Method for managing annulus pressure of four-spud-in deep well
- AB - The invention discloses a method for managing the annulus pressure of a four-spud-in deep well. The method includes the following steps that S1, a borehole is drilled in the surface layer by 70-80 m, and a marine riser is put down and fixed; S2, during first spud-in, a drill is taken out after the borehole is drilled to the position 600-700 m below the pulp surface, a first spud-in casing pipe is put down, and cement paste is injected into annulus gaps, and returns to the pulp surface; S3, during second spud-in, the drill is taken out after the borehole is drilled to the position 1,500-1,700 m below the pulp surface, a second spud-in casing pipe string is put down, the cement paste is injected into the annulus, and the top is controlled to the position 30-50 m below a suspender; S4, during third spud-in, the drill is taken out after the drill drills into a target layer, a third spud-in casing pipe is put down, a well mouth is installed, the cement paste is injected into the annulus, and cement first pulp returns to the position 110 m below a first spud-in casing pipe shoe; the annulus above the first pulp is filled with nitrogen, and the segment length of spacer fluid between the first pulp and tail pulp is 220-230 m; S5, during fourth spud-in, the drill is taken out after the borehole is drilled to the target layer, a tail pipe string is put down, the tail pipe string is suspended on the position 150 m above a third spud-in casing pipe shoe, the cement paste is injected, and next operation is executed after the cement paste is solidified. The problem that pressure is easily generated in the annulus of the four-spud-in deep well is solved.

6/17 © EPODOC / EPO

PN - [CN108071343](#) A 20180525
PR - CN201711310166 20171211
AP - [CN201711310166](#) 20171211
DT - I
CI - E21B7/12 (CN)
- E21B7/20 (CN)
- E21B7/28 (CN)
- E21B23/00 (CN)
- E21B33/13 (CN)
PA - CHINA NAT OFFSHORE OIL CORP; ZHANJIANG BRANCH OF CHINA NAT OFFSHORE OIL CORPORATION
TI - Design method of third-time-drilling **well** bore structure of narrow pressure window **well** in deep water
AB - The invention discloses a design method of a three-times-drilling **well** bore structure of a narrow pressure window **well** in deep water. The design method comprises the following steps that S1, drilling of a surface layer is carried out, specifically, a **drill** and a hole opener are adopted to **drill** into the surface layer, after pulling out the **drill**, a drilling riser string with the wall thickness being 31.75-38.1mm is placed down into the mud surface, and the upper portion of the drilling riser string is connected with a mud mat and then **cement** slurry is injected for **cementing**; S2, first-time-drilling is carried out, specifically, the **drill** is used for drilling in, after pulling out the **drill**, a first-time-drilling **pipe** string is placed down, the upper portion of the of the first-time-drilling **pipe** string is connected with a wellhead, a wellhead seat is hung at the upper portion of the drilling riser string, and the upper portion of the wellhead is connected with an underwater blowout preventer and an upper portion marine riser and then the **cement** slurry is injected for the **cementing**; S3, second-time-drilling is carried out, specifically, the **drill** is used for drilling in, after pulling out the **drill**, a second-time-drilling **pipe** is placed down, the first-time-drilling **pipe** is hung at an upper **casing shoe** and the **cement** slurry is injected for the **cementing**; and S4, third-time-drilling is carried out, specifically, the **drill** is used for drilling in, the **drill** is pulled out after drilling to a target layer, and a third-time-drilling **casing** with the wall thickness being 12.7-20.24 mm is placed down and then the **cement** slurry is injected for the **cementing**. The design method of the three-times-drilling **well** bore structure of the narrow pressure window **well** in the deep water solves the problem of low safety and unreasonable cost control of a conventional three-times-drilling **well** bore structure.

7/17 © EPODOC / EPO

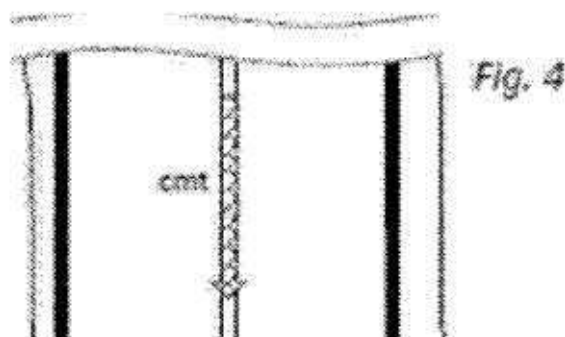
PN - [CN105421997](#) A 20160323
PR - CN201510700279 20151026
AP - [CN201510700279](#) 20151026
DT - I
CT - *// STSE (A)*
CN2635890Y Y 00000000 [A]
[A] 1-9
* 全文 *;
[US7343983](#) B2 00000000 [A]

[A] 1-9
 * 全文 *;
[CN101285375](#) A 00000000 [A]
 [A] 1-9
 * 全文 *;
[CN104912479](#) A 00000000 [Y]
 [Y] 1-9
 * 说明书第1-36段, 附图1 *

- CTNP - || STSE (A)
 [Y] - 高向前等, "侧钻水平井膨胀套管完井新技术", 《石油机械》
 [Y] 1-9
 * 第18页第1栏第1段-第34页第1栏第2段 *
- CI - E21B7/00 (CN)
 - E21B7/20 (CN)
 - E21B7/28 (CN)
- PA - CNPC GROUP WESTERN DRILLING ENG CO LTD
- TI - Coal bed methane horizontal **well** expansion **pipe** drilling and completion method
- AB - The invention relates to the technical field of coal bed methane drilling, in particular to a coal bed methane horizontal **well** expansion **pipe** drilling and completion method. The method comprises the steps that firstly, a conventional drilling method is adopted to complete drilling of a first-opening surface layer section, a second-opening vertical shaft section and an angle build-up section of a horizontal **well**, and **casing** installation is carried out after drilling is completed for **well cementation**; secondly, a **drill** tool with a device of reaming while drilling is tripped in after **well cementation** for carrying out drilling of the first horizontal section of a third-opening coal bed, and the **drill** tool is tripped out after drilling is completed; thirdly, an expansion **pipe** is fed in through the **drill** tool, a drillable float **shoe** is fixedly installed at the lower end of the expansion **pipe**, **cement** paste is injected in after the expansion **pipe** is positioned, a rubber plug is driven in to the position of the drillable float **shoe**, and therefore the annular space between the **well** wall and the expansion **pipe** is filled with the **cement** paste. The horizontal section extends in a length segment mode through the expansion **pipe**, and after **well** completion, the horizontal section has the same **well** diameter. The coal bed can be effectively sealed, and the accidents of horizontal **well** collapse and **drill** tool burying are reduced; meanwhile, the distance of the horizontal section is lengthened, the horizontal **well** mining efficiency is improved, horizontal **well** staged fracturing work can be carried out, and the coal bed methane analysis area is increased.

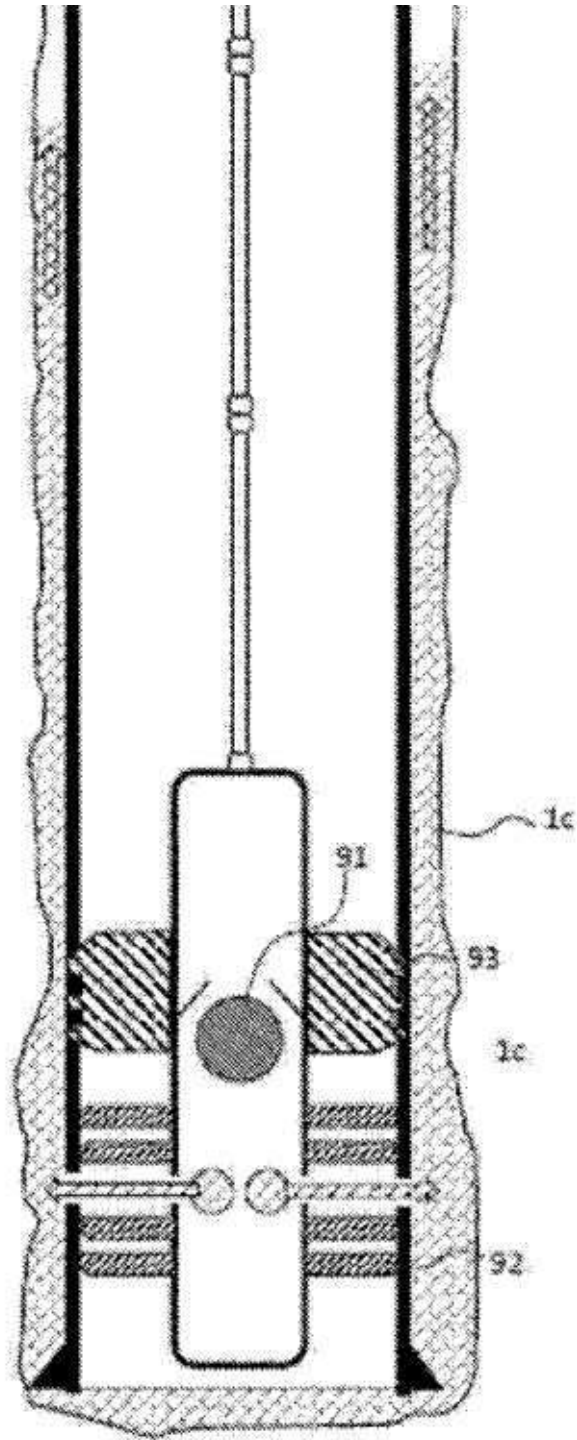
8/17 © EPODOC / EPO

- PN - [GB2541030](#) A 20170208
- PR - GB20150014028 20150807
- AP - [GB20150014028](#) 20150807
- DT - *; Rep
- CT - || STSE (A)
[GB847769](#) A 00000000 [];
[EP1243747](#) A1 00000000 [];
[US10000000](#) A 00000000 []



[US4986361](#) A 00000000 [];
[US3519071](#) A 00000000 [];
[US2012211232](#) A1 00000000 []

- CCI - [E21B21/10](#) ; [E21B33/143](#)
- CI - E21B7/12 (GB)
 - E21B7/20 (GB)
 - E21B21/10 (EP)
 - E21B33/143 (EP, GB)
- PA - ARCHER OILTOOLS AS [NO]
- TI - Conductor float valve
- AB - A method of spudding a **well 1c** comprising, hanging a conductor **casing** from the drilling deck to the seafloor, lowering the spudding **drill** string through the conductor and spudding the **well** for the conductor diameter, and retrieving the **drill** string. Inserting a float **shoe** with check valves 94 for **cementing** through openings near the lower end of the conductor **casing**, said float **shoe** having ports aligned with the openings and isolated by packers or swabs 92. Lowering the conductor **pipe** into the **well**. Connecting a **cementing pipe** string to the float **shoe**, pumping **cement** through the float **shoe** and into the conductor **casing** annulus, retrieving the **cementing pipe** string and letting the **cement** harden. Drilling out said float **shoe cementing** tool and continuing the drilling operation. The float **shoe** may be aligned with the conductor **casing** by the use of dogs and grooves 93.



9/17 © EPODOC / EPO

- PN - [CN203515464U](#) U 20140402
- PR - CN201320573230U 20130916
- AP - [CN201320573230U](#) 20130916
- DT - I

PA - PETROCHINA CO LTD

TI - **Well cementation** device

AB - The utility model discloses a **well cementation** device. The **well cementation** device comprises a **casing pipe** column, an inner **pipe** column and accessories. The **casing pipe** column comprises a **casing pipe** and a rotary gap bridge, the rotary gap bridge is detachably and fixedly connected with the **casing pipe**, the inner **pipe** column comprises an inner **pipe** and a dual-level buckle nipple, the inner **pipe** is arranged inside the **casing pipe**, the inner **pipe** is detachably and fixedly connected with the dual-level buckle nipple, a square **drill** stem is connected to the upper portion of the dual-level buckle nipple through a connector, the dual-level buckle nipple and the rotary gap bridge are detachably and fixedly connected and sealed, and the accessories comprise an elastic centralizer and a guiding **shoe**. The **well cementation** device is integrated in a detachable and fixedly connected mode, ensures that the square **drill** stem rotates to drive the **casing pipe** column to rotate, and is high in displacement efficiency, good in **well cementation** quality and economic benefit and high in construction safety.

10/17 © EPODOC / EPO

PN - [CN203499632U](#) U 20140326

PR - CN201320651751U 20131022

AP - [CN201320651751U](#) 20131022

DT - I

PA - CHINA PETROLEUM & CHEMICAL; CHINA PETROCHEMICAL & CHEMICAL CORP JIANGSU OILFIELD BRANCH

TI - Small **casing pipe** suspending repair process tubular column of **casing** damage horizontal **well**

AB - The utility model provides a small **casing pipe** suspending repair process tubular column of a **casing** damage horizontal **well** and relates to a **casing pipe** suspending device for oil field **well** repair. The small **casing pipe** suspending repair process tubular column comprises a small **drill** rod rubber plug, a feeding **drill** rod, a right-and-left threaded suspension reversing connector, a hollow rubber plug assembly, a small **casing pipe** string, spiral rigid centralizers, a colliding-pressing connector, a float **shoe**, a float collar and an eddy flow **pipe**, wherein the feeding **drill** rod, the right-and-left threaded suspension reversing connector, the hollow rubber plug assembly, the small **casing pipe** string, the colliding-pressing connector, the float collar, the float **shoe** and the eddy flow **pipe** are sequentially connected in a threaded mode, the small **casing pipe** string is formed by connecting a plurality of small **casing** pipes in a threaded mode, and the spiral rigid centralizers are connected among the small **casing** pipes in a threaded mode. The problem that the horizontal **well** cannot perform normal production due to **casing** damage is solved, and a reliable technical means is provided for normal production recovery of the potential and diggable horizontal **well**. The small **casing pipe** suspending repair process tubular column ensures that the small **casing pipe** string can smoothly descend to the designed position (**well** depth) and secondary **well cementation** can be smoothly constructed.

11/17 © EPODOC / EPO

PN - [CN202946068U](#) U 20130522

PR - CN201220666504U 20121206

AP - [CN201220666504U](#) 20121206

DT - I

- PA - CNPC GROUP WESTERN DRILLING ENG CO LTD
- TI - Small-size expansion hanger
- AB - The utility model relates to the technical field of hanging devices for **well** completion of small-size drilling liner **cementing**, in particular to a small-size expansion hanger. The small-size expansion hanger comprises an expansion **pipe**, a conversion tube, a check valve seat and a guide **shoe**, wherein an expansion device is mounted in the expansion **pipe**; the expansion **pipe** comprises a diameter-expansion **pipe**, a connecting **pipe** neck and a **pipe** body, of which the internal diameters and the external diameters are sequentially increased from the top down; a vulcanized rubber ring is fixed on the outer wall of the upper part of the diameter-expansion **pipe** or at least two circles of vulcanized rubber ring are fixed from the top down; the lower end of the **pipe** body and the upper end of the conversion tube are fixedly mounted together; the internal diameter of the conversion tube is equal to that of the **pipe** body; a **drill** rod rubber plug seat sealing device is mounted in the conversion tube; and the lower part of the conversion tube and the upper part of the check valve seat are fixedly mounted together. The small-size expansion hanger has a reasonable and compact structure; under the condition of minimum loss of the drift diameter of an oil-gas **well casing**, hanging and sealing are realized through expansion and cold-drawing deformation of pipes, so that the reliability is high and a failure is prevented; and the hanging **cementing** operation of a tail **pipe** can be safely, conveniently and quickly completed.

12/17 © EPODOC / EPO

- PN - [CN202165049U](#) U 20120314
- PR - CN201120284623U 20110805
- AP - [CN201120284623U](#) 20110805
- DT - I
- PA - PETROCHINA CO LTD
- TI - Tube-inserting **well cementation** device
- AB - The utility model discloses a tube-inserting **well cementation** device, which comprises a **casing pipe** column and an inner **pipe** column, wherein the **casing pipe** column comprises a casting **pipe**, the lower end of the casting **pipe** is connected with a guide **shoe**, and the upper end is connected with a sealing joint; the inner **pipe** column comprises an inner **pipe**, and the inner **pipe** is arranged at the inner part of the casting **pipe**; and the upper end of the inner **pipe** is connected with a square **drill** rod through a lift positioning sub. The lift positioning sub is hung in the sealing joint in a sealing mode, and a positioning block which can lock the lift positioning sub and the sealing joint is arranged above the sealing joint. The tube-inserting **well cementation** device has simple structure, low construction risk and good **well cementation** quality.

13/17 © EPODOC / EPO

PN - [US5732775](#) A 19980331

PR - US19960699997 19960820

AP - [US19960699997](#) 19960820

DT - *; Rep

CT - || STSE (A)
[US2659438](#) A 00000000 [];
[US3381756](#) A 00000000 [];
[US3791448](#) A 00000000 [];
[US4450912](#) A 00000000 [];
[US4469174](#) A 00000000 [];
[US5277255](#) A 00000000 [];
[US5425423](#) A 00000000 []

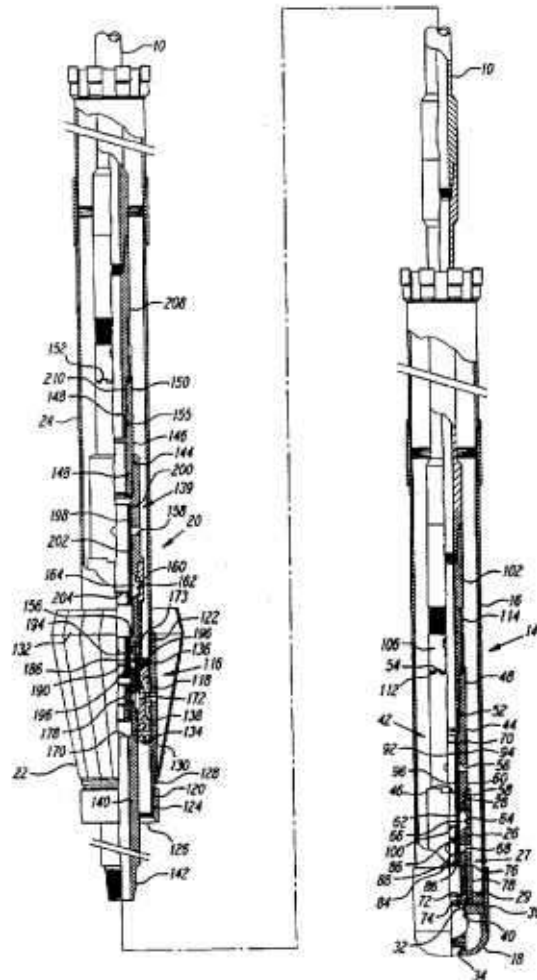
CCI - [E21B17/043](#) ; [E21B17/06](#) ;
[E21B21/10](#) ; [E21B33/146](#)

CI - E21B17/043 (EP)
E21B17/06 (EP)
E21B21/10 (EP)
E21B33/146 (EP)

PA - BESTLINE LINER SYSTEMS INC [US]

TI - Multiple **casing**
segment **cementing** system

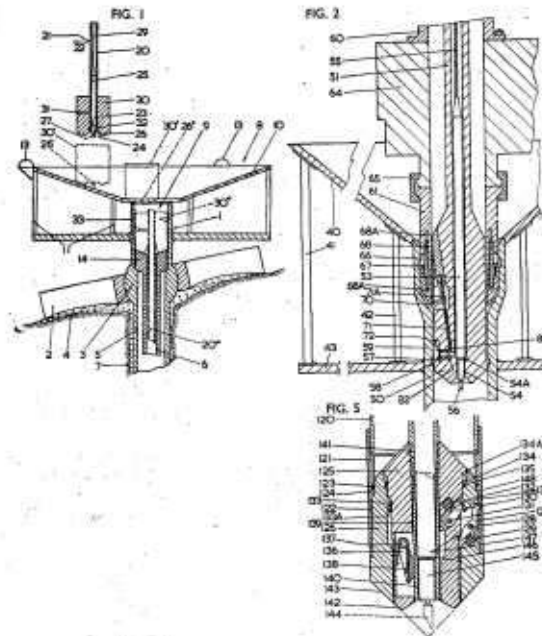
AB - A system including method and apparatus for placing and **cementing** a plurality of scab liners as **well** as a surface liner in a **well** with one placement. A duplex assembly is created using a lower duplex tool having a duplex **shoe** with a valve assembly positioned in the duplex tool. A scab **casing** is fixed to the duplex tool and **drill pipe** extends into the scab **casing** to mate with the valve assembly. A ratchet insures locking of the **drill** string. The valve assembly includes elements to control flow of **cement** to outwardly of the scab **casing** and the flow of flushing fluid inwardly of the scab **casing**. A locking mechanism using floating dogs controlled by a locking sleeve allows unlocking of the valve assembly from the duplex tool upon completion of the **cementing** and flushing operation. Similar operations are conducted in succeeding duplex assemblies



upwardly along the string, each succeeding scab casing being cemented in turn. Once the cementing is complete, the string and valve assemblies are withdrawn from the well leaving liner segments cemented in place with drill-out duplex elements remaining.

14/17 © EPODOC / EPO

- PN - [GB1343897](#) A 19740116
- PR - GB19710006446 19710310
- AP - [GBD1343897](#) 19710310
- DT - *; Rep
- CCI - [E21B7/122](#) ; [E21B33/035](#) ;
[E21B41/0014](#)
- CI - E21B7/122 (EP)
- E21B33/035 (EP)
- E21B41/0014 (EP)
- AB - 1343897 Boring earth and rock;
wells &c SHELL INTERNATIONALE
RESEARCH MAATSCHAPPIJ NV 10
March 1971 6446/ 71 Heading E1F
A well re-entry tool comprises a
tube 20 adapted to be connected
at one end to suspension
means, e.g. a pipe string, and
having a seat 23 for supporting
an orienting device 27 so as to
protrude from the tube and at its
other end a bumper head 30
which extends outwardly from
the tube so as to protect the
device 27 by maintaining it
spaced from a guide funnel 10
as the tool is lowered into a well
entrance 9. The tool may be
automatically connectable to
and releasable from the
wellhead. As shown in Fig. 1, the
device 27 is an acoustic
transmitter/receiver enabling an
operator on a surface vessel (not
shown) from which the tool is
suspended on the pipe string to
manoeuvre the tool into the
entrance 9 by means of a lateral
water jet 22 in response to
echoes from reflectors such as



13. After the bumper head has seated on a **casing** hanger 14 a - shear pin 31 is broken by the weight of the **pipe** string and the **pipe** 20 extended some distance into the **well**, to prevent inadvertant withdrawal, while a marine riser is lowered down the exterior of the **pipe** 20 which acts as a guide. The riser is latched to a groove 33 on a **casing** 5 and the tube 20 withdrawn, picking up the bumper head by a seat 32. In an alternative embodiment, Fig. 2, the bumper head 50 forms part of the tube: 51 and has spring loaded latch dogs such as 57 which are biassed outwardly by the orienting device 53 when it rests on the seat 54. The tool is guided to the **well** entrance as described above and is lowered in the **casing** 59 until the dogs 57 snap into an annular recess 58. Each dog 57 has a flange behind which the end 87 of a spring loaded rod 71 engages to prevent retraction of the dog when the device 53 is withdrawn. Using the tube 51 as a guide a riser 60, blow out preventer 64 and coupling 61 are lowered into the **casing** 59. A lower rim of the coupling 61 engages levers such as 70 to release each rod 71 so that the latch dogs 57 are retracted by spring action, so that the tube 51 may be withdrawn. The riser is latched to the **casing** 59 by actuating hydraulic latches 68 to engage a dog 66 in a recess 67. In a third embodiment, Fig. 5, the bumper head is formed by inner and outer parts 125, 126 of a **cementing shoe**. The outer part 126 is connected to a **casing shoe** 121 by a latch 127 and is lowered on a **casing** string 120 to a suitable depth. The inner part 125 is coupled to a **cementing** string 140 and lowered through the **casing** to engage with the

outer part 126 by a latch 130. Further lowering of the string 140 releases the latch 127 from the **casing shoe** 121 and both parts 125, 126 are extended below the **casing** far enough to expose a lateral guide jet (not shown) in the string 140. The **cementing** string 140 is lowered together with the **casing** 120 using the orienting device 145 as previously described until the parts 125, 126 enter the **well** far enough to prevent inadvertent withdrawal. The orienting device 145 is removed and the **casing** 120 landed on the wellhead. The **cementing** string is raised until the latch 127 re-engages the **casing shoe** 121. After **cement** has been passed into the **well** down the string 140, the string is unscrewed from the part 125, and withdrawn whereupon a valve 136 closes to prevent **cement** backflow. The parts 125, 126 are of drillable material so that further drilling involves lowering the **drill** through the **casing** 120 and drilling through the parts 125, 126 and the **cement**. In a further embodiment (Fig. 4, not shown) the bumper head is a cylindrical shroud surrounding a roller bit, and is disconnectable therefrom on breaking a shear pin, to enable the bit to enter the **well**. When the orienting device is removed from the centre of the **drill** it is replaced by a drilling insert piece. In another embodiment (Fig. 6, not shown) the bumper head comprises pivotably spring loaded arms which extend outwardly to protect the orienting device from engagement with the guide funnel. The funnel may be frusto-conical or a truncated pyramid. The top surfaces of the bumper head are angled to reflect noise from the lateral guide jet away

from the orienting device.

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PN - [GB1247646](#) A 19710929

PR - GB19700029651 19700618

AP - [GB19700029651](#) 19700618

DT - **

CCI - [E21B7/124](#) ; [E21B7/128](#)

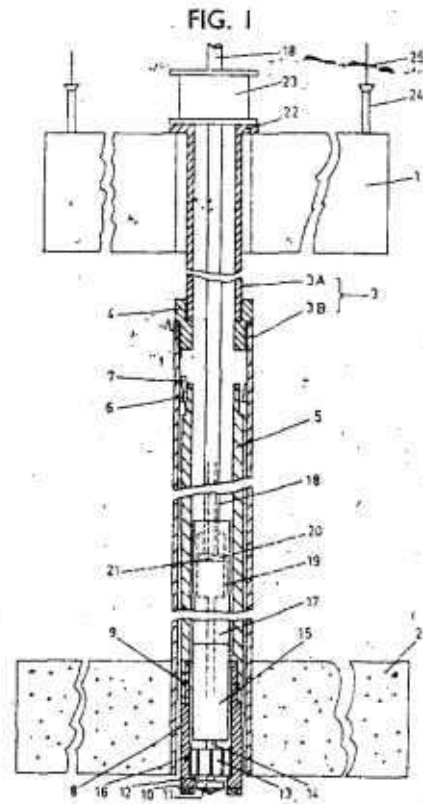
CI - E21B7/124 (EP)

- E21B7/128 (EP)

PA - SHELL INT RESEARCH [NL]

TI - EQUIPMENT FOR USE IN DRILLING
OFFSHORE WELLS

AB - 1,247,646. Wells; boring earth &c. SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ N.V. 18 June, 1970, No. 29651/70. Heading E1F. Apparatus for drilling offshore wells comprises a pedestal conductor 3, a buoyancy member 1 connected to or formed by the pedestal conductor, a base 2 connected to the lower end of the pedestal conductor, and a conductor 5 telescopic within the lower end of the pedestal conductor. The base 2 and tank 1 are connected and floated in the moon pool of a drilling vessel, the part 3B of the pedestal conductor is connected to the base and lowered in the water until the top of the part is level with the top of the tank, the conductor is lowered into the 'part and suspended by bodies 7, a coupling 4 and the part 3A of the pedestal conductor are connected to complete the pedestal conductor which is lowered until the top of the pedestal conductor is level with the top of the tank, the tank and a wellhead 23 are connected to the top of the pedestal conductor, the assembled apparatus is lowered on a **pipe** string whilst the buoyancy of the tank is adjusted until a rotatable cutter **shoe** 8 on the conductor



engages the sea-bed to free the bodies 7, the tank is blown out and if necessary the pedestal conductor is guyed, the **pipe** string is replaced by a **drill** string 18 carrying collars 17, and a turbine 15 having a bit 11, and the conductor is drilled into the sea bed, the **drill** bit engaging and driving the cutter **shoe**. The conductor is **cemented** and the **well** is cased using a further turbine and bits. The **casings** may be supported at the top of the conductor and during drilling the distance between the upper end of the **casing** and the wellhead may be bridged by tubing. After the conductor has been **cemented** the whole or part of the pedestal conductor may be detached from the conductor for completing the **well** adjacent the sea-bed, or for salvaging the tank, pedestal conductor and base or the tank and pedestal conductor. The turbine may be replaced by an electric motor or the turbine may be removed and the **shoe** turned by the **drill** string. The conductor may be drilled into the sea-bed by an expandable bit carried by a **drill** string coupled to the conductor. The base is of concrete but in a modification (Fig. 3, not shown) the base comprises a container which is filled with sand deposited from a sand suspension when or before the container engages the sea-bed.

PN - [GB850148](#) A 19600928

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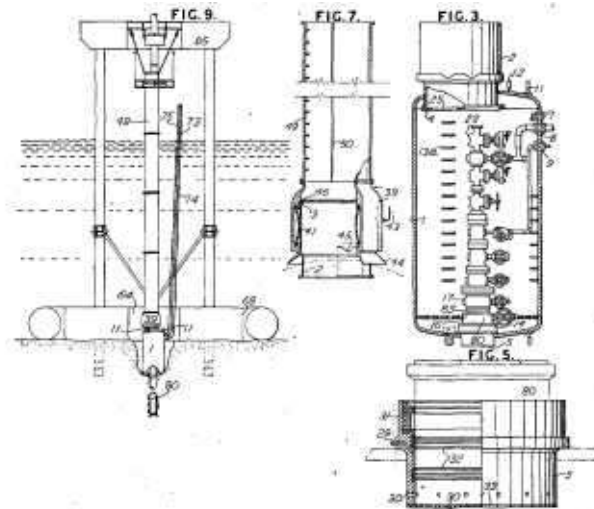
CCI - [E21B7/12](#) ; [E21B33/037](#)

CI - E21B7/12 (EP)
- E21B33/037 (EP)

PA - BATAAFSCHE PETROLEUM

TI - Improvements relating to the drilling of off-shore oil and gas wells

AB - 850,148. Boring earth &c. BATAAFSCHE PETROLEUM MAATSCHAPPIJ N. V., DE. Jan. 26, 1959 [Jan. 27, 1958], No. 2744/59. Class 85. In off-shore drilling, a **well-head** housing 1 and caisson assembly 49 is lowered from a drilling platform 65 until the housing is on the sea-bed, the top of the caisson being still above water level, a drive **pipe** 80 is driven through the bottom of the housing in fluid-tight manner, and the housing is pumped out to enable the top of the drive **pipe** to be cut off within the housing. The housing 1 is about ten feet in diameter and twenty feet in height, and the **pipe** 80 is driven through a **shoe** 5 having sets 31, 32 of packing and, if desired, passages 29 for injecting a plastic for sealing after the **pipe** 80 has been fully driven. The **shoe** 5 has jetting holes 30 in the sides and in a plastic bottom 33 which is disrupted when the **pipe** 80 is driven. The housing 1 is connected at 7, 8, 9 with service conduits 75, 74, 73; and 74 or 73 may be connected with a pump for jetting the housing into the sea-bed. The **pipe** 80 is guided into the **shoe** 5 by a removable taper guide. The drilling platform 65 is preferably supported from a submersible barge 68 having a throughway 64 for the housing



and caisson. The housing is floated beneath lifting tackle which is connected to eyes 11, and is then positioned to receive caisson sections 49 which are attached as the assembly is lowered. The housing 1 has a cylindrical access tube 2 secured at its top end in eccentric relation to the axis of the shoe 5 so that the drive pipe 80 and, subsequently, the drill pipe string may pass through the tube 2, to one side thereof, and at the same time, men may pass through the tube into the housing 1, ladder rungs 13a being provided for this purpose. The caisson sections 49 are divided by longitudinal partitions 50 to separate the personnel passage from the drill string passage. The bottom of the tube 2 is closable by a hinged door 4, which may be in two parts, and is bolted fluid-tightly to the tube 2. A man-hole opening 25 is closed by a bolted cover. The first section 49 of the caisson has bolted to its lower end a landing fitting 39 which has a flared guide 44 for guiding it on to the tube 2 which latter is provided with an upwardly directed removable tripod-like guide for guiding the fitting 39 to the tube 2. A seal 41 inflatable at 43 excludes water from the caisson until the flanges 46, 3 are bolted together, the bolt holes being aligned by the engagement of a V-projection and a V-recess 45. When the pipe 80 has been cut off, the top of the shoe 5 and pipe 80 are sealed by welding on a cover plate 14, and the annulus between the drive pipe 80 and the well casing 83 is covered by a welded plate 16. A casing head 17 is installed after the casing 83 has been run into the well and cemented, and

any desired Christmas tree arrangement may be fitted. The cover 4 may have a hole for the passage of a tubing extension from a swabbing valve 23 to permit swabbing when the door is closed. A relief valve 12 is provided on the housing 1. When the **well** is completed, the caisson assembly together with the landing fitting 39 are withdrawn upwardly, after the tripod-like guide has been re-attached to the tube 2 to secure a marker buoy.

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- PN - [CN2201481Y](#) 19950621
- PR - CN19942028400U 19940420
- AP - [CN19942028400U](#) 19940420
- DT - I
- PA - ZHAO YANMING [CN]
- TI - Inner tube **well**-strengthening floating **shoe**
- AB - The utility model discloses an inner tube **well**-strengthening floating **shoe** used for the **cementing** operation of the sleeve **pipe** of the petroleum drilling surface (or technique). An outer **casing** which is provided with a female thread and an inner cone surface (or spherical surface) can be combined with an inner core and can be separated from the inner core (the inner core is provided with an annular plate-shaped bearing disc (3); the upper end of the inner core is provided with the female thread and the outer cylindrical surface of the lower end of the inner core is provided with the joint (4) of a sealing ring; the lower end of the inner core is provided with a valve ball and an outer sleeve (6) for a valve ball seat.). The outer **casing** can extend the bottom of the **well** following the sleeve **pipe**, which can produce the low resistance, so that a user doesn't need to inject the **cement** paste; the inner core can extend the inner part of the sleeve **pipe** following an inner **pipe** to pack sitting on the inner cone surface of the outer **casing** (or spherical face); after **well**-strengthening, a user can wash the inner **pipe** core; after waiting for consolidation, the inner core can be taken out following the inner **pipe**, which can relieve of the work of **drill** drilling the inner core; the utility model can ensure the quality of the sleeve **pipe** and the **cement** annular glued joint. The utility model save the **drill** and the material consumption.