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Datasheet for the decision of 16 April 2015

Case Number: T 0842/12 - 3.2.03

Application Number: 04712053.0

Publication Number: 1595057

IPC: E21B21/08, E21B21/10

Language of the proceedings: EN

Title of invention:
DYNAMIC ANNULAR PRESSURE CONTROL APPARATUS AND METHOD

Patent Proprietor:
@Balance B.V.

Opponent:
Secure Drilling International L.P. (Bermuda)

Headword:

Relevant legal provisions:
EPC Art. 100(a), 100(b), 100(c), 123(3), 56, 54

Keyword:
Ground for opposition under Article 100(c) EPC - not admitted in the appeal proceedings
Sufficiency of disclosure - (yes)
Novelty - main request (no)
Unallowable amendments - auxiliary request 1 (yes) auxiliary requests 2 to 4 (no)
Inventive step - auxiliary requests 2 and 3 (no) auxiliary request 4 (yes)

Decisions cited:
G 0010/91

Catchword:

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Case Number: T 0842/12 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 16 April 2015

Appellant: (Patent Proprietor)	@Balance B.V. Kessler Park 1 2280 AB Rijswijk (NL)
Representative:	Ljungberg, Robert Murgitroyd & Company Scotland House 165-169 Scotland Street Glasgow Strathclyde G5 8PL (GB)
Respondent: (Opponent)	Secure Drilling International L.P. (Bermuda) 12777 Jones Road, Suite 280 Houston, TX 77070 (US)
Representative:	Williams, Michael Ian Cleveland 10 Fetter Lane London EC4A 1BR (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 30 January 2012 revoking European patent No. 1595057 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	G. Ashley
Members:	V. Bouyssy
	M. Blasi

Summary of Facts and Submissions

I. European patent No. 1 595 057 (in the following: "the patent") concerns a system and a method for dynamically controlling the pressure within the annulus of a well borehole during well drilling, completion and intervention operations.

II. The patent as a whole was opposed on the grounds of Article 100(b) EPC, and Article 100(a) EPC for lack of novelty and inventive step. The Opposition Division revoked the patent on the grounds that the subject-matter of claims 1 and 5 of the main request lacked novelty and that the subject-matter of claims 1 and 5 of the first and second auxiliary requests lacked an inventive step (Article 101(3)(b) EPC).

III. This decision has been appealed by the patent proprietor (here appellant).

IV. With the summons to oral proceedings, the Board sent a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA) indicating to the parties its preliminary opinion of the case.

V. Oral proceedings before the Board were held on 16 April 2015.

VI. Requests

The appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the set of claims of the main request, alternatively of one of auxiliary requests 1 to 3, all as filed with the statement of grounds of appeal dated 29 May 2012,

or further alternatively of auxiliary request 4 as filed during the oral proceedings before the Board.

The respondent (opponent) requested that the appeal be dismissed.

VII. Claims of the appellant's requests

a) Main request

Independent claims 1 and 5 read as follows (compared with claims 1 and 5 as granted, deleted features are indicated in strike-through):

"1. A drilling system for drilling a bore hole into a subterranean earth formation, the drilling system comprising:
a drill string (112) extending into the bore hole, whereby an annular space is formed between the drill string and the bore hole wall, the drill string including a longitudinal drilling fluid passage having an outlet opening at the lower end part of the drill string;
a pump (138) for pumping a drilling fluid from a drilling fluid source through the longitudinal drilling fluid passage into the annular space;
a fluid discharge conduit (124) in fluid communication with said annular space for discharging said drilling fluid;
a fluid back pressure system (131, 132, 133) in fluid communication with said fluid discharge conduit; said fluid backpressure system comprising a bypass conduit (7)
characterized in that the backpressure system comprises also a three way valve (6) and in that the bypass conduit and the three way valve are provided between

the pump and the longitudinal drilling fluid passage, whereby the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit which bypasses ~~at least part of~~ the longitudinal fluid passage."

"5. A method for drilling a bore hole in a subterranean earth formation, comprising:
deploying a drill string into the bore hole, whereby an annular space is formed between the drill string and the bore hole wall, the drill string including a longitudinal drilling fluid passage having an outlet opening at the lower end part of the drill string;
pumping a drilling fluid through the longitudinal drilling fluid passage into the annular space, utilizing a pump in fluid connection with a drilling fluid source;
providing a fluid discharge conduit in fluid communication with said annular space for discharging said drilling fluid;
providing a fluid back pressure system in fluid communication with said fluid discharge conduit; said fluid backpressure system comprising a bypass conduit and a three way valve provided between the pump and the longitudinal drilling fluid passage; and
pressurising the fluid discharge conduit utilizing said pump by establishing a fluid communication between the pump and fluid discharge conduit via the three way valve and the bypass conduit thereby bypassing ~~at least part of~~ the longitudinal fluid passage."

b) Auxiliary request 1

Claim 1 reads as follows (compared with claim 1 as granted, added features are indicated in bold, deleted features in strike-through):

"1. A drilling system for drilling a bore hole into a subterranean earth formation, the drilling system comprising:
a drill string (112) extending into the bore hole, whereby an annular space is formed between the drill string and the bore hole wall, the drill string including a longitudinal drilling fluid passage having an outlet opening at the lower end part of the drill string;
a pump (138) for pumping a drilling fluid from a drilling fluid source through the longitudinal drilling fluid passage into the annular space;
a fluid discharge conduit (124) in fluid communication with said annular space for discharging said drilling fluid **in said drilling fluid source**;
a fluid back pressure system (131, 132, 133) in fluid communication with said fluid discharge conduit; said fluid backpressure system comprising a bypass conduit (7)
characterized in that the backpressure system comprises also a three way valve (6) and in that the bypass conduit and the three way valve are provided between the pump and the longitudinal drilling fluid passage, whereby the pump is in fluid communication with the ~~fluid discharge conduit~~ **drilling fluid source** via the three way valve, ~~and~~ the bypass conduit which bypasses ~~at least part of~~ the longitudinal fluid passage **and the fluid discharge conduit.**"

Method claim 5 has been amended accordingly.

c) Auxiliary request 2

Claims 1 and 5 differ from claims 1 and 5 of the main request in that they both comprise the additional

feature that **"the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string"**.

d) Auxiliary request 3

Claim 1 differs from claim 1 of auxiliary request 2 in that it comprises the additional limitation that **"a choke is provided in said fluid discharge conduit, whereby by maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured"**.

Compared to claim 5 of auxiliary request 2, claim 5 comprises the additional feature that **"a choke (130) is provided in said fluid discharge conduit"** and the additional step of **"maintaining pump action of said pump to ensure sufficient flow through the choke (130) to control backpressure"**.

e) Auxiliary request 4

Claim 1 differs from claim 1 of auxiliary request 3 in that it comprises the additional feature that the three way valve is **"controllable variable"**.

Method claim 4 corresponds to method claim 5 of auxiliary request 3 with the additional feature that the three way valve is **"controllable variable"** and the additional step of **"controlling delivery of the drilling fluid from the pump via the bypass conduit into the discharge conduit is controlling the controllable variable three way valve"**.

Dependent claims 2, 3 and 5 define preferred embodiments of the drilling system of claim 1 and the drilling method of claim 4.

VIII. In the statement of grounds of appeal, the appellant referred to the following prior art documents which were filed in the opposition proceedings and are cited in the appealed decision:

D1: US 3,738,436 A1
D2: W. C. Goins, Jr., "Blowout Prevention", Technology, Volume 1, Gulf Publishing Company, Houston, Texas, 1969, pages 10, 11 and 52 (page 52 is labelled D2b in the appealed decision)
D3: WO 02/50398 A1
D4: US 6,474,422 B2
D5: US 6,374,925 B1
D6: US 4,108,203 A1
D7: WO 00/71919 A1

Of these D3 and D5 are cited in the patent specification (see paragraphs [0008] and [0006]).

IX. The arguments of the parties in the written and oral proceedings, insofar as relevant for the present decision, can be summarised as follows:

a) Main request – Articles 100(c) and 123(2) EPC

The respondent objected to the feature of claim 1 that "the bypass conduit ... (is) provided between the pump and the longitudinal drilling fluid passage" as introducing added subject-matter in the sense of Articles 100(c) and 123(2) EPC. In the application as filed, the three way valve is provided "between the pump and the longitudinal drilling fluid passage" while

the bypass conduit is provided between the three way valve and the fluid discharge conduit to bypass the longitudinal drilling fluid passage.

b) Main request – Article 100(b) EPC

Respondent's case:

Claim 1 recites that "the bypass conduit ... (is) provided between the pump and the longitudinal drilling fluid passage" and that it "bypasses the longitudinal fluid passage". The two features are contradictory. While the latter feature is in accordance with the description and drawings, there is no description or illustration of the former feature in the patent. Therefore, this feature is not described in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

Appellant's case:

The claimed invention is sufficiently disclosed in the patent. It is immediately apparent from a correct reading of the claim that the bypass conduit bypasses the longitudinal fluid passage while the three way valve is provided between the pump and the longitudinal drilling fluid passage.

c) Main request – Novelty over D1

Appellant's case:

The fluid backpressure system as defined in claim 1 performs dynamic annular pressure control (in the following: "DAPC") to maintain the annular pressure within the prescribed operational window during the

entire well drilling and completing process. D1 fails to disclose such a DAPC system. It does teach that, when the circulation is stopped to make connections, it is possible to reverse circulate heavy fluid with the pump 161 to kill formation pressure. The pump 161 is then in fluid communication with the pipe 171 via a three way valve (three way valve junction with valves 195 and 197) and a bypass conduit which bypasses the drill string. However, contrary to the Opposition Division's view, this three way valve and this bypass conduit do not form part of a DAPC system. Moreover, since valve 196 is closed while reverse circulating heavy fluid, the pipe 171 is no longer used as a fluid discharge conduit, and thus D1 also fails to disclose the feature of claim 1 that "the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit".

Respondent's case:

The features allegedly distinguishing claim 1 from D1 cannot be derived from the claim wording. Claim 1 does not specify that the backpressure system imposes backpressure on the annulus during the entire drilling and completing process, let alone that the backpressure system is a DAPC system. As taught in column 5, lines 15 to 23 and claim 8 of the patent, claim 1 covers the situation where the backpressure system is used to apply backpressure to the annulus when the fluid circulation through the drill string is shut off to make connections. For this situation, D1 teaches that the three way valve and the bypass conduit can be used to reverse circulate heavy fluid and so apply backpressure to the annulus, see column 8, lines 1 to 15; thus this equipment forms a backpressure system as defined in claim 1. During normal circulation, the

fluid is pumped down the drill string and from the annulus to the pit 162 through the pipe 171. Thus, the pipe 171 is a "fluid discharge conduit" in the sense of claim 1. While reverse circulating heavy fluid, the pump 161 is in fluid communication with this pipe 171, as required by the claim.

d) Auxiliary requests 1 and 4 – Admissibility

Respondent's case:

Auxiliary requests 1 and 4 have been filed for the first time in appeal and should not be admitted because they were late filed, are not clearly allowable and are not convergent with the other auxiliary requests.

e) Auxiliary request 1 – Article 123(3) EPC

Respondent's case:

In claim 1, the feature that "the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit" has been deleted and this amendment contravenes Article 123(3) EPC. For instance, the fluid discharge conduit may now be in parallel with the three way valve and the bypass conduit and such an embodiment was not covered by claim 1 as granted.

Appellant's case:

It follows from the wording of claim 1 as amended that the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit; hence there is no extension in scope of protection defined by the claim.

f) Auxiliary request 2 – Article 123(2) EPC

Respondent's case:

Amended claims 1 and 5 introduce added subject-matter because the added feature of the check valve is an unallowable generalisation of the original teaching on page 6, lines 13 to 17 of the application that "the drill string 112 supports a bottom hole assembly (BHA) 113 that includes a drill bit 120, a mud motor 118, a MWD/LWD sensor suite 119, including a pressure transducer 116 to determine the annular pressure, a check valve 118, to prevent backflow of fluid from the annulus".

Appellant's case:

The skilled person would recognise without any doubt from the application as filed that the feature of the check valve as added in claim 1 may be combined with the other features disclosed in the general context of claim 1 without creating an objectionable intermediate generalisation. Even though this added feature has been disclosed in combination with other features in the specific embodiment described on page 6, lines 13 to 17, the skilled person would recognise that the check valve is not closely related to the other features.

g) Auxiliary request 2 – Inventive step in light of D1

Appellant's case:

In addition to the distinguishing features mentioned with respect to claim 1 of the main request, D1 fails

to disclose that the backpressure system comprises a check valve which is provided in the drill string to prevent backflow of fluid from the annulus into the drill string. The combination of the distinguishing features has the effect that the backpressure system creates the necessary backpressure to keep the pressure in the annulus within the operational window at all times. The provision of such a DAPC system in the drilling system of D1 is not hinted at by the cited prior art. Furthermore, contrary to the Opposition Division's opinion, the skilled person would not combine the teaching of D1 with that of D2, D4, D5 or D6 to provide the drill string with a check valve. Firstly, D1 teaches away from providing the drill string with a conventional check valve, as it would prevent reverse circulation (see column 8, lines 22 to 24). Secondly, even though D6 discloses a specific check valve that allows reverse flow and closes only in high pressure areas, nothing in D6 suggests that this check valve would remain open when circulation is reversed as disclosed in D1. Thus, the claimed subject-matter involves an inventive step over D1.

Respondent's case:

The subject-matter of claim 1 differs from the drilling system of D1 only in that the drill string is provided with a check valve. This additional feature, however, is an obvious safety measure in the light of common general knowledge, as documented in D2 (page 52), D4, D5 (column 4, lines 40 to 44) and D6 (column 1, lines 10 to 16), to prevent uncontrolled upward flow in the drill string while drilling in a high pressure area. In addition, check valves are disclosed in D2 and D6 that can be opened to allow reverse flow or can regulate the rate of reverse flow. These check valves are easily

adapted to be kept open while reverse circulating as disclosed in D1. Thus, the claimed subject-matter lacks an inventive step against D1 in combination with common general knowledge.

h) Document D7 - Admissibility

Appellant's case:

D7 was filed after expiry of the opposition period. The Opposition Division should not have admitted it in the proceedings because it is no more relevant than D3.

Respondent's case:

D7 was filed in the opposition proceedings in direct response to the filing of the (then) second auxiliary request by the appellant. The added feature of a choke was taken from the description and thus the amendment was unexpected. D7 is highly relevant, more so than D3, with respect to this added feature. The Opposition Division decided correctly to admit this document because of its *prima facie* relevance.

i) Auxiliary request 3 – Articles 123(2) and 84 EPC

Respondent's case:

Amended claims 1 and 5 introduce added subject-matter because the added feature that by "maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured" was originally disclosed only in the context of shutting off the flow of drilling fluid through the drill string (see claim 8 and page 8, lines 16 to 21), and this further feature is not present in claims 1 and 5.

In addition, the feature of claim 1 that "by maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured" seeks to define the claimed system by means of a method step and this renders the claim unclear, contrary to Article 84 EPC.

Appellant's case:

Even though the added feature of the choke has been disclosed for a specific situation during the drilling process, the skilled person would recognise that this is not inextricably linked to shutting off the flow of drilling fluid through the drill string.

j) Auxiliary request 3 – Inventive step in light of D1 and D7

Appellant's case:

In addition to the distinguishing features mentioned with respect to claim 1 of auxiliary request 2, claim 1 differs from D1 in that the backpressure system further comprises a choke which is provided in the fluid discharge conduit to control backpressure. The distinguishing features, in particular the check valve and the choke, mutually interact to perform DAPC and maintain the annular pressure in the prescribed window at all times. For the reasons already given for auxiliary request 2, the skilled person would not provide the drill string of D1 with a check valve. Moreover, contrary to the Opposition Division's opinion, the skilled person would not combine the teaching of D1 with that of D7 to incorporate a choke in the fluid discharge conduit 171 of D1, because this

would hinder the reverse circulation. Thus, the claimed subject-matter involves an inventive step when starting from D1.

Respondent's case:

The drilling system of claim 1 differs from that of D1 only in that the drill string is provided with a check valve, and in that a choke is provided in the fluid discharge conduit to control backpressure. These two features do not mutually influence each other, and hence can be considered as solving different partial problems, namely how to prevent uncontrolled upward flow in the drill string while drilling in a high pressure area (check valve), and how to apply additional backpressure in the annulus (choke). As already explained for auxiliary request 2, the provision of a drill string check valve is an obvious safety measure to solve the first partial problem. The provision of a choke in the annulus discharge conduit is also a well-known design option to solve the second partial problem, see e.g. D7 (page 1, lines 2 to 18 and page 2, lines 12 and 13). Starting from D1, the skilled person would thus provide a backpressure choke in the annulus discharge pipe 171, e.g. in place of annulus wing valve 170, and so arrive at the choke feature in an obvious manner. Thus, the claimed subject-matter lacks an inventive step in the light of D1 and D7.

k) Auxiliary request 4 – Articles 123(2) and 84 EPC

Respondent's case:

The amendments contravene Articles 123(2) and 84 EPC for the reasons already given for the main request and auxiliary requests 2 and 3.

Appellant's case:

As already explained for auxiliary requests 2 and 3, the amendments meet the requirements of Articles 123(2) and 84 EPC.

l) Auxiliary request 4 – Inventive step in light of D3

Respondent's case:

D3 discloses in Figure 5 a drilling system comprising a drill string 1, a pump 6 and a fluid discharge conduit 27. The drilling system also comprises a DAPC system to automatically adjust the required backpressure at all times, during drilling and well completion. The DAPC system comprises separate pump 23 to pump fluid, independently from pump 6, directly to the annulus 3 through injection line 22 which bypasses drill string. This bypass conduit 22 is in fluid communication with discharge conduit 27 via the annulus 3. A choke 12 is provided in discharge conduit 27 to decrease or increase the backpressure (page 47, line 26 to page 48, line 6). The drilling system of claim 1 thus differs from D3 only in that:

- the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string; and
- the backpressure system comprises a controllable variable three way valve which is provided between the pump and the longitudinal drilling fluid passage of the drill string, whereby the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit.

These two groups of distinguishing features are not interrelated and solve different partial problems, namely how to prevent uncontrolled backflow while drilling in a high pressure area, and how to avoid the need for two separate pumps.

As already argued for auxiliary requests 2 and 3, the provision of a drill string check valve is an obvious safety measure to solve the first partial problem.

A suggestion to solve the second partial problem is already provided by D3, because it teaches that bypass conduit 22 may be incorporated as part of the standard circulation system (see page 46, line 28 to page 47, line 1 and Figures 3 and 5). In addition, it is well-known in the art to use a single pump instead of two pumps to pump fluid into the annulus via the drill string or via a bypass conduit, see D2 (Figure 2.1, pump 1 and kill line B). To solve the second partial problem, a skilled person would thus dispense with pump 23 and use pump 6 to send fluid directly to the annulus through bypass conduit 22. This would inevitably necessitate the use of a three way valve, which is implicitly "controllable variable".

When starting from D1, the skilled person would thus arrive at all distinguishing features in an obvious manner. Thus, the claimed subject-matter lacks an inventive step in the light of D3, either on its own or in combination with D2.

Appellant's case:

The drilling system of D3 is the closest prior art. Thanks to the features distinguishing claim 1 from D3,

fluid can be pumped with one and the same pump into the annulus via the drill string as well as via the annulus discharge conduit to perform DAPC during the entire drilling and completing process (see paragraphs [0011], [0023] and [0029] in the patent specification). This way, the drilling system is simpler and cheaper than in D3. Neither D3 nor any of the other cited prior art documents discloses or suggests that this effect can be achieved in the claimed manner. In particular, there is no hint in D3 that the separate pump 23 can be dispensed with and that the pump 6 could be used to replace it. Thus, the claimed invention involves an inventive step over D3.

m) Auxiliary request 4 – Inventive step in light of D1

Respondent's case:

The three way valve as disclosed in D1 is "controllable variable" in the sense of claim 1 because it can be controlled and it can take at least two different states, namely on or off. Moreover, valve 197 in D1 can be partially opened during reverse circulation to allow the amount of circulated heavy fluid to be regulated, even though this step is not disclosed in D1. Thus, for the reasons already given for claim 1 of auxiliary request 3, the subject-matter of claim 1 lacks an inventive step when starting from D1.

Appellant's case:

For the reasons set out for claim 1 of auxiliary request 3, the claimed system involves an inventive step against D1. In addition, the added feature that the three way valve is "controllable variable" is

neither disclosed nor suggested in D1. In particular, valves 195 and 197 of D1 are emergency valves which are either closed or opened.

n) Auxiliary request 4 – Inventive step in light of D2

Respondent's case:

D2 discloses in Figure 2.1 a drilling system comprising a pump 1, a drill string 7, an annulus discharge conduit D and a backpressure system in the broad sense of claim 1, which includes a bypass conduit B and a three way valve (three way junction located between kill line B and stand pipe 2) to impose a backpressure in the annulus. A choke G is provided in the discharge conduit D to control the backpressure. The bypass conduit B is in fluid communication with the fluid discharge conduit D via the annulus. The drilling system of claim 1 thus differs from that of D2 only in that the drill string is provided with a check valve. For the reasons set out with respect to claim 1 of auxiliary requests 2 and 3, this modification is a standard safety measure. Hence, the subject-matter of claim 1 lacks an inventive step when starting from D2.

Appellant's case:

The drilling system in Figure 2.1 of D2 is a conventional drilling system with an open circulation system and a blowout prevention equipment. The flow line 11 forms the annulus discharging conduit when circulating fluid through the drill string. D2 teaches that, if a kick occurs, the BOP is closed and heavy fluid can be injected directly in the annulus through kill line B or C to kill formation pressure, whereby

fluid flow from the annulus is then controlled by a choke G in choke flow line D or E (see paragraph bridging pages 10 and 11). As for the well control equipment disclosed in D1, this blowout prevention equipment of D2 does not form a backpressure system performing DAPC during the entire well drilling and completing process. Furthermore, even if the bypass conduit were considered to be kill line B, as argued by the respondent, pump 1 would not be in fluid communication with fluid discharge conduit 11 via the three way valve and bypass conduit B when applying backpressure, as required by claim 1. The claimed system involves an inventive step when starting from D2, for the same reasons as when starting from D1.

Reasons for the Decision

1. Main request – Articles 100(c) and 123(2) EPC

1.1 The respondent contends that the feature of claim 1 that "the bypass conduit ... (is) provided between the pump and the longitudinal drilling fluid passage" constitutes added subject-matter in the sense of Articles 100(c) and 123(2) EPC.

1.2 This feature already existed in claim 1 as granted.

1.3 In the communication pursuant to Article 15(1) RPBA, the Board pointed out that the ground of Article 100(c) EPC is a "fresh ground for opposition" within the meaning of decision G 10/91 (OJ 1993, 420), as it was neither raised or substantiated in the notice of opposition of the respondent nor introduced into the proceedings by the Opposition Division, and that it may be considered in the appeal proceedings only with the

approval of the appellant as patent proprietor (point 5.2 of the communication).

1.4 In response, the appellant did not consent to the admission of this fresh ground for opposition. Thus, it must be disregarded.

1.5 The Board also indicated in its communication that the objection under Article 123(2) EPC would not be considered because it did not arise from the amendments made to claim 1 during the opposition or appeal proceedings, but concerned amendments made before grant (point 5.3 of the communication).

1.6 In response, the respondent submitted that it is necessary to consider the issue of added subject-matter because it is highly relevant, it does not add any significant procedural complication and it has an impact on how the claims should be interpreted. The Board disagrees. The mere fact that the claims have been amended after grant does not allow the above objection to be raised under Article 123(2) EPC. Since the disputed feature had been introduced in claim 1 before grant, an objection under Article 123(2) EPC cannot be taken into consideration.

2. Main request – Article 100(b) EPC

2.1 In its reply to the statement of grounds of appeal, the respondent raised an objection under Article 100(b) EPC, arguing that the feature of claim 1 that "the bypass conduit ... (is) provided between the pump and the longitudinal drilling fluid passage" is not described in the patent in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2.2 This issue also concerned claim 1 as granted.

2.3 Consideration of the objection in the appeal proceedings

The ground for opposition under Article 100(b) EPC had been raised and substantiated in the opposition notice. In the communication pursuant to Article 15(1) RPBA, the Board pointed to the fact that the minutes of the oral proceedings before the Opposition Division indicate that the respondent had abandoned all its objections under Article 100(b) EPC (see the minutes, page 2, paragraph 4, page 5, paragraph 2, page 7, paragraph 8 and page 8, paragraph 1).

In response, the respondent contested for the first time the correctness of the minutes and the interpretation by the Opposition Division of its declarations. The respondent submitted that, during the oral proceedings, it never renounced its challenge to the patent on the ground of Article 100(b) EPC. Rather, the respondent did not wish to make further oral submissions during the oral proceedings before the Opposition Division on this issue.

If the respondent was of the view that the minutes did not correspond to what has happened during the oral proceedings before the Opposition Division, a request for correction of the minutes should have been duly filed. In the absence of such a request and a subsequent decision of the Opposition Division to correct its minutes, the Board has to assume that they accurately reflect the course of the oral proceedings.

However, the Board takes the view that the withdrawal of a ground for opposition has to be explicit, unambiguous. In the present case, the Board agrees with the respondent that it cannot be inferred with certainty from the minutes that it did withdraw its ground for opposition under Article 100(b) EPC. Moreover, as acknowledged by the appellant, the re-introduction of the above objection under Article 100(b) EPC in the appeal proceedings does not give rise to any new or complex issue. The Board has also no reason to assume an abuse of procedure by the respondent.

Thus, the Board decided to take the respondent's objection under Article 100(b) EPC into consideration, under Article 114(2) EPC and Article 12(4) RPBA.

2.4 Merit of the objection

A skilled reader of claim 1 using common general knowledge would recognise at once that the bypass conduit, which "bypasses the longitudinal fluid passage", cannot at the same time be "provided between the pump and the longitudinal drilling fluid passage". From the wording of method claim 5 (see the before last method step), as well as the teaching in the description and drawings of the patent specification (see bypass conduit 7 in paragraph [0020] and Figures 1 to 3), it is clear that the disputed wording in claim 1 "that the bypass conduit and the three way valve are provided between the pump and the longitudinal drilling fluid passage" should read "that ~~the bypass conduit and~~ the three way valve are provided between the pump and the longitudinal drilling fluid passage".

The patent comprises a detailed description of a number of ways to carrying out the invention (see Figures 1 to 3), such that a skilled person would be able to perform the invention. Hence, the disclosure of the patent is sufficiently clear and complete within the meaning of Article 100(b) EPC.

3. Claim 1 of main request - Novelty over D1

3.1 D1 discloses in Figure 5 (see below) a conventional drilling system for overbalanced drilling operations, with a drill string and an open fluid circulation system comprising a pump 161 for pumping drilling fluid through the drill string into the annulus 167 and a pipe 171 for discharging the fluid from the annulus to a pit 162. During drilling, when the pump 161 is circulating the fluid ("dynamic mode"), the annulus is kept open to the atmosphere and the circulated fluid exerts a pressure against the annulus that substantially equals the hydrostatic pressure of the fluid column plus the annular frictional pressure resulting from fluid circulation. When the pump 161 is shut down to make connections ("static mode"), the annular pressure reduces to the hydrostatic pressure. If it no longer balances the formation pressure, bleeder valve 181 is opened to bleed off. If that is not effective, the BOP 133 and valves 195 and 196 are closed, while valves 197 and 181 are opened; heavy fluid is then directly reverse circulated into the annulus 167 to balance formation pressure and kill any formation fluid inflow (see D1, column 2, lines 39 to 46; column 7, lines 33 to 43; column 8, lines 1 to 12). The three way fluid junction with valves 195 and 197 forms a three way valve in the sense of claim 1 (see e.g. dependent claim 4 of the disputed patent).

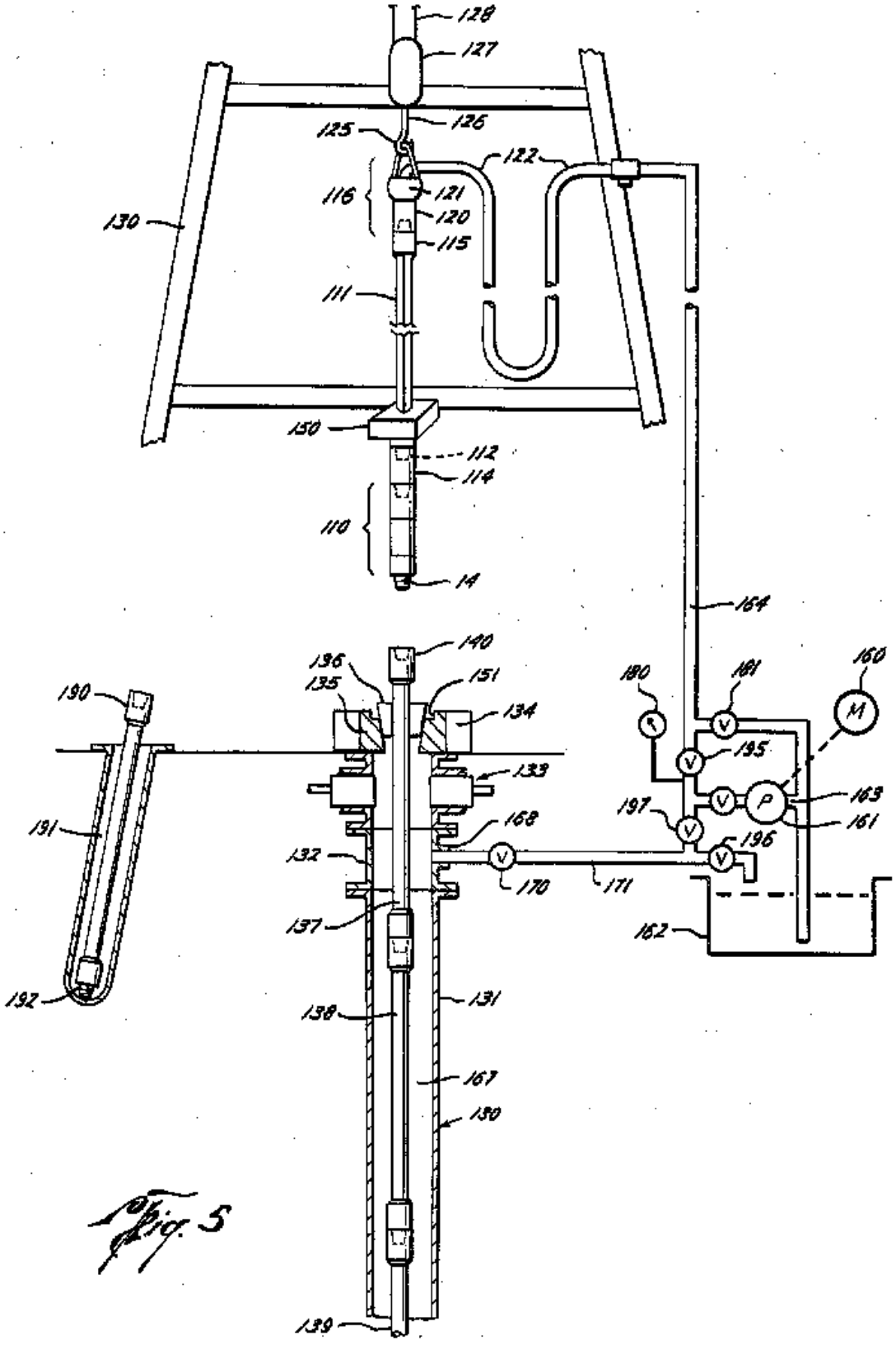
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Fig. 5

3.2 The parties have disputed whether or not D1 discloses a "fluid backpressure system" as defined in claim 1, whereby "the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit".

3.3 "Fluid backpressure system"

3.3.1 In the relevant technical field, the term "backpressure" generally means a pressure added to the borehole to reduce or prevent the inflow of formation fluid. In the context of claim 1, a skilled reader thus understands the expression "fluid backpressure system" in the broad sense of defining equipment for imposing backpressure in the annulus to reduce or prevent formation fluid inflow.

3.3.2 Instead, the appellant submits that the "fluid backpressure system" of claim 1 is an automated control system which continuously provides the annulus with a backpressure that maintains the annular pressure at all times within a prescribed operational window, as established by the formation pressure and the fracture pressure.

3.3.3 However, such an interpretation cannot be derived from the wording of the claim. The claim does not specify that the circulation system is a closed circulation system with a rotating control device for sealing off and allowing pressurisation of the annulus, even though this is an essential feature for enabling dynamic annular pressure control (see e.g. column 4, lines 25 to 31 in the patent specification; pressure containment device 26 closed at all times in D3). Furthermore, claim 1 does not specify the circumstances when

backpressure should be added by means of the backpressure system.

Hence, it follows from the wording of claim 1 that the circulation system can be a conventional open circulation system, and that the "fluid backpressure system" can be any equipment for imposing backpressure on the annulus during the well drilling and completing process, for instance to control the well when the circulation through the drill string is shut off to make drill string connections. This understanding accords with the teaching in method claim 8 and also in paragraphs [0020], [0027] and [0029] of the patent specification.

The claim itself thus imparts a clear and credible technical teaching to the skilled reader. Therefore there is no reason for consulting the description and the drawings of the patent to give the term "fluid backpressure system" a narrower meaning, such as defining a particular type of control system (see paragraphs [0001] and [0013]).

3.3.4 It follows from the teaching of D1 that, in the static mode, after closing the BOP 133 and valves 195 and 196 and opening valves 197 and 181, the pump 161 can be used to supply heavy fluid directly to the annulus 167 via the pipe 171 to add backpressure to the hydrostatic pressure, and thus balance/kill the formation pressure before unscrewing the mud saver valve assembly 110. The bypass conduit and the three valve junction with valves 195 and 197 thus form a part of the backpressure system as is broadly defined in the claim.

3.4 "The pump is in fluid communication with the fluid discharge conduit"

3.4.1 In claim 1, the term "fluid discharge conduit" defines a conduit for "discharging said drilling fluid" during drilling. In D1, the pipe 171 fulfils this function when in the dynamic mode and thus forms a "fluid discharge conduit" in the sense of the claim. In the static mode, when reverse circulating as taught in D1, the pump 161 is in fluid communication with the pipe 171 via the three way valve and the bypass conduit, as required in the last feature of claim 1 of the disputed patent.

3.4.2 The appellant submits that the pipe 171 is no longer a "fluid discharge conduit" when reverse circulating, as the fluid is then discharged to the pit 162 only via pipe 164. This argument is not convincing. In claim 1, the term "fluid discharge conduit" can be read as a label used to refer to a specific pipe or conduit, irrespective of whether or not it is discharging drilling fluid at all times. Pipe 171 is a "fluid discharge conduit" during normal fluid circulation and within the definition given in claim 1.

3.5 In conclusion, the Board agrees with the Opposition Division that the subject-matter of claim 1 lacks novelty in the sense of Article 54 EPC in light of D1.

4. Auxiliary request 1 - Consideration of the request in the appeal proceedings

4.1 Auxiliary request 1 was filed for the first time in the appeal proceedings with the statement of grounds of appeal.

4.2 The amendments relate to the introduction of limiting features in the independent claims as granted, with the aim of overcoming the Opposition Division's objection that the subject-matter of these claims lacks novelty. Thus, the filing of this request does not amount to an abuse of procedure on the part of the appellant, and the Board decided to take it into consideration (Article 114(2) EPC and Article 12(4) RPBA).

5. Auxiliary request 1 – Article 123(3) EPC

5.1 Claim 1 as amended no longer requires that "the pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit". It now defines the pump to be in fluid communication with the drilling fluid source via the three way valve, the bypass conduit and the fluid discharge conduit.

5.2 Hence, claim 1 covers an embodiment wherein the fluid discharge conduit is in parallel to the three way valve and the bypass conduit. Such an embodiment was not covered by claim 1 as granted, hence auxiliary request 1 contravenes Article 123(3) EPC.

6. Auxiliary request 2 – Article 123 EPC

6.1 Claims 1 and 5 differ from claims 1 and 5 of the main request only in that they both include the further limitation that "the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string".

6.2 This amendment meets the requirements of Articles 123(2) and (3) EPC. The added feature of the check valve is supported by the teaching in the application documents as originally filed, see page 6, lines 13 to

17 with Figures 1 to 3 (see check valve 118). Even though it follows from page 6, lines 13 to 17 that the check valve is part of a bottom hole assembly (BHA) supported by the drill string, together with a drill bit 120, a mud motor 118, a MWD/LWD sensor suite 119, a pressure transducer 116 and a telemetry package 122, a skilled reader of this passage would recognise that these further features are entirely optional to achieve the promised effect, namely to prevent backflow of fluid from the annulus into the drill string. Consequently, there is no unallowable intermediate generalisation, contrary to the respondent's view.

7. Claim 1 of auxiliary request 2 – Inventive step in light of D1

7.1 The drilling system of D1 shows all the features of claim 1 of the main request (see point 3 above) but it fails to disclose the added feature that "the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string". Hence, the system of claim 1 differs from that of D1 only in that it comprises such a check valve.

7.2 However, it is a standard safety measure to provide the drill string with a check valve, in order to prevent uncontrolled backflow up the drill string in the event of a sudden inflow of formation fluid in an unexpectedly high pressure area, see e.g. D2 (page 52), D4 (check valve 110), D5 (column 4, lines 40 to 44 and check valve 52) and D6 (column 1, lines 10 to 23). Hence, it would be an obvious safety measure for the skilled person to incorporate such a check valve in the drill string of D1.

7.3 The appellant submits that the skilled man would not provide the drill string of D1 with a conventional check valve because, as taught in column 8, lines 22 to 24 of D1, such a check valve would prevent reverse circulation. The Board is not convinced. The cited passage of D1 aims only to distinguish the mud saver valve assembly 110 as disclosed therein from an ordinary check valve ("It is only desired to distinguish the present valve assembly from an ordinary upwardly closing check valve which would prevent reverse circulation"). This passage would not hinder the skilled person from using a drill string check valve preventing unexpected backflow if it is considered necessary for safety reasons. In addition, it is common knowledge that check valves with reverse flow capabilities exist that allow regulation of the rate of reverse flow, see e.g. D6 (column 4, lines 9 to 14). If need be, the skilled person would, as a manner of routine design, incorporate such a check valve in the drill string of D1.

7.4 Thus, the Board agrees with the Opposition Division that the subject-matter of claim 1 lacks an inventive step in the sense of Article 56 EPC when starting from the conventional drilling system of D1.

8. Auxiliary request 3 – Articles 123 and 84 EPC

8.1 Claim 1 differs from claim 1 of auxiliary request 2 only in that it includes the further limitation that "a choke is provided in said fluid discharge conduit, whereby by maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured". Method claim 5 differs from claim 5 of auxiliary request 2 in that it comprises the additional feature that "a choke ... is provided in

said fluid discharge conduit" and the additional step of "maintaining pump action of said pump to ensure sufficient flow through the choke ... to control backpressure".

8.2 These amendments meet the requirements of Articles 123(2) and (3) EPC. The added features are supported by the teaching in the application documents as originally filed, see page 7, line 28 to page 8, line 21 and Figures 1 to 3 (see choke 130) and page 10, lines 13 and 27. In these passages, the function of the backpressure choke is described for the static mode, wherein the flow through the drill string is shut off. For a skilled reader of the application documents as originally filed, however, it is clear that these further features are not essential for the functioning of the backpressure choke. Consequently, the introduction of the isolated features does not amount to an unallowable intermediate generalisation, contrary to the respondent's view.

8.3 The amendments made in the claims also meet the requirements of Article 84 EPC. In claim 1, the wording "whereby by maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured" is a functional feature, which further defines the choke.

9. Consideration of D7 in the appeal proceedings

9.1 D7 was filed after expiry of the opposition period and the Opposition Division decided to admit it into the proceedings, using its discretionary power under Article 114(2) EPC (see point 2.3.1 of the decision under appeal).

9.2 It is not the function of the Board to review all the facts and circumstances of the case as if it were in the place of the Opposition Division, in order to decide whether or not it would have exercised such discretion in the same way. Rather, the Board must confine its review as to whether the Opposition Division has exercised its discretion according to the wrong principles, without taking into account the right principles, or in an unreasonable way.

9.3 In the present case, in view of the reasons given in the decision under appeal and the summary provided in the minutes, the Board has no reason to overrule the way in which the Opposition Division exercised its discretionary power. In particular, the Board does not share the appellant's view that this decision was incorrect, since the disclosure of pages 1 and 2 of D7 was not "more weighty" than D3. Instead, the Board considers the principles applied by the Opposition Division (i.e. development of the case, complexity of the subject-matter, length of the document, *prima facie* relevance for the case) as being appropriate. Moreover, the respondent relied upon D7 in its reply to the statement of appeal grounds. Consequently, D7 is taken into consideration.

10. Claim 1 of auxiliary request 3 – Inventive step in light of D1 and D7

10.1 In addition to the feature of the check valve (see point 7 above), D1 fails to disclose a choke in the fluid discharge conduit. Hence, the drilling system of claim 1 differs from that of D1 in that:

- "the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string"; and

- "a choke is provided in said fluid discharge conduit, whereby by maintaining pump action of said pump, sufficient flow through the choke to control backpressure is ensured".

10.2 The Board agrees with the respondent that there is no functional reciprocal relationship between these distinguishing features. The check valve is not defined as being part of the backpressure system, neither in claim 1 nor in the patent specification (see paragraph [0015]), and it does not necessarily interact with the choke to control backpressure. The check valve is an independent safety device against uncontrolled backflow in the drill string. The two distinguishing features thus solve different partial problems, namely how to prevent uncontrolled backflow up the drill string in an unexpectedly high pressure area (check valve) and how to apply additional backpressure in the annulus (choke), and they can be considered independently for the purpose of inventive step analysis.

10.3 For the reasons already given for claim 1 of auxiliary request 2 (see point 7 above), it would be obvious for a skilled person to solve the first partial problem by providing the drill string with a safety check valve.

10.4 With respect to the second partial problem, it is common general knowledge to provide the annulus discharge conduit of an open circulation system with a choke, in order to create an additional backpressure in the annulus in the event that the weight of the circulated fluid is insufficient to balance the formation pressure and control kicks, see for instance D7, page 1, lines 6 to 18 and also page 1, lines 2 to 4 and page 2, lines 12 to 13. The skilled person would recognise the advantage of using such a choke to

control the well before possibly reverse circulating heavy fluid. He would have no practical difficulties in incorporating the choke of D7 in the open circulation system of D1 by installing it in the annulus discharge conduit 171, for example in place of annulus wing valve 170, to add the required backpressure. Thus, the skilled person would arrive at the second distinguishing feature in an obvious manner.

10.5 Hence, the Board agrees with the Opposition Division that the subject-matter of claim 1 lacks an inventive step in the sense of Article 56 EPC when starting from D1.

11. Auxiliary request 4 - Consideration of the request in the appeal proceedings

11.1 Auxiliary request 4 was filed for the first time in the appeal proceedings, together with the statement of grounds of appeal.

11.2 The amendments relate to the introduction of limiting features in the independent claims of auxiliary request 3, with the aim of overcoming the Opposition Division's objection that the subject-matter of these claims lacks inventive step. Thus, the filing of this request does not amount to an abuse of procedure on the part of the appellant, and the Board decided to take it into consideration (Article 114(2) EPC and Article 12(4) RPBA).

12. Auxiliary request 4 – Articles 123 and 84 EPC

12.1 Claim 1 differs from claim 1 of auxiliary request 3 in that it includes the additional limitation that the three way valve is "controllable variable". Method

claim 4 differs from claim 5 of auxiliary request 3 in that it comprises this additional feature and also the additional method step of "controlling delivery of the drilling fluid from the pump via the bypass conduit into the discharge conduit by controlling the controllable variable three way valve".

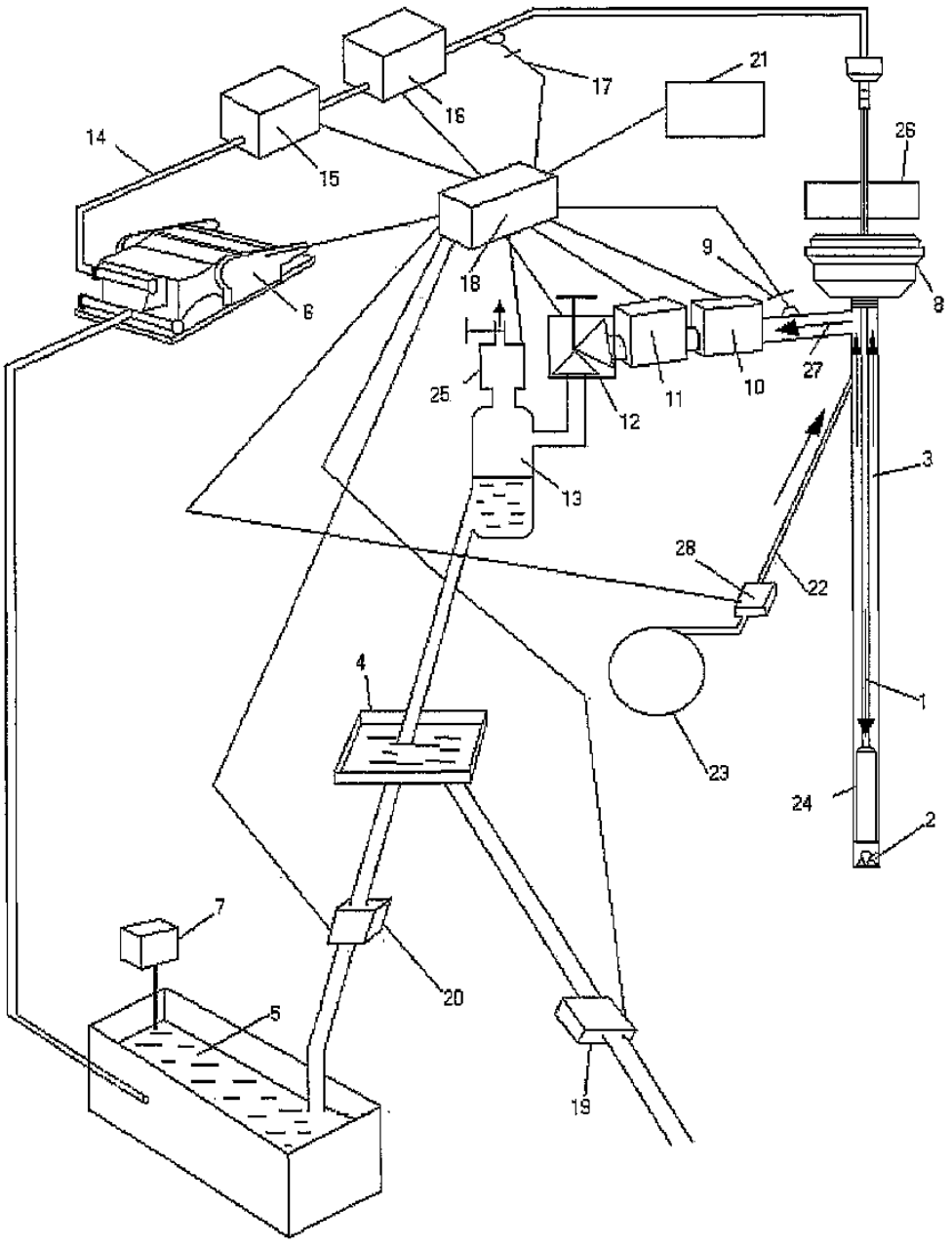
12.2 These amendments meet the requirements of Articles 123(2) and (3) and 84 EPC. In particular, the added features are supported by the teaching in the application documents as originally filed, see page 9, lines 5 to 29, in particular lines 6, 18, 24 and 27, and page 10, lines 13 to 15.

13. Claim 1 of auxiliary request 4 – Inventive step

13.1 The Board agrees with the parties that the drilling system in Figure 5 of D3 is the most promising starting point for the assessment of inventive step of the claimed drilling system, as it comprises a closed circulation system with automated means to continuously control the backpressure in the annulus and maintain the annular pressure within the desired operational window at all times.

13.2 This drilling system of D3 comprises (see Figure 5 below): a drill string 1, a pump 6 for pumping a drilling fluid from a drilling fluid source through the longitudinal drilling fluid passage of the drill string into the annulus 3, and a conduit 27 in fluid communication with the annulus 3 for discharging the drilling fluid. The annulus 3 is closed at all times by a pressure containment device in the form of a rotating BOP 26. The backpressure in the annulus is continuously adjusted by means of, among other things, a separate backpressure pump 23, a bypass conduit in the form of

an injection line 22 and a choke in the form of a flow/ pressure control device 12, which is provided in the discharge conduit 27 to decrease or increase the backpressure.



13.3 The drilling system of claim 1 differs from that of D3 in that:

- the drill string is provided with a check valve to prevent backflow of fluid from the annular space into the drill string; and
- the backpressure system comprises a controllable variable three way valve that is provided between the longitudinal drilling fluid passage of the drill string and the pump for pumping drilling fluid through this passage into the annulus, whereby this pump is in fluid communication with the fluid discharge conduit via the three way valve and the bypass conduit.

13.4 The second group of distinguishing features has the effect that one and the same pump can be used to supply drilling fluid through the drill string and to add backpressure directly to the annulus via the annulus discharge conduit during well drilling, completion and intervention operations (see paragraphs [0011], [0023], [0029] in the patent specification). This makes the drilling system simpler and cheaper than that of D3.

13.5 The parties dispute which technical problem is solved by the second group of distinguishing features. The respondent submits that it solves the problem of using a single pump instead of two separate pumps (6 and 23 in D3). This formulation, however, includes some of the distinguishing features, and hence has an element of hindsight. The technical problem more objectively solved starting from D3 is how to simplify the drilling system, while still allowing additional backpressure in the annulus at any time, in particular when the drilling fluid is being circulated through the drill string.

13.6 The claimed solution to this objective problem is not rendered obvious by the teaching of D3 alone, or in

combination with common general knowledge, as documented in D2.

13.7 The respondent submits that the claimed solution is suggested in the sentence bridging pages 46 and 47 of D3, which teaches that the injection line 22, i.e. the bypass conduit in the sense of claim 1, "may be incorporated as part of the standard circulation system, or embodied in other ways, the purpose being to provide an independent, of normal drilling circulation, means of flow into wellbore". However, this specific teaching must be read in context, in particular in the light of the teaching on page 20, line 1 to page 21, line 6, on page 29, lines 1 to 11 and on page 46, lines 24 to 26. When doing so, the only information which can be gleaned from D3 is that the system as described may comprise a standard well control means to inject fluid directly into the annulus and so add backpressure to compensate for the loss in annular frictional pressure when the normal circulation is stopped and that, in order to allow to decrease or increase the backpressure in the annulus at any time, in particular when the normal circulation is on, the well control means preferably comprises at least one circulation bypass consisting of a separate pump and a dedicated injection line. This does not provide any hint towards the claimed solution of using a single pump to impose additional backpressure on the annulus while circulating the fluid through the drill pipe.

13.8 The respondent also argues that the second group of distinguishing features is an obvious modification in the light of the teaching on pages 7 and 8 of the US patent application No. 10/368,128, one of the applications from which the disputed patent claims priority. However, no evidence has been submitted to

show that this teaching was made public before the effective date of the patent.

13.9 The respondent further contends that, in light of common general knowledge, it would be obvious for the skilled person to use a single pump in place of the pumps 6 and 23. In support of this argument, the respondent refers to Figure 2.1 of D2 wherein a single pump 1 is used to circulate fluid through the drill string in the dynamic mode and to inject fluid in a kill line in the static mode. However, D2 only discloses conventional well control means which are used to inject drilling fluid directly into the annulus only in the static mode, i.e. when the normal circulation is stopped. Therefore, this conventional well control means leads the skilled person away from the claimed solution. The same would apply if he were to consider D1, since it discloses a similar conventional well control means.

13.10 In conclusion, when starting from D3, the provision of the second group of distinguishing features involves an inventive step.

13.11 The respondent has also disputed whether the subject-matter of claim 1 involves an inventive step when taking D1 or D2 as starting point, even though the conventional drilling system of either D1 or D2 is a less promising starting point than that of D3. For the sake of completeness, this issue is discussed hereafter:

13.12 Inventive step with respect to D1

In addition to the features of the check valve and the choke (see point 10 above), D1 fails to disclose the

feature that the three way valve is "controllable variable".

The respondent contends that this feature is implicitly disclosed in D1 because the three way valve of D1 can be controlled to take at least two different states: the valves 195 and 197 can be operated so that the total pump output is delivered to the longitudinal drilling fluid passage, or alternatively to the discharge conduit 171. In addition, the respondent submits that the valve 197 of D1 could be partially opened during reverse circulation to allow the amount of reverse circulation to be regulated. The Board is not convinced by these arguments. It is common general knowledge that some valves are adjustable while others are not. The introduced limitation "controllable variable" makes it clear that the three way valve must allow variation or adjustment of the flow. This feature is neither disclosed nor suggested in D1. The valves 195 and 197 of D1 are closed and opened respectively in an emergency well control operation and there is no reason for them to be adjustable.

The distinguishing feature of the three way valve being "controllable variable" allows use of one and the same pump to create a backpressure on the annulus via the discharge conduit while continuing to circulate the fluid through the drill string. Neither D1, nor any of the cited prior art documents, discloses or suggests that this effect could be achieved by using a controllable variable three way valve (see points 13.7 to 13.9 above).

Thus, the claimed invention involves an inventive step over the conventional drilling system of D1.

13.13 Inventive step with respect to D2

D2 discloses in Figure 2.1 a conventional drilling system similar to that disclosed in D1. It comprises an open fluid circulation system with a pump 1 for pumping drilling fluid through the drill string and a flow line 11 for discharging the fluid from the annulus to a fluid tank 13. The flow line 11, not the choke line D, thus forms the fluid discharge conduit in the sense of claim 1. Should a kick occur, heavy fluid is injected directly into the annulus through the kill line B or C to kill formation pressure; the fluid is then discharged through the choke line D or E. When killing the formation pressure, the kill line B is used as a bypass conduit in the sense of claim 1. A choke G is provided in the choke line D, not in the discharge conduit 11. Hence, as with the system of D1, the drilling system of D2 fails to disclose a drill string check valve, a backpressure choke and a controllable variable three way valve as defined in claim 1. In addition, when killing the formation pressure by injecting heavy fluid in the annulus via bypass conduit B, the pump 1 is no longer be in fluid communication with the discharge conduit 11 via a three way valve and the bypass conduit B, because the conduit 11 is disposed above the then closed BOP.

The skilled person starting from D2 and using common general knowledge gains no motivation, at least for the reasons already given above when starting from D1, to apply the distinguishing features

Thus, the claimed invention involves an inventive step over the conventional drilling system of D2.

14. The above reasoning applies to the subject-matter of independent method claim 4 of auxiliary request 4 as well as that of the dependent claims of this request.

15. The Board comes to the conclusion that the claims of auxiliary request 4 meet the requirements of the EPC.

16. The description is not yet adapted to the wording of these amended claims. The Board exercises its discretion under Article 111(1) EPC to remit the case to the Opposition Division in order for the description to be adapted to the claims.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent
   - on the basis of claims 1 to 5 of auxiliary request 4 filed during the oral proceedings before the Board,
   - with a description to be adapted thereto, and
   - with the drawings of the patent specification.

The Registrar: The Chairman:

C. Spira G. Ashley

Decision electronically authenticated