The opinion in support of the decision being entered today was not written
for publication and is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte L. DONALD MAUS, TORNEY M. VAN ACKER and MARK E. EHRHARDT

Appeal No. 2002-2203
Application No. 09/584,526

ON BRIEF

Before ABRAMS, STAAB and BAHR, Administrative Patent Judges.
BAHR, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 12 and 13. Claims 2-11, 19-30 and 33[1] stand allowed and claim 14 stands objected to as depending from a rejected claim. No other claims are pending in this application.

We AFFIRM-IN-PART.

[1] Claim 33 was amended and claims 15-18, 31 and 32 were canceled subsequent to the final rejection (see Paper Nos. 8 and 9).

BACKGROUND

The appellants' invention relates to a method for controlling the riser base pressure in an offshore well and detecting well control problems, such as "kicks," a condition in which riser base pressure is not sufficient to prevent the influx of formation fluids into the wellbore, or "lost circulation," a condition in which the riser base pressure exceeds the natural fracture pressure of the gradient, thereby possibly leading to a blowout situation (specification, page 1). The objective of appellants' method is to maintain the hydrostatic pressure of the drilling fluid adjacent an exposed formation above the formation's pore pressure but below the formation's fracture pressure. A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The examiner relied upon the following prior art references in rejecting the appealed claims:

Dower	3,470,972	Oct. 7, 1969
Bruce et al. (Bruce)	3,815,673	Jun. 11, 1974
Calcar et al. (Calcar)	5,006,845	Apr. 9, 1991

Maus et al. (Maus), "Instrumentation Requirements for Kick Detection in Deep Water," August 1979.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bruce in view of Dower.

Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bruce in view of Calcar.

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bruce in view of Calcar and Maus.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer (Paper No. 13) for the examiner's complete reasoning in support of the rejections and to the brief and reply brief (Paper Nos. 12 and 15) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

We turn first to the rejection of claim 1 as being unpatentable over Bruce in view of Dower. Bruce teaches that proper control of offshore wells requires that the riser base pressure (the hydrostatic pressure exerted on the subsurface formation) be kept at a sufficient level to overcome formation pressure without exceeding the natural fracture gradient of the formation (column 1, lines 32-41). With this in mind, Bruce discloses a method of pressure control comprising monitoring the riser base pressure and adjusting the rate of lift gas injection into the riser to control the density of the fluid in the riser to thereby adjust the riser base pressure. Bruce does not disclose using a

throttling device at or near the top of the riser to adjust the mass flow rate out of the top of the riser and the riser surface pressure to compensate for changes in the riser base pressure, as called for in claim 1.

Dower discloses using a throttling device (casing pressure regulator 21) near the top of the riser to control the flow of the return drilling fluid to thereby impose a back pressure on the drilling fluid to reduce kicks. Dower, however, monitors riser surface pressure using pressure gage 22 and adjusts the casing pressure regulator 21 in response thereto.

We agree with the examiner that the combined teachings of Bruce and Dower are sufficient to suggest use of a throttling device at or near the surface of Bruce's riser to adjust the mass flow rate out of the top of the riser and hence the riser surface pressure. Dower, however, would have suggested adjustment of the throttling device to compensate for changes in the riser surface pressure, not changes in the riser base pressure, as called for in appellants' claim 1. Thus, combination of the applied references would not yield the invention recited in claim 1. It therefore follows that we cannot sustain the rejection of claim 1.[2]

We turn next to the rejection of claim 12 as being unpatentable over Bruce in view of Calcar. Calcar discloses a method of detecting kicks comprising predicting the

[2] It is elementary that to support an obviousness rejection, all of the claim limitations must be taught or suggested by the prior art applied (see In re Royka, 490 F.2d 981, 984-85, 180 USPQ 580, 582-83 (CCPA 1974)) and that all words in a claim must be considered in judging the patentability of that claim against the prior art (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)).

density of the mud in the riser at a point just above the blowout preventer, locally measuring the density of the mud and comparing the predicted and measured density values. If gas is present in the mud, thereby indicating a "gas kick," the measured density will be lower than the predicted value. Note the paragraph bridging columns 3 and 4. While Calcar focuses primarily on "kick" detection, Calcar also points out (column 4, lines 8-10) that, in addition to gas kicks, "lost circulation conditions can be determined using this invention."

It is our opinion that the combined teachings of Bruce and Calcar are sufficient to have suggested the subject matter of claim 12. Specifically, the combined teachings of Bruce of adjusting lift gas flow rate to control the riser base pressure and of Calcar of comparing measured riser mud density to a predicted density as an early indicator of a kick or lost circulation situation would have suggested to one of ordinary skill in the art at the time of appellants' invention a method including predicting riser fluid density, measuring the actual riser fluid density, comparing the predicted and measured values to determine if either a kick or lost circulation situation exists, as taught by Calcar, and increasing the lift gas flow rate, as taught by Bruce, if a lost circulation situation is detected.

Appellants argue that the examiner's combination of Bruce and Calcar is improper because neither reference indicates a recognition that decreasing the rate of injection of lift gas cannot provide sufficient control with regard to preventing the influx

of formation fluids (brief, page 12). While appellants may be correct that neither reference recognizes this fact, as long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor. See In re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); In re Dillon, 919 F.2d 688, 693, 16 USPQ2d 1897, 1901 (Fed. Cir. 1990), (en banc), cert. denied, 500 U.S. 904 (1991) and In re Kronig, 539 F.2d 1300, 1304, 190 USPQ 425, 427-428 (CCPA 1976). Calcar discloses a method of detecting "kick" or "lost circulation" conditions but does not specify any means to correct or compensate for such conditions. Bruce teaches adjustment of lift gas flow rate as a means to control riser base pressure so as to prevent lost circulation conditions. It thus would have been obvious to adjust lift gas flow rate as taught by Bruce with the method of Calcar to correct for a lost circulation condition once it has been identified.

Appellants' argument on page 13 of the brief that Bruce does not teach or suggest the method of injecting boost mud to prevent an influx of formation fluids is not commensurate in scope with the language of claim 12. Claim 12 does not require adjustment of both lift gas flow rate and boost mud flow rate. Rather, claim 12 recites a step of adjusting "one or both" of the boost mud flow rate and lift gas flow rate. This limitation is met by the adjustment of lift gas flow rate only, which appellants concede is taught by Bruce.

For the foregoing reasons, we shall sustain the examiner's rejection of claim 12. In that appellant has not offered a separate argument as to the patentability of claim 13 but simply relies on the above arguments as to the combination of Bruce and Calcar which we have not found persuasive, it follows that we shall also sustain the rejection of claim 13 as being unpatentable over Bruce in view of Calcar and Maus. See In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978).

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 12 and 13 under 35 U.S.C. § 103(a) is affirmed as to claims 12 and 13 and reversed as to claim 1.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

NEAL E. ABRAMS Administrative Patent Judge	)
LAWRENCE J. STAAB Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
JENNIFER D. BAHR Administrative Patent Judge	)

JDB:svt

APPENDIX

1. A method for controlling the pressure at the base of a gas-lifted riser during drillling of an offshore well, said method comprising the steps of:

determining the rider base pressure (p_{rb}); and

using a throttling device located at or near the top of said riser to adjust the mass flow rate out of the top of said riser (m_o) and the riser surface pressure (p_{rs}) to compensate for changes in the riser base pressure (p_{rb}).

12. A method for controlling the pressure at the base of a gas-lifted riser during drilling of an offshore well, said method comprising the steps of:

determining a setpoint value for riser mix density (p_{mix});

determining the actual value of riser mix density (p_{mix});

adjusting one or both of the boost mud flow rate (q_b) and the lift gas flow rate (q_b) to substantially minimize the difference between said setpoint value and said actual value.

13. The method of claim 12, wherein said method further comprises the steps of:

determining well return flow rate (q_w) and drill string flow rate (q_c); and

comparing the drill string flow rate (q_c) to the well return flow rate (q_w) to detect well control problems such as kickers or lost circulation.

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