

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

OMRON OILFIELD & MARINE, INC.
Petitioner

v.

MD/TOTCO, A DIVISION OF VARCO, L.P.
Patent Owner

Case IPR2013-00265
Patent 5,474,142

Before THOMAS L. GIANNETTI, BRYAN F. MOORE, and
MICHAEL J. FITZPATRICK, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

A. *Background*

Omron Oilfield & Marine, Inc. (“Petitioner”) requests an *inter partes* review of claims 1, 11, and 14 of U.S. Patent 5,474,142 (“the ’142 Patent”), pursuant to 35 U.S.C. §§ 311 *et seq.* Paper 1 (Pet.). The patent owner, MD/Totco, a division of Varco, L.P. (“Patent Owner”), timely filed a preliminary response. Paper 10 (“Prelim. Resp.”).

The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides as follows:

THRESHOLD – The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition filed under section 311 and any response filed under section 313 shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.

Petitioner contends that the challenged claims are unpatentable under 35 U.S.C. §§ 102 and/or 103 on the following specific grounds¹:

Reference(s)	Basis	Claims challenged
Lindstad U.S. Patent 3,613,805 (Ex. 1013)	§ 102	1, 11, and 14
Warren U.S. Patent 4,854,397 (Ex. 1018)	§ 102	1, 11, and 14
Miller U.S. Patent 3,463,252 (Ex. 1022)	§ 102	1 and 11
Lindstad and Crake U.S. Patent 2,455,917 (Ex. 1015)	§ 103	1, 11, and 14
Lindstad and Brooks U.S. Patent 3,324,717 (Ex. 1017)	§ 103	1, 11, and 14

¹ Petitioner supports its challenge with a declaration by Mitchell Pinckard (Ex. 1012) (“Pinckard Decl.”).

Reference(s)	Basis	Claims challenged
Warren and Brooks	§ 103	1, 11, and 14
Miller and Crake	§ 103	14
Le Compte U.S. Patent 1,891,329 (Ex. 1023) and Crake	§ 103	14

For the reasons given below, we deny the petition and decline to institute an *inter partes* review of the '142 Patent.

B. *Related Proceedings*

The '142 Patent has been asserted in the following actions: *National Oilwell Varco, LP v. Omron Oilfield & Marine, Inc.* (W.D. Tex. Case No. 12-cv-00773) (filed 8/23/12, still pending); *National Oilwell Varco, LP v. Pason Sys. USA, Corporation* (W.D. Tex. Case No. 12-cv-01113) (filed 12/7/12, still pending); *National Oilwell Varco, LP v. Pason Sys. USA Corp.* (D. Colo. Case No. 03-cv-02579; Fed. Cir. Case Nos. 2012-1551, 2012-1587) (appeal pending) (“the Colorado litigation”); *Bowden v. Tech Power Controls* (S.D. Tex. Case No. 00-cv-00271) (dismissed); *Bowden v. Martin-Decker Totco* (W.D. Tex. Case No. 99-cv-00607) (dismissed); *Varco LP v. IDM Equip. Co. Inc.* (S.D. Tex. Case No. 05-cv-00767) (dismissed); *National Oilwell Varco, LP v. Auto-Dril, Inc.* (E.D. Tex. Case No. 09-cv-00085) (dismissed); and *Bowden v. Dick’s Oilfield* (W.D. Tex Case No. 5:98-cv-01174-FB). Pet. 1-2; Prelim. Resp. 1-2.

C. *'142 Patent*

The '142 Patent (Ex. 1001) is titled “Automatic Drilling System,” and relates generally to an automatic drilling system that regulates the release of the drill string of a drilling rig in response to, among other things, drilling fluid

pressure and bit weight. '142 Patent Abstract. Figure 1 of the '142 Patent depicts the basic components of a drilling rig.

Figure 1 is reproduced below:

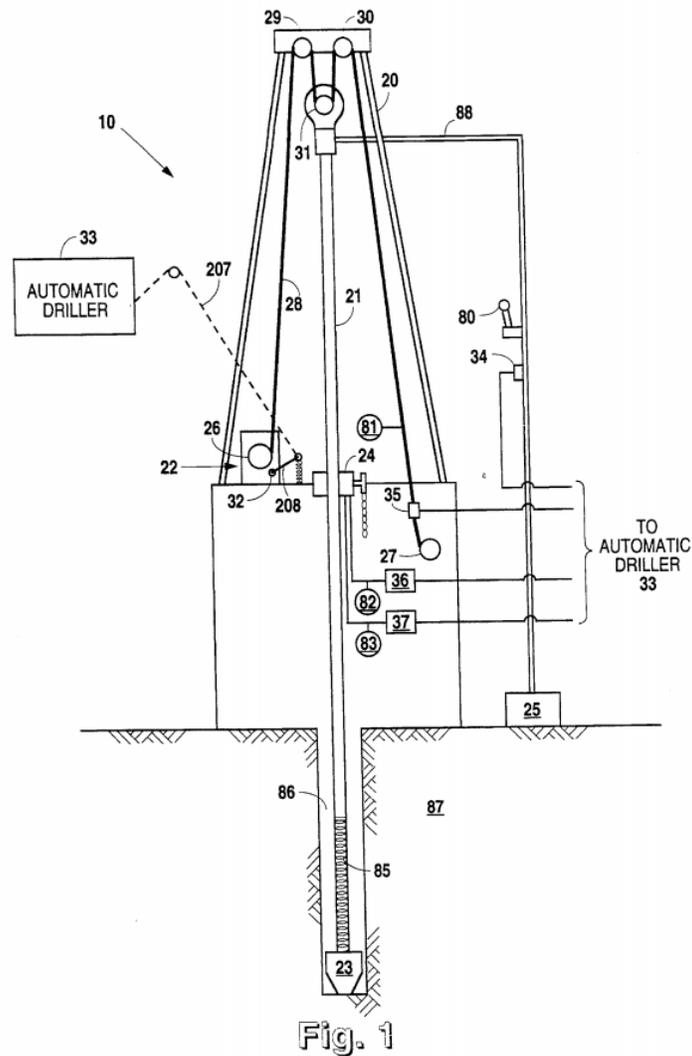


Figure 1 depicts a drilling rig with an automatic driller. Ex. 1001, col. 3, ll. 53-64. Drill string 21 extends into the borehole 86 utilizing drawworks 22. *Id.*, col. 3, ll. 55-56. Brake 32 controls the release of cable 28 to adjust the vertical position of drill string 21. *Id.*, col. 3, ll. 61-63. Drill bit 23 is located at the end of drill string 21. *Id.*, col. 3, ll. 65-66. Rotary table 24 drives drill string 21 to rotate drill bit 23 to achieve the drilling of the borehole. *Id.* Drilling fluid (i.e., mud) is pumped into

drill string 21 and “drives mud motor 85, provides pressure within drill bit 23 to prevent blowouts, and carries drilled formation materials from borehole 86.” *Id.*, col. 4, ll. 10-25. The object of the invention is to operate not only through bit weight measurements, “but also operate[] in response to other measurements so that directional or horizontal boreholes may be drilled,” as opposed to strictly vertical boreholes. *Id.*, col. 1, ll. 51-54.

Claims 1, 11, and 14, at issue in this petition, are reproduced below.

1. An automatic drilling system for automatically regulating the release of the drill string of a drilling rig having a drill bit in association therewith during the drilling of a borehole, comprising:

a drilling fluid pressure sensor; and

a drilling fluid pressure regulator coupled to said drilling fluid pressure sensor, said drilling fluid pressure regulator measuring changes in drilling fluid pressure and outputting a signal representing those changes;

a relay coupled to said drilling fluid pressure regulator, said relay responsive to the output signal of said drilling fluid pressure regulator to supply a drill string control signal at an output thereof; and

a drill string controller coupled to said relay wherein a decrease in drilling fluid pressure results in said relay supplying a drill string control signal that operates said drill string controller to effect an increase in the rate of release of said drill string with direct effect at the drill bit associated with the drill string and an increase in drilling fluid pressure results in said relay supplying a drill string control signal that operates said drill string controller to effect a decrease in the rate of release of said drill string with direct effect at the drill bit associated with the drill string.

11. A method for automatically regulating the release of the drill string of a drilling rig drill having a drill bit in association therewith, comprising the steps of:

measuring drilling fluid pressure;

producing a signal in response to changes in drilling fluid pressure, said signal representing the changes in drilling fluid pressure;

rel[a]ying said signal to a drill string controller; and

controlling said drill string controller to increase the rate of release of said drill string with direct effect at the drill bit associated with the drill string when said signal represents a decrease in drilling fluid pressure and to decrease the rate of release of said drill string with direct effect at the drill bit associated with the drill string when said signal represents an increase in drilling fluid pressure.

14. A method for automatically regulating the release of the drill string of a drilling rig drill, comprising the steps of:

measuring drilling fluid pressure and bit weight;

producing a first signal in response to changes in drilling fluid pressure, said first signal representing the changes in drilling fluid pressure;

producing a second signal in response to changes in bit weight, said second signal representing the changes in bit weight;

selecting any one of said first signal, said second signal, and both said first and said second signals to control the release of said drill string; and

relaying said selected signal or signals to a drill string controller which regulates the release said drill string in response to said selected signal or signals.

E. *Claim Construction*

Although neither party mentions this fact, the '142 Patent has expired. The Board's review of the claims of an expired patent is similar to that of a district court's review. *In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012). In *Phillips v. AWH Corp.*, the court set forth the principle that words of a claim "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention, construing to preserve validity in case of ambiguity. 415 F.3d 1303, 1312, 1327 (Fed. Cir. 2005). Here, this principle is applicable because the expired claims are not subject to amendment. *See In re Yamamoto*, 740 F.2d 1569, 1571-72 (Fed. Cir. 1984).

1. "release of the drill string"

Petitioner asserts that "release of the drill string" should be construed as "downward movement of the drill string into the borehole." Pet. 12 (brackets in original and internal quotation marks omitted). Petitioner argues that the patent does not define this term. *Id.* The specification discloses releasing the drill string by releasing a cable ('142 Patent, col. 3, ll. 61-63), resulting in the drill string being pulled down by gravity. Petitioner, without further explanation, asserts, however, that the "specification does not indicate an exclusion of other methods of downward movement [of the drill string], such as use of motor to apply a downward force." Pet. 12. Rather than stating what the specification does not exclude – because the list of things not expressly excluded by the Specification actually is infinite in length, in this context, to support its particular interpretation, the Petitioner *would have needed to explain* how it is that the ordinary meaning of "release" comes to include the downward force applied by a motor, which downward force is nowhere mentioned in the Specification.

According to Patent Owner, “[r]elease’ means ‘slacking’ of or ‘letting go’ of the drill string.” Prelim. Resp. 9. Consistent with the Patent Owner’s construction, we find that the ordinary meaning of release in the context of the invention is to “set free from restraint.”² This meaning is also consistent with the specification, which discloses a mechanism whereby cable 28 is “released” from drum 26 and controlled by brake 32 to adjust the vertical position of drill string 21. ’142 Patent, col. 3, ll. 61-63. Thus, for purposes of this decision, we interpret the release of the drill string limitation to require setting free of the drill string rather than a driving down of the drill string.

2. “bit weight”

Petitioner asserts that “bit weight” should be construed as “the amount of weight or force that the drill string applies to the drill bit.” Pet. 11 (internal quotation marks omitted). Petitioner relies on “A Dictionary for the Oil and Gas Industry” published by the University of Texas at Austin Petroleum Extension Service (“PETEX”) in 2005 (“2005 PETEX Dictionary”) (Ex. 1010), which recites a similar definition of bit weight. *Id.* This definition is consistent with the specification. The specification states: “a Martin-Decker anchor weight indicator implements [a] *bit weight* sensor 35 to provide the hydraulic signal to automatic driller 33 representing the weight drill string 21 applies to drill bit 23.” ’142 Patent, col. 6, ll. 26-30 (emphasis added).

Patent Owner asserts that “weight” implies force due only to gravity. Prelim. Resp. 7-8. However, as noted above, the specification uses a weight sensor to measure the weight of the drill string. Because the drill string is not weighed independent of the drill rig, the weight the “drill string applies,” as measured by

² *Random House Webster’s College Dictionary* (2nd ed. 1999); Ex. 2006, Websters.com definitions of “release.”

the sensor, will be the entire downward force exerted by the drill string including any external downward force. Thus, for purposes of this decision, we interpret bit weight as “the amount of weight or force that the drill string applies to the drill bit.”

3. “drill string controller”

Petitioner does not construe this term. Patent Owner construes this term to mean “a device that changes the rate of release of the drill string in response to signals from the relay(s).” Prelim. Resp. 8. This construction is consistent with the claim language, and, therefore, we adopt this construction.

The remaining terms for which Petitioner and Patent Owner request construction are not necessary to our decision on this petition, and, thus, we decline to discuss those terms.

II. ANALYSIS

A. Overview

For the reasons described below, we decline to institute an *inter partes* review of claims 1, 11, and 14 of the ’142 Patent on any of the asserted grounds.

B. Lindstad

1. Anticipation

Petitioner asserts that claims 1, 11, and 14 are anticipated by Lindstad (Ex. 1013). Lindstad discloses a blasthole drilling system that automatically regulates the downward drive of the drill string in response to changes in drilling fluid pressure. Col 2, ll. 6-35; col. 2, ll. 55-65; col 4, l. 5 – col. 5, ll. 8; claims 4-5. Lindstad discloses that the drill string is controlled by a downfeed control that was disclosed in a then-co-pending application filed by the same assignee (with a

common inventor), Application Ser. No. 04/854,871, which issued as U.S. Patent No. 3,581,830 to Stoner (“Stoner”) (Ex. 1014). Lindstad, col. 3, ll. 45-53.

Patent Owner argues, among other things, that Lindstad fails to disclose releasing the drill string as required by the claims. Prelim. Resp. 18-19. We agree with Patent Owner.

Claim 1 requires automatically regulating the release of the drill string. Petitioner argues that Lindstad meets this limitation by controlling the downward movement of the drill string. Pet. 17. Patent Owner asserts that Lindstad’s use of a downfeed motor is not a release of the drill string. Prelim. Resp. 22-23. As noted above, we construe releasing the drill string to require “setting free” of the drill string, rather than the use of a motor to drive the drill string down. Therefore, Lindstad does not release the drill string as required by claim 1.

For the forgoing reasons, Petitioner has not demonstrated a reasonable likelihood that it will prevail in establishing that claim 1 is anticipated by Lindstad. Claims 11 and 14 both contain recitations of releasing the drill string. Thus, for the same reasons, Petitioner has not demonstrated a reasonable likelihood that it will prevail in establishing that claims 11 and 14 are anticipated by Lindstad.

2. Obviousness over Lindstad and Crake

Petitioner asserts that claims 1, 11, and 14 would have been obvious over the combination of Lindstad and Crake (Ex. 1015). Pet. 23-31. Crake discloses a drilling system that automatically regulates the release of the drill string in response to changes in two drilling parameters: bit weight and the rate of penetration of the drill bit. Ex. 1015, col. 1, ll. 1-6.

Patent Owner contends that Petitioner’s alleged grounds of unpatentability based on obviousness are cumulative of other references considered during reexamination of the ’142 Patent. Prelim. Resp. 42-46. Specifically, Patent Owner

argues that Crake is cumulative of, among others, the Bowden '359 reference (US Patent 3,265,359) (Ex. 2010). *Id.* at 52-53. Bowden '359, like Crake, discloses an automatic driller that controls the rate at which the drill string is released in response to changes in the weight on the drill bit. Bowden '359, col. 3, ll. 44-55.

The patentability of the then-existing claims of the '142 Patent was confirmed in a first reexamination. Ex. 2030 (*Ex Parte* Reexamination Certificate No. US 5,474,142 C1). Claims 1 and 11 were amended and the patentability of claims 1, 11, and 14 was confirmed during a second reexamination of the '142 Patent. Ex. 1007 (*Ex Parte* Reexamination Certificate No. US 5,474,142 C2). In a Reexamination Office Action, from the second reexamination, dated December 14, 2009 (Ex. 1020), the Examiner found that “[c]laims 1, 5 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowden '359 (US 3,265,359) in view of Dillon et al. (US 2,005,889) and Hobhouse (US 3,550,697).” Ex. 1020, p. 6 (Office Action in 2nd Reexamination (Control No. 90/010,615). The Examiner further found that

[o]ne of ordinary skill in the art would know that excess drilling fluid pressure is undesirable and, therefore, would apply the fluid pressure sensor taught by Dillon and Hobhouse to the system of Bowden '359 in order to bring about a decrease in the rate of release of the drill string in response to an undesirable build up in drilling fluid pressure.

Id. at 8.

Based on the facts stated above, Patent Owner argues that the petition presents identical prior art disclosures and the same or substantially the same arguments as those that were presented previously to the Office. Prelim. Resp. 44. Even if true, that does not mean the petition must be denied. 35 U.S.C. § 325(d).

As noted above, Lindstad does not release the drill string as required by the claims. However, Crake releases that drill string in the same manner as the '142 Patent. Crake discloses the use of a weight controller 31 similar to the regulators of the '142 Patent. Ex. 1015, Figs. 1-3; col. 3, ll. 22-75. The weight controller 31 measures bit weight using a weight-indicating device 36. *Id.*, col. 3, ll. 36-51. If the bit weight gets too high, the weight controller causes fluid motor 28 to apply brake 19 to slow down the release of the drill string. *Id.*, col. 5, l. 62 – col. 6, l. 9. If the bit weight gets too low, the reverse happens. *Id.*, col. 6, l. 10-18. Thus, Crake releases the drill string as required by the challenged claims. We are persuaded that the combination of Lindstad and Crake teaches all elements of claims 1, 11, and 14.

We agree with Petitioner that a person of ordinary skill in the art would know that excess drilling fluid pressure is undesirable (Ex. 1012 ¶ 38) and, therefore, would apply the fluid pressure sensor taught by Lindstad to the system of Crake in order to bring about a decrease in the rate of release of the drill spring in response to an undesirable build up in drilling fluid pressure. Pet. 25. Thus, the rationale offered by Petitioner for combining Lindstad and Crake, taken by themselves, without consideration to other parts of the obviousness analysis, suffice as articulated reasons with rational underpinnings to justify the legal conclusion of obviousness.

3. Secondary Considerations of Non-Obviousness

As noted above, the Examiner found a prima facie case of obviousness existed during the second Reexamination. Ex. 1020, p. 6. The Examiner determined that secondary considerations of obviousness overcame the prima facie case. *Id.* We have reviewed the examiner's findings and the supporting evidence,

and we agree that the patent owner's evidence of secondary considerations is persuasive.

Secondary considerations, also known as objective evidence, may weigh in favor of or against a finding of obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1376-79 (Fed. Cir. 2000). “[E]vidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not.” *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012) (quoting *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983)) (internal quotation marks omitted).

The secondary considerations before us include commercial success, long-felt but unsolved needs, failure of others, and unexpected results. *Graham*, 383 U.S. at 17; *see also CFMT, Inc. v. Yieldup Int'l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 662-63 (Fed. Cir. 2000).

i. Commercial Success

There is a presumption that the patented invention is commercially successful “when a patentee can demonstrate commercial success, usually shown by significant sales in a relevant market, and that the successful product is the invention disclosed and claimed in the patent.” *Ecolochem, Inc.*, 227 F.3d at 1377 (quoting *J.T. Eaton & Co. v. Atlantic Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed. Cir. 1997)).

In order to establish commercial success, there must be some “nexus” between the “merits of the claimed invention” and the “commercial success of [the] product.” *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1027 (Fed. Cir. 1985), *overruled on other grounds by Midwest Indus., Inc. v. Karavan*

Trailers, Inc., 175 F.3d 1356 (Fed. Cir. 1999) (en banc); *see also J.T. Eaton & Co.*, 106 F.3d at 1571. A prima facie case of nexus is established when the patentee shows both that there is commercial success, and that the product that is commercially successful is the invention disclosed and claimed in the patent. *See In re GPAC Inc.*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). Once the patentee demonstrates a prima facie nexus, the burden of coming forward with evidence in rebuttal shifts to the challenger. *See Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1393 (Fed. Cir. 1988).

a. Nexus

Advertising the benefits of the claimed invention links the invention to commercial success. *Cf. Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579 (Fed. Cir. 1997) (“The prominence of the patented technology in . . . advertising creates an inference that links the . . . invention to this success.”); *see also Wm. Wrigley Jr. Co. v. Cadbury Adams USA LLC*, 683 F.3d 1356, 1369 (Fed. Cir. 2012). Patent Owner presents a brochure that touts the inventive features of automatic control and using weight on bit along with drilling pressure. Ex. 2020, 109.

Testimony that a product was successful due to the patented features supports a finding of nexus. *See Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013). Patent Owner also submitted trial testimony from the Colorado litigation of its expert, Mr. Prejean,. The testimony states “we had our field guys go out and tell the customer try it and we’ll demonstrate it for you; if you like it you keep it. And they never would rig it down. We had a 99 percent success rate.” Ex. 2020, 57. The testimony also states “the features of this invention, the ability to use pump pressure was critical [to driving demand for the product].” *Id.* Based on the record

cited above, we determine that Patent Owner has presented sufficient evidence to establish a prima facie case of nexus.

b. Success of the Invention

Patent Owner presents evidence that the Wildcat system was successful, growing from a total of 110 units built over a five-year span from 1994 -1999 to building over a hundred units per year starting in 2000. Ex. 2020, 61-62. Patent Owner also presents evidence that in one type of system used for land rigs, which has been adjudged to infringe the '142 Patent (Ex. 2020, 22-23 (Response to Reexamination Office Action)), grew from being installed on 35% of Canadian and 6% of U.S. land rigs operating with a Pason EDR system in 2004 to being installed on 55% of Canadian and 50% of U.S. land rigs operating with a Pason EDR system in 2005. Ex. 2020, 65-67; *see also Alcon Research, Ltd. v. Apotex Inc.*, 687 F.3d 1362, 1371 (Fed. Cir. 2012) (holding that Alcon's drug Patanol® was a commercial success "achieving nearly 70% market share within two years of its launch, accounting for nearly \$2 billion in sales within ten years").

Petitioner does not rebut any of this evidence. This lack of a rebuttal serves to bolster the case for commercial success. *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1310-11 (Fed. Cir. 2010). Based on the record cited above, we determine that Patent Owner has presented sufficient evidence to establish that the invention of the '142 Patent was a significant commercial success.

iii. Long-Felt Need, Prior Failure, and Unexpected Results

Patent Owner provides no evidence to explain how long a need for the invention was felt, or when such a need first arose. *See Tex. Instruments v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993) ("[L]ong-felt need is analyzed as of the date of an articulated identified problem and evidence of efforts to solve that problem."). Patent Owner does not claim that other inventors

attempted, but failed, to solve the problems addressed by the '142 Patent. Additionally, Patent Owner does not claim that the invention of '142 Patent was surprising or unexpected. Thus, there is insufficient evidence that the invention of the '142 Patent satisfied long-felt but unsolved needs, had unexpected results, or that others failed to solve the problem of the invention.

vi. Summary

Evidence of secondary considerations, taken as a whole, supports our decision that the Petitioner has not demonstrated a reasonable likelihood that the invention of claims 1, 11, and 14 of the '142 Patent is obvious.

Petitioner does not challenge the merits of Patent Owner's secondary consideration evidence. Rather, Petitioner argues that "[t]he Patent Owner's evidence of secondary considerations will be unable to overcome the strong showing of obviousness set forth in this Petition. *Sibia Neurosciences v. Cadus Pharmaceutical*, 225 F.3d 1349, 1358 (Fed. Cir. 2000) (evidence of secondary considerations does not overcome a strong case of obviousness)." Pet. 10. We disagree. We find that the '142 Patent had significant commercial success, which, here, overcomes the prima facie case of obviousness.

For these reasons, we determine that Petitioner has not demonstrated a reasonable likelihood that it will prevail in challenging claims 1, 11, and 14 as unpatentable over Lindstad and Crake.

4. Obviousness over Lindstad and Brooks

Petitioner asserts that claims 1, 11, and 14 would have been obvious over the combination of Lindstad and Brooks. Pet. 31-38. Brooks (Ex. 1017) discloses a drilling rig with a drilling information gathering system for detecting various drilling parameters, including weight on bit and drilling fluid pressure. Ex. 1017, col. 3, ll. 23-41. In addition, Brooks discloses that the release of the drill string can

be regulated automatically in response to changes in bit weight. *Id.* at col. 9, l. 68 - col. 10, l. 6.

Petitioner's ground of unpatenability based on the combination of Lindstad and Brooks is redundant of the previously-discussed ground of unpatenability based on the combination of Lindstad and Crake. Accordingly, for the same reasons set forth above with respect to Lindstad and Crake, we also deny the petition as to this ground.

C. Warren

1. Anticipation

Petitioner asserts that claims 1, 11, and 14 are anticipated by Warren (Ex. 1018). Pet. 38-46. Warren discloses a system for directional drilling. *See generally* Ex.1018. In conjunction with that system, Warren discloses a system that adjusts automatically the draw works 17 by a preselected amount or increment in response to changes in various drilling parameters, including fluid pressure and weight on bit. *Id.* at col. 3, ll. 1-16; col. 4, ll. 13-38.

Patent Owner argues, among other things, that Warren fails to disclose a drill string controller that effects an increase in the rate of release of the drill string. Prelim. Resp. 27-29. We agree with Patent Owner.

Claim 1 requires regulating automatically the release of the drill string. Petitioner argues that Warren discloses that the controls of the draw works are operatively connected to the computer. Pet. 41. However, this operable connection is represented only as an arrow between the computer and the draw works. Ex. 1018, col. 4, ll. 3-5; Fig. 1. Petitioner asserts that the computer causes the draw works to be regulated in response to changes in the parameters measured by the measurement-while-drilling (MWD) tool. Pet. 42-43. Petitioner, however,

does not explain how the generic computer disclosed in Warren causes the draw works to be regulated.

Petitioner further asserts that Warren necessarily teaches that an increase in the fluid pressure above the preselected limit would cause the draw works to decrease the rate of release of the drill string and vice versa. Pet. 17. Petitioner, however, does not explain what teaching in Warren would lead one of ordinary skill in the art to decrease the rate of release of the drill string in response to fluid pressure. In particular, Petitioner does not explain why it would be inherent, based on Warren's teaching of measuring fluid pressure and "cause[ing] the draw works . . . to be adjusted by a preselected amount or increment" (Ex. 1018, col. 4, ll. 33-35), to decrease the rate of release of the drill string.

Patent Owner asserts that Warren does not disclose anything for controlling the draw works. Prelim. Resp. 27-29. We agree. Warren lacks a description of how a generic computer "controls" a generic draw works. *See generally* Ex. 1018.

For the forgoing reasons, Petitioner has not demonstrated a reasonable likelihood that it will prevail in establishing that claim 1 is anticipated by Warren. Claims 11 and 14 both contain limitations to a drill string controller. Thus, for the same reasons, Petitioner has not demonstrated a reasonable likelihood that it would prevail in establishing that claims 11 and 14 are anticipated by Warren.

2. Obviousness over Warren and Brooks

Petitioner asserts that claims 1, 11, and 14 would have been obvious over the combination of Warren and Brooks. Pet. 46-47.

Petitioner's ground of unpatenability based on the combination of Warren and Brooks is redundant of the previously-discussed ground of unpatenability based on the combination of Lindstad and Crake. Accordingly, for the same

reasons set forth above with respect to Lindstad and Crake, we also deny the petition as to this ground.

D. Miller

1. Anticipation

Petitioner asserts that claims 1 and 11 are anticipated by Miller (Ex. 1022). Pet. 47-48. Miller discloses a drilling system that automatically regulates the downward movement of the drill string in response to changes in drilling fluid pressure. Ex. 1022, col. 1, ll. 25-27. Miller controls the vertical movement of the upper drill string using a vertical positioning means above a “telescopic choke”/“telescopic joint” (Ex. 1022, Fig. 5 (element 206), Figs. 1-4 and 12-17) that separates the upper portion of the drill string from the lower portion of the drill string. *Id.*, col. 6, l. 71 – col. 7, l. 5.

Patent Owner argues, among other things, that Miller fails to disclose “operat[ing] said drill string controller to effect an increase in the rate of release of said drill string with direct effect at the drill bit associated with the drill string,” as required by claim 1. Prelim Resp. 39-42. We agree with Patent Owner.

Petitioner argues that Miller controls the release of the drill string. Pet. 48 and 50. Miller releases the drill string by releasing a cable attached to a rotary drive means 209, which is attached to the drill string. Ex. 1022, col. 7, ll. 15-35. Patent Owner asserts that Miller’s use of a telescopic joint separates the upper portion of the drill string from the lower portion preventing any direct effect from the draw works on the lower portion of the drill string. Prelim. Resp. 39-42.

Petitioner argues when the Miller drill bit is “off bottom,” the weight of the drill string is not applied to the drill bit. Instead, at that moment in time, the drill string and the drill bit are suspended and both will “lower until the drill bit comes into contact with the bottom of the borehole.” Pet. 52-53. However, Petitioner’s

expert does not cite to anything in Miller to support his finding. Ex. 1012 ¶ 85.

In fact, such a circumstance is not contemplated by Miller. Miller recites:

[T]he downward force on the drill bit will remain substantially *constant*, consisting of the weight of the drill string *below* the telescopic joint plus the weight of the lower half of the telescopic joint plus the force of the drilling fluid acting to extend the telescopic joint.

Ex. 1022, col. 2, ll. 15-20 (emphasis added). Miller recites further:

The telescopic choke 206 is inserted above the hammer and whatever joints of drill steel collars, if any, are desired, and below the lower end of the drill pipe, so that none of the weight of the drill pipe is imposed on the bit

Ex. 1022, col. 7, ll. 1-5.

Petitioner's expert testimony contradicts the disclosure from Miller itself. We, therefore, give it minimal weight. *See MEHL/Biophile Int'l Corp. v. Milgraum*, 192 F.3d 1362, 1366-67 (Fed. Cir. 1999). Additionally, Petitioner does not point to anywhere in Miller that describes the control of the drill string when the drill bit is off-bottom. Therefore, Petitioner has not shown that Miller controls the release of the drill string with a direct effect at the drill bit associated with the drill string as required by claim 1.

For the forgoing reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing in establishing that claim 1 is anticipated by Miller. Claim 11 contains limitations to controlling the release of the drill string with a direct effect at the drill bit. Thus, for the same reasons, Petitioner has not demonstrated a reasonable likelihood of prevailing in establishing that claim 11 is anticipated by Miller.

2. Obviousness over Miller and Crake

Petitioner asserts that claim 14 would have been obvious over the combination of Miller and Crake. Pet. 47-50, 54, and 55.

The ground of unpatenability based on the combination of Miler and Crake is redundant of the previously-discussed ground of unpatenability based on the combination of Lindstad and Crake. Accordingly, for the same reasons set forth above with respect to Lindstad and Crake, we also deny the petition as to this ground.

E. Obviousness over Le Compte and Crake

Petitioner asserts that claims 14 would have been obvious over the combination of Le Compte (Ex. 1023) and Crake. Pet. 55-60. The ground of unpatenability based on the combination of Le Compte and Crake is redundant of the previously-discussed ground of unpatenability based on the combination of Lindstad and Crake. Accordingly, for the same reasons set forth above with respect to Lindstad and Crake, we also deny the petition as to this ground.

F. Conclusion

Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one of the claims challenged in the petition.

III. ORDER

It is therefore

ORDERED that the Petition is *denied*.

PETITIONER:

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