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Paper 12
Entered: December 10, 2021

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HELMERICH & PAYNE INTERNATIONAL DRILLING COMPANY,
HELMERICH & PAYNE TECHNOLOGIES, LLC, and
MOTIVE DRILLING TECHNOLOGIES, INC.,
Petitioner,

v.

NABORS DRILLING TECHNOLOGIES USA, INC.,
Patent Owner.

IPR2021-01043
Patent 10,672,154 B2

Before KEN B. BARRETT, MATTHEW S. MEYERS, and
SEAN P. O'HANLON, *Administrative Patent Judges.*

MEYERS, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

A. Background and Summary

Helmerich & Payne International Drilling Company, Helmerich & Payne Technologies, LLC, and Motive Drilling Technologies, Inc. (collectively, "Petitioner") filed a Petition to institute an *inter partes* review of claims 1–4, 6, 20–22, 24, 25, 27, and 28 (the "challenged claims") of U.S. Patent 10,672,154 B2 (Ex. 1001, the "'154 patent"). Paper 2 ("Petition" or "Pet."). Nabors Drilling Technologies USA, Inc. ("Patent Owner") filed a Preliminary Response. Paper 8 ("Preliminary Response" or "Prelim. Resp."). With our authorization (Paper 9), Petitioner filed a Reply (Paper 10, "Reply") and Patent Owner filed a Sur-reply (Paper 11, "Sur-reply") to address discretionary denial factors.

An *inter partes* review may not be instituted "unless . . . the information presented in the petition . . . 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." 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the '154 patent. Accordingly, we do not institute an *inter partes* review of the challenged claims.

B. Real Parties-in-Interest

Petitioner identifies itself as the real party-in-interest. Pet. 1. Patent Owner names itself, and Nabors Corporate Services, Inc., as the real parties-in-interest. Paper 6, 2.

C. Related Proceedings

The parties identify, as matters involving or related to the '154 patent, *Nabors Drilling Techs. USA, Inc. v. Helmerich & Payne Int'l Drilling Co. et al.*, Case No. 3:20-CV-03126 (N.D. Tex.). Pet. 2; Paper 6, 2. We also note that there are several related *inter partes* review proceedings: IPR2021-00621, IPR2020-00671, IPR2021-00672, IPR2021-00897, IPR2021-01018, and IPR2021-01044.

D. The '154 Patent

The '154 patent is titled "3D Toolface Wellbore Steering Visualization." Ex. 1001, code (54). The '154 patent describes techniques for "visualizing a downhole environment" in drilling operations, such as "to recover an underground hydrocarbon deposit." *Id.* at 1:6–24. The '154 patent describes that as drilling progresses, deviation from the planned drilling path occurs, so drillers must "direct the drill back to the original path" based on information available to them about the location of the drill and desired location of the drill. *Id.* at 1:63–65.

To provide information necessary to correct the drilling path, the '154 patent describes a human-machine interface ("HMI"), which is to be utilized by a human drilling operator to monitor the "relationship between toolface orientation and quill position." *Id.* at 9:11–16. Figure 5, reproduced below, shows an embodiment of an HMI, the user interface displayed to the operator.

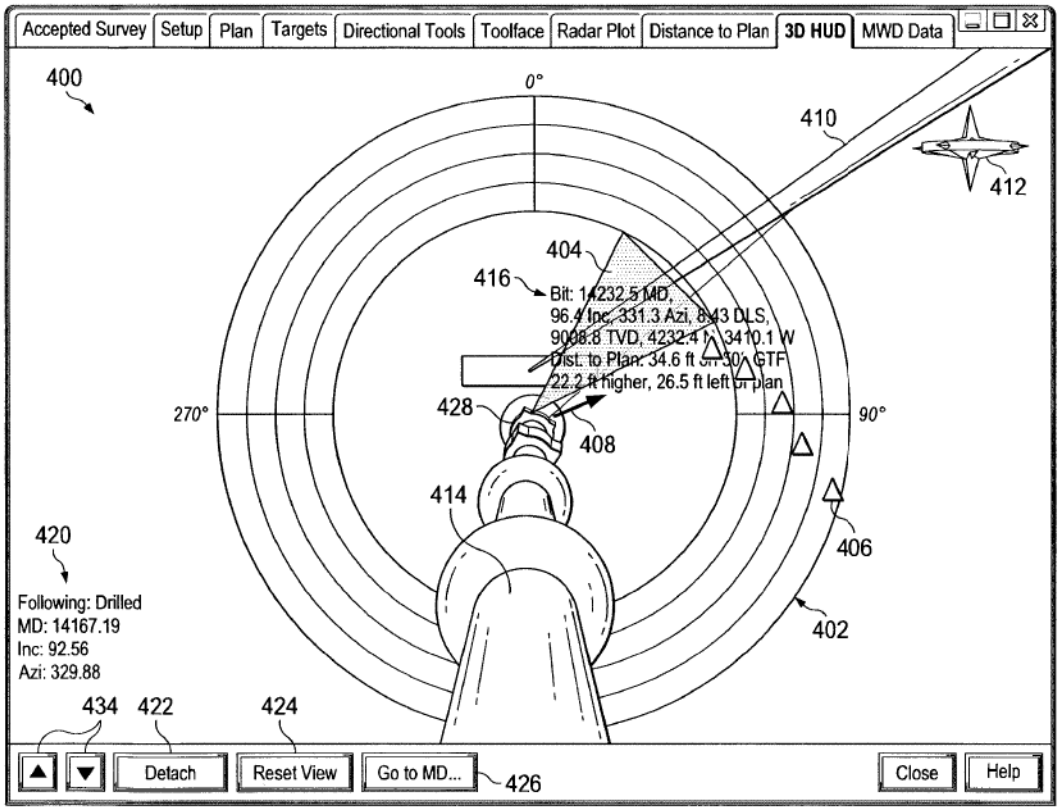


Figure 5 shows three-dimensional visualization HMI 400, with circular grid 402, advisory segment 404, toolface angle symbols 406, "indicator" 408, drill plan 410, drill history 414, and drilling bit 428. Ex. 1001 at 10:51–12:23. "[I]ndicators such as the advisory segment 404 and indicator 408 may be included in the visualizations to indicate a recommended steering path for moving the toolface and thus the drilling motor toward the drilling plan." *Id.* at 13:60–64. Indicator 408 may be depicted as a vector arrow, as in Figures 5 and 6. *Id.* at 11:48–49.

E. Illustrative Claim

Petitioner challenges claims 1–4, 6, 20–22, 24, 25, 27, and 28 of the '154 patent. Pet. 1. Challenged claims 1 and 20 are independent. Claim 1 is reproduced below, with Petitioner's bracketing, labels, and formatting (*see* Ex. 1010).

1. [p] A drilling apparatus comprising:

[a] a drill string comprising a plurality of tubulars and a drill bit;

[b] a top drive unit configured to rotate the drill string;

[c] a first sensor system connected to the drill string and configured to detect one or more measurable parameters of the drill bit;

[d][1] a controller in communication with the first sensor system,

[d][2] wherein the controller is operable to generate a three-dimensional depiction of a location of the drill bit based on the one or more measurable parameters of the drill bit,

[d][3] wherein the controller is further operable to generate a three-dimensional depiction of a drill plan; and

[e] a display device in communication with the controller, the display device configured to display to an operator a visualization of an underground environment from a viewpoint looking down the drill string,

[f] the visualization comprising the three-dimensional depiction of the location of the drill bit down the drill string from the viewpoint and the three-dimensional depiction of the drill plan from the viewpoint in real time,

[g] the visualization comprising a positional difference between the three-dimensional depiction of the location of the drill bit and the three-dimensional depiction of the drill plan,

[h] the visualization further comprising a first indicator extending from the three-dimensional depiction of the location of the drill bit from the viewpoint and indicating a direction toward the three-dimensional depiction of the drill plan,

[i] the visualization further comprising a second indicator showing a range of acceptable deviation from the indicated direction toward the three-dimensional depiction of the drill plan.

Ex. 1001, 16:52–17:17; Ex. 1010.

F. Prior Art and Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–4, 6, 20–22, 24, 25, 27, and 28 of the '154 are unpatentable on the following ground:

Claims Challenged	35 U.S.C. §	References
1–4, 6, 20–22, 24, 25, 27, 28	103	Benson[1], Terentyev[2], Sequeira[3]

Petitioner also relies on the Declaration of Mr. Robert Schaaf (Ex. 1003, "the Schaaf Declaration") in support of its arguments.

II. ANALYSIS

A. Legal Standards

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (2012) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics*, Inc., 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which that subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406

[1] US 2013/0161096 A1, published June 27, 2013 (Ex. 1006, "Benson"). We note that Petitioner refers to Benson as "Benson II" to distinguish Benson from other Benson-related references. *See, e.g.,* Pet. 8–9. However, because we do not refer to other Benson references, our decision does not adopt Petitioner's designation.
[2] US 7,027,925 B2, issued Apr. 11, 2006 (Ex. 1007, "Terentyev").
[3] US 2013/0140037 A1, published June 6, 2013 (Ex. 1008, "Sequeira").

(2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness when presented. *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

In analyzing the obviousness of a combination of prior art elements, it can be important to identify a reason that would have prompted one of skill in the art "to combine . . . known elements in the fashion claimed by the patent at issue." *KSR*, 550 U.S. at 418. A precise teaching directed to the specific subject matter of a challenged claim is not necessary to establish obviousness. *Id.* Rather, "any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* at 420. Accordingly, a party who petitions the Board for a determination of unpatentability based on obviousness must show that "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (quotations and citations omitted).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

In determining the level of ordinary skill in the art, various factors may be considered, including the "type of problems encountered in the art;

prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field." *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (internal quotation marks and citation omitted).

Petitioner asserts that at the time of the invention,

> a person of ordinary skill in the art ("POSITA") would be a person with a Bachelor of Science degree in engineering (e.g., chemical, electrical, computer, mechanical, petroleum engineering), computer science, or an equivalent degree, or at least two years of experience in the field of computer programming, working with computer systems, user interfaces, and control systems.

Pet. 15 (citing Ex. 1003 ¶¶ 79–81). Petitioner further asserts that "[a]dditional education could compensate for less practical experience and vice versa." *Id.* Patent Owner does not address the level of skill in the art, or otherwise dispute Petitioner's assertion. *See generally* Prelim. Resp.

Petitioner's definition is consistent with the level of ordinary skill reflected in the prior art references of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (recognizing that the prior art itself may reflect an appropriate level of skill in the art).

Accordingly, for purposes of this decision, we apply Petitioner's definition of the person of ordinary skill in the art.

C. Claim Construction

In an *inter partes* review proceeding for a petition filed on or after November 13, 2018, a patent claim shall be construed using the same claim construction standard that would be used to construe the claim in a civil

action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b).[4] This rule adopts the same claim construction standard used by Article III federal courts, which follow *Phillips v. AWH Corp*., 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*), and its progeny.

Under that standard, the words of a claim are generally given their "ordinary and customary meaning," which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13. "In determining the meaning of the disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014 (Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17).

Petitioner submits "that the Board need not expressly construe any term because the prior art invalidates the claims under any plausible construction." Pet. 20 (citing Ex. 1003 ¶¶ 95–99). Patent Owner does not address claim construction in its briefs. *See generally* Prelim. Resp.

We determine, at this stage, that no explicit construction of any term is needed to resolve the issues presented by the arguments and evidence of record and to reach a decision on institution. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (per curiam) (claim terms need to be construed "only to the extent necessary to resolve the controversy" (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))).

[4] The Petition in this case was accorded a filing date of June 11, 2021. *See* Paper 3, 1.

D. Alleged Obviousness over Benson, Terentyev, and Sequeira

Petitioner asserts that claims 1–4, 6, 20–22, 24, 25, 27, and 28 are unpatentable as obvious over Benson, Terentyev, and Sequeira. Pet. 20–81. Petitioner also relies on the testimony of Mr. Schaaf to support its arguments. *Id*. Patent Owner responds to Petitioner's assertions. Prelim. Resp. 13–23.

1. Overview of Benson (Ex. 1006)

Benson is titled "System and Method for Determining Incremental Progression Between Survey Points While Drilling," and relates "to the creation of wells, such as oil wells, and more particularly to the planning and drilling of such wells." Ex. 1006, code (54), ¶ 2.

Benson discloses display 250 that provides a drilling operator with "many different types of information in an easily accessible format." Ex. 1006 ¶ 58. Figure 2B, reproduced below, shows an embodiment of Benson's display 250.

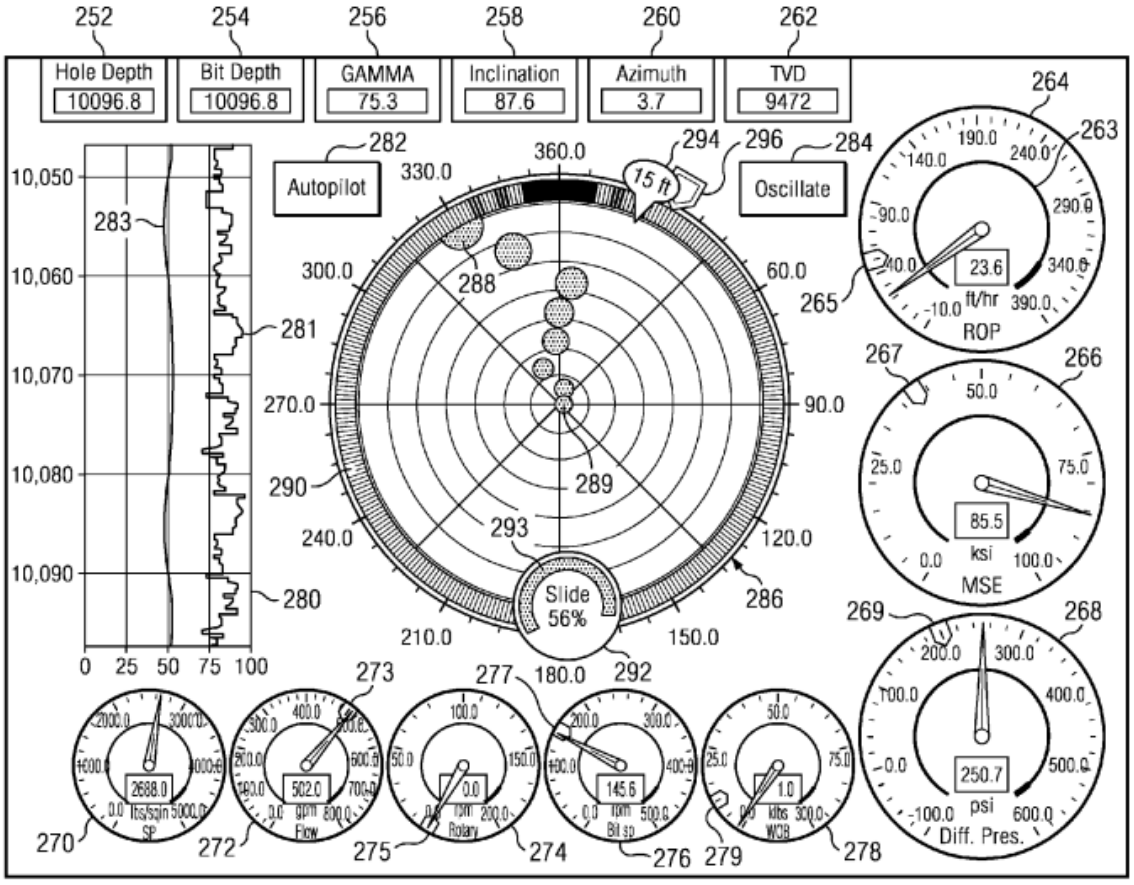


Figure 2B shows display 250, which displays information around the periphery of display such as "hole depth indicator 252," "bit depth indicator 254," "GAMMA [ray count] indicator 256," "inclination indicator 258," "azimuth indicator 260," and total vertical depth (TVD) indicator 262, as well as rate-of-penetration (ROP) indicator 264, "mechanical specific energy (MSE) indicator 266," "differential pressure indicator 268," "standpipe pressure indicator 270," "flow rate indicator 272," "rotary RPM indicator 274," "bit speed indicator 276," and weight-on-bit (WOB) indicator 278. *Id.* ¶ 59. Figure 2B also includes log chart 280 which displays depth information along with GAMMA count 281 and rate of progression 283. *Id.* ¶ 61. In the center of display 250 is "circular chart 286," which "may provide current and historical toolface orientation information (e.g., which

way the bend is pointed)." *Id.* ¶ 62. The "series of circles within the circular chart 286 may represent a timeline of toolface orientations," where "larger circles may be more recent than smaller circles, so the largest circle 288 may be the newest reading and the smallest circle 289 may be the oldest reading." *Id.*

Benson discloses that display 250 also shows "error indicator 294" which "may be present to indicate a magnitude and/or a direction of error," and "may indicate that the estimated drill bit position is a certain distance from the planned path, with a location of the error indicator 294 around the circular chart 286 representing the heading." Ex. 1006 ¶ 66. In Figure 2B, above, the error indicator indicates an error of 15 feet and an error direction of 15 degrees. *Id.* In addition, "marker 296 may indicate an ideal slide direction." *Id.*

Figure 6, reproduced below, illustrates a flow chart for a method employed in Benson.

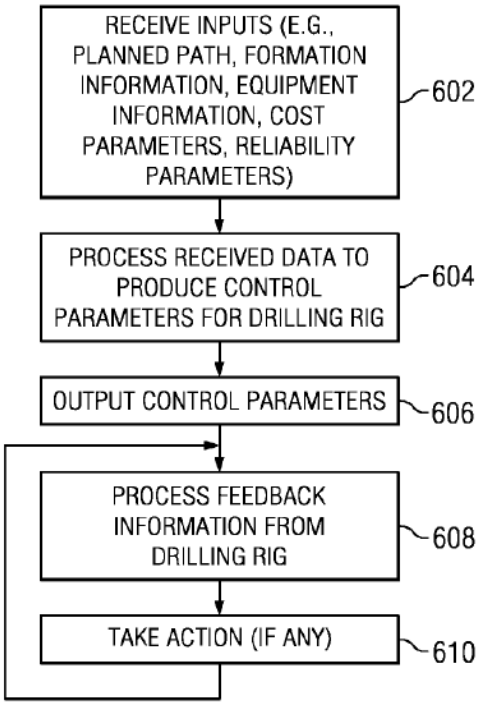


Figure 6 depicts steps for receiving inputs (step 602), processing data to produce control parameters (step 604), outputting parameters (step 606), processing received feedback from the drilling rig (step 608), and taking or not taking an action (step 610). Ex. 1006 ¶¶ 95–100. Figure 7C, reproduced below, "illustrate[s] a more detailed embodiment of the method 600 of FIG. 6, particularly of step 610." *Id.* ¶ 108.

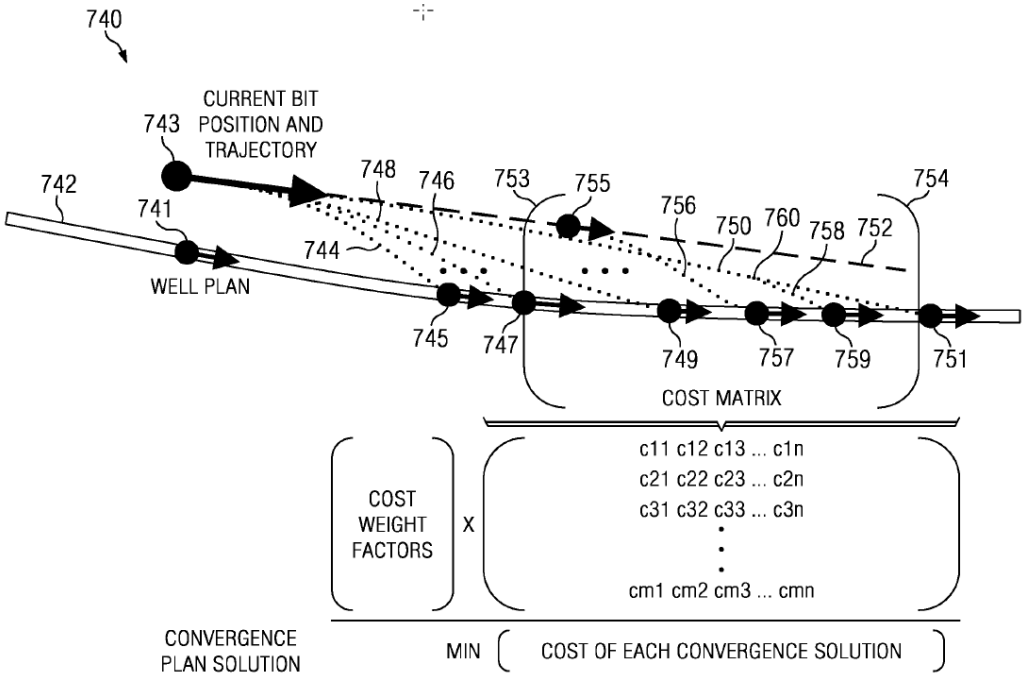


Figure 7C illustrates "a diagram" in which "the estimated bit position is indicated by arrow 743 relative to the desired bit position 741 along the planned path 742." *Id.* ¶¶ 108–109. More particularly, Figure 7C illustrates that

> an infinite number of paths may be selected to return the bit to the planned path 742. The paths may begin at the estimated bit position 743 or may begin at other points along a projected path 752 that may be determined by calculating future bit positions based on the current trajectory of the bit from the estimated bit position 752.

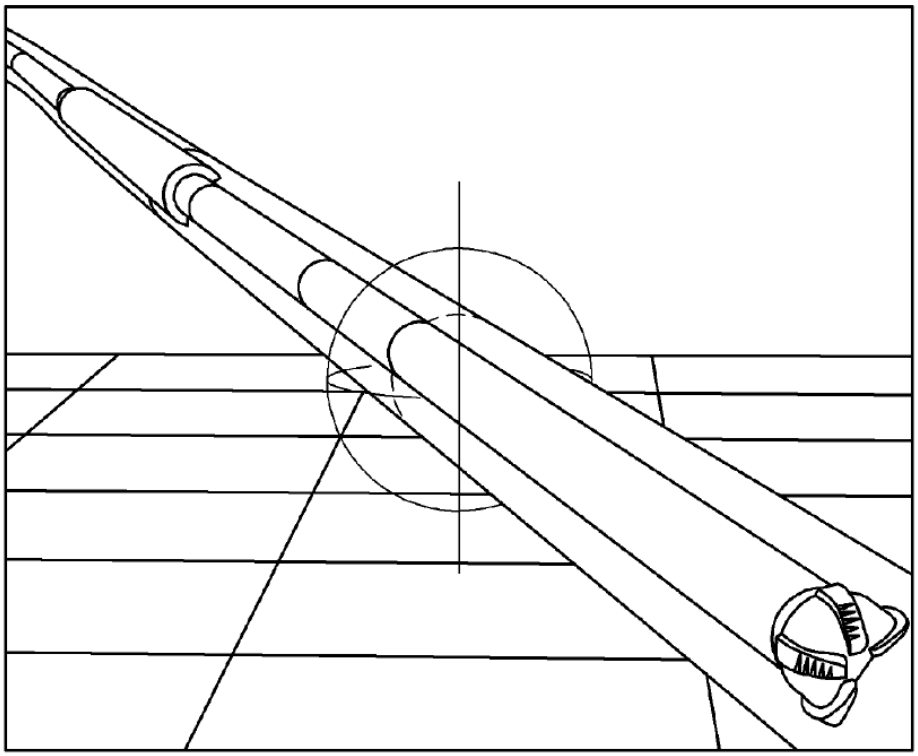
Id. ¶ 113. With reference to Figure 7C, Benson discloses that

> [e]ach of these paths 744, 746,748,750, 756, and 758 may present advantages and disadvantages from a drilling standpoint. For example, one path may be longer and may require more sliding in a relatively soft rock layer, while another path may be shorter but may require more sliding through a much harder rock layer. Accordingly, tradeoffs may be evaluated when selecting one of the convergence plans rather than simply selecting the most direct path for convergence. The tradeoffs may, for example, consider a balance between ROP, total cost, dogleg severity, and reliability. While the number of convergence plans may vary, there may be hundreds or thousands of convergence plans in some embodiments and the tradeoffs may be used to select one of those hundreds or thousands for implementation. The convergence plans from which the final convergence plan is selected may include plans calculated from the estimated bit position 743 as well as plans calculated from one or more projected points along the projected path.

Id. ¶ 116.

2. Overview of Terentyev (Ex. 1007)

Terentyev is titled "Adaptive Borehole Assembly Visualization in a Three-Dimensional Scene," and relates to "analyzing data generated in oilfield exploration" and "methods and systems that facilitate the analysis of downhole data or bottom-hole assembly data." Ex. 1007, code (54), 1:8–12. Figure 8, reproduced below, shows a three-dimensional image of a bottom hole assembly ("BHA") inside a borehole trajectory. *Id.* at 3:9–11.



In Figure 8, "the BHA is displayed inside the borehole." *Id.* at 4:32–34.

3. Overview of Sequeira (Ex. 1008)

Sequeira is titled "System and Method for Planning a Well Path," and "relates to optimizing hydrocarbon well placement in a three-dimensional (3D) environment." Ex. 1008, code (54), ¶ 2.

Sequeira provides "real time interactivity for a well planning process," where "a wide range of drilling variables may be considered." *Id.* ¶ 47. Sequeira "evaluates the distance between a proposed well path and potential obstructions. Such an exemplary embodiment may determine a minimum acceptable distance from specific objects based on a type of object." *Id.* ¶ 49. Sequeira's display may "provide a 3D representation of a 3D earth model," such as to "display information or a representation pertaining to a portion of a subsurface region under analysis, such as displaying a generated well path." Ex. 1008 ¶¶ 109, 111.

4. Analysis of Claim 1

Petitioner asserts claim 1 would have been obvious over Benson, Terentyev, and Sequeira. Pet. 20–63. We use Petitioner's notations to identify the claim elements, and focus on the dispositive claim limitation.

1[h] the visualization further comprising a first indicator extending from the three-dimensional depiction of the location of the drill bit from the viewpoint and indicating a direction toward the three-dimensional depiction of the drill plan

a) Petitioner's Contentions

Petitioner asserts that "marker 296" in Benson's Figure 2B "'may indicate an ideal slide direction,' which includes indicating a direction toward the drill plan." Pet. 47–48 (quoting Ex. 1006 ¶ 66, Ex. 1003 ¶ 209). Petitioner reproduces Figure 7C of Benson and, relying on the declaration testimony of Mr. Schaaf, states that Figure 7C "is an embodiment of *Benson['s]* display." Pet. 49 (citing Ex. 1003 ¶ 211). Petitioner further asserts that the "graphical user interface (GUI) in steps 2306 and 2308 is updated and display 250 provides recommendations to the driller." *Id.* (citing Ex. 1006 ¶ 251). Petitioner contends that "the GUI corresponds to circular chart 286 ('GUI (e.g., circular chart 286)'), which is an embodiment of the display 250 of Figure 2B." *Id.* (citing Ex. 1006 ¶ 247). Petitioner concludes that Benson "discloses that the display's recommended correction to the driller indicates a direction toward the drill plan." *Id.* (citing Ex. 1003 ¶ 214).

b) Patent Owner Contentions

Patent Owner contends that "the Petition fails to demonstrate how the *Benson[]-Terentyev-Sequeira* combination discloses a visualization that includes an 'indicator ***extending from***' the position of the drill bit," in

limitation 1[h]. Prelim. Resp. 13. This indicator, according to the Patent Owner, corresponds to element 408 in Figure 5 of the '154 patent. *Id.* at 13–14. Patent Owner contends that the Petition is unclear as to what prior art disclosure maps to the "first indicator," but presumes that Petitioner is referring to Benson's "marker 296." *Id.* at 14–15. Patent Owner further contends "the Petition ***completely ignores*** the claimed limitation of the 'indicator ***extending from***' the depiction of the location of the drill bit." *Id.* at 15.

c) Discussion

Having considered the conflicting positions of the parties, we conclude that Petitioner has not shown a reasonable likelihood that it would prevail in challenging the patentability of independent claim 1. Instead, we agree with Patent Owner that Petitioner has not demonstrated that the cited prior art discloses or suggests "a first indicator *extending from* the three-dimensional depiction of the location of the drill bit from the viewpoint and indicating a direction toward the three-dimensional depiction of the drill plan," as required by limitation 1[h].

Petitioner's analysis for this limitation begins with the contention that Benson discloses "indicating a direction toward the drill plan" displayed as a "recommended correction" to the drill operator, because Benson's "marker 296" displays "an ideal slide direction" to the operator. Pet. 47–49 (citing Ex. 1006 ¶¶ 66, 251; Ex. 1003 ¶¶ 209, 212). However, as Patent Owner points out, Benson does not display an indicator that is *extending from* the three-dimensional depiction of the location of the drill bit. Prelim. Resp. 15. Rather, Benson discloses "a first indicator . . . indicating a direction toward the three-dimensional depiction of the drill plan," as partially recited in

claim 1, but does not disclose or suggest that the "first indicator" is "*extending from the three-dimensional depiction of the location of the drill bit* from the viewpoint and indicating a direction toward the three-dimensional depiction of the drill plan," as fully recited in claim 1.

Petitioner's reference to Figure 7[5] of Benson does not supply the missing aspect of limitation 1[h]. Petitioner asserts that Benson's controller first determines "the positional difference between the drill bit location and drill plan" (step 730), then "determines whether the drill bit is outside of a margin of error from the drill path" (step 732), and if the drill bit location is outside of the margin of error from the from the drill path, "calculates a convergence path for the drill bit to return to the drill plan" (step 734). Pet. 48 (citing Ex. 1006 ¶¶ 110–112; Ex. 1003 ¶ 210). However, none of steps 730, 732, or 734 discloses or suggests "a first indicator *extending from* the three-dimensional depiction of the location of the drill bit from the viewpoint and indicating a direction toward the three-dimensional depiction of the drill plan," as required by limitation 1[h].

Petitioner then reproduces Figure 7C, and appears to suggest that the convergence paths calculated to return the drill to the drill plan are displayed as "an embodiment of *Benson[]'s* display." Pet. 48–49 (citing Ex. 1003 ¶ 211). However, we do not see, and Petitioner does not adequately explain, where Benson discloses or would suggest to one of ordinary skill in the art that Figure 7C and its convergence plan diagram with multiple convergence

[5] There is no "Figure 7" in Benson. Instead, Benson provides separate Figures 7A, 7B, and 7C. For purposes of clarity, however, we note that steps 730, 732, and 734 are steps of the flow chart depicted in Figure 7B and Figure 7C "illustrates one embodiment of a convergence plan diagram with multiple convergence paths." Ex. 1006 ¶ 16.

paths is displayed to an operator on a user interface. Instead, Benson informs us that Figure 7C is used to illustrate that

> an infinite number of paths may be selected to return the bit to the planned path 742. The paths may begin at the estimated bit position 743 or may begin at other points along a projected path 752 that may be determined by calculating future bit positions based on the current trajectory of the bit from the estimated bit position 752.

Ex. 1006 ¶ 113. Thus, we understand Benson's Figure 7C as illustrating part of the method of calculating a convergence plan (*see id.* at Fig. 7B, step 734), as a means to visually depict to the reader the types of possible convergence plans that are analyzed to select a path, not to illustrate a display presented to a drilling operator. *See, e.g., id.* ¶¶ 108–123, 156–161.

Petitioner further argues that Benson

> discloses that, in steps 2306 and 2308, the display can provide the recommended correction to the driller if the drill bit veers off course. [Ex. 1006 ¶ 251]; EX1003, ¶212. Steps 2306 and 2308 are embodiments of Benson['s] display. EX1003, ¶213. The graphical user interface (GUI) in steps 2306 and 2308 is updated and display 250 provides recommendations to the driller. EX1006, ¶[0251].

Pet. 49. Based on this disclosure, Petitioner concludes that Benson "therefore discloses that the display's recommended correction to the driller indicates a direction toward the drill plan." *Id.* (citing Ex. 1003 ¶ 214). However, even if Petitioner is correct that steps 2306 and 2308 of Benson work together to provide the recommended correction to the driller, notably missing from Petitioner's argument is that Benson discloses or suggests that the recommended correction is "a first indicator *extending from* the three-dimensional depiction of the location of the drill bit from the viewpoint."

Because the prior art cited and relied upon by Petitioner (Pet. 47–49) does not disclose, and Petitioner does not address, a key aspect of the recited limitation 1[h], i.e., "a first indicator *extending from* the three-dimensional depiction of the location of the drill bit," Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claim 1 is unpatentable under 35 U.S.C. § 103 as obvious over Benson, Terentyev, and Sequeira.

5. Independent Claim 20

Independent claim 20 is similar to independent claim 1. Petitioner relies on its assertion for claim 1 and does not provide contentions for claim 20 that remedy the deficiency discussed with respect to claim 1. *See, e.g.*, Pet. 78 (Benson "discloses the visualization including an indicator extending from the calculated position of the drill bit and indicating toward the drill plan. [Ex. 1003] ¶300*; see supra* Limitation 1[h]."). Accordingly, for the reasons discussed with respect to claim 1, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claim 20 is unpatentable under 35 U.S.C. § 103 as obvious over Benson, Terentyev, and Sequeira.

6. Dependent Claims 2–4, 6, 21, 22, 24, 25, 27, and 28

We have considered Petitioner's arguments and evidence for dependent claims 2–4, 6, 21, 22, 24, 25, 27, and 28. Petitioner does not provide contentions for these claims that remedy the deficiency discussed with respect to claim 1. Accordingly, for the reasons discussed with respect to claim 1, we conclude that Petitioner has not demonstrated a reasonable likelihood that it would prevail in showing that claims 2–4, 6, 21, 22, 24, 25,

27, and 28 are unpatentable under 35 U.S.C. § 103 as obvious over Benson, Terentyev, and Sequeira.

III. DISCRETIONARY DENIAL

Patent Owner argues that we should exercise our discretion to deny institution of *inter partes* review in this case under 35 U.S.C. § 314(a), because of the parallel district court litigation. Prelim. Resp. 2–11; Sur-reply 1–5. Because we have considered the merits of the Petition and decline to institute an *inter partes* review on that basis, we need not determine whether it would be appropriate to discretionarily deny the Petition under § 314(a).

IV. CONCLUSION

Petitioner has not demonstrated that there is a reasonable likelihood of establishing the unpatentability of any of claims 1–4, 6, 20–22, 24, 25, 27, and 28 of the '154 patent.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that the Petition is *denied* and no trial is instituted.

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