

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REFLEX USA LLC,
Petitioner,

v.

LONGYEAR TM, INC. and GLOBALTECH CORPORATION PTY LTD.,
Patent Owner.

IPR2023-00642
Patent 10,830,013 B2

Before BENJAMIN D. M. WOOD, JEREMY M. PLENZLER, and
CYNTHIA L. MURPHY, *Administrative Patent Judges*.

WOOD, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background*

Reflex USA LLC (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting *inter partes* review of claims 1–4, 14, 15, 19–22, 24, and 25 of U.S. Patent No. 10,438,421 B2 (Ex. 1001, “the ’013 patent”). Longyear TM, Inc. and Globaltech Corporation Pty Ltd., (collectively, “Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”). In accordance with our authorization (Paper 8, 2–3), Petitioner filed a Reply to Patent Owner’s Preliminary Resp. (Paper 9, “Prelim. Reply”) addressing Patent Owner’s request for discretionary denial of institution under 35 U.S.C. § 325(d), and Patent Owner filed a responsive Sur-Reply (Paper 10, “Prelim. Sur-Reply”).

We have authority under 35 U.S.C. § 314, which provides that an *inter partes* review may not be instituted “unless . . . 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). Upon considering the Petition and the Preliminary Response, we determine that Petitioner has satisfied this threshold requirement, and therefore we institute *inter partes* review of claims 1–4, 14, 15, 19–22, 24, and 25 of the ’013 patent.

B. *Related Proceedings*

The parties state that the Petitioner has initiated an Australian Opposition proceeding against an Australian patent application that claims priority to the same provisional U.S. Patent application as the ’013 patent. Pet. 4; Paper 6, 2.

C. The '013 Patent

The '013 patent, titled “Core Barrel Head Assembly with an Integrated Sample Orientation Tool and System for Using Same,” issued November 10, 2020, from an application filed September 30, 2019. Ex. 1001, codes (21), (22), (45), (54). The patent “relates to down hole surveying in drilling operations.” *Id.* at 1:19–20. To develop a “three dimensional map of underground mineral/rock content,” core samples are taken. *Id.* at 1:31–33, 55–56. Core drilling systems comprise outer and inner tube assemblies; the outer tube, having a cutting head at its down-hole end, revolves to cut the core, which progressively fills the inner tube. *Id.* at 1:36–38. When the innertube is full the core is fractured and the inner tube assembly and core are retrieved from the drill hole, where the core can be removed and analyzed. *Id.* at 1:39–46.

Usually, cores are drilled at an angle relative to the vertical. Ex. 1001, 1:49–50. Thus, accurate analysis of the core sample requires the determination of, among other things, the rotational position, or orientation, of the core relative to the ground from which it was extracted. Ex. 1001, 1:47–49, 2:17–27. The '013 patent therefore describes “a core barrel head assembly” (part of the inner tube assembly) having at least one electronic instrument configured to obtain core orientation data of a core sample before the core is extracted, e.g., “just prior to or after the core break.” *Id.* at 2:38–45, 6:16–26.

Figures 1, 3, and 5 of the '013 patent depict an embodiment of the core barrel head assembly described in the '013 patent, and are reproduced below:

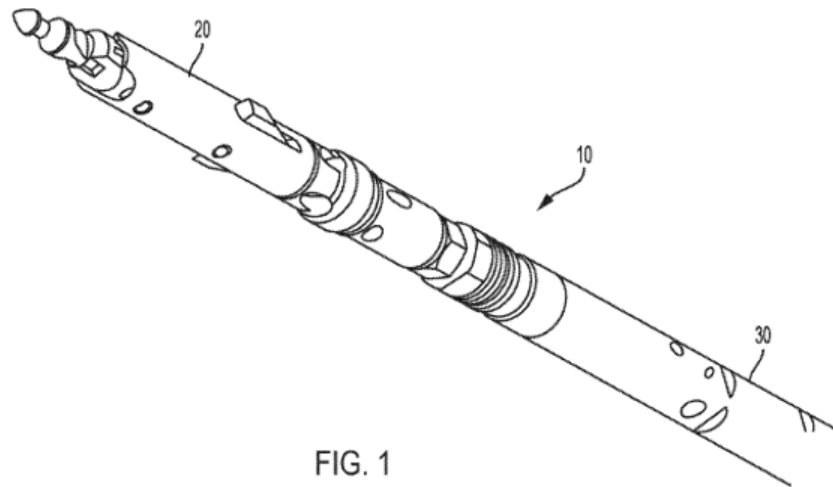


FIG. 1

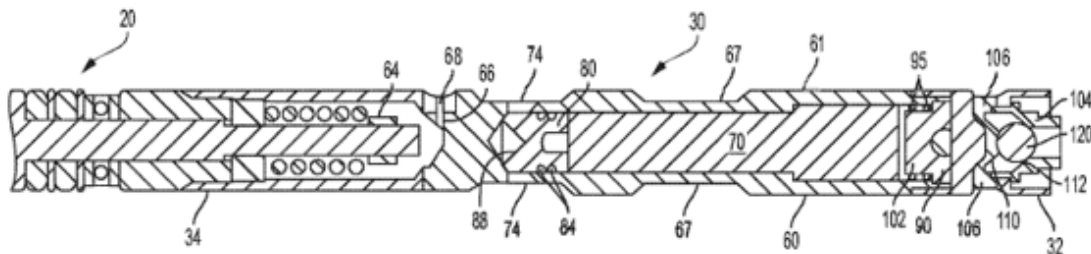


FIG. 3

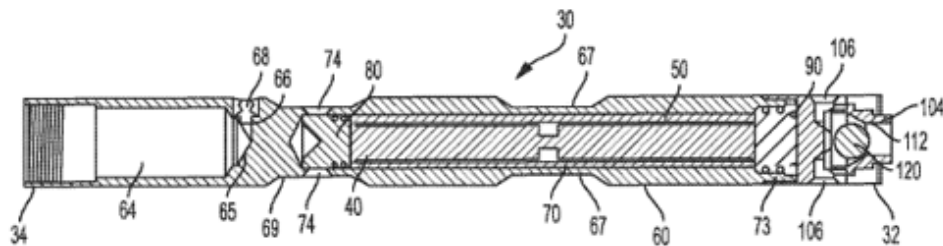


FIG. 5

Figures 1 and 3 depict core barrel head assembly 30 coupled to conventional head assembly 20. Ex. 1001, 5:63–66. Figures 3 and 5 provide a more expanded view of core barrel head assembly 30. As shown in these figures, end 32 of core barrel head assembly 30 is oriented toward the drill-bit end, and first interior cavity 64 is situated at the other end of the assembly. *Id.* at 6:43–44, 52–54. Second interior cavity 70 extends distally (toward the drill-bit end) from the first interior cavity and “can be sized to hermetically enclose” electronic instrument 40 used to obtain core

orientation data. *Id.* at 6:16–18, 62–66. A “plurality of windows 74 can be defined in the elongate body [60] that extend[s] from the exterior surface 61 [of elongate body 60] . . . into the second interior chamber 70 proximate the closed proximal end 72 of the second interior chamber.” *Id.* at 7:13–17. Orientation indicator module 80, comprising light emitters, “can be sized and shaped to sealingly close the second interior chamber from any intrusion of pressurized fluid into the second interior chamber 70 via the defined plurality of windows 74.” *Id.* at 7:17–23. The light emitters of core orientation indicator 80 can transmit core orientation data through windows 74 without having to first separate core barrel head assembly 30 from head assembly 20. *Id.* at 7:42–53, 11:59–65. Being able to retrieve data without having to separate these sections results in “reduced equipment handling time” and “less risk of equipment failure and drilling downtime.” *Id.* at 11:52–56.

D. The Challenged Claims

Petitioner challenges claims 1–4, 14, 15, 19–22, 24, and 25 of the ’013 patent. Pet. 1. Claim 1 is the only independent claim. Ex. 1001, 21:17–39. Claim 1 is reproduced below (with Petitioner’s limitation designations added):

1. [1.Pre] A core barrel head assembly having an exterior surface and comprising:
 - [1.a] a first interior cavity;
 - [1.b] a selectively sealed interior cavity spaced distally from the first interior cavity and having a closed proximal end;
 - [1.c] a threaded proximal end portion for coupling to a wire line retrieval portion of a head assembly;

[1.d] a base portion, wherein the first interior cavity extends distally from the threaded proximal end portion to the base portion;

[1.e] a window that extends from the exterior surface into optical communication with the sealed interior cavity proximate the closed proximal end of the sealed interior cavity;^[1]

[1.f] at least one electronic instrument that is configured to obtain core orientation data,

[1.g] wherein the at least one electronic instrument comprises at least one digital and/or electro-mechanical sensor in a core orientation data recording tool; and

[1.h] a transmitter configured to transmit core orientation data,

[1.i] wherein the sealed interior cavity is sized and shaped to enclose the at least one electronic instrument.

Ex. 1001, 21:17–39 (Claim 1).

E. Asserted Grounds of Unpatentability

Petitioner contends that the challenged claims are unpatentable based on the following specific grounds (Pet. 5–6):²

No.	Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1	1, 3, 4, 19–22, 24, 25	103	Beach-127 ³

¹ Hereinafter, “the Window Limitation.”

² Petitioner relies on “Beach-127 alone or in view of Wiese” at least in part for all three of its grounds. Therefore, Petitioner effectively proposes six separate grounds of unpatentability.

³ WO 2008/113127 (Sept. 25, 2008) (Ex. 1003).

No.	Claims Challenged	35 U.S.C. §	Reference(s)/Basis
2	1, 3, 4, 19– 22, 24, 25	103	Beach-127, Wiese ⁴
3	2	103	Beach-127, Pickard ⁵
4	2	103	Beach-127, Wiese, Pickard
5	14, 15	103	Beach-127, Klass-839 ⁶
6	14, 15	103	Beach-127, Wiese, Klass-839

Petitioner also relies on the Declaration of Dr. John P. Rodgers (Ex. 1022) to support its proposed grounds.

II. ANALYSIS

A. *Legal Standards Used in the Merits Analysis*

“In an IPR, 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) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *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).

⁴ US Pub. No. 2008/0001775 (Jan. 3, 2008) (Ex. 1004).

⁵ US 3,305,033 (Feb. 21, 1967) (Ex. 1006).

⁶ WO 2012/012839 (Feb. 2, 2012) (Ex. 1005).

A claim is unpatentable under 35 U.S.C. § 103 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 . . . to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (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 skill in the art; and (4) when in evidence, objective evidence of nonobviousness, i.e., secondary considerations. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

Petitioner contends that a person of ordinary skill in the art would have had “a bachelor’s degree in petroleum, mining, mechanical, or electrical engineering (or a closely related field), and at least two years’ experience in designing and developing electromechanical downhole tools, including working with sensors and electronics.” Pet. 10–11.⁷ Patent Owner does not address the level of ordinary skill in its Preliminary Response, and therefore does not oppose Petitioner’s contention.

At this stage of the proceeding, we adopt Petitioner’s unopposed definition for purposes of this Decision. We also presume that the cited prior art references reflect the level of ordinary skill at the time of the invention. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001)

⁷ Because Petitioner’s definition of a person of ordinary skill in the art mirrors that put forward by its Declarant, Dr. Rodgers (Ex. 1022 ¶ 20), we assume that Petitioner relies on that testimony as support for its definition.

(explaining the level of ordinary skill in the art may be evidenced by the cited references themselves).

C. Claim Construction

We construe claim terms “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), including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b); *see Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc). Any special definitions for claim terms must be set forth in the Specification with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994).

Petitioner proposes constructions for “window” and “selectively sealed.” Pet. 11–13. Patent Owner responds that “[n]o claim construction is necessary to deny institution,” and its “arguments for denial do not hinge on the outcome of an actual controversy about construction of a claim term.” Prelim. Resp. 28.

No claim term requires an express construction for us to determine whether to institute an *inter partes* review. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and 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))). Accordingly, we proceed with the understanding that each term should be accorded its plain and ordinary meaning.

D. Ground 1: Claims 1, 3, 4, 19–22, 24, and 25—Beach-127 alone or combined with Wiese

Petitioner contends that claims 1, 3, 4, 19–22, 24, and 25 would have been obvious over Beach-127 alone, or, alternatively, over Beach-127 and Wiese. Pet. 22–61. Patent Owner opposes. Prelim. Resp. 29–40.

1. *Beach-127 (Ex. 1003)*

Beach-127 teaches “a core orientation tool for providing an indication of *in situ* orientation of a core sample extracted from a borehole by a core drill.” Ex. 1003, 2:16–19. Figures 1 and 2 of Beach-127 depict an embodiment of Beach-127’s core orientation tool, and are reproduced below:

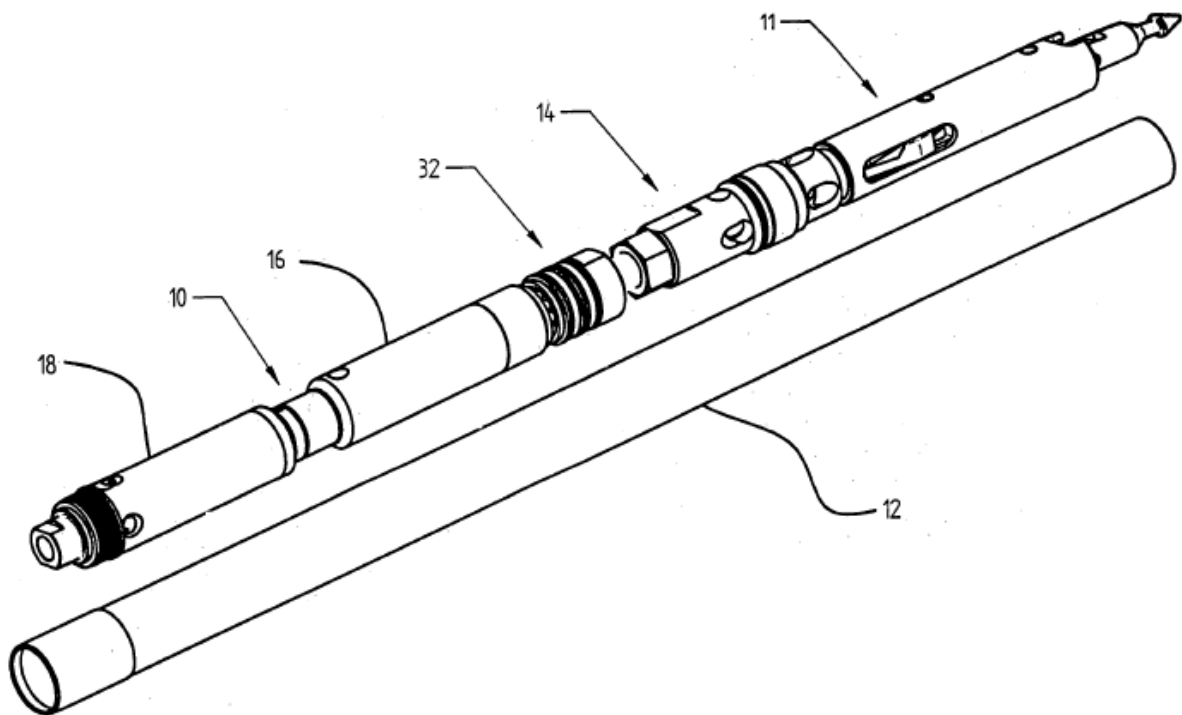


Figure 1

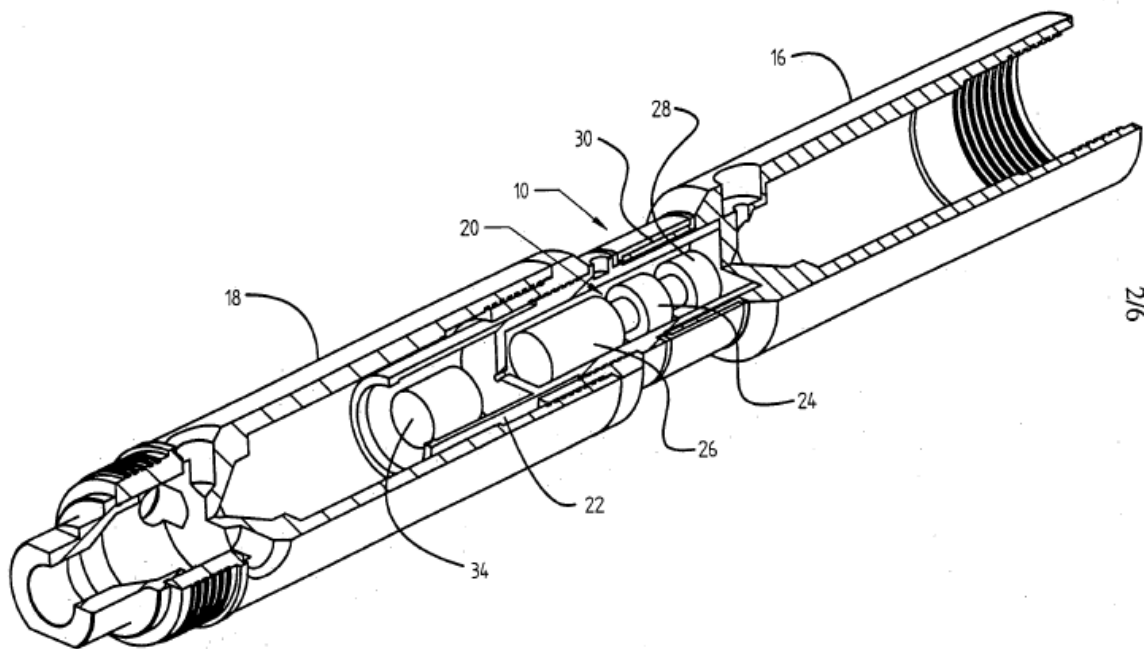


Figure 2

Figure 1 depicts inner barrel assembly 11, which comprises core tube 12 for receiving the core cut by the core drill, backend assembly 14 for lowering and retrieving the core tube, adaptor 16 for connecting the backend assembly to core orientation tool 10, and core tube cap 18 for connecting the core orientation tool to core tube 12. Ex. 1003, 11:9–22. Figure 2 depicts core orientation tool 10 comprising electronic core orientation system 20 housed within body 22, the core orientation system comprising “multiple sensors and transducers for sensing various events and orientation data of the tool 10 and core drill.” *Id.* at 11:30–12:9. Orientation system 20 “may further comprise a transceiver 28 coupled to an antenna 30 to communicate with a hand-held computer or other like device.” *Id.* at 12:24–27. Transceiver 28 “communicates via wireless communication with the hand-held computer” *Id.* at 17:13–14.

2. *Wiese (Ex. 1004)*

Wiese concerns systems for retrieving data from “measurement while drilling” (MWD) and “logging while drilling” (LWD) tools used in the hydrocarbon exploration and production industry. Ex. 1004 ¶¶ 2–4.

According to Wiese, “MWD/LWD tools generally contain a number of functional groups of electrical devices that each perform a specific function thereby generating their own volumes of data for reporting at the surface.” *Id.* at ¶ 10. Wiese seeks to reduce the expense of “rig time” by “speed[ing] the data dump from the MWD/LWD tool to surface computer(s)” in a way that avoids opening a plurality of ports into the tool to avoid potential contamination and “the time it takes to clean the area of the tool surrounding the access opening and physically remove a cover.” *Id.* To address these concerns, Wiese describes a MWD/LWD bottom hole assembly that includes “a window at the housing, the window being transmissive to the signal of at least one transceiver of a tool having a memory in operable communication with the transceiver, such that the signal is receivable outside of the housing through the window.” *Id.* ¶ 5. Figure 1 is a schematic view of an embodiment of Wiese’s device, and is reproduced below:

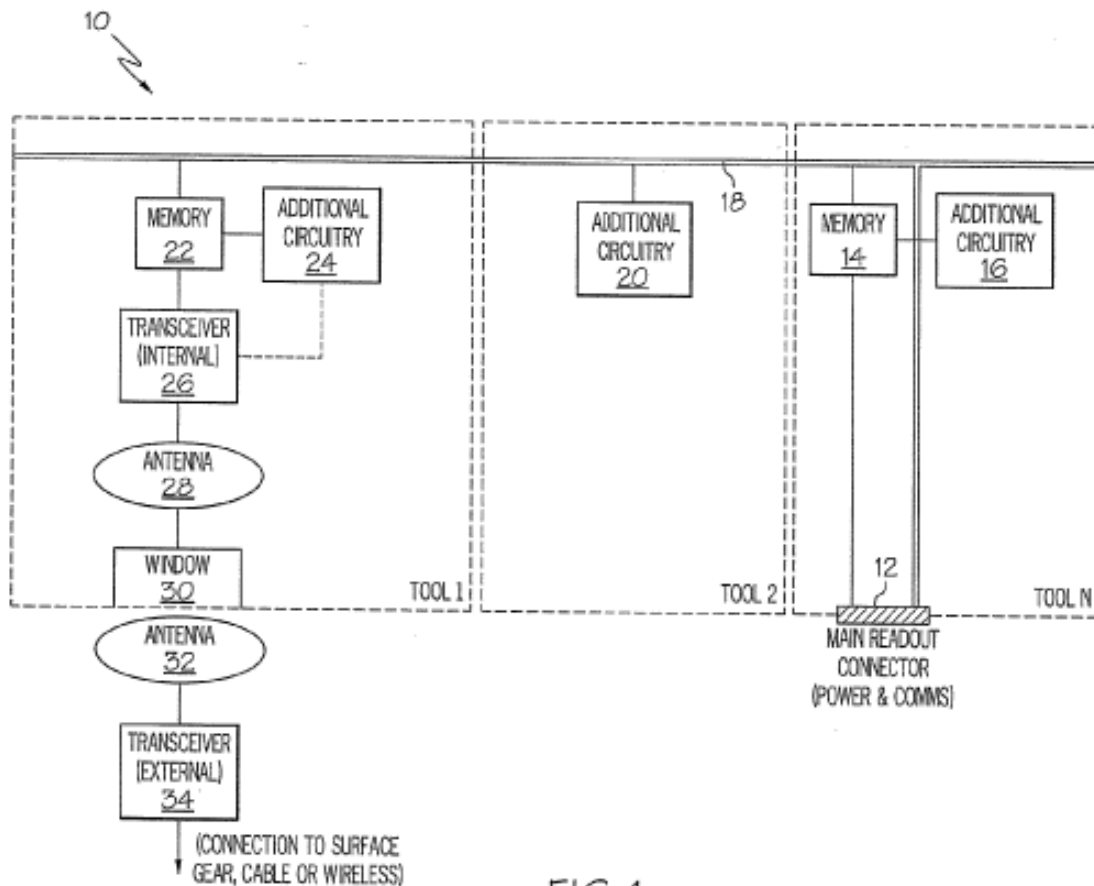


FIG. 1

Figure 1 schematically depicts bottom hole assembly (BHA) 10 comprising generically identified tools 1 through “N.” Ex. 1004 ¶¶ 12. Any of the tools, e.g., tool 1 in Figure 1, may contain transceiver 26 in communication with antenna 28, which in turn communicates through window 30 with antenna 32 outside of BHA 10. *Id.* ¶¶ 14–15. The antennas may communicate by using infrared (IR) signals, in which case the antenna would be a light emitting diode (LED) to transmit the IR signal. *Id.* ¶ 15. Window 30, through which transfer of data between antennas 28 and 32 is accomplished, “is pressure sealed to the housing, and transmissive to the selected signal type.” *Id.* For transmitting IR signals, “window 30 may be glass or other material transmissive to IR light.” *Id.* The window “must

also be constructed with sufficient strength (e.g., thickness, etc.) to withstand the downhole pressure differential between the environment inside and outside of the tool 10.” *Id.*

3. *Patent Owner’s Request for Discretionary Denial Under 35 U.S.C. § 325(d)*

Patent Owner argues that we should deny institution under 35 U.S.C. § 325(d) because the Petition “is based upon the ‘same or substantially the same art previously presented to the Office’ and fails to demonstrate ‘that the Office erred in a manner material to the patentability of the challenged claims.’” Prelim. Resp. 2 (quoting *Advanced Bionics, LLC v. Med-El Electromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (Feb. 3, 2020) (precedential)).

Section 325(d) provides that the Director may elect not to institute⁸ a proceeding when “the same or substantially the same prior art or arguments previously were presented to the Office.” *See Becton, Dickinson & Co. v. B. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (designated precedential in relevant part) (setting forth six factors the Board may weigh in evaluating whether to exercise discretion under § 325(d)). Under § 325(d), the Board applies the following two-part framework: (1) whether the same or substantially the same art or arguments were previously presented to the Office; and (2) if either condition of the first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of the challenged claims. *Advanced Bionics*, Paper 6 at 8.

⁸ The Board institutes trial on behalf of the Director. 37 C.F.R. § 42.4(a).

Applying the *Advanced Bionics* framework, we first determine whether the same or substantially the same art or arguments were presented previously to the Office. Petitioner relies on Beach-127 alone or, alternatively, on Beach-127 and Wiese at least in part in all of its proposed grounds of unpatentability. Pet. 5–6. Beach-127 was previously before the Office. The '013 patent issued from an application that is a continuation of a “parent” application, which in turn is a continuation of a “grandparent” application. The original independent claim 1 of the grandparent application was substantially the same as claim 1 of the '013 patent, except that it did not contain the Window Limitation. Ex. 2001, 848. The Examiner rejected this version of claim 1 as obvious over Beach-127 and another reference (“Juergens”). *Id.* at 637. In doing so the Examiner found that Beach-127 taught or rendered obvious all of the limitations of that version of claim 1. *Id.* at 637–39. Patent Owner subsequently amended the original claim 1 to add a “window” limitation similar to the Window Limitation of the '013 patent. *Id.* at 624. The rejection over Beach-127 and Juergens was thus overcome and the grandparent application issued as U.S. Pat. No. 10,047,581 B2. Ex. 2002.

Essentially the same scenario played out during the examination of the parent application. The original claim 1 (Ex. 1011, 204), which did not recite a window, was rejected over Beach-127 and Juergens (*id.* at 54). Patent Owner overcame the rejection by amending the claim to add the Window Limitation (*id.* at 31), and the parent application issued as U.S. Pat. No. 10,465,463 B2 (*id.* at 9).

Independent claim 1 of the '013 patent application originally included the Window Limitation (Ex. 1002, 283), and was rejected only on the

ground of non-statutory double patenting (*id.* at 73). Patent Owner overcame that rejection by submitting a terminal disclaimer. *Id.* at 45.

Although Beach-127 has previously been before the Office, the same cannot be said for Wiese. It does not appear that Wiese was identified in an IDS or considered by the Examiner during the examination of the grandparent application, the parent application, or the application that issued as the '013 patent. Further, Wiese differs from Beach-127: whereas Beach-127 does not expressly disclose or depict a window as part of its device, or disclose optical communication with the interior of the device, Wiese does both. As noted above, Wiese describes a MWD/LWD bottom hole assembly that includes “a window at the housing, the window being transmissive to the signal of at least one transceiver of a tool having a memory in operable communication with the transceiver, such that the signal is receivable outside of the housing through the window.” Ex. 1004 ¶ 5. The signal may be optical, e.g., IR, in which case the window is “optically transmissive.” *Id.* ¶ 14, claim 8. This difference between Wiese and Beach-127—teaching an optically transmissive window—is material, because it addresses the sole limitation in dispute at this stage of the proceeding.

Thus, although Beach-127 was considered by the Examiner, the combination of Beach-127 and Wiese was not. Moreover, for the grounds that rely on the combination of Beach-127 and Wiese, the Petition relies on Beach-127 essentially to teach the same limitations that the Examiner previously found Beach-127 to teach or suggest. *See, e.g.*, Ex. 1011, 54–56; Pet. 22–48.

Patent Owner argues that Wiese is cumulative to Beach-127 because Petitioner “urges the Board to find that both Wiese and Beach-127 teach the

claimed ‘window’ under its claim construction.” Prelim. Resp. 14; *see id.* at 17 (“Petitioner is relying upon Wiese to teach the same thing as Beach-127: a ‘window’ as defined by its claim construction, making Petitioner’s use of Wiese cumulative.”). According to Patent Owner, “[t]he Board has consistently held under part one of *Advance Bionics* that when a Petitioner uses a second prior art reference as an alternative to a first, the second prior art reference is ‘cumulative’ to the first prior art reference.” *Id.* at 18 (citing *Bio-Rad Labs., Inc. v. 10X Genomics, Inc.*, IPR2019-00566, Paper 21 at 7 (July 22, 2019) (“*Bio-Rad*”); *Microsoft Corp. v. Throughputer, Inc.*, IPR2022-00757, Paper 10 at 19 (Nov. 1, 2022) (“*Microsoft*”); *Splunk Inc. v. Sable Networks, Inc.*, IPR2022-00003, Paper 10 at 11–12 (April 14, 2022) (“*Splunk*”)). Petitioner denies that it is relying on Wiese merely as an alternative to Beach-127. Prelim. Reply 4–5.

Patent Owner reads too much into these decisions (none of which has been designated precedential). In none of these decisions does the Board find that the Petitioner’s reliance on a newly cited second reference as an alternative to a previously considered first reference, by itself, is sufficient to deem the second reference cumulative of the first reference. Further, these decisions differ from the case at hand because in none of them does the Board identify a material difference between the second newly cited reference and the first previously considered reference. In *Bio-Rad*, for example, the Board noted that the petitioner “has not indicated, in the context of 325(d), any material difference between Hinz [not previously considered by the examiner] and Abate [previously considered by the examiner].” *Bio-Rad*, 7. Similarly, in *Microsoft*, the Board expressed agreement with patent owner’s contention that “Petitioner does not identify a

single substantive difference between or among the secondary references and the art considered during prosecution.” *Microsoft*, 17–18. *See also Splunk*, 11 (Board finding that new secondary reference relied on by Petitioner was previously found by the examiner to teach what would have been obvious to one of ordinary skill in the art).⁹ Here, however, we have determined that Wiese is materially different from Beach-127, in that, unlike Beach-127, it expressly teaches an optically transmissive window.

Patent Owner also argues that Wiese is cumulative because the Examiner previously indicated that Beach-127 teaches “optical communication,” which is the specific teaching of Wiese on which Petitioner relies. Sur-Reply 4–5. Patent Owner refers to the Examiner’s examination of a “child” application relative to the application that issued as the ’013 patent. *Id.*; *see also* Ex. 1013 (prosecution history of the child application).

Independent claim 1 of the child application contained a broader version of the Window Limitation: “a window that extends from the exterior surface into optical communication with the sealed interior cavity.” Ex. 1013, 382. Thus, claim 1 of the child application did not require the window to be “proximate the closed proximate end of the sealed interior cavity.” The Examiner rejected this claim as anticipated by Beach-127, finding, *inter alia*, that Figure 2 of Beach-127 illustrates “a window . . . that extends from

⁹ Patent Owner also relies on *Motorola Mobility LLC v. Maxell, LTD*, IPR2022-01287, Paper 11 at 18–19 (Feb. 2, 2023) for this proposition. Prelim. Resp. 17. *Motorola*, however, is no more helpful to Patent Owner. *See Motorola*, 17 (“Petitioner does not rebut Patent Owner’s arguments that Watanabe, Sawanobori, and Silver are cumulative to [references that] were considered during prosecution.”).

the exterior surface into *optical communication* with the sealed interior cavity.” *Id.* at 192 (emphasis added). Appellant amended the claim by adding limitations directed to a “threaded distal portion,” “seal coupler,” and “check valve assembly,” but did not modify the claim’s window limitation. *Id.* at 63. The Examiner allowed the claim as amended (*id.* at 27–28) and the child application issued as U.S. Pat. No. 11,466,529 B2 (Ex. 1012).

Setting aside why the Examiner, after examining three previous generations of similar claims, finds here that Beach-127 teaches a window limitation,¹⁰ the Examiner does not explain, and we find it difficult to

¹⁰ Petitioner and Patent Owner draw different inferences from this finding. Patent Owner is of the view that because claim 1 of the child application did not require—as does claim 1 of the ’013 patent—that the window be “proximate the closed proximal end of the sealed interior cavity,” the Examiner’s finding that Beach-127 teaches the window recited in the child application is not relevant to whether Beach-127 teaches the Window Limitation of the ’013 patent. Pet. 20–21. While it is possible that the Examiner believed that Beach-127 discloses an optically transmissive window as far back as the grandparent application, we wonder if the Examiner would have remained silent regarding this disclosure simply because he did not consider the window to be sufficiently “proximate” to the “closed proximal end of the sealed interior cavity”; assuming the “proximate” location is a patentable distinction, the term “proximate” is arguably broad enough to cover the structure in Beach-127 that the Examiner believes corresponds to the claimed window. Petitioner, on the other hand, asserts that the Examiner’s finding that Beach-127 discloses the window limitation of the child application means that the Examiner “understood the ‘window’ limitation recited in the challenged ’013 patent was present in . . . Beach-127.” Prelim. Reply 2. But it is not clear how the Examiner could conclude that Beach-127 discloses an optically transmissive window when Beach-127 does not disclose optical communication. Further, it is not clear that the structure in Beach-127 that the Examiner identifies as the claimed window is the same structure that Petitioner identifies as the claimed window. *Compare* Pet. 33 with Ex. 1013, 192. In sum, we are

fathom, how the Examiner could find that Beach-127's window is for optical communication when Beach-127 is completely silent on the issue. While Beach-127 teaches "wireless communication" between tool 10 and a remote hand-held device, nothing in Beach-127 teaches or suggests that the wireless communication is optical. Indeed, not even Petitioner alleges that Beach-127 expressly teaches optical communication. *See* Pet. 32–36. Instead, Petitioner relies on the knowledge of one of ordinary skill in the art, or, alternatively, on Wiese for this limitation. *Id.* at 36–42. We decline to accept the Examiner's unsupported finding that Beach-127 teaches a window for optical communication as justification for essentially ignoring Wiese's express teaching of a window for optical communication.

For the above reasons, we find that the teachings of Wiese are not cumulative of the art evaluated by the Examiner during prosecution. Therefore, we find that the same or substantially the same art or arguments were not presented previously to the Office. Having determined that the first part of the *Advanced Bionics* framework is not satisfied, we need not consider the second part of the framework. Accordingly, we are not persuaded that we should exercise our discretion under § 325(d) to deny institution.

4. *Principles of Law*

"A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set

unable to say at this stage of the proceeding whether the Examiner's finding that Beach-127 discloses the window claimed in the child application indicates one way or the other whether Beach-127 teaches the Window Limitation of the '013 patent.

forth in [35 U.S.C. § 102], if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains.” 35 U.S.C. § 103. Obviousness is a question of law based on underlying findings of fact. *Graham*, 383 U.S. at 17. The underlying factual considerations “include the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and any relevant secondary considerations” of non-obviousness, including commercial success of the patented product or method, a long-felt but unmet need for the functionality of the patented invention, and the failure of others who have unsuccessfully attempted to accomplish what the patentee has achieved. *Id.* at 17–18. The obviousness analysis should not be conducted “in a narrow, rigid manner,” but should instead focus on whether a claimed invention is merely “the result[] of ordinary innovation,” which is not entitled to patent protection. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 400, 427 (2007).

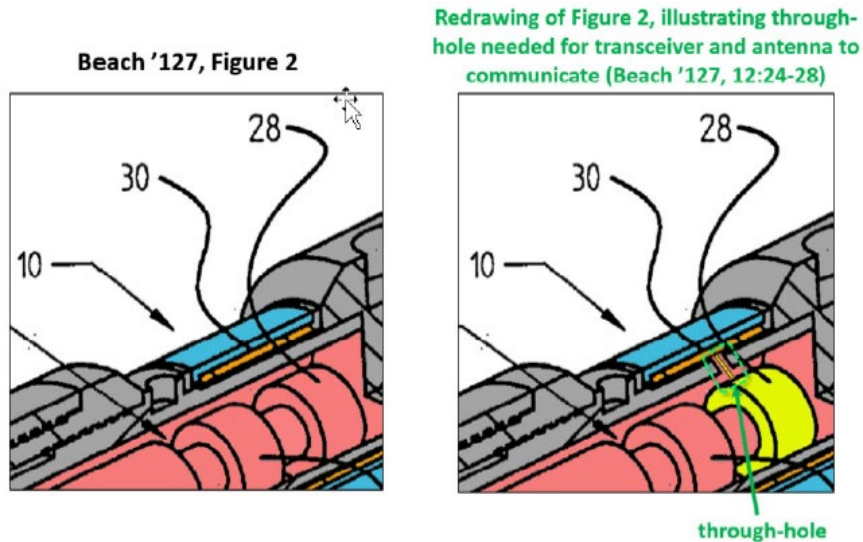
1. Claim 1

Petitioner contends that Beach-127 teaches all of the limitations of claim 1, including limitation 1[e], the Window Limitation. Pet. 22–36, 42–48. Petitioner alternatively contends that Beach-127 combined with Wiese teaches the Window Limitation. *Id.* at 36–40. Petitioner supports its contentions regarding all of the limitations of claim 1 with citations to Beach-127 and to the testimony of Dr. Rodgers. *Id.*

Patent Owner does not dispute, at this stage of the proceeding, that Beach-127 teaches the preamble of claim 1 and limitations 1[a] through 1[d]

outer surface of the body 22,” and is “situated directly above the ‘antenna 30’ of Beach-127’s electronic system, which in turn, is taught as being communicatively coupled to the transceiver 28 residing within the sealed interior cavity.” *Id.* at 33–34 (citing Ex. 1003, 12:24–28). Relying on Dr. Rodger’s testimony, Petitioner contends that “a POSA would have appreciated that, in Beach-127’s Figure 2 core barrel assembly, the window is the feature that permits data transmission from the electronic system 20 (*i.e.*, within the assembly), to the handheld computer or other remote unit (*i.e.*, external to the assembly).” *Id.* at 34 (citing Ex. 1022 ¶ 119).

Petitioner further contends that “[w]hile not explicitly shown in Figure 2, a POSA would have further appreciated that Beach-127’s teaching that transceiver 28 is communicatively ‘coupled to . . . antenna 30’ . . . implies that a through-hole would be present in body 22 in the region under antenna 30, in order to permit reliable communication between the transceiver and antenna.” Pet. 34 (citing Ex. 1003, 12:24–28, Fig. 2; Ex. 1022 ¶¶ 120–21). Petitioner submits a second annotated Figure 2, reproduced below, modified to show this through-hole:



Petitioner’s modified Figure 2 of Beach-127 depicts a passage, or through-hole, through body 22 where transceiver 28 and antenna 30 are located. Petitioner submits that this through-hole “demonstrates that the ‘sealed interior cavity’ identified for Limitation 1[b] extends to and incorporates both components.” Pet. 35 (citing Ex. 1022 ¶ 122). According to Petitioner, “[w]ith the antenna situated directly below the window, the ‘window’ in Beach-127 Figure 2 therefore extends from the exterior surface *into communication with the sealed interior cavity* as required.” *Id.* (citing Ex. 1022 ¶ 122).

Patent Owner’s contentions.

Patent Owner disputes that Beach-127 teaches or suggests limitation 1[e]. Patent Owner asserts that even if the structure that Petitioner highlights in blue in the annotated version of Beach-127 Figure 2 is a window, “the Petition fails to show either that the alleged ‘window’ (1) permits ‘*optical* communication’ or (2) that it permits communication of any kind *between the exterior surface and the ‘sealed interior cavity,’* as claim 1 requires.” Prelim. Resp. 31.

As to Patent Owner’s first point, Patent Owner notes that “the Petition does not even address the claim’s requirement that the window extend into optical communication with the sealed interior cavity,” but only asserts that “the alleged window ‘permits *data transmission*’” Prelim. Resp. 31 (quoting Pet. 34) (emphasis added by Patent Owner). Patent Owner submits that “[n]othing in Beach-127 teaches or suggests that this data transmission is via optical communication,” and, in fact, the structure that Petitioner identifies as the window “appears . . . to be an *opaque exterior* housing that would not permit transmission of optical signals.” *Id.* at 31–32.

As to Patent Owner's second point, Patent Owner contends that the Petitioner, at most "shows that the window permits communication between an exterior device and the 'antenna 30,'" which "is *outside* of the cavity that the Petition maps to the '*sealed interior cavity*' of claim 1." Prelim.

Resp. 32. Patent Owner further notes that Beach-127 "does not describe or depict [a] through-hole," and Petitioner does not establish that reliable communications between transceiver 28 and antenna 30 necessitates a through-hole. *Id.* at 33–34. Even if Petitioner could establish that a window was necessarily present, according to Patent Owner, it "would establish, at most, that (i) the window permits communication from the exterior surface to the antenna 30, and (ii) the through-hole permits separate communication from the antenna 30 to transceiver 28 in the cavity," but "that is insufficient for the window itself to extend into optical communication with the interior cavity, as required." *Id.* at 34.

Discussion

Beach-127 does not expressly disclose that its core orientation tool comprises a window, or describe as a window the structure highlighted in blue in Petitioner's annotated version of Beach-127 Figure 2. Pet. 33. It is plausible that this structure is a "window," of sorts. Beach-127 teaches wireless communication from one side of this structure to the other, i.e., between an interior transceiver and an exterior remote unit (Ex. 1004, 17:33–34, Fig. 2), so this structure would have to be transparent to whatever electromagnetic radiation these components use to communicate. But nowhere does Beach-127 teach or suggest optical communication across this structure, such that this structure is "in optical communication with the sealed interior cavity," as claim 1 requires. Indeed, Petitioner does not

appear to allege that Beach-127 does so. *See* Pet. 32–36. Accordingly, on this record, we are not persuaded that Beach-127 teaches or suggests a window in optical communication with the sealed interior cavity.

b. Whether the Combination of Beach-127
and Wiese teaches the window limitation

Petitioner contends that Wiese “describes a configuration that transfers data via optical signals from a downhole assembly to an external device, through ‘a window at the housing’ of the assembly.” Pet. 37 (citing Ex. 1004 ¶¶ 5, 15. Petitioner further contends that “Wiese describes its ‘window’ as being ‘transmissive’ to the relevant transceiver signal,” which may be “an ‘optical signal,’” i.e., “infrared (IR),” in which case “a light emitting diode (LED) would be the ‘antenna’ to transmit the IR signal.” *Id.* at 38 (quoting Ex. 1004 ¶¶ 5, 14, 15, Fig. 1). Petitioner also notes Wiese’s teaching that its “window is *pressure sealed*” and, for infrared signals, “may be glass or other material transmissive to IR light.” *Id.* (quoting Ex. 1004 ¶ 15). Finally, Petitioner calls our attention to Wiese’s teaching that “while the antenna is illustrated as a separate component from that of the transceiver, it is to be understood that the antenna may form part of the transceiver in some embodiments.” *Id.* (quoting Ex. 1004 ¶ 15).

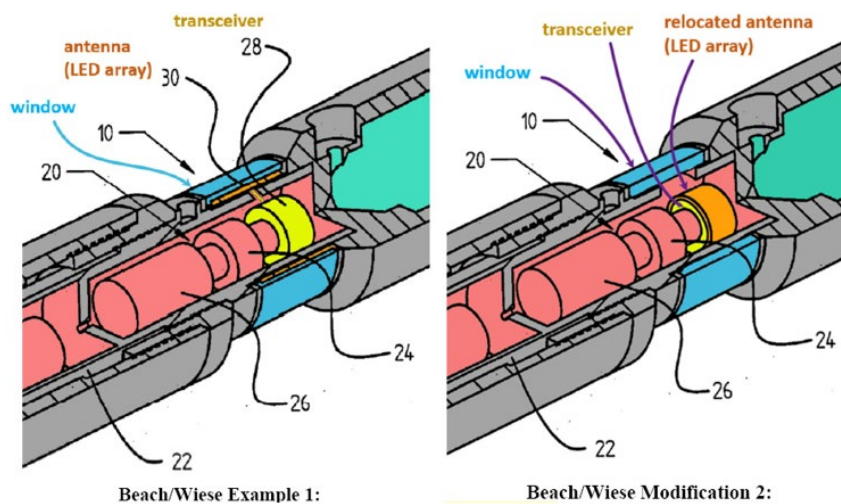
Petitioner asserts that “it would have been obvious to implement Beach-127’s Figure 2 configuration with ‘a window that extends into optical communication with the sealed interior cavity’ as taught in Wiese, to provide a reliable, efficient way to transfer the orientation data obtained [from] Beach-127’s electronic device or system 20, to the remote unit.” Pet. 39–40 (citing Ex. 1022 ¶¶ 128–33). According to Petitioner:

Wiese provides a teaching, suggestion, or motivation for implementing “a window that extends from the exterior surface” of a downhole assembly “into optical communication with the sealed interior cavity” in the manner shown above: whereas conventional downhole assemblies required being opened at surface locations—and were thus time-consuming and subject to damage and/or contamination, . . . Wiese’s configuration provided a “[f]aster and more reliable method[] for downloading information accumulated downhole”

Id. at 38–39 (citing Ex. 1004 ¶¶ 3, 4, 10) (alterations made by Petitioner).

Petitioner also submits that “configurations having LED arrays, and optically transmissive windows for external communication, were well withing the level of ordinary skill in the art,” and that implementing Wiese’s teachings in Beach-127’s device “would have constituted nothing more than the application of known techniques . . . to a known device ready for improvement . . . to obtain predictable results” *Id.* at 41–42.

Petitioner’s Declarant, Dr. Rodgers, illustrates two different ways one of ordinary skill in the art would have applied Wiese’s teachings to Beach-127’s device; these illustrations are reproduced below:



Reproduced above left is Dr. Rodger's Beach/Wiese Example 1, and on the right is his Beach/Wiese Example 2. Ex. 1022 ¶¶ 133–36. Example 1 “use[s] the same configuration shown in Figure 2 [of Beach-127],” but “with []‘antenna 30’ taking the form of an LED array . . . communicatively coupled to the transceiver 28.” *Id.* ¶ 134. In Example 2, “for additional design simplicity, a POSITA would have been further motivated to apply Wiese’s teaching that ‘the antenna may form a part of the transceiver,’ and would have relocated the antenna accordingly. *Id.* ¶ 135 (quoting Ex. 1004 ¶ 15). In both examples, according to Dr. Rodgers, the “window” would be “in optical communication with the sealed interior cavity.” *Id.* ¶ 136.

Patent Owner responds that “[r]eplacing the antenna 30 with an LED array would, at most, provide for optical communication between the LED array and the exterior surface through the window,” but with the LED array blocking optical communication between the window and the interior cavity. Prelim. Resp. 36–37. As for Dr. Rodger’s two examples of how one of ordinary skill in the art would have modified Beach-127 in accordance with Wiese, Patent Owner contends that “neither arrangement results in a window that ‘extends from the exterior surface into optical communication with the sealed interior cavity,’ as required.” *Id.* at 38. That is, according to Patent Owner, the first example “would require creating a through-hole to facilitate communication between the transceiver 28 of the electrical device 20 and the LED array,” whereas the second example “would require displacing the antenna 30 to combine it with the transceiver 28 and opening a portion of the sealed interior chamber to provide for optical communication between the combined antenna and transceiver and the purported window in the exterior of the body 22.” *Id.* at 39. According to Patent Owner, “[n]either

arrangement would result in a window that extends into a ‘*sealed*’ interior cavity’ as required.” *Id.* Patent Owner thus contends that Petitioner fails to show that the combination of Beach-127 and Wiese “discloses or renders obvious claim element 1[e].” *Id.*

Patent Owner further argues that Petitioner failed to articulate a reason with rational underpinning to support modifying Beach-127 in accordance with Wiese. Prelim. Resp. 39–40. Instead, according to Patent Owner, “Petitioner’s expert’s proposed rearrangements of the Beach-127 device merely reflect an impermissible attempt to use the challenged claims as a ‘roadmap’ to attempt to fit the prior art to the claim language.” *Id.* at 40 (citing *InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014)).

We determine that, on the current record, Petitioner is reasonably likely to show that the combination of Beach-127 and Wiese teaches the window limitation. First, we agree with Petitioner that “Wiese teaches ‘a window that extends into optical communication with the sealed interior cavity.’” Pet. 39. Wiese teaches “a window at the housing” of tool 1, the window transmissive to the signal—which may be optical—of a transceiver within the sealed interior of the tool. Ex. 1004 ¶¶ 5, 14, 15. Second, Petitioner, through its Declarant, adequately explains how one of ordinary skill in the art would have incorporated Wiese’s teachings with Beach-127, i.e., Dr. Rodger’s two example configurations. Ex. 1022 ¶¶ 132–136. The second example, in particular, reflects Wiese’s teachings, as the window is sealed and the antenna/transceiver combination is within the sealed interior of the tool. Thus, Petitioner has reasonably shown, at this stage of the

proceeding, that one of ordinary skill in the art would have had a reasonable expectation of success in combining Beach-127 and Wiese.

Third, Petitioner has articulated a reason why one of ordinary skill in the art would have combined Beach-127 and Wiese, and supported the articulated reason with rational underpinning. That is, according to Petitioner, one of ordinary skill in the art would have modified Beach-127's Figure 2 embodiment with a window that extends into optical communication with the sealed interior cavity, in accordance with Wiese's teachings, because that configuration allows downloading information without having to open the downhole assembly at surface locations, which otherwise would take time and subject the downhole assembly to damage or contamination. Pet. 38–39 (citing Wiese ¶¶ 3, 10). Petitioner further contends that using Wiese's optical communication link to communicate between Beach-127's transceiver and remote unit would have constituted the application of known techniques to a known device ready for improvement to obtain predictable results. *Id.* at 41–42.

We have considered Patent Owner's arguments against institution but, on this record, find them unpersuasive. Regarding Patent Owner's argument that combining the references would not result in the window that extends into a "sealed" interior cavity, we disagree. Wiese teaches that its window is "pressure sealed to the housing," thus ensuring that the cavity into which the window extends would be sealed. Regarding Patent Owner's hindsight argument, we disagree that Petitioner failed to articulate a reason with rational underpinning why one of ordinary skill in the art would have combined Beach-127 and Wiese, as discussed above. *See In re Cree, Inc.*, 818 F.3d 694, 702 n.3 (Fed. Cir. 2016) (explaining that a hindsight argument

is of no moment where the Examiner provides a sufficient reason to combine the references). Further, Patent Owner has not pointed us to any knowledge relied on by Petitioner that was gleaned only from the disclosure of the '013 patent. *See In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971) (“Any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.”).

c. Conclusion Regarding Claim 1

For the foregoing reasons, and based on the current record, we determine that Petitioner is reasonably likely to prevail in showing that claim 1 would have been obvious over Beach-127 and Wiese.

2. *Claims 3, 4, 19–22, 24, and 25*

Claims 3, 4, 19, 20, 22, 24, and 25 depend from claim 1. Claim 21 depends from claim 20. Petitioner contends that the additional limitations of these dependent claims are taught or suggested by Beach-127 (for claims 3, 19–22, 24, and 25) or by the combination of Beach-127 and Wiese (for claim 4). Pet. 49–61. Patent Owner does not raise any arguments against institution of review of these claims.

3. *Conclusion as to Ground 1*

We determine, on the current record, that Petitioner demonstrates a reasonable likelihood of prevailing in showing that independent claim 1 would have been obvious over Beach-127 and Wiese. The Petitioner thus satisfies the threshold requirement for institution of *inter partes* review.

“When instituting post-grant review, the Board will authorize the review to proceed on all of the challenged claims and on all grounds of unpatentability asserted for each claim.” 37 C.F.R. § 42.208(a). We must “either (1) institute as to all claims challenged in the petition and on all grounds in the petition, or (2) institute on no claims and deny institution.” Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019),¹¹ 5–6, 64; *see also PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–60 (Fed. Cir. 2018) (stating a decision to institute is “a simple yes-or-no institution choice respecting a petition, embracing all challenges included in the petition”). Thus, because we have decided to grant institution on Ground 1 with respect to claim 1, we must do the same for claims 3, 4, 19–22, 24, and 25.

E. The Remaining Grounds

As discussed above, because we have decided to institute *inter partes* review on Ground 1, we must do the same for Grounds 2 and 3 as well. Moreover, Patent Owner does not raise any additional arguments specifically directed to these grounds.

III. CONCLUSION

For the foregoing reasons, we determine that Petitioner has shown that there is a reasonable likelihood that it would prevail with regard to at least one of the claims challenged in the Petition. Accordingly, we institute *inter partes* review of claims 1–4, 14, 15, 19–22, 24, and 25 of the ’013 patent on all asserted grounds.

¹¹ Available at <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf?MURL=TrialPracticeGuideConsolidated>

IV. ORDER

For the reasons given, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review of claims 1–4, 14, 15, 19–22, 24, and 25 of the '013 patent on all asserted grounds is *instituted*; and

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4(b), notice is hereby given of the institution of trial, which will commence on the entry date of this Decision.

IPR2023-00642
Patent 10,830,013 B2

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