

IN THE 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 Owners.

IPR2023-00642
U.S. Patent 10,830,013

PATENT OWNER'S RESPONSE

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
Ex.2001	File History for U.S. Patent No. 10,047,581
Ex.2002	U.S. Patent No. 10,047,581 (the "Grandparent Patent")
Ex.2003	Table comparing independent claim 1 of the '013 Patent, the Parent Patent, the Grandparent Patent, and the Child Patent
Ex.2004 (NEW)	Provisional Patent Application No. 61/982,052
Ex.2005 (NEW)	Deposition Transcript of Dr. John Rodgers (December 5, 2023)

I. INTRODUCTION

Each of the Petition's three grounds relies on Beach-127 alone or in combination with Wiese to disclose or render obvious claim 1[e]'s requirement of *"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."* Because each of the Challenged Claims¹ depends from claim 1 and because the Petition fails to establish that Beach-127 alone or in view of Wiese discloses or renders obvious a window that extends into ***optical*** communication with a sealed interior cavity, all three grounds fail.

As Petitioner itself admits, Beach-127 makes no mention of optical communication. And although Wiese mentions optical communication as one of many possible ways to communicate data from inside a downhole tool to a remote device, Petitioner fails to identify any plausible reason why Wiese's disclosure would have motivated a person of ordinary skill in the art (POSITA) to modify Beach-127's device to use optical communication to transmit data.

The sole purported teaching, suggestion, or motivation for the combination that the Petition identifies is Wiese's suggestion that wireless communications save

¹ The Petition challenges claims 1–4, 14–15, 19–22, and 24–25 (collectively, the "Challenged Claims").

time and prevent damage by permitting external devices to collect data from downhole tools without having to open the tool's housing. But Beach-127 *already* discloses a device that can wirelessly transmit data to a remote device without being opened. Because Beach-127 does not have the problem that Petitioner alleges to be the motivation for combination, “[a]n inference of nonobviousness is especially strong.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009). Hindsight, rather than rational underpinning, is the only possible explanation for Petitioner's combination. This is especially true given that the proposed combination structurally weakens Beach-127's downhole tool, thereby undercutting a POSITA's goal of making such tools “as robust to physical damage and fluid ingress as possible.” Ex.1022 (Rodgers Decl.), ¶ 47. Further, even if Petitioner could establish any rational motivation to combine Beach-127 and Wiese, the proposed combination would still fail to satisfy claim 1[e]'s requirement of “*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*” because it would require unsealing the cavity the Petition maps to the “sealed interior chamber.”

The Petition's failure to show that the asserted prior art discloses or renders obvious claim element 1[e] is sufficient to dispose of all three grounds, but many of Petitioner's arguments regarding the dependent claims fail for additional

reasons. For example, the Petition relies on the same indentation in the exterior of Beach-127's device to satisfy both claim 19's requirement of "female planar stops" and claim 2's requirement of a "port" for delivering grease or other lubricant into the sealed interior chamber despite Beach-127's complete silence as to the functionality of the identified indentation. Petitioner also relies exclusively on Beach-127 for claim 21's requirement of at least one electronic instrument that is "programmed to obtain orientation data when the at least one electronic instrument senses no vibrations" even though Beach-127 makes no mention of sensing the absence of vibrations.

For all of these reasons, the Board should uphold the validity of the Challenged Claims.

II. CLAIM CONSTRUCTION

No claim construction is necessary to find that the Petition fails to prove the claims unpatentable. Patent Owner's arguments do not hinge on the outcome of any actual controversy about the construction of any claim term, and each of the Grounds raised in the Petition can be rejected without construing any claims. *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (only terms in controversy need to be expressly construed, and only to the extent necessary to resolve controversy).

A. “window”

Petitioner construes “window” to “require a solid material that is transmissive to a communication signal.” Petition, 11. Petitioner, however, also “submits that this term need not be construed for this IPR.” *Id.* at 12. As noted above, Patent Owner agrees. The Board can resolve the issue of whether the prior art renders the challenged claims obvious without construing “window.”

B. “selectively sealed”

Petitioner construes “selectively sealed” to “require the capability of being both sealed and unsealed, as a product design feature.” Petition, 12. Again, Petitioner “submits that this term need not be construed for this IPR.” *Id.* at 13. Patent Owner again agrees. The Board can resolve the issue of whether the prior art renders the challenged claims obvious without construing “selectively sealed.”

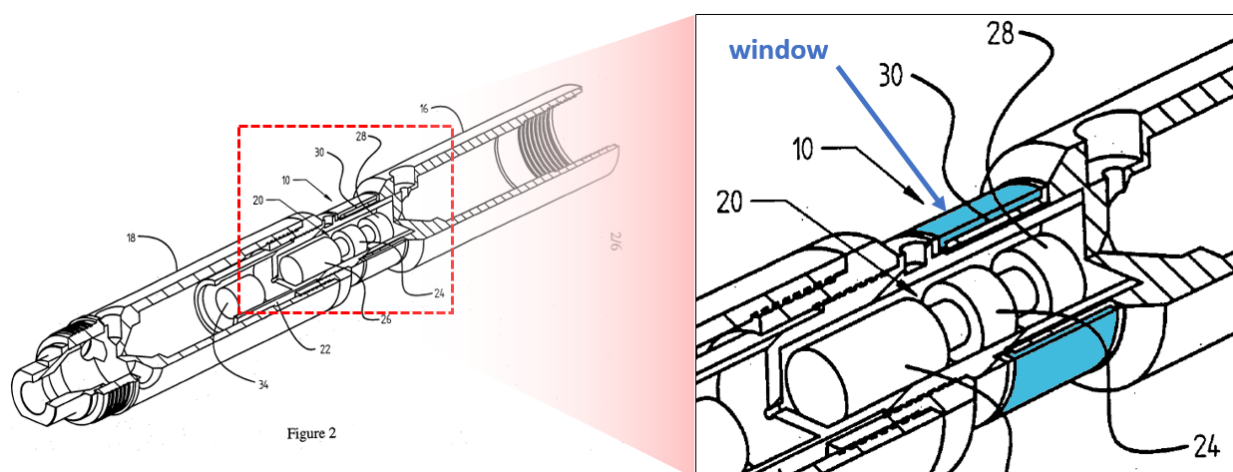
III. GROUNDS I-III: BEACH-127 ALONE OR IN VIEW OF WIESE FAILS TO RENDER OBVIOUS CLAIMS 1, 3-4, 19-22, AND 24-25

Petitioner has failed to show that either Beach-127 alone or in combination with Wiese discloses or renders obvious claim element 1[e]’s requirement of “*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*” under any reasonable construction.

A. Beach-127 alone does not disclose or render obvious claim element 1[e].

Claim element 1[e] requires that the claimed core barrel head assembly include “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.” Although the Petition purports to identify a “window” in the “body 22” of Beach-127, it fails to show that that alleged window extends from the exterior surface into optical communication with what Petitioner has identified as the “sealed interior cavity,” as required. *See* Petition, 32-33.

Beach-127 does not mention a “window” in the body 22. *See* Petition, 32–33. Nevertheless, the Petition alleges that a POSITA “would have appreciated” that Beach-127’s body 22 includes a “window” because Beach-127 discloses that the “electronic device 20” within the body may include a transceiver 28 that can communicate with an external hand-held computer or other device via an antenna 30. Petition, 33-34; Ex.1022, ¶¶ 116–19. Specifically, the Petition asserts that the highlighted portion of the exterior surface of the embodiment depicted in Figure 2 below must be a “window” because it permits communication between the antenna 30 and an external device. Petition, 33-34.



Petition, 33. But even if the highlighted component 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 a “sealed interior cavity,”* as claim 1 requires.

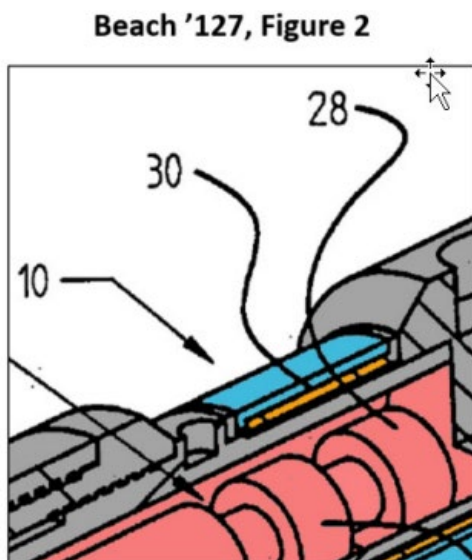
1. The Petition does not allege and Beach-127 does not disclose “optical” communication.

First, the Petition does not even address the claim’s requirement that the window extend into *optical* communication with the sealed interior cavity. Instead, it asserts only that the alleged window “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).” Petition, 34. Nothing in Beach-127 teaches or suggests that this data transmission is via optical communication, as the claim requires. Indeed, the portion of the body 22 Petitioner identifies as the alleged “window” appears in Figure 2 to be an opaque exterior housing that would

not permit transmission of optical signals. And Petitioner's own expert admits that Beach-127 does not expressly disclose optical communication. Ex.2005 (Rodgers Depo. Tr.), 73:16–22. Accordingly, the Beach-127 ground fails for this reason alone.

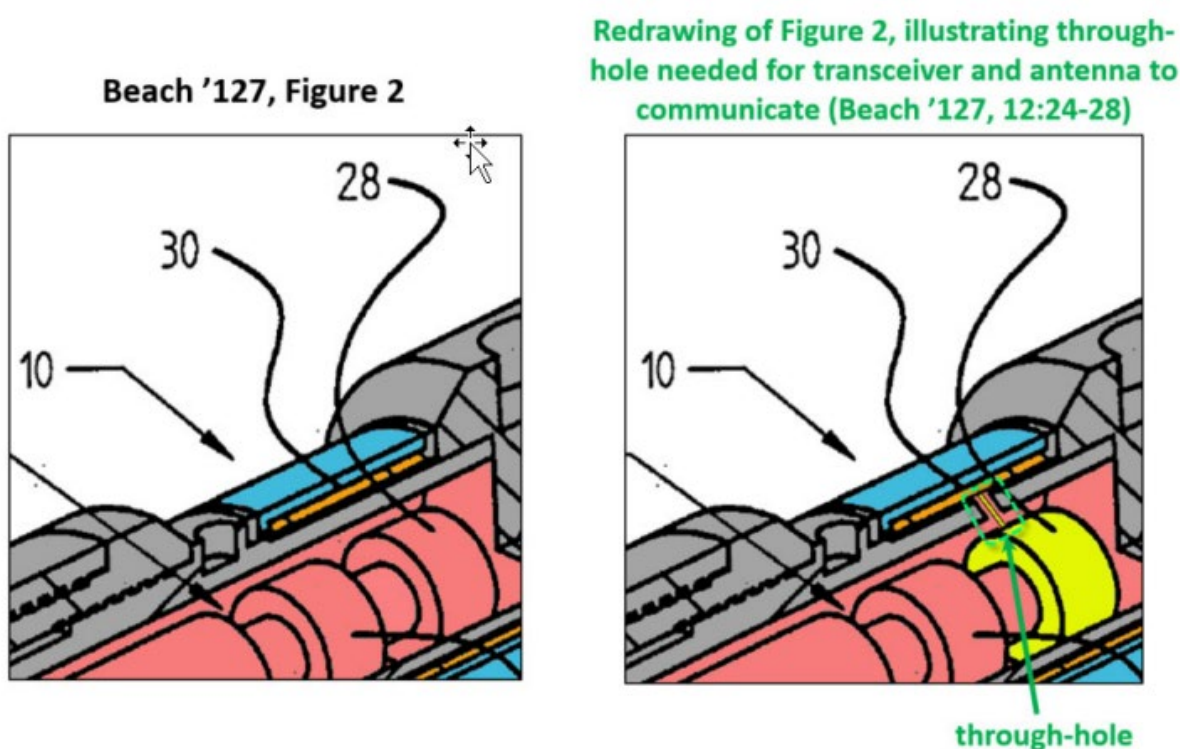
2. The purported “window” the Petition identifies does not extend into communication (of any kind) with the “sealed interior cavity.”

Second, the Petition fails to show that the alleged window itself permits communication between the “exterior surface” and the “sealed interior cavity,” as the claim requires. At most, it shows that the window permits communication between an exterior device and the “antenna 30.” As Petitioner's own annotation of Beach-127's Figure 2 demonstrates, the antenna 30 is *outside* of the cavity that the Petition maps to the recited “*sealed interior cavity*” of claim 1:



Petition, 35.

The Petition attempts to remedy this deficiency by asserting a POSITA would have understood that Beach-127 “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.” Petition, 34. Petitioner’s expert modified Beach-127’s Fig. 2 to illustrate this alleged through-hole:



Petition, 35.

But as Petitioner’s expert admits, Beach-127 does not describe or depict any such through-hole. Ex.2005, 66:6–9; *see* Petition, 34; *see generally* Ex.1003. And neither the Petition nor Petitioner’s supporting expert declaration even attempts to establish that “reliable communication” between the transceiver 28 and the antenna

30 *necessarily* requires a through-hole. *See* Petition, 34–35; Ex.1022, ¶¶ 120–122.

The Petition merely alleges that Beach-127 “implies” a through-hole would be present. Petition, 34 (“... 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...”). Similarly, when Petitioner’s expert was asked about this alleged through-hole in his deposition, he testified only that “the *likely way* to accomplish that transmission would be through a hole of some sort.” Ex.2005, 68:3-4. These assertions regarding the possibility of through-hole are, on their face, insufficient to establish that Beach-127 *inherently* discloses a through-hole. *See PersonalWeb Techs., LLC v. Apple, Inc.*, 917 F.3d 1376, 1382 (Fed. Cir. 2019) (“Inherency ... may not be established by probabilities or possibilities.”) (quoting *PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1195 (Fed. Cir. 2014)).

Moreover, Petitioner *cannot* establish that a through-hole is necessarily present in Beach-127 in light of its own evidence that RF signals may be used between the transceiver 28 and the antenna 30. Ex.1022, ¶ 120 (“With such a through-hole, a POSITA would have understood that **the communication link could take the form of** a wire (such as copper), a fiber optic cable, or various forms of **wireless communication (such as RF or optical signals)**.”). Under cross-examination, Petitioner’s expert admitted that RF signals can be used to

communicate data through solid material such as the Beach-127 device's solid exterior surface. Ex.2005, 49:5-22. Thus, under at least the RF signal scenario contemplated by Dr. Rodgers, no through-hole would be necessary in the solid material between transceiver 28 and antenna 30 in Beach-127's device because the RF signals could pass through such solid material.

Even if Petitioner could establish that Beach-127 expressly or inherently discloses a through-hole, Petitioner still could not show that Beach-127 discloses or renders obvious that the “*window . . . extends from the exterior surface into optical communication with the sealed interior cavity,*” as claim element 1[e] requires. Petitioner's unsupported inherency argument 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.

Moreover, if the interior cavity included a through-hole, as alleged by Petitioner, it would not be “*sealed.*” Therefore, the purported “window” the Petition identifies would not extend into optical communication with any “*sealed interior cavity,*” as the claim recites.

The Petition thus fails to show that Beach-127 expressly or inherently discloses “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.”

3. Beach-127 in view of the knowledge of a POSITA does not render claim element 1[e] obvious.

Petitioner's argument that Beach-127 in view of “the knowledge and skill of a POSA” would have rendered the window limitation obvious also fails. Petition, 37. Petitioner's sole argument is that a POSITA “would have appreciated that optical communication techniques—*e.g.*, infrared (IR) or visible light—were, at the time of the '013 Patent priority date, common and straightforward methods for transferring data from downhole equipment to surface equipment,” and thus, it would have been obvious to perform the disclosed communication between the Beach-127's antenna 30 and an external handheld device via optical communication. Petition, 36–37 (citing Ex.1022, ¶¶ 126–27).

But as already noted, Beach-127 does not disclose that the portion of the body 22 that Petitioner maps to the claimed “window”—or any other portion of the body 22—is transmissive of optical signals, and the Petition makes no effort to explain why it would have been obvious to modify a portion of the body to be comprised of a material that is transmissive of optical signals. Indeed, as the Petition acknowledges, Beach-127's “electronic core orientation device or system 20” already communicates “via a transceiver with a remote device,” so there would

be no need to modify its body to permit *optical* communication. Petition, 15 (citing Ex.1022, ¶¶ 75-76 (citing Ex.1003, 11:9–33, 17:29–36)).

Further, simply replacing the wireless communication between the antenna 30 and any external device would not cure Beach's failure to disclose a window that "extends *from the exterior surface into optical communication with the sealed interior cavity*." Again, that would only make the window extend from the exterior surface into optical communication with the antenna, not with the sealed interior cavity.

Accordingly, the Petition fails to establish a reasonable likelihood of success in showing that Beach-127 alone discloses or renders obvious any challenged claim.

B. A POSITA would not have been motivated to combine Beach-127 and Wiese as suggested in the Petition.

The Petition also fails to show that a POSITA would have been motivated to combine Beach-127 and Wiese as proposed in the Petition. According to the Petition, a POSITA would have found it obvious to replace the antenna 30 in the embodiment depicted in Beach-127's Figure 2 with Wiese's LED array to create a window that "extends from the exterior surface into optical communication with the sealed interior cavity." Petition, 40. But the Petition's rationale for why a

POSITA would have been motivated to make that modification is deficient because it is predicated upon a problem not found in Beach-127's downhole tool.

The sole “teaching, suggestion, or motivation” for the combination that the Petition points to is Wiese's suggestion that Wiese's device, unlike conventional assemblies, can communicate information collected downhole without having to open the drill string at the surface to extract the information—which Wiese explains can be time-consuming and cause damage or contamination. Petition, 38–39 (citing Ex.1004, [0003], [0010])².

Wiese's solution to this problem is to use any type of “wireless communication”—not just optical communication—to transmit data from internal components of its device to outside devices without having to open the device's housing. Ex.1004, [0015]. Wiese expressly states that the “benefit” of its invention (i.e., data extraction without tool disassembly) can be achieved by any “wireless communication.” Ex.1004, [0015] (“It is by means of the wireless communication between antennas 28 and 32 that a benefit of the invention described herein is achieved.”); Ex.2005, 55:9–56:9.

² The Institution Decision references this alleged motivation in its analysis of the combination of Beach-127 and Wiese. Inst. Dec., 30.

Petitioner's reliance on Wiese's problem and solution as motivation for the combination fails because Beach-127 already implements Wiese's solution—i.e., Beach-127's tool wirelessly transmits data to a remote device and thus ***does not need to be opened to extract such data***. Because Beach-127 does not suffer from the problem proffered by Petitioner as the reason for the combination, there exists a strong inference of nonobviousness. *See DePuy*, 567 F.3d at 1326 (“An inference of nonobviousness is especially strong where the prior art's teachings undermine the very reason being proffered as to why a person of ordinary skill would have combined the known elements.”); *Fisher & Paykel Healthcare Ltd. V. ResMed R&D Ger. GmbH*, IPR2017-00272, Paper 41 at 26 (Sept. 6, 2018) (no motivation to combine where secondary reference seeks a new way to solve a problem absent in primary reference).

As the Petition itself acknowledges, the device depicted in Beach-127's Figure 2 already has a “core orientation device or system 20” with a “transceiver 28 coupled to an antenna 30 to communicate with a hand-held computer or other like device.” Petition, 32 (citing Ex.1003, 12:24–28). And as Petitioner's own expert testified, these components permit Beach-127's device to pass information “through from the antenna on the inside to the receiver or hand-held device on the outside” through a “a solid structure that's providing a barrier between wellbore fluid on the outside and the protected space on the inside when the tool is in a

downhole environment.” Ex.2005, 52:2–53:10. Thus, Beach-127’s device *already* permits remote devices to collect downhole information stored inside the assembly without having to open its housing, and a POSITA would not need to replace Beach-127’s antenna 30 with an LED array to introduce that capability. *See* Ex.2005, 52:2-53:10. Similarly, Petitioner’s reliance on Wiese’s statement that its configuration provides a “[f]aster and more reliable method[] for downloading information accumulated downhole” is misplaced because Wiese is referring to a wireless configuration generally, not an optical configuration. Petition, 39 (quoting Ex.1004, [0004]). Beach-127’s tool already includes Wiese’s wireless configuration and is thus already capable of performing Wiese’s “faster and more reliable method” for downloading information accumulated downhole.

Not only would Petitioner’s proposed modification fail to improve Beach-127’s device, but a POSITA would also be strongly motivated *not* to make the combination because it violates a central design tenet of downhole tools—robustness. Petitioner’s expert explains in his declaration that “the designer of a downhole tool is strongly motivated to make the instrument as robust to physical damage and fluid ingress as possible.” Ex.1022, ¶ 47. The proposed combination would instead weaken Beach-127’s assembly because it would require replacing the material that makes up the portion of Beach-127’s body 22 that Petitioner identifies as a “window” with an optically transmissive material. Petitioner’s

expert explained during his deposition that optically transmissive material is weaker than the materials typically forming the exterior of a downhole tool.

Ex.2005, 68:19–22 (“That’s why you can’t just make the whole tool, say, out of translucent material. You want the primary structure to be steel to survive in the operating environment.”). Because the modified version of Beach-127’s tool would include an optically transmissive window of weaker material, Beach-127’s tool will be, by definition, weaker. *See* Ex.2005, 78:5-8 (“that window is going to be a special material that’s different than the rest of the downhole tool structure”).

Petitioner’s proposed modification would also create unnecessary seams in the exterior surface of Beach-127’s device between the optically transmissive material of the window and the material that makes up the rest of the device’s exterior surface. Ex.2005, 77:22–78:17 (agreeing that Beach’s exterior surface would include a seam because “there would be a point where those two materials meet”). Accordingly, Beach-127’s modified downhole tool would not be “as robust to physical damage and fluid ingress as possible.” *See* Ex.1022, ¶ 47.

Beach-127’s unmodified design that does not include a weaker optically transmissive window would, on its face, be more robust. Therefore, under Petitioner’s own expert’s logic, a POSITA would be strongly motivated **not** to add an optically transmissive window. *See* Ex.1022, ¶ 47 (“the designer of a downhole tool is strongly motivated to make the instrument as robust to physical damage and

fluid ingress as possible.”). It would also be unnecessary because, as Beach-127 indicates, there were other types of wireless communications, such as radio communications, available. *See, e.g.,* Ex.1003, 17:33–36, 18:8–10, 20:25–29; *see also* Ex.2005, 44:12–45:3 (agreeing that Beach-127’s wireless communications may include “radio wave” and “acoustic” signals).

In evaluating whether a motivation to combine two prior art references exists, “the benefits, both lost and gained, should be weighed against one another.” *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (quoting *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000)) (internal alterations omitted). Petitioner’s proposed combination solves no problem, as Beach-127’s device can *already* transmit downhole information to a remote device without being disassembled. And the combination would come at the expense of robustness. Beach-127’s modified device would be more vulnerable to damage and fluid ingress because stronger material would be substituted for weaker optically transmissive material and unnecessary points of failure would be added to the device’s exterior housing.

Thus, a POSITA would have no reason to make the proposed combination and, in fact, would be strongly motivated not to do so. *See Henny Penny*, 938 F.3d at 1332 (upholding the Board’s finding that no motivation to combine existed because the disadvantages of the proposed combination outweighed its benefits).

Moreover, Petitioner's expert admittedly failed to even consider the disadvantages of using optical communication in his proposed combination, and his testimony that the proposed combination would have been obvious is deficient for that reason alone. *See* Ex.2005, 57:19–58:6.

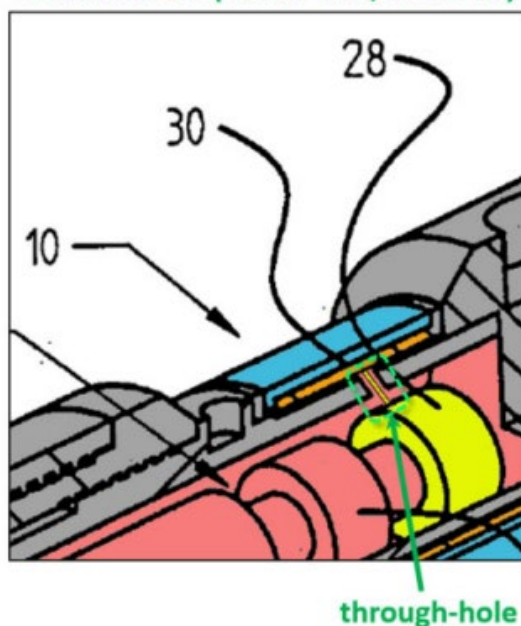
Thus, Petitioner has not “articulated reasoning with some rational underpinning” to support its assertion that a POSITA would have been motivated to reconfigure Beach-127's core orientation device as suggested just to add functionality that the device already possessed. *InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1351 (Fed. Cir. 2014) (citing *KSR v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)). Instead, 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. *InTouch Techs.*, 751 F.3d at 1351. Because making Beach-127's antenna an LED array and adding an optical window would not solve an identified problem and would introduce significant disadvantages, impermissible hindsight based on the claim language itself is the only plausible motivation for the proposed combination. Accordingly, Petitioner fails to show that the proposed combination would have been obvious. *InTouch Techs.*, 751 F.3d at 1349, 1353 (reversing the district court's denial of JMOL of no obviousness where the patent challenger's expert “opined that the references were like separate pieces of a simple jigsaw

puzzle” but “did not explain what reason or motivation one of ordinary skill in the art at the time of the invention would have had to place these pieces together.”).

C. The combination of Beach-127 and Wiese does not render claim element 1[e] obvious.

Even if it would have been obvious to make the proposed combination of Beach-127 and Wiese, the combination fails to cure Beach-127’s deficiencies. Petitioner’s proposed combination—which would replace the antenna 30 in the embodiment depicted in Beach-127’s Figure 2 with an LED array—also fails to disclose or render obvious a window that “extends *from the exterior surface into optical communication with the sealed interior cavity*.” Replacing 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. In other words, the LED array (replacing antenna 30) would be positioned between the exterior surface and the interior cavity, *blocking optical communication between them*, as shown below in Petitioner’s redrawing:

Redrawing of Figure 2, illustrating through-hole needed for transceiver and antenna to communicate (Beach '127, 12:24-28)

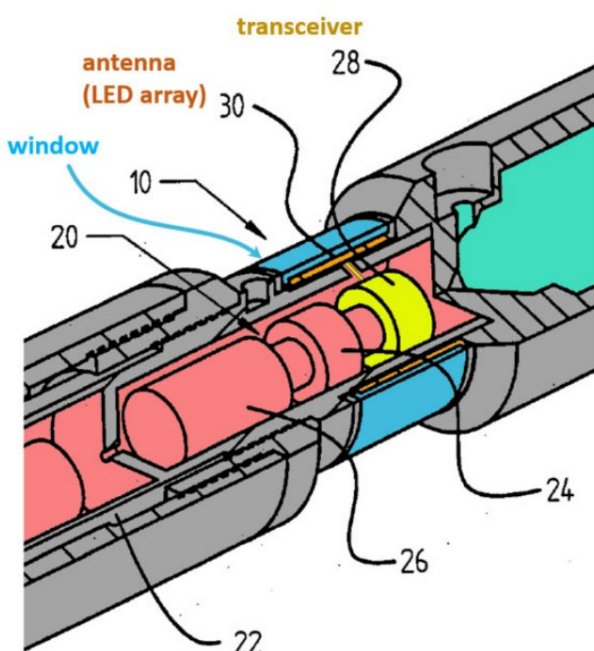


Petition, 35. Therefore, the alleged window of the proposed combination would extend only from the exterior surface into optical communication with the LED array—not the interior cavity. Moreover, the alleged window would not *need* to extend into optical communication with the sealed interior cavity because the LED array, rather than a device within the sealed interior cavity, would be transmitting the optical signals to any external device.

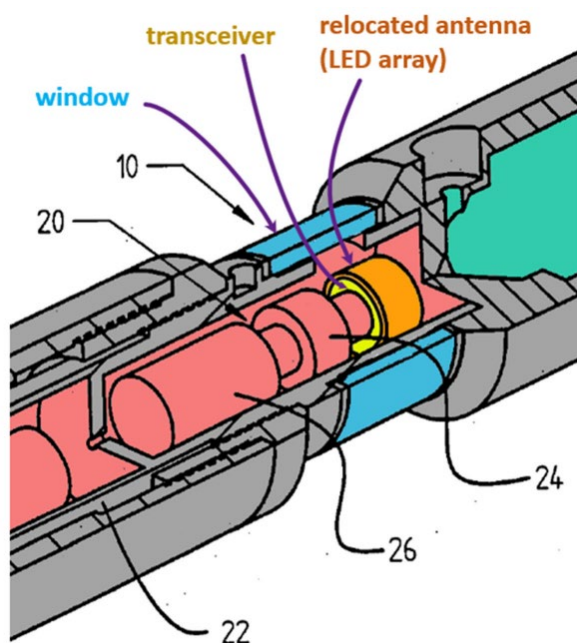
The Petition further proposes that the LED array could in turn communicate with the transceiver 28 of the electronic device 20 within the sealed interior cavity via optical communication. *See* Petition, 40. But the Petition fails to explain how an LED array could *receive* optical signals from the sealed interior chamber. And

even if it could, that would not cause the purported “window” Petitioner identifies in the body 22 of Beach to extend into optical communication with the sealed interior cavity. Instead, the window’s optical communication would still extend only to the LED array.

Petitioner’s expert suggests two specific arrangements involving further modifications to Beach-127 that he alleges “demonstrat[e] how a POSITA would have been motivated to apply Wiese’s teachings to Beach-127’s Figure 2 assembly, and how doing so would satisfy this limitation.” Ex.1022, ¶¶ 133–36. But neither arrangement results in a window that “extends from the exterior surface into optical communication with the sealed interior cavity,” as required. Instead, as shown, both proposed arrangements would require *unsealing* the inner cavity containing Beach-127’s electrical device 20:



Beach/Wiese Example 1:



Beach/Wiese Modification 2:

Ex.1022, ¶¶ 134–35. The first arrangement would require creating a through-hole to facilitate communication between the transceiver 28 of the electrical device 20 and the LED array, and the second arrangement 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. Ex.1022, ¶¶ 134–35. Neither arrangement would result in a window that extends into communication with a “*sealed* interior cavity” as required. Therefore, neither proposed combination discloses or renders obvious claim element 1[e].

In sum, Petitioner and its expert fail to show that the proposed combination would meet claim element 1[e], and even if it had, Petitioner has not “articulated

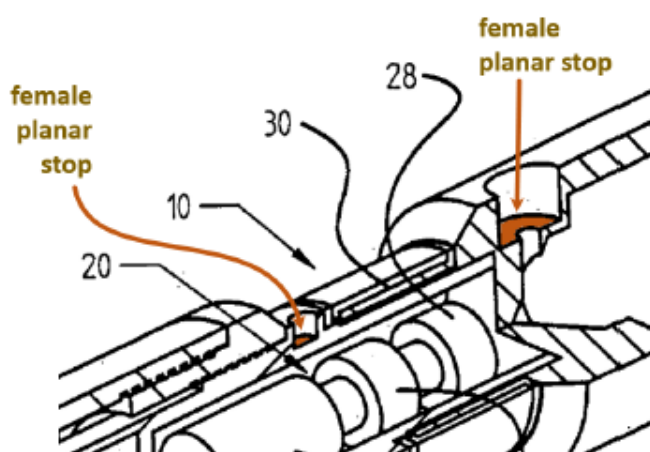
reasoning with some rational underpinning” to support its assertion that a POSITA would have been motivated to reconfigure Beach-127’s core orientation device as suggested. *See InTouch Techs.*, 751 F.3d at 1351. Instead, Petitioner’s expert’s proposed rearrangements of the Beach-127 device merely reflect an impermissible attempt to use the challenged claims as a “roadmap” to attempt to fit the prior art to the claim language. *See InTouch Techs.*, 751 F.3d at 1351.

Because the Petition fails to establish that either Beach-127 alone or the combination of Beach-127 and Wiese discloses or renders obvious claim element 1[e], Ground I fails. Grounds II and III also rely on Beach-127 and Wiese to disclose the limitations of claim element 1[e], so those Grounds fail, as well.

D. The asserted prior art does not disclose or renders obvious dependent claim 19.

Because each of the remaining challenged claims depend from claim 1, the Petition’s failure to show that the asserted prior art discloses or renders obvious claim element 1[e] is fatal to Petition’s arguments with respect to each of the challenged claims. But the Petition also fails to show that either Beach-127 alone or the combination of Beach-127 and Wiese discloses or renders obvious claim 19’s requirement of “a plurality of female planar stops.”

Petitioner points to the two below indentations in the exterior of the device depicted in Beach-127's Figure 2 as allegedly disclosing claim 19's requirement of "wherein the exterior surface defines a plurality of female planar stops":



Petition, 53. But the Petition does not point to any description of these indentations in Beach-127's specification, nor does it make any effort to describe how they constitute "stops" with the meaning of the '013 Patent, which describes "female planar stops" as features for "aid[ing] in grasping and selectively orienting the orientation of obtain orientation data and the power source 50." Ex.1001 at 9:10–12. The Petition does not explain how either of the depicted indentations could be used for "grasping" the device or how they constitute "stops" under any understanding of that term.

In fact, later in the Petition, Petitioner contradicts itself and asserts that one of these same indentations is instead a "port," and its expert asserts that "a POSITA would have understood that the port serves as an access point for

delivering lubrication to the spring and bearing 32 of the Beach '127 assembly, in order to minimize the undesirable friction between or within these components of the assembly.” Petition at 62–68; Ex.1022, ¶ 195. Nowhere does the Petition explain how the indentation can be both a “port” for receiving lubricant and a “stop.”

Petitioner's argument that Patent Owner “acquiesc[ed]” to the Patent Office's finding that Beach-127 discloses this limitation during the prosecution of the parent '463 Patent is incorrect. *See* Petition at 53–54. The Patent Owner made no such acquiescence and instead simply amended the claims to further prosecution. Ex.1011 at 36; *see Sanofi v. Watson Lab'ys Inc.*, 875 F.3d 636, 650 (Fed. Cir. 2017) (holding that the “familiar pattern” in which “an applicant adopts an explicit claim-narrowing limitation to achieve immediate issuance of a patent containing the narrowed claims” does not, without more, create disclaimers with respect to the unamended claim language).

Thus, the Petition fails to establish that Beach-127 alone or in combination with Wiese renders claim 19 obvious for this additional reason.

E. The combination of Beach-127 and Wiese does not render obvious claim element 21[a]

The Petition also fails to establish that Beach-127 discloses or renders obvious claim 21's requirement of a core barrel head assembly with at least one

electronic instrument that is “programmed to obtain orientation data when the at least one electronic instrument senses no vibrations”—either alone or in combination with Wiese. The Petition relies solely on Beach-127 for this element, but it fails to cite any disclosures in Beach-127 that relate to “vibrations” at all—much less that disclose or render obvious obtaining orientation data when an electronic instrument senses no vibrations.

Instead, the Petition cites only disclosures relating to (1) taking measurements when *drilling* has stopped (2) issuing a trigger signal upon detecting a *change in direction* of motion from a downhole direction to an uphole direction, and (3) detecting a zero speed of *rotation*. Petition, 55–56. None of these disclosures teach obtaining orientation data when vibration stops. For example, the Petition fails to cite any evidence that a tool cannot vibrate after drilling has stopped or when it is not rotating. The Petition further asserts that “[w]hen Beach’s electronic instrument senses *no relative movement*, as disclosed above, the instrument would likewise sense no vibrations, as vibrations entail movement.” Petition, 56. But the cited disclosures in Beach-127 are *not* about sensing “no relative movement;” they merely teach sensing cessation of “drilling” and “rotation.” See Petition, 56.

Therefore, the Petition fails to cite any evidence that Beach-127 discloses claim element 21[a] either expressly or inherently. And Petition does not contend

that Beach-127 renders this claim element obvious. Accordingly, even if Petitioner could demonstrate that Beach-127 in view of Wiese discloses or renders obvious independent claim 1, it would fail to establish that the cited art invalidates claim 21.

IV. GROUND II: BEACH-127 IN VIEW OF WIESE AND PICKARD FAILS TO RENDER OBVIOUS CLAIM 2

As already noted, because Ground II relies on the Beach-127 and Wiese to establish the anticipation and/or obviousness of claim element 1[e], the Petition's failure to establish that the cited art discloses that limitation or renders it obvious is also fatal to Ground II. But Ground II fails for the additional reason that Beach-127 in view of Wiese and Pickard fails to disclose or render obvious "a grease fitting mounted in [a] port to allow for selective passage of grease or other lubricant to and from the exterior surface of the barrel head assembly into communication with the first interior cavity," as claim 2 requires.

A. The cited prior art does not disclose or suggest the claimed "grease fitting mounted in the port."

The Petition relies on one of the same indentations depicted in Beach-127's Figure 2 that the Petition mapped to claim 19's "female planar stops" as disclosing a "port includ[ing] a complete void, or through-hole, extending into the 'first interior cavity.'" Petition, 62–63. But the Petition does not cite anything in Beach-

127 indicating that the indentation or aperture it points to is a “port”—or even describing the function of the aperture at all.

And even if the cited aperture were a “port,” the Petition concedes that Beach-127 does not disclose mounting a grease fitting into it, as claim 2 requires. Instead, Petitioner argues that it would have been obvious to implement Pickard’s “grease fitting 41” into Beach-127’s alleged “port” “facilitate injection of lubrication into Beach’s assembly.” Petition, 64–68.

But Petitioner cites no evidence beyond the conclusory testimony of its expert that a POSITA “would have understood that the port functions as an access point for delivering lubrication to the spring and bearing 32 of the Beach ’127 assembly.” *See* Petition, 66 (citing Ex.1022, ¶¶ 193–195). Again, Beach-127 does not indicate that the aperture Petitioner relies on is a “port” at all, nor does it mention lubricant. Therefore, contrary to Petitioner’s assertions, nothing in Beach-127 indicates a need for “pressurized injection of lubricant” into the aperture.

Even if it did, Pickard does not disclose mounting its grease fitting into a *port* “to allow for selective passage of grease or other lubricant to and from the exterior surface,” as claim 2 recites. Instead, Pickard teaches threading the grease fitting into the end of a “bore 40” in an “inner tube cap 29 threaded into the outer end of the core receiving tube.” Ex.1006, 4:7–15, 4:31–35. Thus, even considered together, Beach-127 and Pickard do not disclose or suggest “a grease fitting

mounted in [a] port to allow for selective passage of grease or other lubricant to and from the exterior surface of the barrel head assembly into communication with the first interior cavity.” And additional evidence included in a Reply would not cure the Petition’s failure to make a *prima facie* case of obviousness with respect to claim 2. 37 C.F.R. §§ 42.22(a)(2), 42.23(b); *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1370 (Fed. Cir. 2016).

B. Petitioner fails to explain how or why a POSITA would mount Pickard’s threaded grease fitting into Beach-127’s non-threaded aperture.

Even if Beach-127 included any disclosure suggesting that the aperture the Petition relies on is a port for delivering lubrication, the Petition fails to show that a POSITA would have been motivated to mount the grease fitting disclosed in Pickard into it. Petitioner’s expert asserts, without support, that “POSITA would have further appreciated that the port design shown in Figure 2 of Beach-127 already reflects a design that would mate with a grease fitting.” Ex.1022, ¶ 195. But Pickard’s Figure 2 makes clear that its “grease fitting 41” is threaded, and the specification expressly states that the grease fitting is “threaded into the opposite end of the bore 40.” Ex.1006, 4:34–45, Fig. 2. By contrast, the aperture in Beach-127 upon which Petitioner relies is visibly *not* threaded and therefore not configured to mate with a threaded grease fitting. The Petition fails to explain how

or why a POSITA would mount Pickard's threaded grease fitting into Beach-127's non-threaded aperture.

Petitioner's expert attempts to address this shortcoming by asserting in a footnote that "a POSITA would have understood that, in Beach-127 Figure 2 assembly, the port of adaptor 16 would have included a female threaded portion within the through-hole, in order to reliably mate with a grease fitting," but nothing in Beach-127's Figure 2 suggests that the alleged port is threaded. *See* Ex.1022, ¶ 198 n.9; Ex.1003, Fig. 2. Petitioner's expert alternatively asserts that "implementing such female threads would have been a routine task that was well within the skillset of a POSITA" and notes that Beach-127 discloses female threaded portions at multiple other locations on the assembly. Ex.1022, ¶ 198 n.9. But the fact that the drafter of Beach-127 disclosed threading at other locations but specifically chose *not* to show threading in the alleged port would confirm to a POSITA that the alleged port was not intended to be threaded.

Thus, even if Petitioner could establish that a POSITA would understand Beach-127's aperture to be a port for accepting lubricant despite Beach-127's complete silence on that aperture's function, Petitioner fails to show how or why a POSITA would mount Pickard's grease fitting in that port.

Because the Petition fails to establish that it would have been obvious to combine Beach-127 with Pickard and because the Petition fails to show that the proposed combination would satisfy claim 2, Ground II fails.

V. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board uphold the validity of the Challenged Claims.

Respectfully submitted,

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CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), Patent Owner hereby certifies, in accordance with and reliance on the word count provided by the word-processing system used to prepare this Response, that the number of words in this paper is 6,030. This word count excludes the table of contents, table of authorities, mandatory notices under §42.8, certificate of service, certificate of word count, signature block, and appendix of exhibits. *See* 37 C.F.R. §42.24(c).

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CERTIFICATE OF SERVICE

The undersigned certifies that, in accordance with 37 C.F.R. § 42.6(e),
service was made on Petitioner as detailed below.

Date of service December 19, 2023

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Documents served **Patent Owner's Response; Exhibit List and Exhibits
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