

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

U.S. WELL SERVICES, LLC,
Petitioner,

v.

HALLIBURTON ENERGY SERVICES, INC.,
Patent Owner.

IPR2022-01163
Patent 7,574,325 B2

Before HUBERT C. LORIN, KRISTINA M. KALAN, and
JAMES J. MAYBERRY, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

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

I. INTRODUCTION

U.S. Well Services, LLC (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 1–22 of U.S. Patent No. 7,574,325 B2 (Ex. 1001, “the ’325 patent”). Halliburton Energy Services, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 7, “Prelim. Resp.”).

To institute *inter partes* review, we must determine that the information presented in the Petition shows “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). For the reasons discussed below, after considering the parties’ submissions and the evidence of record, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one claim of the ’325 patent, and we do not institute *inter partes* review.

A. Related Proceedings

The parties identify the following district court litigation as a related matter: *U.S. Well Services, Inc. v. Halliburton Co.*, 6:21-cv-00367-ADA (W.D. Tex.). Pet. 1; Paper 5, 1 (Patent Owner’s Mandatory Notices).

Petitioner also states that it has filed petitions against other patents held by Patent Owner in IPR2022-01162, IPR2022-01164, and IPR2022-01165. Pet. 2.

B. Real Party-in-Interest

Petitioner states: “U.S. Wells Services, LLC . . . is the real party-in-interest for this Petition.” Pet. 1. Patent Owner states that Halliburton Energy Services, Inc. is the real party-in-interest. Paper 5, 2.

C. The '325 Patent

The '325 patent, titled “Methods to Monitor System Sensor and Actuator Health and Performance,” is directed to a “method for assessing health and performance of a system” which may comprise “subsystems (preferably physically coupled subsystems), at least some of which are characterizable by transmitted signals;” some signals “are transformed into a comparable form and compared, so as to identify signals that are outside of operating bounds.” Ex. 1001, codes (54), (57).

Figure 4 of the '325 patent is reproduced below:

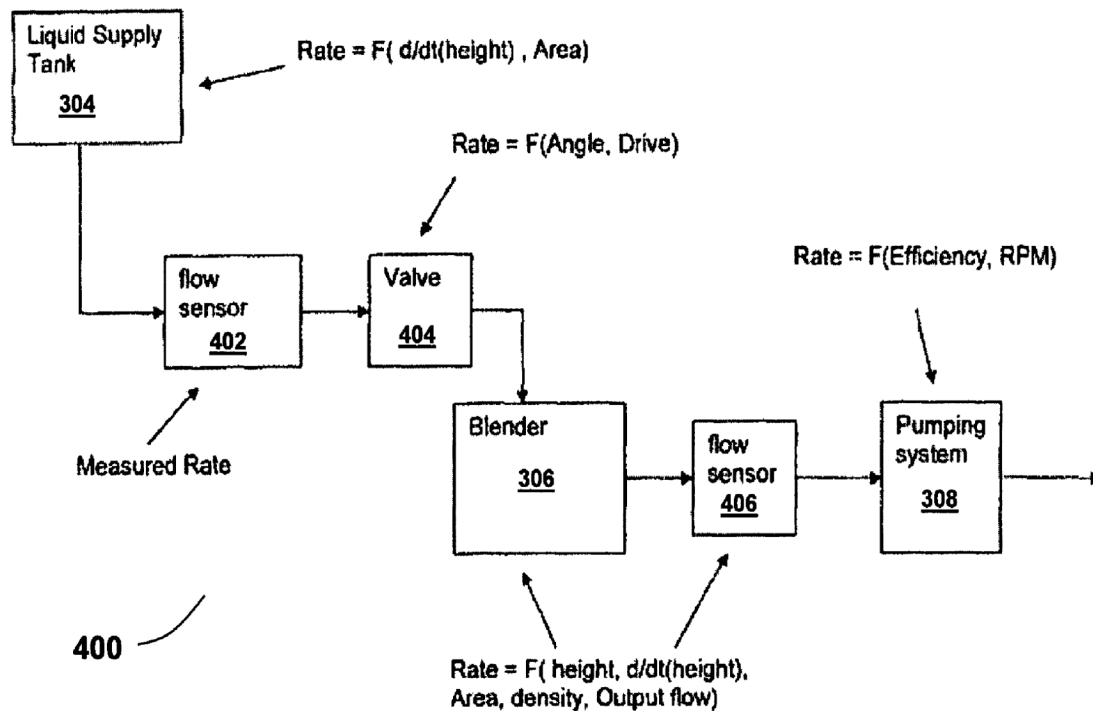


Figure 4 “shows a detail of the liquid supply side of the sand and liquid slurry system consistent with implementing an embodiment of the present innovations.” *Id.* at 2:51–53. Figure 4 depicts liquid supply tank 304, flow sensor 402, valve 404, blender 306, flow sensor 406, and pumping system 308. *Id.* at 5:18–40, Fig. 4. The elements of Figure 4 “are physically

coupled (via flow stream hydraulics, in this example)” and “can be characterized in terms of one another.” *Id.* at 5:25–27. The ’325 patent describes determining different measurements such as liquid flow rate at flow sensor 402, “rate as a function of the valve flow constant, the valve-open angle and drive signal applied to” valve 404, “rate as a function of the height over time, the area, density, and output flow of the blender” at blender 306 and flow sensor 406, and rate “in terms of efficiency, output curve, and RPMs of the pumping system” 308. *Id.* at 5:27–40. The “multiple functions that result in flow rate determination effectively form a system or plurality of redundant sensor measurements for flow rate measurements.” *Id.* at 5:41–46.

D. Illustrative Claim

Claim 1 is reproduced below.

1. [Preamble] A method of monitoring an oilfield equipment system, comprising the steps of:
 - [a] identifying a physical coupling among three or more oilfield equipment subsystems;
 - [b] monitoring a plurality of signals with a computer-based monitoring system, each signal being associated with one of the three or more oilfield equipment subsystems;
 - [c] transforming one or more of the oilfield equipment subsystem signals into units associated with the type of physical coupling among the three or more oilfield equipment subsystems;
 - [d] comparing at least some of the signals; and
 - [e] indicating at least one oilfield equipment subsystem’s signal that does not agree with at least two other oilfield equipment subsystems’ signals.

Ex. 1001, 10:34–47 (bracketed annotations added by Petitioner).

E. Asserted Grounds of Unpatentability

Petitioner asserts that claims 1–22 would have been unpatentable on the following grounds:

Ground	Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1	1–15, 18–22	§ 102 or § 103	Koederitz ²
2	1, 3, 9, 14, 18–22	§ 102 or § 103	Koederitz, Hori ³
3	1, 3, 9, 22	§ 103	Koederitz, SPE-56634, ⁴ Hopkins ⁵
4	16, 17 ⁶	§ 102 or § 103	SPE-56634

Pet. 10. In support of its unpatentability arguments, Petitioner relies on the Declaration of John W. Ely (Ex. 1003). Patent Owner relies on the Declaration of Dr. Robert A. Durham (Ex. 2001).

II. ANALYSIS

A. Claim Construction

We apply the claim construction standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005). 37 C.F.R. § 42.100(b) (2021). Under *Phillips*, claim terms are afforded “their ordinary and customary

¹ The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) (“AIA”), amended 35 U.S.C. § 102 and § 103. Because the ’325 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA versions of § 102 and § 103.

² US 6,484,816 B1, issued November 26, 2002 (Ex. 1004).

³ US 2006/0287806 A1, published December 21, 2006 (Ex. 1005).

⁴ A.J. Mansure *et al.*, *A Probabilistic Reasoning Tool for Circulation Monitoring Based on Flow Measurements*, SPE 56634 (October 3, 1999) (Ex. 1006).

⁵ US 5,442,462, issued August 15, 1995 (Ex. 1007)

⁶ On October 5, 2022, Patent Owner filed a Disclaimer in Patent Under 37 C.F.R. § 1.321(a) of claims 16 and 17 of the ’325 patent. Ex. 2009. Because Ground 4 covers only these two now-disclaimed claims, we do not analyze Ground 4 in this Decision.

meaning.” *Phillips*, 415 F.3d at 1312. The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1313. Only terms that are in controversy need to be construed, and then only to the extent necessary to resolve the controversy. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those 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))).

Petitioner proposes construing one term, “plurality of nodes.” Pet. 13. Petitioner “applies an ordinary and customary meaning of a ‘plurality of nodes’” and argues that the term “should be construed to mean the ‘plurality of subsystems’ as disclosed throughout the ’325 Patent.” *Id.*

Patent Owner states that it “does not dispute Petitioner’s constructions for the purposes of this preliminary response.” Prelim. Resp. 2.

On this record, we determine that no claim terms require express construction.

B. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art (“POSITA”) “would include someone who has, a Bachelor of Science in Mechanical Engineering, Electrical Engineering, Petroleum Engineering, or an equivalent field and at least two years of academic or industry experience in the oil and gas industry, including in process control systems.” Pet. 12.

Patent Owner “applies Petitioner’s definition of a POSITA.” Prelim. Resp. 21. Accordingly, for the purposes of this Decision, we adopt Petitioner’s proposal regarding the level of one of ordinary skill in the art

with the exception of the open-ended phrase “at least,” which expands the range of experience indefinitely without an upper bound. The level of ordinary skill in the art is also reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

C. Asserted Prior Art

1. Koederitz (Ex. 1004)

Koederitz is titled “Method and System for Controlling Well Bore Pressure” and is directed to methods and systems for maintaining fluid pressure control of a well bore drilled through a subterranean formation. Ex. 1004, codes (54), (57). In Koederitz, one or more sensors “may be interconnected with the controller to sense well bore pressure conditions and/or pumping conditions.” *Id.* at code (57). Koederitz facilitates “regaining hydrostatic control of the well bore in a more timely fashion and with improved process control” and “provides methods and systems for circulating a kick out of a well bore and regaining hydrostatic control of the well bore with the ability to vary the pump rate. *Id.* at 3:59–62. Koederitz’s “control system may obtain and record information pertaining to selected drilling parameters which may be useful in executing a well killing procedure.” *Id.* at 4:4–6. In addition to sensed well bore and/or drilling parameters, “parameters may be sensed or monitored when performing well bore related operations such as well completion work or remedial well work.” *Id.* at 6:30–37.

2. Hori (Ex. 1005)

Hori is titled “Fault Diagnosis Apparatus for Sensors Used in a System” and relates to an “apparatus for sensors in an apparatus system” having “at least three sensors which detect different physical quantities for

one physical phenomenon which vary in correlation with one another.”

Ex. 1005, codes (54), (57). Hori is directed to a fault diagnosis apparatus for sensors “used in vehicles, power plants, industrial machines, chemical plants and the like.” *Id.* ¶ 1. Hori’s apparatus is “incorporated into a vehicle multiple-transmission apparatus comprising a sensor node that transmits the measurement of the first physical quantity as communication data, on the basis of the first measurement signal.” *Id.* ¶ 3.

3. *SPE-56634 (Ex. 1006)*

SPE-56634, a paper prepared for presentation at the 1999 Society of Petroleum Engineers annual meeting, is titled “A Probabilistic Reasoning Tool for Circulation Monitoring Based on Flow Measurements” and discloses a Circulation Monitoring System useful for “detecting, characterizing, and quantifying lost circulation, fluid influx, gas/steam kicks, loss of mud pump efficiency, washouts, plugged nozzles, and sensor problems.” Ex. 1006, Abstract.

4. *Hopkins (Ex. 1007)*

Hopkins is titled “Method of Controlling a Manufacturing Process Using Multivariate Analysis” and is directed to a “manufacturing process using multivariate analysis for statistical process control,” in which “data representing a plurality of process and/or product variables is collected during operation of the process.” Ex. 1007, codes (54), (57). Hopkins identifies the difficulty with determining the source of the problem as the number of process variables increases. *Id.* at 1:64–68. Hopkins purports to solve this difficulty with a number of steps, including generating a surrogate variable to determine the source of the problem. *Id.* at 2:3–24.

D. Analysis

“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) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)); *see also* 37 C.F.R. § 42.104(b) (requiring a petition for *inter partes* review to identify how the challenged claim is to be construed and where each element of the claim is found in the prior art patents or printed publications relied upon).

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 631 (Fed. Cir. 1987). A “prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements ‘arranged as in the claim.’” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1369 (Fed. Cir. 2008) (quoting *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1548 (Fed. Cir. 1983)).

A patent claim is unpatentable under 35 U.S.C. § 103 if the differences between the claimed subject matter 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 said subject matter pertains. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved based on 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) when presented, objective evidence of nonobviousness, i.e., secondary considerations.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). Subsumed within the *Graham* factors are the requirements that all claim limitations be found in the prior art references and that the skilled artisan would have had a reasonable expectation of success in combining the prior art references to achieve the claimed invention. *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). Additionally, the obviousness inquiry typically requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)). Petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements,” but “must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016).

1. *Ground 1*

a. *Petitioner’s Arguments*

Petitioner asserts that Koederitz “anticipates and/or renders obvious, claims 1-15 and 18-22 of the ’325 Patent.” Pet. 13.

⁷ At this stage, although Petitioner discusses secondary considerations briefly (Pet. 65–66), Patent Owner does not present any objective evidence of secondary considerations as to any of the challenged claims.

Petitioner asserts that every element of claim 1 is found in Koederitz, as follows:

[Preamble] A method of monitoring an oilfield equipment system, comprising the steps of: (Pet. 13–14 (relying on Ex. 1003 ¶¶ 45; Ex. 1004, 6:19–24, 6:33–38));⁸

[a] identifying a physical coupling among three or more oilfield equipment subsystems; (Pet. 14–15 (relying on Ex. 1003 ¶¶ 48–49; Ex. 1004, 5:44–47, Fig. 1));

[b] monitoring a plurality of signals with a computer-based monitoring system, each signal being associated with one of the three or more oilfield equipment subsystems; (Pet. 15–16 (relying on Ex. 1003 ¶¶ 50–51; Ex. 1004, Abstract, 6:19–24, 6:37–44));

[c] transforming one or more of the oilfield equipment subsystem signals into units associated with the type of physical coupling among the three or more oilfield equipment subsystems; (Pet. 16–17 (relying on Ex. 1003 ¶¶ 52–55; Ex. 1004, Abstract, 6:62–65, 11:43–45));

[d] comparing at least some of the signals; and (Pet. 18 (relying on Ex. 1003 ¶¶ 56–60; Ex. 1004, 7:22–27, claim 10));

[e] indicating at least one oilfield equipment subsystem's signal that does not agree with at least two other oilfield equipment subsystems' signals. Pet. 18–19 (relying on Ex. 1003 ¶¶ 55, 59–61; Ex. 1004, 13:13–19, 11:3–11).

⁸ We express no opinion on whether the preamble is limiting.

Petitioner presents additional arguments directed to where Petitioner believes the limitations of claims 2–14 and 18–22 are found in Koederitz. Pet. 19–39.

b. Patent Owner’s Arguments

Patent Owner argues that, regarding limitation 1[b], which requires “each signal being associated with one of the three or more oilfield equipment subsystems,” Koederitz’s “sensors are, in effect, duplicate sensors that monitor repeat signals and are therefore associated with only one oilfield equipment subsystem.” Prelim. Resp. 30. According to Patent Owner, “Petitioner does not identify or explain any disclosure about how signals from distinct subsystems are monitored, transformed, compared, and action taken, as described in the rest of Claim 1.” *Id.* at 30–31. With respect to independent claims 9, 18, and 22, Patent Owner relies on its claim 1 arguments and also makes a similar argument about Koederitz’s sensors being “redundant” instead of being signals associated with a plurality of subsystems, and Koederitz’s sensors failing to monitor three or more signals that are physically coupled but not identical. *Id.* at 31–32.

c. Analysis

We agree with Patent Owner that Petitioner’s rationale has not adequately explained how Koederitz’s sensors meet the limitations of at least independent claims 1, 9, 18, and 22. Patent Owner argues that Koederitz discloses “redundant sensor[s] at each respective sensed position, such that each sensing act is performed by two or more sensors at each location.” Prelim. Resp. 30 (citing Ex. 1004, 8:4–7, [sic] 7:5–9). With respect to limitation 1[b], “monitoring a plurality of signals with a computer-based monitoring system, each signal being associated with one of the three

or more oilfield equipment subsystems,” Petitioner relies on Koederitz’s disclosure that a “programmable system controller 100 and one or more sensors 80, 82, 84, and 95” may “sense and/or receive information pertaining to one or more well bore and/or drilling parameters.” Pet. 15–16 (citing Ex. 1004, Abstract, 6:19–24, 6:37–44). Petitioner further argues that Koederitz’s disclosure of different parameters “which may be sensed and input to the controller 100” may include, i.e., mud tank volume/level, mud pump rate and/or stroke counter, fluid pressure in the mud system and the drill string, well bore pressure near the surface, and/or the positions of the choke and the blowout preventers, and these are the “type of oilfield equipment subsystems monitored.” *Id.* at 16 (citing Ex. 1004, 6:37–44). As argued by Patent Owner, however, the portion of Koederitz that discusses comparison of signals from sensors 80, 82, 84, 94, and 95 may pertain only to “duplicate sensors that monitor repeat signals” from the same location. Prelim. Resp. 30–31. The portion of Koederitz that discusses comparison of sensed signals relied upon by Petitioner (i.e. signals from sensors 80, 82, 84, 94, and 95) discloses that the “sensed information from each sensor at a respective position may be compared to the other sensed information at that respective position to determine the accuracy, variance, and/or reliability of the sensed value.” Ex. 1004, 7:9–13; *see also id.* at 10:66–11:2 (“well bore annulus pressure sensor 84 and the drill pipe pressure sensor 80 may include one or more additional respective sensors to provide a second measurement or sensing of the respective pressure being sensed”). This does not support Petitioner’s argument that each of these signals are compared among each other, and therefore among different subsystems, as required by claim 1. Rather, it appears that Koederitz discloses comparing duplicate signals from

the same position, and compares those duplicate signals to each other to ensure accuracy of the signal received from that position. Petitioner does not, therefore, clearly articulate how Koederitz's sensing and comparison of its redundant signals maps to the required "each signal being associated with one of the three or more oilfield equipment subsystems" limitation of claim 1[b] or the "comparing at least some of the signals" associated with one of the three or more oilfield equipment subsystems limitation of claim 1[d].

Additionally, with respect to limitation 1[e], which requires indicating that "at least one oilfield equipment subsystem's signal . . . does not agree with at least two other oilfield equipment subsystems' signals," Petitioner generalizes that the method and system of Koederitz identifies sensor failures, erroneous data, and sensor inconsistencies with in a system with a multitude of equipment subsystems and therefore "necessarily teaches the step of" limitation 1[e]. Pet. 18–19; Ex. 1003 ¶ 61. This explanation also fails to find support in Koederitz's disclosure of monitoring duplicate signals from the same location, as discussed above, and fails to articulate with sufficient clarity how these disclosures anticipate or necessarily teach the disclosures of limitation 1[e].

Additionally, to the extent Petitioner presents an argument that Koederitz renders obvious (as opposed to anticipates) the claims challenged under this ground, we do not perceive a clear articulation by Petitioner of why Koederitz would have rendered the challenged claim limitations obvious. According to 35 U.S.C. § 312(a)(3), a petition for *inter partes* review must identify, "in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim."

According to 37 C.F.R. § 42.104(b)(4), a petition for *inter partes* review must identify how “the construed claim is unpatentable under the statutory grounds” on which the petitioner challenges the claims, and “must specify where each element of the claim is found in the prior art patents or printed publications relied upon.” Rule 42.104(b)(5) adds that the Petition must identify “specific portions of the evidence that support the challenge.” Similarly, Rule 42.22(a)(2) states that each petition must include a “full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent.” The Patent Trial Practice Guide suggests that parties should “focus on concise, well-organized, easy-to-follow arguments supported by readily identifiable evidence of record.” Patent Trial and Appeal Board Consolidated Trial Practice Guide 39, *available at* <https://www.uspto.gov/TrialPracticeGuideConsolidated> (Nov. 14, 2019).

Here, Petitioner’s approach of arguing that every limitation in the claims challenged under Ground 1 can be both anticipated by and obvious over Koederitz fails to identify with sufficient specificity the approach that Petitioner intends to invoke. Although arguing in the alternative is generally permissible, in this case, both the Petition and Petitioner’s expert fail to explain in adequate detail which, why or how the identified elements of Koederitz, or the addition of the knowledge of one of ordinary skill in the art to Koederitz’s elements, meet the limitations of the challenged claims. In each subsection discussing the limitations of claim 1, Petitioner relies on Koederitz, seemingly individually, but then adds language indicating that, with respect to limitations 1[c], 1[d], and 1[e], a “POSITA would understand

that . . .” or “SPC techniques would be understood by a POSITA to” Pet. 16–19. This leaves it unclear whether Petitioner intends to rely on Koederitz as an anticipation reference, or Koederitz as an obviousness reference, or something else.

Even for limitation 1[e], which requires indicating that “at least one oilfield equipment subsystem’s signal . . . does not agree with at least two other oilfield equipment subsystems’ signals,” Petitioner argues that a POSITA would understand that the method and system of Koederitz “that identifies sensor failures, erroneous data, and sensor inconsistencies within a system with a multitude of equipment subsystems teaches the limitations of this claimed step.” Pet. 19 (citing Ex. 1003 ¶¶ 59–61). Not only does this weaken Petitioner’s anticipation argument, by inferring that the method and system of Koederitz do not necessarily anticipate limitation 1[e], but it also leaves unclear how precisely Petitioner intends to map the general features of Koederitz’s method and system to the specific requirements of limitation 1[e], or explain with particularity how a POSITA would have understood that these features teach limitation 1[e], in support of Petitioner’s obviousness argument. Thus, for example, we are not able to determine, based on the information advanced in the Petition, what Petitioner relies on to meet limitation 1[e] based on anticipation, or based on obviousness. Pet. 18–19. Mr. Ely’s testimony, which largely mirrors the Petition, does not add any clarity. *See* Ex. 1003 ¶¶ 45–61.

The layering of one alternative argument on top of another alternative argument, without sufficient explanation of how the alternatives interrelate, obscures what exactly Petitioner is relying on as disclosing the limitations of the claims challenged under this ground. In addition, this approach

improperly shifts the burden of deciphering Petitioner’s arguments onto Patent Owner and the Board, which is contrary to the statutory and regulatory provisions governing *inter partes* review proceedings discussed above. To hold otherwise would require us to “play archaeologist with the record,” which we decline to do. *DeSilva v. DiLeonardi*, 181 F.3d 865, 866–67 (7th Cir. 1999).

In view of these deficiencies, we agree that the Petition fails to identify the proposed grounds for review ‘with particularity’ as required by 35 U.S.C. § 312(a)(3)” with respect to the limitations of independent claim 1, and the similar arguments presented for independent claims 9, 18, and 22. Petitioner presents no arguments or evidence with respect to the dependent claims challenged under this ground that would remedy the defects noted above with respect to independent claims 1, 9, 18, and 22. *See generally* Pet. Thus, Petitioner has failed to demonstrate a likelihood that the subject matter of claims 1–15 or 18–22 would have been anticipated by or obvious over Koederitz.

2. *Grounds 2 and 3*

Petitioner argues that claims 1, 3, 9, 14, and 18–22 would have been obvious over Koederitz in view of Hori. Pet. 39–50. Petitioner argues that claims 1, 3, 9, and 22 would have been obvious over Koederitz in view of SPE-56634 and Hopkins. Pet. 50–62. Patent Owner opposes. Prelim. Resp. 23–32.

a. Petitioner’s Arguments Regarding Reason to Combine

In its Ground 2 “Reason to Combine” section, Petitioner summarizes the disclosures of Koederitz and Hori, and then states that “a POSITA would have been motivated to substitute (or enhance) the SPC analysis technique

employed by *Koederitz* with the analysis technique of *Hori*,” whereby “outputs from sensors from differing physical quantities are converted, or *transformed*, into units of one physical quantity.” Pet. 40. “The results of the combination would have been predictable and obvious to a POSITA,” and “such an improvement represents the use of a known technique (*i.e.*, data conversion/transformation of *Hori*) to predictably improve the system of *Koederitz*.” *Id.*

In its Ground 3 “Reason to Combine” section, Petitioner summarizes the disclosures of *Koederitz* and SPE-56634, and then states that “a POSITA would have been motivated to substitute or improve the SPC analysis technique employed by *Koederitz* by incorporating the analysis technique of *SPE-56634*,” whereby data “are processed by a Kalman filter and examined for deviations from expected patterns.” Pet. 51 (quoting Ex. 1006, Abstract). “The results of the combination would have been predictable and obvious to a POSITA,” and “such an improvement represents the use of a known technique (*i.e.*, data conversion/ transformation) to predictably improve the system of *Koederitz*.” *Id.* at 52. Petitioner also summarizes the disclosures of *Hopkins*, and then states that “a POSITA would have been motivated to simply substitute or improve the SPC analysis technique employed by *Koederitz* and *SPE-56634* by incorporating the multivariate analysis taught by *Hopkins*.” *Id.* “The results of the combination would have been predictable and obvious to a POSITA,” and “such an improvement represents the use of a known SPC technique (*i.e.*, multivariate analysis for statistical process control) to predictably improve the system of *Koederitz*.” *Id.* at 53.

b. Patent Owner's Arguments

Patent Owner argues that Petitioner has not shown a motivation to combine several of its references. Prelim. Resp. 23–30.

First, Patent Owner argues that Petitioner's reasons for combining Koederitz and Hopkins are deficient for failure to indicate "why a POSITA would have been 'motivated to combine,' had 'a reasonable expectation of success,' or felt that 'the combination would have been predictable and obvious.'" *Id.* at 23.

Second, Patent Owner argues that Petitioner's reasons for combining SPE-56634 with Koederitz are deficient for failure to "indicate how [SPE-56634's] analysis technique could be incorporated into Koederitz," or "into which components of Koederitz 2001 the analysis technique of [SPE-56634] would be incorporated." *Id.* at 24–25.

Third, Patent Owner argues that Petitioner's reasons for combining Hori with Koederitz are deficient. *Id.* at 25–30. Patent Owner first argues that Hori is nonanalogous art. *Id.* at 25–28. Because we determine, as detailed below, that Petitioner has not shown a reasonable likelihood of establishing the obviousness of the claims challenged under Grounds 2 and 3, we do not consider this argument. Patent Owner also argues that Petitioner provides "only two pieces of fragmented evidence to support its conclusions" of obviousness, i.e., that a POSITA would have been motivated to substitute (or enhance) the SPC analysis technique employed by Koederitz with the analysis technique of Hori, and "would have understood that the SPC of Koederitz would be enhanced with the fault diagnosis analysis taught by Hori" because this represents "use of a known technique"

to “predictably improve the system of Koederitz,” but does not explain why. *Id.* at 28–30.

c. Analysis

We agree that Petitioner’s reasoning for combining Koederitz with the secondary references is insufficient and fails to provide the necessary factual support. In making a determination of obviousness, it is not enough that each claimed limitation be found in one or more prior art references. *In re Kotzab*, 217 F.3d 1365, 1371 (Fed. Cir. 2000) (explaining that obviousness “cannot be predicated on the mere identification . . . of individual components of claimed limitations”). Instead, Petitioner must also show that the skilled artisan would have had a reason to combine each of the prior art references to achieve the claimed subject matter and a reasonable expectation of success in making the combination. *PAR Pharm., Inc. v. TWi Pharm., Inc.*, 773 F.3d 1186, 1193 (Fed. Cir. 2014). A generic reason to combine references fails to “explain why a person of ordinary skill in the art would have combined elements from specific references *in the way the claimed invention does.*” *ActiveVideo Networks, Inc. v. Verizon Commc’ns, Inc.*, 694 F.3d 1312, 1328 (Fed. Cir. 2012); *see also Cardiac Pacemakers, Inc. v. St. Jude Medical, Inc.*, 381 F.3d 1371, 1377 (2004) (explaining that “[r]ecognition of a need does not render obvious the achievement that meets that need” because “[t]here is an important distinction between the general motivation to cure an uncured disease . . . and the motivation to create a particular cure”). “[A] clear, evidence-supported account of the contemplated workings of the combination is a prerequisite” to concluding “that a relevant skilled artisan would have been motivated to make the

combination and reasonably expect success in doing so.” *Personal Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 994 (Fed. Cir. 2017).

Here, Petitioner proposes combining the system of Koederitz with the specific SPC analysis technique of Hori (Pet. 40 (citing Ex. 1003 ¶ 118)) or the analysis technique of SPE-56634 (Pet. 51–52 (citing Ex. 1003 ¶ 150)) and the multivariate analysis of Hopkins (Pet. 52–53 (citing Ex. 1003 ¶ 152)). Petitioner states that a POSITA would have been motivated to “substitute (or enhance)” (Pet. 40 (Ground 2)) or “substitute or improve” (Pet. 51, 52 (Ground 3)) Koederitz’s SPC analysis technique, but fails to provide a reason that a POSITA would have been so motivated. Petitioner summarizes that the modification would represent use of a known technique to improve Koederitz. Pet. 41, 53. This is nothing more than a generalized statement that the techniques are known, rather than an articulation of a rationale for the combination. Petitioner fails to direct our attention to any record evidence that suggests the specific systems of Hori, SPE-56634, or Hopkins enhance or improve the overall system of Koederitz. The fact that the references share commonalities fails to identify what *would have* prompted the skilled artisan to arrive at the combination in the first place.

Petitioner also relies on the testimony of Mr. Ely, but Mr. Ely’s testimony similarly falls short. *See* Ex. 1032 ¶¶ 115–118 (Ground 2), 147–152 (Ground 3). Mr. Ely’s testimony is entitled to little weight because it fails to explain how one of ordinary skill would have been motivated to make the proposed combination, and it is not otherwise apparent that it does. *See* 37 C.F.R. § 42.65(a) (“Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight.”); *see also Velander v. Garner*, 348 F.3d 1359, 1371 (Fed.

Cir. 2003) (“It is within the discretion of the trier of fact to give each item of evidence such weight as it feels appropriate.”); *cf. Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (“Lack of factual support for expert opinion going to factual determinations, however, may render the testimony of little probative value in a validity determination.”).

As a result, we agree that Petitioner’s analysis “fails to indicate why a POSITA would have ‘been motivated to combine,’ had ‘a reasonable expectation of success, or felt that ‘the combination would have been predictable and obvious,’” and “falls short of the ‘clear, evidence-supported account of the contemplated workings of the combination.’” Prelim. Resp. 23, 30 (citing *Personal Web Techs.*, 848 F.3d at 994), 29 (“Petitioner does not explain why a POSITA would have been motivated to make such a substitution.”). Because Petitioner’s reasons to combine do not clearly articulate a motivation, there is insufficient reasoning to support a determination of obviousness.

In view of these deficiencies, we agree that the Petition fails to identify the proposed grounds for review “with particularity” as required by 35 U.S.C. § 312(a)(3) with respect to the limitations of independent claim 1, and independent claims 9, 18, and 22, under Grounds 2 and 3 of its challenge. Petitioner presents no arguments or evidence with respect to the dependent claims challenged under these grounds that would remedy the defects noted above with respect to independent claims 1, 9, 18, and 22. *See generally* Pet. Thus, Petitioner has failed to demonstrate a likelihood that the subject matter of the claims challenged under Grounds 2 or 3 would have

been obvious over Koederitz in combination with the respective secondary references.

E. Discretion under 35 U.S.C. § 314(a) and § 325(d)

Petitioner argues that the Board should not exercise its discretion to deny institution under 35 U.S.C. § 314(a) in view of the district court litigation. Pet. 10–11 (citing *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential)). Petitioner also argues that the Board should not exercise its discretion to deny institution under 35 U.S.C. § 325(d). *Id.* at 11–12.

Patent Owner presents arguments directed to whether we should exercise our discretion to deny institution under 35 U.S.C. § 314(a) and *Fintiv*. Prelim. Resp. 2–13. Patent Owner also presents arguments directed to whether we should exercise our discretion to deny institution under 35 U.S.C. § 325(d). *Id.* at 13–18.

For the reasons stated above, we decline to institute *inter partes* review. Because we base our denial of institution on the merits of this case, it is unnecessary for us to analyze whether we should also discretionarily deny institution under 35 U.S.C. § 314(a) or 35 U.S.C. § 325(d).

III. CONCLUSION

For the reasons set forth above, we determine that Petitioner has not demonstrated a reasonable likelihood of prevailing with respect to at least one challenged claim of the '325 patent. Accordingly, we do not institute *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

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ORDERED that the Petition is *denied* as to all challenged claims of U.S. Patent No. 7,574,325 B2, and no trial is instituted.

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