

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.

IPR2022-01164
Patent RE47,695 E

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, Inc. (“Petitioner”) filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review of claims 27–33, 40–63, 70–89, and 96–111 of U.S. Patent No. RE47,695 E (Ex. 1001, “the ’695 patent”). Halliburton Energy Services, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 8, “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 ’695 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, IPR2022-01163, and IPR2022-01165. Pet. 1.

B. Real Party-in-Interest

Petitioner states: “U.S. Wells Services, LLC and U.S. Well Services, Inc. . . . are the real parties-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 '695 Patent

The '695 patent, titled "Electric or Natural Gas Fired Small Footprint Fracturing Fluid Blending and Pumping Equipment," is a reissued patent of U.S. Patent No. 8,834,012. Ex. 1001, codes (54), (60), (64). The '695 patent is directed to methods and systems for integral storage and blending of the materials used in oilfield operations. *Id.* at code (57). Figure 6 of the '695 patent is reproduced below:

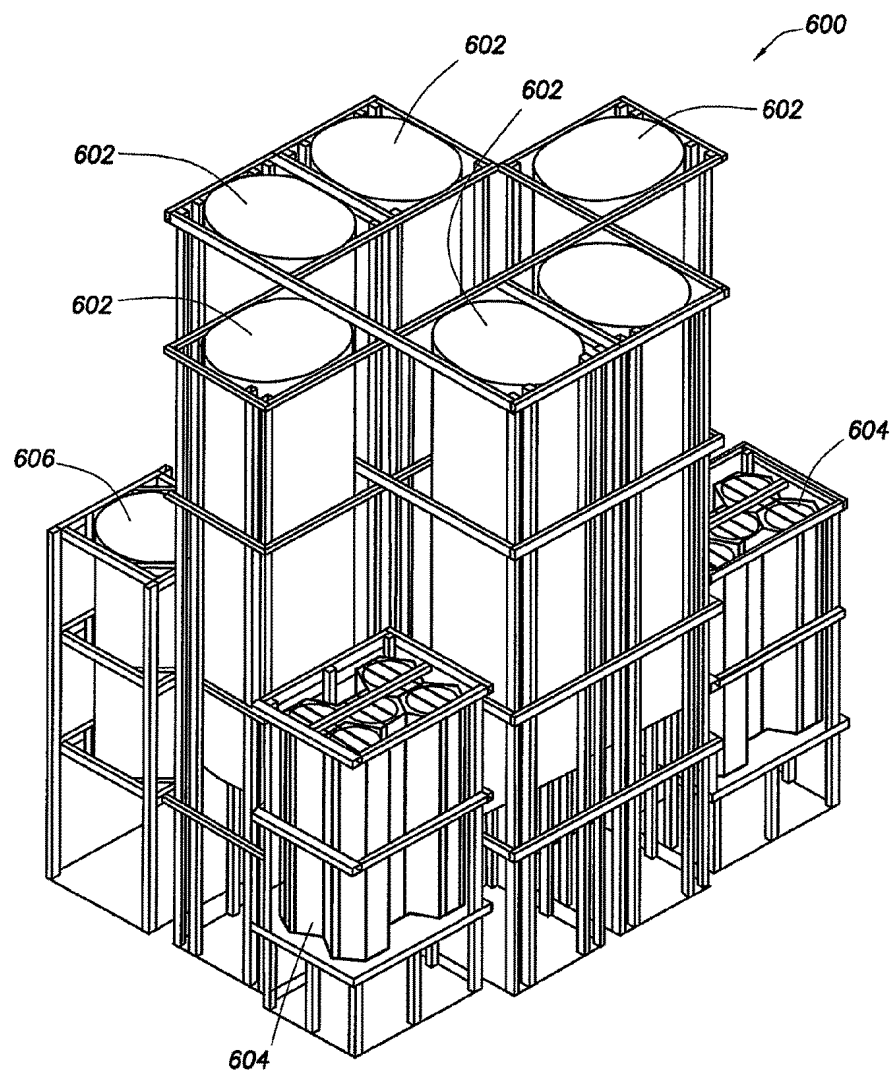
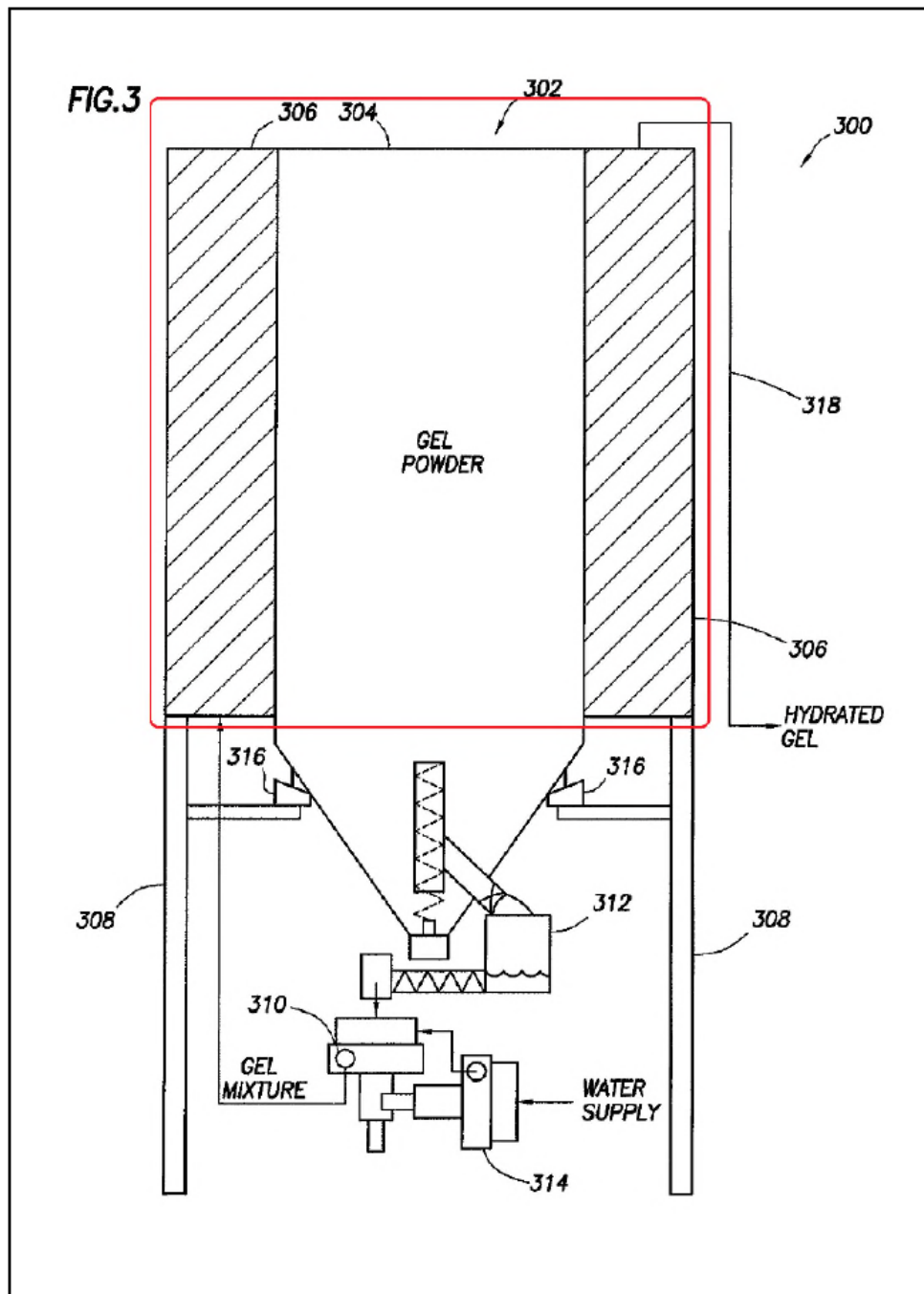


FIG. 6

Figure 6 is an isometric view of an Integrated Material Storage and Blending System. *Id.* at 2:57–59. Figure 6 depicts storage units 602, liquid additive storage modules 604, and Integrated Pre-gel Blenders 606. *Id.* at 9:42–45. Patent Owner’s annotated version of Figure 3 is reproduced below:



Prelim. Resp. 20. Figure 3 is a cross-sectional view of an Integrated Pre-gel Blender in accordance with an embodiment of the invention. *Id.* at 2:47–49. Patent Owner’s annotations highlight pre-gel storage unit 302, in which a gel mixture may be maintained for hydration within annular space 306. Prelim. Resp. 20–21; Ex. 1001, 6:54–63.

D. Illustrative Claim

Claim 27 is reproduced below.

27. A method of preparing a fluid for use in a subterranean operation, the method comprising:

- a) preparing a mixture comprising a gel powder and water using a mixer;*
- b) transferring the mixture to a pre-gel storage unit*
- c) allowing the gel powder to at least partially hydrate in the pre-gel storage unit to form a hydrated mixture;*
- d) transferring the hydrated mixture to a blender;*
- e) blending the hydrated mixture with at least one component in the blender to prepare the fluid;*
- f) using a transfer pump to transfer the fluid to a down hole pump; and*
- g) using the down hole pump to pump the fluid into a down hole location, wherein either natural gas or electricity, or both, is used to power the transfer pump, the down hole pump, or a combination thereof.*

Ex. 1001, 12:43–58.

E. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims would have been unpatentable on the following grounds:

Ground	Claims Challenged	35 U.S.C. § ¹	Reference(s)/Basis
1	27–32, 40, 41, 46, 47, 54, 84–87, 96, 97, 104, 106, 107	§103	Heilman ²
2	33, 48–51, 55, 89, 98–101, 105	§103	Heilman, Kierbow ³
3	52, 53, 102, 103	§103	Heilman, Kierbow, Crain ⁴
4	42–45, 56–62, 70, 71, 78, 80–83, 108–111	§103	Heilman, Berry ⁵
5	63, 72–75, 79	§103	Heilman, Berry, Kierbow
6	76, 77	§103	Heilman, Berry, Crain

In support of its unpatentability arguments, Petitioner relies on the Declaration of John W. Ely (Ex. 1003).

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 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

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 ’695 patent has an effective filing date before the effective date of the applicable AIA amendments, we refer to the pre-AIA version of § 103.

² US 2007/0201305 A1, published August 30, 2007 (Ex. 1004).

³ US 4,265,266, issued May 5, 1981 (Ex. 1005).

⁴ US 4,916,631, issued April 10, 1990 (Ex. 1006).

⁵ US 4,169,506, issued October 7, 1979 (Ex. 1007).

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 states that “unless otherwise specifically noted herein, the claim terms of the ’695 Patent are accorded their plain and ordinary meaning.” Pet. 9. Additionally, Petitioner provides two subheadings with the claim terms “pre-gel storage unit” and “partially hydrate,” each bearing a footnote with a citation to a document in the district court proceeding. Pet. 10, 10 n.3 & n.4 (citing “*U.S. Well Services, Inc. et al. v. Halliburton Company et al.*, W.D. Tex. Case No. 6:21-cv-367-ADA, Dkt. 73”). Petitioner provides no content under either of the subheadings and, therefore, no explicit claim constructions of these terms, and no citation to any portion of the record before us.

Patent Owner states that the “Petition indicates that it intends to apply constructions of the claim terms ‘pre-gel storage unit’ and ‘partially hydrate’ as entered by the district court in the parallel litigation” and that Patent Owner “applies the same construction of ‘pre-gel storage unit’ as indicated in the Petition, and otherwise interprets the claims ‘in accordance with the ordinary and customary meaning.’” Prelim. Resp. 29.

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 have either (1) 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 well drilling, completion, or production; or (2) at least four years of industry experience in the oil and gas industry, including well drilling, completion, or production.

Pet. 9. Patent Owner “applies the same definition of the level of skill in the art,” for purposes of the Preliminary Response. Prelim. Resp. 28.

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. Heilman (Ex. 1004)

Heilman is titled “Method and Apparatus for Centralized Proppant Storage and Metering” and is directed to an apparatus for manufacturing well treatment fluid. Ex. 1004, codes (54), (57). Heilman’s apparatus includes:

a proppant storage and metering unit, a chemical storage and metering unit connected to a blending unit, and an electronic control system connected to the proppant storage and metering unit, the chemical storage and metering unit, and the blending unit, wherein the proppant storage and metering unit, chemical storage and metering unit, and blending unit are contained in a single land based enclosure.

Id. ¶ 4. Figure 7 of Heilman is reproduced below.

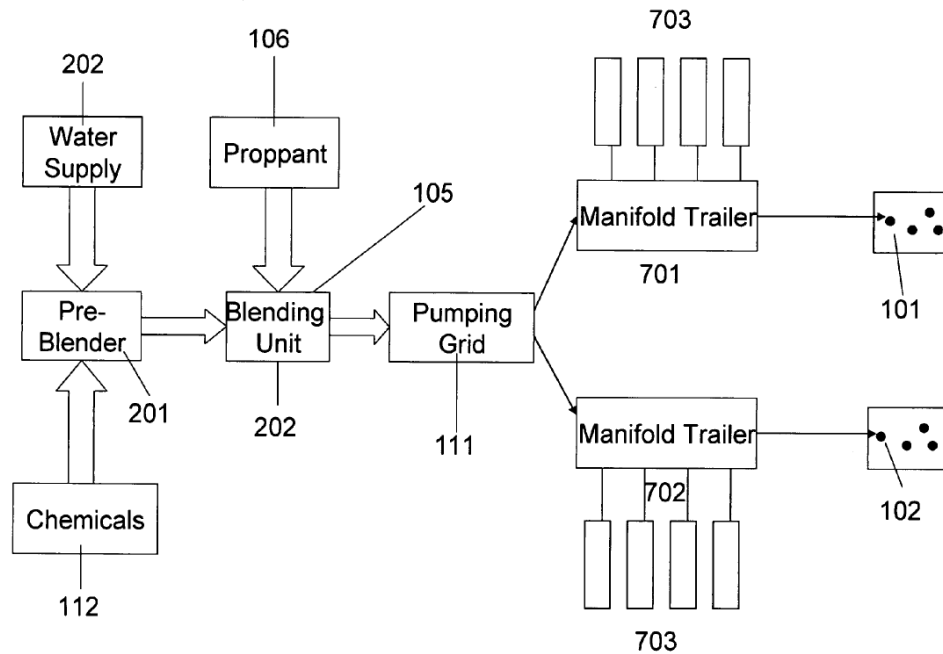


Figure 7

Figure 7 is a schematic of a simultaneous fracturing method. *Id.* ¶ 19.

2. Kierbow (*Ex. 1005*)

Kierbow is titled “Controlled Additive Metering System” and relates to a transportable frame that includes a plurality of liquid material storage tanks and dry material storage bins mounted thereon. *Ex. 1005*, codes (54), (57). Generally, Kierbow relates to systems for storing and metering material, and more particularly to systems adapted for use in metering additives to be mixed with a fluid for pumping down an oil well. *Id.* at 1:4–8. Kierbow discloses the use of a trailer-mounted portable materials storage and metering system having the ability to transport, store, meter, and convey a plurality of liquid and dry additives for mixing with a primary fluid to be pumped down into an oil well. *Id.* at 2:37–41.

3. *Crain (Ex. 1006)*

Crain is titled “Process Control System Using Remote Computer and Local Site Control Computers for Mixing a Proppant with a Fluid” and discloses a process control system for mixing a proppant with a fluid, which “includes a remote control computer located remotely from where the process is to be performed, and a monitor computer and a local control computer both located where the process is to be performed.” Ex. 1006, codes (54), (57). More particularly, Crain discloses a blender system used at an oil or gas well site to produce a fracturing fluid to be pumped into the well. *Id.* at 3:12–15.

4. *Berry (Ex. 1007)*

Berry is titled “In Situ Retorting of Oil Shale and Energy Recovery” and is directed to a process for “the in situ retorting of oil shale and energy recovery from generated off gases.” Ex. 1007, codes (54), (57). Berry discusses the process of forming a subterranean in situ retort, passing a retorting gas through the in situ retort to produce a mixture of shale oil and off gases, subjecting this mixture to preliminary separation, passing a portion of the off gases to a purification zone, and passing a portion of the purified off gases to a gas turbine where they are burned and power is generated. *Id.* at 4:51–65.

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 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.⁶ *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

⁶ At this stage, although Petitioner discusses secondary considerations briefly (Pet. 42–44), Patent Owner does not present any objective evidence of secondary considerations as to any of the challenged claims.

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 Heilman discloses and/or suggests all limitations of claims 27-32, 40, 41, 46, 47, 54, 84-87, 96, 97, 106, and 107, and thus renders those claims obvious. Pet. 10.

Petitioner asserts that every element of independent claim 27 is found in Heilman, as follows:

27[a] A method of preparing a fluid for use in a subterranean operation, the method comprising: (Pet. 11 (relying on Ex. 1004 ¶¶ 4–6, 22, 26, 27, 30–32));⁷

27[b] a) preparing a mixture comprising a gel powder and water using a mixer; (Pet. 11–12 (relying on Ex. 1003; Ex. 1004 ¶ 27));

27[c] b) transferring the mixture to a pre-gel storage unit (Pet. 12 (relying on Ex. 1003; Ex. 1004 ¶ 27));

27[d] c) allowing the gel powder to at least partially hydrate in the pre-gel storage unit to form a hydrated mixture; (Pet. 12–13 (relying on Ex. 1003; Ex. 1004 ¶¶ 26–28, Fig. 2));

⁷ We express no opinion on whether the preamble is limiting.

27[e] d) transferring the hydrated mixture to a blender; (Pet. 13 (relying on Ex. 1003; Ex. 1004 ¶¶ 26–28, Fig. 2));

27[f] e) blending the hydrated mixture with at least one component in the blender to prepare the fluid; (Pet. 14 (relying on Ex. 1003; Ex. 1004 ¶¶ 24, 26, Figs. 2, 8));

27[g] f) using a transfer pump to transfer the fluid to a down hole pump; and (Pet. 14–16 (relying on Ex. 1003; Ex. 1004 ¶¶ 26, 28, 32, Fig. 7));

27[h] g) using the down hole pump to pump the fluid into a down hole location, wherein either natural gas or electricity, or both, is used to power the transfer pump, the down hole pump, or a combination thereof. Pet. 16–17 (relying on Ex. 1003; Ex. 1004 ¶¶ 26, 28, 32, Fig. 7).

Petitioner presents additional arguments directed to where Petitioner believes the limitations of claims 28–32, 40, 41, 46, 47, 54, 84–87, 96, 97, 104, 106, and 107 are found in Heilman. Pet. 10–11 (Table of Explained Claims and Equivalent Claims), 17–25.

b. Patent Owner's Arguments

Patent Owner argues that, regarding limitation 27[g] (and also limitations 56[d] and 84[e]), Heilman does not disclose or teach “using a transfer pump to transfer the fluid to a down hole pump.” Prelim. Resp. 32. According to Patent Owner: “Neither Heilman nor any other reference cited in the Petition expressly describes or refers to a ‘transfer pump,’” noting that “in prosecution of the ’695 Patent, the USPTO specifically found that ‘Heilman fails to teach or suggest a transfer pump to transfer the fluid to a downhole pump.’” *Id.* (citing Ex. 1002, 72). More particularly, Patent Owner argues that the portions of Heilman that Petitioner relies on “only

describe that pumping grid 111 is connected to and provides fluid to one or more manifolds, *e.g.*, a central manifold 107, additional manifolds 405, or manifold trailers 701 and 702.” *Id.* at 32. Regarding Petitioner’s alternative argument that a “portion of the pumps” in pumping grid 111 are transfer pumps and another portion are downhole pumps (Pet. 15–16), Patent Owner argues that Heilman does not disclose or teach this, nor does it “show that any pumps in the pumping grid 111 are arranged such that any pumps in that grid would transfer fluid to other pumps in the grid.” Prelim. Resp. 33.

Regarding limitations 27[c] and 27[d], which require “allowing the gel powder to at least partially hydrate in the pre-gel storage unit to form a hydrated mixture” and “transferring the mixture to a pre-gel storage unit,” Patent Owner argues that Heilman’s preblending unit 201 is not a storage unit, and does not hold any mixture or other component for any period of time. Prelim. Resp. 34. Rather, Patent Owner argues, preblender 201 describes that the power or liquid gel concentrate is fed “into the preblender’s fluid stream,” suggesting that preblender 201 does not include a pre-gel storage unit. *Id.* at 35 (citing Ex. 1004 ¶ 26).

Regarding limitations 84[b] and 84[c], Patent Owner argues that Heilman does not disclose “at least one output” of a liquid additive storage module “located at an elevation higher than at least one input of the blender,” wherein “gravity at least partially directs the liquid additive from the liquid additive storage module to the blender.” Prelim. Resp. 35. Patent Owner argues that Figure 8, on which Petitioner relies, “does not show or describe any outputs of the chemical storage system 112, much less that they are located at an elevation higher than an input of the blending unit 105.” *Id.* at 36.

c. Analysis

We determine that Petitioner’s rationale has not adequately explained how Heilman discloses at least limitations 27[g] (and limitations 56[d] and 84[e]), 27[c] and 27[d], and 84[b] and 84[c].

With respect to limitation 27[g] (and similarly, with respect to limitations 56[d] (Pet. 37) and 84[e] (Pet. 11)), which requires “using a transfer pump to transfer the fluid to a down hole pump,” Petitioner argues that Heilman discloses “that the final fracturing fluid is directed to a pumping grid 111 and from the pumping grid 111 to two multiple manifold trailers 701 and 702” and a POSITA “would have understood that the pumping grid 111 transfers the fracturing fluid to the pump trucks 703” and in the alternative “would know a portion of the pumps of the pumping grid 111 are transfer pumps and a portion of another portion of the pumps of the pumping grid 111 are downhole pumps.” Pet. 14–16 (citing Ex. 1004 ¶¶ 26, 28, 32; Ex. 1003 generally). As Patent Owner argues, and as we agree, Heilman’s referenced disclosure only describes “that pumping grid 111 is connected to and provides fluid to one or more manifolds,” i.e., 107, 405, 701, or 702, but “there is no indication in Heilman that any of the treatment fluid is transferred *from* pumping grid 111 *to* pump trucks 703. Prelim. Resp. 32–33. We also agree that Heilman does not show a “portion of the pumps” being a certain type of pump, i.e. a downhole pump or a transfer pump. *Id.* at 33–34. We also note the prosecution history of the ’695 Patent, in which the USPTO specifically found that “HEILMAN fails to teach or suggest a transfer pump to transfer the fluid to a downhole pump.” Ex. 1002, 72 (Detailed Reissue Action). Petitioner has not provided

any compelling rationale for why we should revisit this determination, or any reasoning that would persuade us to reach a different conclusion.

With respect to limitations 27[c] and 27[d], “transferring the mixture to a pre-gel storage unit” and “allowing the gel powder to at least partially hydrate in the pre-gel storage unit to form a hydrated mixture,” Petitioner relies on Heilman’s disclosure of mixer 202, blending unit 105, and pre-blender 201, arguing that a POSITA “would have understood that a pre-gel blending unit includes a storage unit (e.g. pre-blender 201) where dry powder and water are hydrated.” Pet. 13 (citing Ex. 1004 ¶¶ 26–28; Ex. 1003). As noted by Patent Owner, though, Heilman’s pre-blender 201 does not necessarily hold any mixture or other component for any period of time; instead, Heilman’s disclosures about the powder or liquid gel concentrate being fed “into the preblender’s fluid stream” and progressing in a “laminar flow” to blender 202 suggest “that preblender 201 does not include a ‘pre-gel storage unit.’” Prelim. Resp. 34–35 (citing Ex. 1004 ¶ 26). It does not appear that Heilman on its face discloses limitations 27[c] and 27[d], but, rather, appears to allude to a different arrangement that would not include a pre-gel storage unit. Ex. 1004 ¶¶ 26–27. We also agree that Petitioner does not explain sufficiently why a POSITA would have understood why a blending unit would necessarily include a pre-gel storage unit as required by claim 27. Pet. 13 (citing Ex. 1003 generally).

With respect to limitations 84[b] and 84[c], which require “at least one output” of a liquid additive storage module “located at an elevation higher than at least one input of the blender,” wherein “gravity at least partially directs the liquid additive from the liquid additive storage module to the blender,” Petitioner relies on Figure 8 of Heilman to show that the

outputs of the tanks for chemical storage 112 are at an elevation higher than blending unit 105. Pet. 10–11 (equivalent claims chart), 11–17, 18–19 (discussing claims 29 and 31). However, Figure 8 is unclear about where the outputs of chemical storage system 112 are located, let alone whether they are located at an elevation higher than blending unit 105. Prelim. Resp. 36–37. Moreover, as noted by Patent Owner, Heilman expressly teaches that storage system 112 uses mechanisms such as pressurized tanks, additive pumps, or aspiration mechanisms to add chemicals to blending unit 105, but does not include a teaching of use of gravity. Ex. 1004 ¶ 25; Prelim. Resp. 37–38. On this record, Petitioner fails to articulate with sufficient clarity how these relied-on disclosures of Heilman necessarily teach the elements of limitations 84[b] and 84[c].

Mr. Ely’s testimony, which appears to mirror the Petition, does not add sufficient clarity. *See* Ex. 1003 *passim*. Moreover, Petitioner in most instances fails to provide a pinpoint cite to the portions of Mr. Ely’s testimony on which it relies; rather, Petitioner merely cites to “Ex. 1003” without citing to a particular paragraph, section, or page. *See, e.g.*, Pet. 11–18 (discussion of claim 27, referencing only Ex. 1003 generally), 18–25 (discussion of remaining claims challenged under Ground 1, also referencing Ex. 1003 only generally). This approach improperly fails to identify with particularity what Petitioner considers to be its argument, and 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).

2. *Grounds 2–6*

Petitioner argues that Heilman in combination with secondary references would have rendered obvious additional claims of the ’695 Patent:

2	33, 48–51, 55, 89, 98–101, 105	Heilman, Kierbow
3	52, 53, 102, 103	Heilman, Kierbow, Crain
4	42–45, 56–62, 70, 71, 78, 80–83, 108–111	Heilman, Berry
5	63, 72–75, 79	Heilman, Berry, Kierbow
6	76, 77	Heilman, Berry, Crain

Pet. 6–7, 25–42. Patent Owner opposes. Prelim. Resp. 38–46.

a. *Petitioner’s Arguments Regarding Reason to Combine*

In its Ground 2 “Reason to Combine” section, Petitioner summarizes the disclosures of Heilman and Kierbow, and then states that a “PHOSITA would have understood that methods of *Heilman* and *Kierbow* are utilized in gel fracturing operations.” Pet. 26–27. Petitioner provides additional statements with respect to certain claims, such as a “PHOSITA would know to measure a mass or a volume as disclosed in *Heilman* with an electronic load cell as disclosed by *Kierbow*” for claim 48, or a “PHOSITA would have understood that the cogeneration power unit is an equivalent of an on-site generator to power load sensors, such as an electronic load cell as disclosed by *Kierbow*” for claim 49. *Id.* at 28–29.

In its Ground 3 “Reason to Combine” section, Petitioner argues that “a PHOSITA would be motivated to further combine *Heilman* and *Kierbow*

with *Crain* because *Crain* is directed to a blender system used at an oil or gas well site to produce a fracturing fluid to be pumped into the well.”

Pet. 32.

In its Ground 4 “Reason to Combine” section, Petitioner argues that a “PHOSITA would have understood that methods of *Heilman* and *Berry* are utilized fracturing operations where natural gas is utilized to power operations.” Pet. 35.

In its Ground 5 “Reason to Combine” section, Petitioner argues: “The motivation to combine *Heilman* and *Kierbow* is discussed in Section IX(B)(1) above. The motivation to combine *Heilman* and *Berry* is discussed in Section IX(D)(1) above.” Pet. 40.

In its Ground 6 “Reason to Combine” section, Petitioner argues: “The motivation to combine *Heilman* and *Crain* is discussed in Section IX(C)(1) above. The motivation to combine *Heilman* and *Berry* is discussed in Section IX(D)(1) above.” Pet. 42.

b. Patent Owner’s Arguments

Patent Owner argues that Petitioner has not provided sufficient rationale for combining *Heilman* with any of *Kierbow*, *Crain*, or *Berry*. Prelim. Resp. 38–44.

First, Patent Owner argues that the Petition provides “only conclusory assertions that methods of the prior art are used in similar types of operations.” *Id.* at 38. Patent Owner asserts that the “Petition merely summarizes the teachings of each reference individually, and then concludes that a POSITA ‘would have understood’ that the methods of each of them ‘are utilized in gel fracturing operations.’” *Id.* (citing Pet. 26–27 (*Heilman* and *Kierbow*), 35 (*Heilman* and *Berry*), 32 (*Heilman* and *Crain*)).

Additionally, Patent Owner argues, even if the secondary references “all describe similar types of fracturing operations,” that “does not explain why a POSITA would use the features of Kierbow, Crain, or Berry in the methods of Heilman instead of or in addition to the mechanisms already described in Heilman.” *Id.* at 39.

Second, Patent Owner argues that a POSITA would not think it obvious to combine Heilman with Berry to arrive at the methods of independent claim 56. *Id.* at 40. Patent Owner argues that Berry is non-analogous art because it is neither in the same field of endeavor nor reasonable pertinent to the particular problem that the inventors addressed. *Id.* at 40–42. Because we determine, as discussed below, that Petitioner has not shown a reasonable likelihood of establishing the obviousness of the claims challenged under Grounds 2–6, we do not consider this argument. Patent Owner also argues that a “POSITA would not have had any reason to attempt to combine the teachings of Berry with those of Heilman,” let alone with a reasonable expectation of success. *Id.* at 42–43.

c. Analysis

We agree that Petitioner’s reasoning for combining Heilman 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 Heilman with the methods of Kierbow (Pet. 26–27) or the electronic load cell of Kierbow (*id.* at 28–29), with the blender system of Crain (*id.* at 32), and generally with the recovery of gases disclosed in Berry (*id.* at 35). Petitioner states that a POSITA “would have understood” that the secondary references are utilized in the same types of operations (*id.* at 27 (Ground 2), 35 (Ground 4)), or would have been motivated to “further combine” (*id.* at 32 (Ground 3)), but fails to provide a reason that a POSITA would have had this understanding, or would have been so motivated. Petitioner’s proffered reason to modify Heilman is essentially a statement that a POSITA would understand that the methods among the references are used in similar operations, or

modification would represent incorporating an element from a secondary reference into Heilman. Pet. 41, 53. These are nothing more than generalized statements, 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 Kierbow, Crain, or Berry enhance or improve the overall system of Heilman. The fact that the references share a common type of system 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. Prelim. Resp. 39 (comparing Pet. 26–27, 32, 35, 40, 42, with Ex. 1003 ¶¶ 83–84, 94, 100, 121, 128). As noted above, Petitioner's citations to Mr. Ely's testimony in refer generally to “Ex. 1003” without more particularity, hindering the Board's ability to determine on which portions of Mr. Ely's testimony Petitioner intends to rely. *See, e.g.*, Pet. 27–31 (Ground 2), 31–34 (Ground 3), 34–37 (Ground 4). To the extent we have reviewed Mr. Ely's testimony in connection with the Petition, 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 provides only conclusory assertions that methods of the prior art are used in similar types of operations. Prelim. Resp 38–40 (citing *KSR*, 550 U.S. at 418; *In re Kahn*, 441 F.3d at 988). 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 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 the claims involved in Grounds 2–6 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 Ground 1 and the independent claims challenged on Heilman alone. *See generally* Pet. Thus, Petitioner has failed to demonstrate a likelihood that the subject matter of the claims challenged under Grounds 2–6 would have been obvious over Heilman 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. 7–8 (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 8.

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. 2–11. 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 12–14.

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 '695 patent. Accordingly, we do not institute *inter partes* review.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, the Petition is *denied* as to all challenged claims of U.S. Patent No. RE47,695 E and no trial is instituted.

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Patent RE47,695 E

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