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Paper 32
Date: October 15, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALASKA FUEL DISTRIBUTORS INC., AFD PETROLEUM (TEXAS) INC., AND AFD PETROLEUM LTD.,
Petitioner,

v.

FRAC SHACK INC.,
Patent Owner.

IPR2019-00995
Patent 10,029,906 B2

Before HUBERT C. LORIN, KEVIN F. TURNER, and TIMOTHY J. GOODSON, *Administrative Patent Judges*.

GOODSON, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Granting Patent Owner's Motion to Amend
Denying Petitioner's Motion to Exclude
35 U.S.C. § 318(a); 37 C.F.R. § 42.64

I. INTRODUCTION

A. Procedural Background and Summary

Alaska Fuel Distributors Inc., AFD Petroleum (Texas) Inc., and AFD Petroleum Ltd. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 2, 8, 10, 18, 19, 28–30, 32–34, 37, 38, 40–42, 45, and 47 of U.S. Patent No. 10,029,906 B2 (Ex. 1001, "the '906 patent"). Frac Shack Inc. ("Patent Owner") filed a Preliminary Response. Paper 6 ("Prelim. Resp."). We instituted an *inter partes* review on all claims and all grounds asserted in the Petition. *See* Paper 8 ("Dec. on Inst.").

After institution of trial, Patent Owner did not file a Patent Owner Response and instead filed a Non-Contingent Motion to Amend. Paper 12 ("MTA"). Petitioner filed an Opposition to that motion. Paper 14 ("MTA Opp."). Pursuant to Patent Owner's request, we issued non-binding Preliminary Guidance on the motion. Paper 15 ("PG").

Patent Owner then filed a Revised Non-Contingent Motion to Amend (Paper 16, "RMTA"), in which Patent Owner proposed substitute claims 48–62. *Id.* at A1–A4. The briefing on Patent Owner's Revised Motion to Amend also included Petitioner' Opposition (Paper 20, "Opp. RMTA"), Patent Owner's Reply (Paper 23, "Reply RMTA"), and Petitioner's Sur-Reply (Paper 27, "Sur-Reply RMTA"). We held a hearing on August 13, 2020, a transcript of which is included in the record. *See* Paper 31 ("Tr.").

Petitioner also filed a motion to exclude certain evidence relating to Patent Owner's arguments on objective indicia of nonobviousness. For the reasons discussed in Section II below, we deny that motion.

We have authority under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) (2018) and 37 C.F.R. § 42.73 (2018). For the reasons discussed below, Patent Owner's Revised Motion to

Amend is granted. We do not address the patentability of the originally challenged claims, each of which is cancelled or replaced by a substitute claim by virtue of Patent Owner's non-contingent Revised Motion to Amend. *See infra* § I.E.

B. Real Parties in Interest

Petitioner identifies the following persons or entities as real parties in interest: Alaska Fuel Distributors Inc.; AFD Petroleum (Texas) Inc.; AFD Petroleum Ltd.; AFD Holdings (USA) Inc.; AFD Holdings Inc.; 993106 Alberta Ltd.; 993131 Alberta Ltd.; 1597322 Alberta Ltd.; AFD Global Aviation Inc.; The Decal Shop Corp.; 1497668 Alberta Ltd.; L&M Fuels Ltd.; 679094 BC Inc.; AFD Community Support Corp.; 1736445 Alberta Ltd.; Global Engineering Solutions Limited; GES Holdings Limited; Global Engineering Solutions Pty Ltd.; Zhangjiagang Jiesi Petroleum Equipment Co., Ltd.; Parker McLean; Kim McLean; Shayne Lowrie; and Robert Reeves. Pet. 2. Patent Owner lists only itself as a real party in interest. *See* Paper 5, 2.

C. Related Matters

The parties inform us that the '906 patent has been asserted in two district court proceedings: *Frac Shack Inc. v. Alaska Fuel Distributors Inc. et al.*, No. 7:19-cv-00026-DC in the U.S. District Court for the Western District of Texas; and *Frac Shack, Inc. v. Atlas Oil Company et al.*, No. 4:18-cv-02566 in the U.S. District Court for the Southern District of Texas. Pet. 3; Paper 5, 2.

The parties further state that the '906 patent is related to U.S. Patent No. 9,346,662 (the "Parent Patent"), which has been asserted in two district court proceedings: *Frac Shack Inc. v. Alaska Fuel Distributors Inc. et al.*, No. 7:19-cv-00026-DC in the U.S. District Court for the Western District of

Texas; and *Frac Shack Inc. v. Atlas Oil Company et al.*, No. 1:16-cv-02275-STV in the U.S. District Court for the District of Colorado. Pet. 3–4; Paper 5, 2. In addition, the Parent Patent was the subject of IPR2017-01349, in which the Board denied institution. Pet. 4; *see also* Ex. 1011 (Decision Denying Institution).

The parties also report that the '906 patent is related to Canadian Patent No. 2,693,567, which has been asserted in a foreign court proceeding: *Frac Shack Inc. and Frac Shack International Inc. v. AFD Petroleum Ltd.*, No. T-2149-14 in the Federal Court of Ottawa, Canada. Pet. 3–4; Paper 5, 2.

D. The '906 Patent

The '906 patent issued July 24, 2018, from an application filed May 2, 2016. Ex. 1001, [45], [22]. It claims priority to a number of related applications, the earliest of which is a provisional application filed February 17, 2010. *Id.* at [60].

The '906 patent relates to systems and methods for delivering fuel to equipment at a well site. *See id.* at 1:25–27. According to the Background section of the '906 patent, equipment used for fracturing a well requires a large amount of fuel, and the conventional method of refueling was "the well known method of manually discharging fluid from a fuel source into each fuel tank one after the other." *Id.* at 1:8–14. That method entailed a risk that the equipment would run out of fuel, which would damage the well or necessitate additional work, and also presented dangers to operators. *Id.* at 1:14–21. The '906 patent relates to systems and methods for reducing the likelihood that fuel tanks of equipment at a well site will run out of fuel during fracturing of a well. *Id.* at 1:25–27.

Figure 1 of the '906 patent is reproduced below:

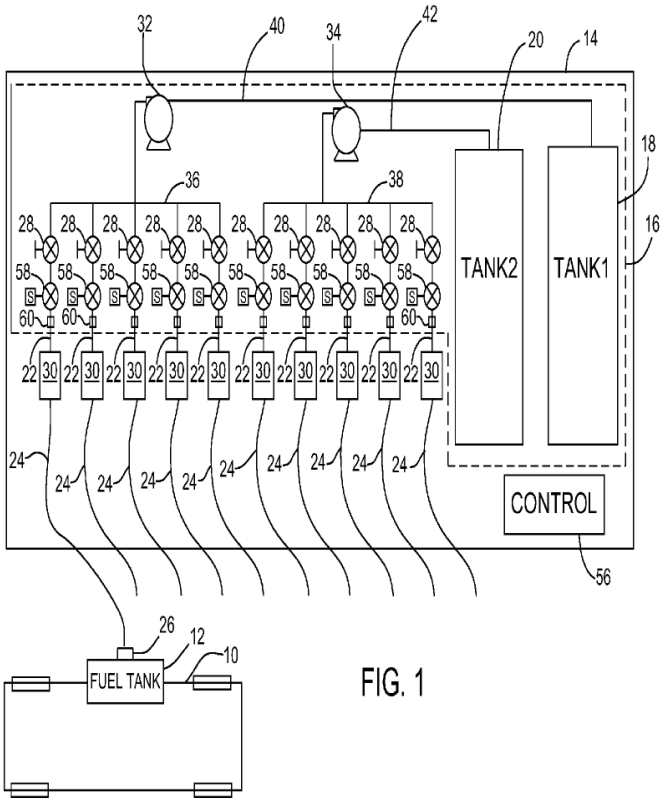

FIG. 1

Figure 1 depicts a schematic of fuel delivery system 14. *Id.* at 1:67, 2:27–30, Fig. 1. As shown in Figure 1, fuel delivery system 14 delivers fuel to fuel tanks 12 of multiple pieces of equipment 10 at a well site during fracturing of a well. *Id.* at 2:28–31. The fuel delivery is accomplished by "pumping fuel from . . . the fuel source 14 through hoses 24 in parallel to each of the fuel tanks 12" and "controlling fluid flow through each hose 24 independently of flow in other hoses 24. . . . in response to receiving signals representative of fuel levels in the fuel tanks." *Id.* at 5:29–35. The '906 patent describes that the fuel delivery system should be transportable to various well sites, such as by containing "[t]he fuel delivery system 14 . . . on a single trailer . . . or parts may be carried on several trailers or skids." *Id.* at 2:32–36.

Fuel delivery system 14 includes fuel source 16 including one or more tanks 18, 20, which can be mounted on the same trailer as the rest of fuel delivery system 14 or on other trailers. *Id.* at 2:37–41. Equipment used at the well site for the fracturing job includes blenders and pumpers 10, each having a fuel tank 12. *Id.* at 2:25–31. Fuel source 16 has fuel outlets 22 and hoses 24. Each hose 24 connects a fuel outlet 22 to a fuel cap 26 to deliver fuel to fuel tank 12. *Id.* at 2:42–47. A valve arrangement including valve 28, valve 58, or both is provided at each fuel outlet 22 to control fluid flow through hose 24 and permit independent operation of each hose 24. *Id.* at 2:53–57. Fuel outlets 22 are located on manifolds 36, 38, which are connected to pumps 32, 34 and fuel source tanks 18, 20 via lines 40, 42. *Id.* at 3:4–9.

E. Originally Challenged Claims and Proposed Substitute Claims

In the Petition, Petitioner challenged claims 2, 8, 10, 18, 19, 28–30, 32–34, 37, 38, 40–42, 45, and 47 of the '906 patent. Pet. 1. None of the originally challenged claims remain at issue in this proceeding. In lieu of filing a Patent Owner Response to defend the originally challenged claims, Patent Owner elected to file a non-contingent motion to amend. *See* MTA 1 ("Patent Owner . . . is forgoing a formal response, is unconditionally filing this Motion to Amend . . . to cancel and substitute the claims as set forth [herein], and is asking the Board to decide the patentability of the claims so substituted."); RMTA 1 ("Patent Owner . . . files this unconditional revised motion to amend to cancel and substitute the claims as set forth in Appendix A."). As we noted in our Preliminary Guidance, "[a] non-contingent motion to amend is one in which 'the Board provides a final decision on the patentability of substitute claims in place of determining the patentability of corresponding original claims.'" PG 2 n.1 (quoting Notice Regarding a New

Pilot Program Concerning Motion to Amend Practice and Procedures in Trial Proceedings Under the America Invents Act Before the Patent Trial and Appeal Board, 84 Fed. Reg. 9,497 (Mar. 15, 2019)). Patent Owner agreed at the hearing that this Final Written Decision should only address the patentability of the claims in the non-contingent Revised Motion to Amend and not the originally challenged claims. Tr. 47:5–14.

In the Revised Motion to Amend, every originally challenged claim has either been canceled or replaced with a proposed substitute claim. Specifically, Patent Owner cancels claims 10, 18, and 47 and proposes substitute claims to replace originally challenged claims as set forth in the table below:

Original Claim	Proposed Substitute Claim
2	48
8	49
19	50
28	51
29	52
30	53
32	54
33	55
34	56
37	57
38	58
40	59
41	60
42	61
45	62

See RMT A A1–A4.

Proposed substitute claim 48 is reproduced below, with underscoring to indicate text that has been added to claim 2:

> 48. A method of reducing the likelihood of blenders and pumpers at a well site running out of fuel during fracturing of a well and for reducing dangers from extreme operating temperatures and pressures, extreme noise levels, and fire hazard from fuel and fuel vapors when fueling the pumpers and blenders during fracturing of the well, the blenders and pumpers including fuel tanks, the method comprising:
>
> transporting a fuel delivery system including fuel delivery connections and a fuel source to the well site on a trailer or trailers, the fuel delivery connections comprising a fuel level sensor for detecting a low and high fuel level in the tanks to which the fuel delivery connection is connected;
>
> securing hoses to the fuel tanks with the fuel delivery connections;
>
> detecting a low and high fuel level in the tanks with the fuel level sensors;
>
> pumping fuel from the fuel source through the hoses and subsequently through the fuel delivery connections in parallel to each of the fuel tanks during fracturing of the well when the blenders and pumpers are consuming fuel;
>
> controlling fluid flow through each hose independently of flow in other hoses by starting fuel flow to each fuel tank by signaling an automatically operable valve associated with each fuel tank when the fuel level sensor associated with each fuel tank detects a low fuel level, and stopping fuel flow to each fuel tank by signaling the automatically operable valve associated with each fuel tank when the fuel level sensor associated with each fuel tank detects a high fuel level, the signaling issued remotely from the fuel delivery connections; and
>
> logging fuel consumption while pumping fuel.

Id. at A1–A2.

F. Prior Art References and Testimonial Evidence

Petitioner relies on the following references for its challenges to the patentability of the substitute claims proposed in the Revised Motion to Amend:

Reference	Patent or Publication No.	Date	Exhibit
Gerardot	US 5,983,962	Nov. 6, 1999	1012
Robinson	US 2007/0125544 A1	June 7, 2007	1013
Yoshida	JP 2003-341797 A	Dec. 3, 2003	1014[1]
Hockner	US 2008/0223482 A1	Sept. 18, 2008	1035
Mitrovich	US 8,281,823 B2	Oct. 9, 2012[2]	1034
Burns	US 5,579,233	Nov. 26, 1996	1015
Adler	US 2,498,229	Feb. 21, 1950	1016

See Opp. RMTA 3.

In addition to the cited references, Petitioner also relies on the declaration testimony of Richard E. Berry, P.E. *See* Ex. 1003; Ex. 1029; Ex. 1039. Petitioner offers Mr. Berry's opinions as expert testimony. *See* Ex. 1003 ¶¶ 2–3; Ex. 1039 ¶¶ 2–7. Patent Owner did not take Mr. Berry's deposition.

[1] Citations to Yoshida in this Decision refer to the certified English-language translation, which was provided with the original Japanese-language document as part of Exhibit 1014.

[2] Petitioner contends that Mitrovich qualifies as prior art to the '906 patent under pre-AIA § 102(e) based on its filing date of June 16, 2009, and its claim to the benefit of the filing date of a provisional application filed on June 16, 2008. *See* Opp. RMTA 3; *see also* Ex. 1036 (application that eventually issued as Mitrovich); Ex. 1037 (provisional application). Patent Owner does not contest Petitioner's assertion that Mitrovich qualifies as prior art.

Patent Owner relies on the testimony of Todd Van Vliet. *See* Ex. 2020; Ex. 2207. Patent Owner offers Mr. Van Vliet as a fact witness testifying on topics relating to objective indicia of nonobviousness. *See* Tr. 86:21–25 (Patent Owner confirming that Van Vliet is a fact witness). The record also includes the transcript of Petitioner's deposition of Mr. Van Vliet. *See* Ex. 1038.

G. Asserted Grounds

Petitioner asserts that proposed substitute claims 48–62 would have been unpatentable on the following grounds:

Claims Challenged	35 U.S.C. §[3]	References
48–58, 61, 62	103(a)	Gerardot, Robinson, Yoshida, Hockner, and Mitrovich
54, 55, 57	103(a)	Gerardot, Robinson, Yoshida, Hockner, Mitrovich, and Burns
59, 60	103(a)	Gerardot, Robinson, Yoshida, Hockner, Mitrovich, and Adler

See Opp. RMT A 3.

II. PETITIONER'S MOTION TO EXCLUDE

Petitioner filed a motion to exclude Exhibits 2020–2026 and 2207. *See* Paper 25 ("Mot. to Exclude"). Patent Owner filed an Opposition (Paper 26, "Opp. Mot. to Exclude") and Petitioner filed a Reply (Paper 30, "Reply Mot. to Exclude").

[3] The Leahy-Smith America Invents Act ("AIA") included revisions to 35 U.S.C. §§ 102, 103 that became effective on March 16, 2013. Because the '906 patent states that it is a continuation of an application filed before March 16, 2013, we apply the pre-AIA versions of the statutory bases for unpatentability.

A. Exhibit 2020

Exhibit 2020 is a Declaration of Todd Van Vliet, one of the inventors of the '906 patent and the founder and Chief Executive Officer of Patent Owner. Ex. 2020 ¶¶ 2–4. In his declaration, Mr. Van Vliet testifies regarding commercial success and industry praise for the '906 patent. *See id.* ¶¶ 5–22.

Petitioner argues that Mr. Van Vliet's declaration is irrelevant and has minimal probative value because Patent Owner has not adequately demonstrated a nexus between the asserted objective indicia and the merits of the claimed invention. Mot. to Exclude 3–4; Reply Mot. to Exclude 1–2. This argument attacks the merits of Patent Owner's substantive arguments on objective indicia and does not establish an evidentiary basis for excluding Mr. Van Vliet's testimony. We agree with Patent Owner that Mr. Van Vliet's testimony is relevant to the issue of objective indicia of nonobviousness. *See* Opp. Mot. to Exclude 1–2.

Petitioner also argues that Mr. Van Vliet's declaration should be excluded because it contains hearsay. Mot. to Exclude 4–6; Reply Mot. to Exclude 2. Petitioner states that it "is not moving to exclude based on the fact that the Declaration itself [is] hearsay, but rather that it contains a multitude of statements therein that are themselves hearsay, made by persons other than Van Vliet . . . ." Mot. to Exclude 5. However, as Patent Owner points out, Petitioner does not identify any specific statements in the declaration that constitute hearsay. Opp. Mot. to Exclude 4. Even after Patent Owner pointed out this lack of specificity, Petitioner's Reply still does not clarify which specific statements in the declaration are alleged to be hearsay and instead simply repeats the assertion there are "a multitude of statements therein that are themselves hearsay." Reply Mot. to Exclude 2.

In the absence of any particularized argument, Petitioner's hearsay challenge is unpersuasive.

B. Exhibits 2021–2026

Exhibits 2021–2026 are materials Mr. Van Vliet refers to in his declaration. *See* Ex. 2020 ¶¶ 17–22; Ex. 2207 ¶¶ 4–7. In particular, Exhibit 2021 is a marketing video describing the operation of the Frac Shack, which Mr. Van Vliet testifies is the automatic refueller whose use embodies the claims of the '906 patent. *See* Ex. 2021; Ex. 2020 ¶¶ 12, 17; Ex. 2207 ¶ 4. Exhibit 2022 is a photograph of the Frac Shack's fuel delivery connection. *See* Ex. 2022; Ex. 2020 ¶ 18. Exhibit 2023 is an excerpt from a marketing presentation for the Frac Shack that includes a photograph of one component of the system. *See* Ex. 2023; Ex. 2020 ¶ 19. Exhibit 2024 is an "Inspection Summary Report" and a follow-up letter correcting a clerical error in that report. *See* Ex. 2024; Ex. 2020 ¶ 20; Ex. 2207 ¶ 5. Finally, Exhibits 2025 and 2026 are email chains concerning customer feedback on the Frac Shack. *See* Exs. 2025–2026; Ex. 2020 ¶¶ 21–22; Ex. 2207 ¶¶ 6–7.

Petitioner argues that these materials are "irrelevant, prejudicial, misleading, and of minimal probative value" because they lack nexus, are incomplete, include grammatical errors, and reflect bias. Mot. to Exclude 6–7; Reply Mot. to Exclude 2–3. Petitioner's arguments go to the weight that should be given to these materials in the objective indicia analysis, not their admissibility.

Next, Petitioner argues that these exhibits should be excluded as hearsay because through them, Patent Owner is relying on unsworn statements of the creators or authors of these materials. Mot. to Exclude 8. The entirety of Petitioner's hearsay argument for these six exhibits is set forth in a single paragraph in Petitioner's Motion, which is repeated in the

Reply without any response to Petitioner's detailed arguments in opposition to the motion. *See id.*; Opp. Mot. to Exclude 4–14; Reply Mot. to Exclude 4. Petitioner's cursory treatment is insufficient to establish that Patent Owner's use of these materials violates the prohibition on hearsay. We are persuaded by Patent Owner's argument that the materials are either not statements (in the case of the photographs) or Patent Owner is not relying on the statements for the truth of the matter asserted but for the independent purposes of showing how the Frac Shack was marketed and how it was regarded by those in the market. Opp. Mot. to Exclude 6, 8, 11–14.

Petitioner additionally argues that Exhibits 2021, 2023, and 2024–2026 lack authentication. Mot. to Exclude 8–9. We disagree that Patent Owner's showing is insufficient under Federal Rule of Evidence 901. Mr. Van Vliet's testimony is adequate to support a finding that these materials are what Patent Owner says they are. *See* Ex. 2020 ¶¶ 17–22; Ex. 2207 ¶¶ 4–7. Patent Owner also points to other indicia in the materials themselves that provide circumstantial evidence of authenticity. Opp. Mot. to Exclude 5–6, 9–14.

C. Exhibit 2207

Exhibit 2207 is a supplemental declaration from Mr. Van Vliet. Petitioner argues that it should be excluded because it contains hearsay. Mot. to Exclude 9. "For example, it contains the names of persons and dates of statements (Ex. 2207 ¶¶ 4–7) that are hearsay statements without exception pulled from hearsay documents relied upon for their truth, e.g., the statement was made by the named person at the time so stated." *Id.* This argument is difficult to follow. To the extent Petitioner's argument is that Mr. Van Vliet's supplemental declaration is hearsay because it addresses

materials that are inadmissible hearsay, we have addressed that argument in the preceding section. To the extent Petitioner's argument is that Mr. Van Vliet's supplemental declaration is hearsay because he testifies regarding names and dates referenced in the documents, the argument is unpersuasive because Mr. Van Vliet's testimony is sworn testimony in this proceeding and is, therefore, not hearsay. *See* Opp. Mot. to Exclude 14.

Petitioner also argues that Mr. Van Vliet's supplemental declaration is procedurally defective because Patent Owner did not timely provide the evidence after Petitioner objected to Exhibits 2021 and 2024–2026 on authentication grounds. Mot. to Exclude 9. In response, Patent Owner shows that it did provide Mr. Van Vliet's supplemental declaration within the period permitted by our rules after Petitioner's evidentiary objections. Opp. Mot. to Exclude 15. Petitioner's Reply then shifts to an argument that Exhibit 2207 is procedurally deficient because it was filed prior to any motion to exclude. Reply Mot. to Exclude 4. Thus, Petitioner's Motion to Exclude argues that the supplemental declaration was provided too late; the Reply argues that the supplemental declaration was filed too early. The original argument is unpersuasive in light of the arguments and evidence in Patent Owner's opposition brief. And the Reply does not persuade us that exclusion is appropriate for at least the reason that Petitioner did, ultimately, file a motion to exclude. Thus, even if Petitioner is correct that the supplemental declaration should have been filed with the opposition to the motion to exclude, we fail to see how Petitioner is unfairly prejudiced by Patent Owner's earlier filing of the supplemental declaration or why such early filing warrants exclusion of the supplemental declaration.

D. Conclusion

For the foregoing reasons, we deny Petitioner's motion to exclude in its entirety.

III. ANALYSIS OF PATENT OWNER'S MOTION TO AMEND

A. Legal Standards for Motions to Amend

In an *inter partes* review, amended claims are not added to a patent as of right, but rather must be proposed as a part of a motion to amend. 35 U.S.C. § 316(d) (2018). The Board must assess the patentability of proposed substitute claims "without placing the burden of persuasion on the patent owner." *Aqua Prods., Inc. v. Matal*, 872 F.3d 1290, 1328 (Fed. Cir. 2017) (en banc); *see also Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 3–4 (PTAB Feb. 25, 2019) (precedential). Ordinarily, "the petitioner bears the burden of proving that the proposed amended claims are unpatentable by a preponderance of the evidence." *Bosch Automotive Service Solutions, LLC v. Matal*, 878 F.3d 1027, 1040 (Fed. Cir. 2017) (as amended on rehearing); *see Lectrosonics,* Paper 15 at 3–4.

In determining whether a petitioner has proven unpatentability of the substitute claims, the Board focuses on "arguments and theories raised by the petitioner in its petition or opposition to the motion to amend." *Nike, Inc. v. Adidas AG*, 955 F.3d 45, 51 (Fed. Cir. 2020). The Board itself also may justify any finding of unpatentability by reference to evidence of record in the proceeding. *Lectrosonics*, Paper 15 at 4 (citing *Aqua Products*, 872 F.3d at 1311 (O'Malley, J.)). However, "only under rare circumstances should the need arise for the Board to advance grounds of unpatentability to address proposed substitute claims that the petitioner did not advance, or insufficiently developed, in its opposition to the motion." *Hunting Titan, Inc. v. DynaEnergetics Europe GmbH*, IPR2018-00600, Paper 67, 9 (PTAB

July 6, 2020) (precedential). This case does not present any of the rare circumstances that would make it appropriate to look beyond the theories Petitioner advances against the proposed substitute claims. Instead, this case presents the usual scenario in which we should rely on the adversarial process to frame the issues for the Board. *Id.* at 11.

Before reaching the patentability issues that Petitioner argues, however, we first consider whether Patent Owner's Revised Motion to Amend meets the statutory and regulatory requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121. *Lectrosonics*, Paper 15 at 4. To satisfy those requirements, Patent Owner must demonstrate that: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment responds to a ground of unpatentability involved in the trial; (3) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter; and (4) the proposed claims are supported in the original disclosure (and any earlier filed disclosure for which the benefit of filing date is sought). *See* 35 U.S.C. § 316(d) (2018); 37 C.F.R. § 42.121 (2018).

B. Statutory and Regulatory Requirements

1. Reasonable Number of Substitute Claims

"There is a rebuttable presumption that a reasonable number of substitute claims per challenged claim is one (1) substitute claim." *Lectrosonics*, Paper 15 at 4–5 (citing 37 C.F.R. § 42.121(a)(3)). Here, Patent Owner's Revised Motion to Amend cancels three originally challenged claims of the '906 patent and proposes one substitute claim for each of the remaining originally challenged claims. *See* RMTA, App'x A. Thus, the Revised Motion to Amend complies with the requirement that the amendment propose a reasonable number of substitute claims.

2. Responsive to Ground of Unpatentability

Patent Owner's Revised Motion to Amend responds to a ground of unpatentability involved in this trial. 37 C.F.R. § 42.121(a)(2)(i). Patent Owner's claim amendments add features in an attempt to distinguish the proposed substitute claims from the references asserted in the Petition. RMTA 9. The Revised Motion to Amend also sets out Patent Owner's arguments regarding how the proposed substitute claims distinguish the prior art references asserted in the Petition. *See id.* at 9–20.

3. No Enlargement of the Scope of the Claims

"A motion to amend may not present substitute claims that enlarge the scope of the claims of the challenged patent." *Lectrosonics,* Paper 15 at 6–7 (citing 35 U.S.C. § 316(d)(3); 37 C.F.R. § 41.121(a)(2)(ii)). The Revised Motion to Amend satisfies this requirement. Proposed substitute claims 48–50 add narrowing limitations to claims 2, 8, and 19 and do not eliminate any limitations from those claims. *See* RMTA, at A1–A3. Proposed substitute claims 51–62 merely change the dependency of claims 28–30, 32–34, 37, 38, 40–42, and 45. *Id.* at A3–A4. As such, none of the proposed substitute claims enlarges the scope of the claims they replace.

4. No New Matter

"A motion to amend may not present substitute claims that . . . introduce new subject matter." *Lectrosonics*, Paper 15 at 6–7 (citing 35 U.S.C. § 316(d)(3); 37 C.F.R. § 41.121(a)(2)(ii)). To evaluate compliance with the prohibition on amendments that add new matter,

> the Board requires that a motion to amend set forth written description support in the originally filed disclosure of the subject patent for each proposed substitute claim, and also set forth support in an earlier filed disclosure for each claim for

> which benefit of the filing date of the earlier filed disclosure is sought.

Id. at 7 (citing 37 C.F.R. § 42.121(b)(1)–(2)). The Revised Motion to Amend fulfills that requirement by providing a chart listing the support for each proposed substitute claim in the originally filed disclosures of U.S. Application No. 15/144,547, filed May 2, 2016 (Ex. 1002, 80–103), U.S. Application No. 13/028,991, filed Feb. 16, 2011 (Ex. 2011), and U.S. Provisional Application No. 61/305,320, filed Feb. 17, 2010 (Ex. 2012). *See* RMTA 7–9.

In opposing Patent Owner's original Motion to Amend, Petitioner argued that the limitation in the proposed substitute claims of "fuel delivery connections comprising a fuel level sensor" lacked written description support. *See* MTA Opp. 5–6. Our Preliminary Guidance considered those opposition arguments but found, based on the record at that stage, that Patent Owner had shown a reasonable likelihood that there is adequate written description support for the claim limitation at issue. *See* PG 6–7. In its Opposition to the Revised Motion to Amend, Petitioner refers back to its Opposition to the original Motion to Amend and purports to "maintain[]" and "not waive its position that certain claim language is . . . not described." Opp. RMTA 2–3. But Petitioner does not provide any argument in its operative briefing to develop or explain its new matter or written description theories. *See id.*; *see also* Sur-Reply RMTA 2–5. We are doubtful that this manner of merely referring to arguments presented in an earlier brief, which opposed an earlier and different version of the motion to amend, is sufficient for Petitioner to preserve any new matter argument with respect to the Revised Motion to Amend. *See* 37 C.F.R. § 42.6(a)(3) ("Arguments must not be incorporated by reference from one document into another

document."). In any event, Petitioner's arguments against the Revised Motion to Amend do not respond to the analysis we provided in the Preliminary Guidance on this issue, and no other development in the record of this proceeding causes us to revise our analysis therein of whether the "fuel delivery connections comprising a fuel level sensor" limitation has written description support.

We determine that the proposed substitute claims in Patent Owner's Revised Motion to Amend do not introduce new matter.

5. Conclusion Regarding Statutory and Regulatory Requirements

Patent Owner's Revised Motion to Amend satisfies the requirements of 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.

C. Patentability of Substitute Claims

As noted above in Section I.G, Petitioner's patentability challenges to the proposed substitute claims are based on obviousness. *See* Opp. RMTA 3. Although Petitioner's opposition lists three grounds to cover each of the proposed substitute claims, Petitioner's arguments focus almost entirely on claim 48. *Id.* at 4–18. Specifically, Petitioner contends that claim 48 would have been obvious based on the combination of Gerardot, Robinson, Yoshida, Hockner, and Mitrovich. *See id.* Petitioner's arguments regarding the other proposed substitute claims are covered in a single paragraph, in which Petitioner refers back to arguments in its Petition to address any limitations beyond those recited in claim 48. *See id.* at 18–19; Sur-Reply RMTA 9–10.

1. Legal Standards for Obviousness Analysis

In *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), the Supreme Court set out a framework for assessing obviousness under § 103 that requires consideration of four factors: (1) the "level of ordinary skill in

the pertinent art," (2) the "scope and content of the prior art," (3) the "differences between the prior art and the claims at issue," and (4) when in evidence, "secondary considerations" of nonobviousness such as "commercial success, long-felt but unsolved needs, failure of others, etc." *Id.* at 17–18. "While the sequence of these questions might be reordered in any particular case," *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), the Federal Circuit has explained that an obviousness determination can be made only after consideration of all of the *Graham* factors. *Kinetic Concepts, Inc. v. Smith & Nephew, Inc.*, 688 F.3d 1342, 1360 (Fed. Cir. 2012).

2. Level of Ordinary Skill in the Art

In our Decision on Institution, based on the parties' proposals and the record at that stage, we adopted Patent Owner's proposal of the level of ordinary skill in the art—namely, a person with "a Bachelor of Science degree in chemical, oil & gas, or industrial engineering, or comparable degree, and at least two years' experience working in the field of fueling hydraulic fracturing equipment." Dec. on Inst. 9. We also agreed with Patent Owner that "a higher level of training or skill might make up for less education, and vice-versa." *Id.* The post-institution briefing did not address the level of ordinary skill in the art, and the parties confirmed at the hearing their agreement with the definition adopted in the Decision on Institution. *See* Tr. 13:9–15, 47:25–48:4. Thus, for the reasons explained in the Decision on Institution, we maintain our finding quoted above regarding the level of ordinary skill in the art.

3. Claim Construction

"In an *inter partes* review proceeding, a claim of a patent . . . shall be construed using the same claim construction standard that would be used to

construe the claim in a civil action under 35 U.S.C. 282(b)." *See* Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)).[4] That standard "includ[es] construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." *Id.*; *see also Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc).

We discuss three terms below, which are the only terms that require express construction. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (claim terms need only be construed "to the extent necessary to resolve the controversy"); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (applying *Vivid Techs.* in the context of an *inter partes* review). We note that the parties disagree over whether the entirety of claim 48's preamble is limiting. *See* Tr. 14:24–15:3, 51:14–54:6. We need not decide that issue because, as discussed below, we find Petitioner's challenge to claim 48 unpersuasive for reasons unrelated to the preamble.

a) "fuel delivery connections comprising a fuel level sensor"

Proposed substitute claim 48 recites "transporting a fuel delivery system including fuel delivery connections and a fuel source to the well site" and further recites that "the fuel delivery connections compris[e] a fuel level sensor." RMTA, at A1. Although the parties do not propose constructions that specifically address the relationship between the fuel delivery

[4] The Petition in this case was filed April 19, 2019. *See* Paper 3, 1.

connections and the fuel level sensor, the parties' arguments applying the cited references to this limitation evince a disagreement about the meaning of the phrase "fuel delivery connections comprising a fuel level sensor." *See* Tr. 13:17–14:4.

In particular, Petitioner argues that this term does not require a physical or structural connection between the fuel delivery connections and the fuel level sensor. *See* Opp. RMTA 7–8; Sur-Reply RMTA 3–4; Tr. 14:5–18, 34:11–35:3. According to Petitioner, "[t]hey can be viewed as a logical construct." Tr. 34:13–14; *see also id.* at 14:14–18 ("So they're viewed together for the purpose of effectuating refueling, but Petitioner AFD doesn't believe that they're required to physically—the refueling hose and the fuel sensor are physically required to be one part."). In support of that understanding, Petitioner points to the '906 patent's illustration of refueling hose 24 as separate from fuel level sensor 54. Opp. RMTA 8 (citing Ex. 1001, Fig. 2; Ex. 1039 ¶ 56). Patent Owner counters that Petitioner's interpretation of this claim language is overbroad because "Petitioner's conflation of separate 'components operationally connected to effectuate refueling' as part of the [fuel delivery connection] would make every part of the '906 Patent's fuel delivery system part of the [fuel delivery connection]." Reply RMTA 5.

We determine that the plain language of the claim, which requires that the fuel delivery connections "compris[e]" the fuel level sensor, shows that the fuel level sensor is structurally connected to the fuel level sensor. As Petitioner agrees, this claim language requires that the fuel delivery connection includes the fuel level sensor. Tr. 34:17–20. Both the fuel delivery connections and the fuel level sensor are structures, so for one to include the other, they must be physically connected. Petitioner's argument

that the phrase merely requires a logical or operational association does not give effect to the word "comprising." Because a fuel delivery connection and a fuel level sensor would be operationally connected in any system that has both items, Petitioner's interpretation essentially reads out the word "comprising" and treats the claim phrase as if it recited "fuel delivery connections *and* a fuel level sensor." Our interpretation that the fuel delivery connections must be physically connected to the fuel level sensor is more faithful to the claim's recitation that the fuel delivery connections "compris[e]" the fuel level sensor. *See Stumbo v. Eastman Outdoors, Inc.*, 508 F.3d 1358, 1362 (Fed. Cir. 2007) ("A claim construction that gives meaning to all the terms of the claim is preferred over one that does not do so.") (quoting *Merck & Co. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1372 (Fed. Cir. 2005)).

We are not persuaded by Petitioner's argument that Figure 2 of the '906 patent supports its interpretation. *See* Opp. RMTA 8. Petitioner argues that because Figure 2 shows refueling hose 24 as separate from fuel level sensor 54, a fuel delivery connection need only be operationally linked and not physically connected. *Id.* But as shown in Figure 2 and explained in the Detailed Description of the '906 patent, fuel level sensor 54 and hose 24 are both physically connected to fuel cap 26. Ex. 1001, Fig. 2; *see also id.* at 3:40–42 ("Each cap 26 also preferably comprises a fuel level sensor 54 mounted in port 49."); *id.* at 4:7–11 ("The port 50 [in fuel cap 26] may be used to house a conduit 27 . . . that extends down through the cap 26 to the bottom of the fuel tank 12, and which is connected . . . to one of the hoses 24."). Thus, although the fuel cap 26, fuel level sensor 54, and hose 24 are each separately identifiable structures, all three are physically connected. As such, we find no support in the Specification for Petitioner's position that the

claim does not require a physical or structural connection between the fuel delivery connections and the fuel level sensor.

For these reasons, we determine that the phrase "fuel delivery connections comprising a fuel level sensor" requires that the fuel delivery connections are physically connected to the fuel level sensor.

b) "low . . . fuel level" and "high fuel level"

Proposed substitute claim 48 recites "a fuel level sensor for detecting a low and high fuel level in the tanks to which the fuel delivery connection is connected." RMTA A1. Patent Owner proposes that "low" fuel level means "empty or nearly empty" and "high" means "full or nearly full." *Id.* at 5 nn.16–17 (citing Ex. 1001, 4:1–4, 6:7–12; Ex. 2002, 10). Petitioner does not contest Patent Owner's proposed constructions or offer competing constructions for these terms. *See generally* Opp. RMTA; Tr. 13:17–15:14.

Although Patent Owner's argument in support of these constructions is truncated, we determine that Patent Owner's proposals are supported by the evidence of record. The '906 patent describes that operators can be provided with "visual representations or displays showing the fuel level in each of the tanks 12. Any visual representation or display may be used that shows at least a high level condition (tank full) and a low level condition (tank empty or nearly empty) and preferably also shows actual fuel level." Ex. 1001, 3:66–4:4; *see also id.* at 6:7–10 (explaining that "[t]he control station 56 may be provided with a full readout or display for each fuel tank 12 being filled that shows the level of fuel in the fuel tank 12 including when the fuel tank 12 is near empty and near full. An alternative is to provide only fuel empty (low sensor dry) or fuel full (high sensor wet) signals."). These descriptions equate a high fuel level with the tank being full or nearly full and a low fuel level with the tank being empty or nearly empty. Patent

Owner also cites a district court's claim construction order relying on this description[5] as definitional and, therefore, construing "a low fuel condition" to mean "a state in which the fuel level is empty or nearly empty." *See* Ex. 2002, 11–12. The district court's construction of "a low fuel condition" is relevant to the construction of "low . . . fuel level" because the terms are substantially similar.

Accordingly, we adopt Petitioner's proposed constructions of "low" fuel level as "empty or nearly empty" and "high" fuel level as "full or nearly full."

4. Summary of Petitioner's Cited References

a) Summary of Gerardot

Gerardot discloses a "portable fuel dispensing device [that] includes a fuel container formed of inner and outer fuel impervious walls and a plurality of fuel metering and dispensing units coupled to the container for simultaneously dispensing metered quantities of fuel to a plurality of vehicles." Ex. 1012, 2:5–9. Gerardot seeks to provide a system that eliminates the need for underground storage tanks at customer locations, and that offers versatility and portability insofar as units can be moved out of areas as needed, such as when flooding occurs. *Id.* at 1:10–14, 1:47–52.

In Gerardot's system, a "plurality of wheels such as the undercarriage of a semi-tractor trailer support the [portable fuel dispensing] device for allowing the device to be moved between locations at which fuel is

[5] The district court was construing the Parent Patent (*see supra* § I.C) — i.e., U.S. Patent No. 9,346,662, to which the '906 patent states that it is related as a continuation. *See* Ex. 2002, 1; Ex. 1001, code (63). The portion of the Parent Patent on which the district court relied as definitional for "low fuel condition" is also present in the '906 patent. *See* Ex. 2002, 11; Ex. 1001, 4:3.

dispensed to vehicles and a fuel container refilling location." *Id.* at 2:9–13. Figures 1 and 2 are reproduced below:

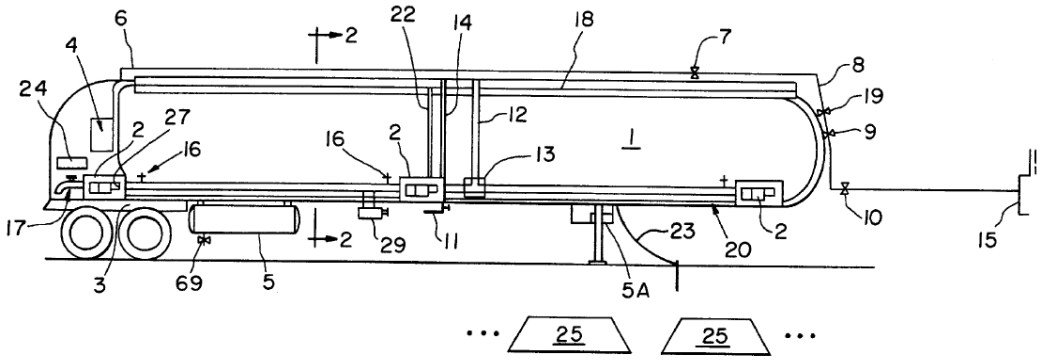

Fig. 1

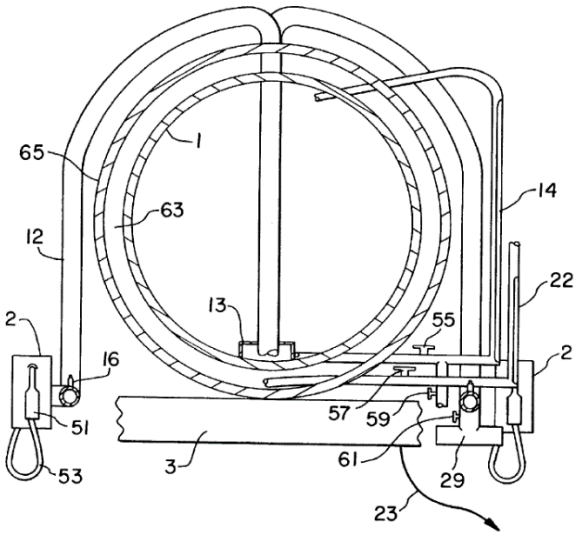

Fig. 2

Figures 1 and 2 depict a side elevation view and a cross-section of a semi-tractor trailer, respectively, carrying a portable fuel dispensing device holding fuel in supply tanks 1. *Id.* at 2:34–38, 2:55–58.

Fuel is dispensed from supply tank 1 through pipe line 6, main manifold supply line 12, and dispensers 2 to customer vehicles. *Id.* at 3:4–5, 3:14–15, 3:40–42. Hoses 53 at dispensers 2 are equipped with automatic disconnect snap couplers to prevent spillage if a customer fails to remove the

nozzle prior to leaving the dispensing station. *Id.* at 4:3–5. Dispensers 2 also include automatic shut-off filler nozzles 51 to prevent customers from overfilling their vehicle tanks. *Id.* at 4:1–3. Ground cable 23 connects chassis 3 of the trailer to the ground to prevent static electricity buildup, and concrete barriers 25 are set up on both sides of the carrier chassis to prevent accidental crashes into the chassis and supply tank. *Id.* at 3:49–55.

b) Summary of Robinson

Robinson discloses a well treatment operations factory "for providing pressure for a well fracturing operation." *See* Ex. 1013, at Abstract, ¶ 5. The factory includes "one or more docking areas for docking one or more pumping units to a pressure manifold wherein the one or more docking areas are operable to provide access between one or more pumping units." *Id.* ¶¶ 5, 21.

Figure 1 is reproduced below:

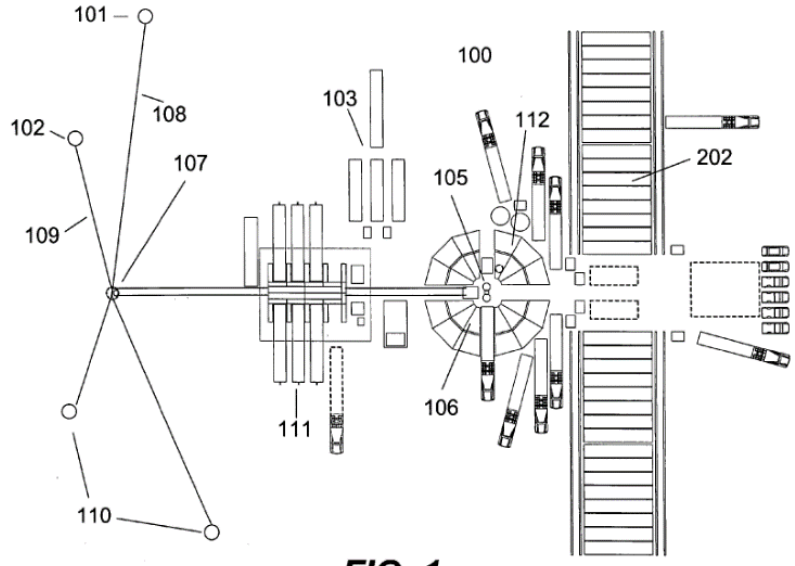

FIG. 1

Figure 1 shows well treatment operations factory 100 including centralized power unit 103, pumping grid 111, central manifold 107, proppant storage

system 106, chemical storage system 112, and blending unit 105. *Id.* ¶¶ 9, 21.

Figure 7 is reproduced below:

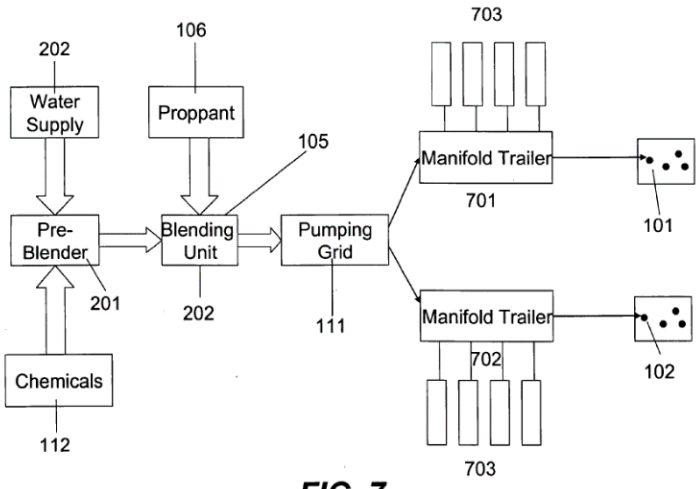

FIG. 7

Figure 7 is a schematic for a well fracturing method using manifold trailers 701, 702, each of which is connected to pressurized stimulating fluid through pump trucks 703 or through pumping grid 111. *Id.* ¶¶ 15, 31.

Figure 8 is reproduced below:

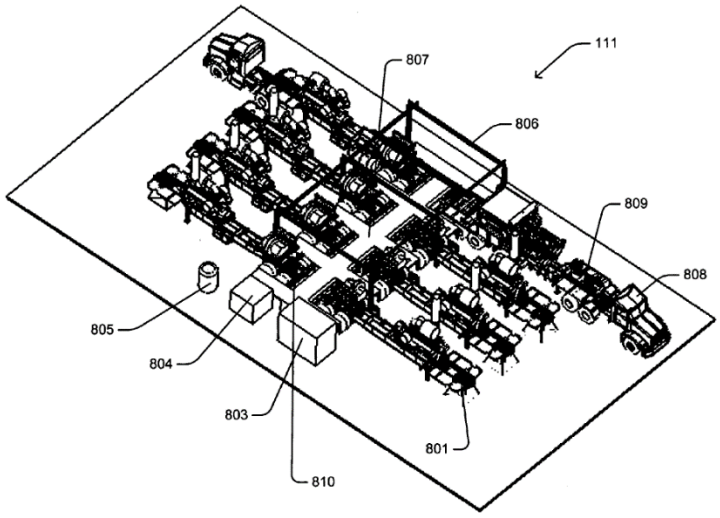

FIG. 8

Figure 8 shows an aerial view of pumping grid 111, including walkways 807 and docks 810 that receive equipment. *Id.* ¶¶ 16, 32. Pumping grid 111

includes freestanding pumps 801, which rely on centralized fuel, coolant, and power. *Id.* ¶ 32. Pumping grid 111 can also include pumps 809 attached to trucks 808. *Id.* "Pumps 809 can each contain its own fueling, cooling, lubrication, and power sources." *Id.*

c) Summary of Yoshida

Yoshida discloses "a refueling apparatus which enables the automatic supply of fuel" from an external fuel tank to an internal fuel tank by switching the operation of a fuel supply pump in accordance with the amount of fuel in the internal fuel tank. Ex. 1014 ¶ 14. Yoshida's Figure 3 is reproduced below:

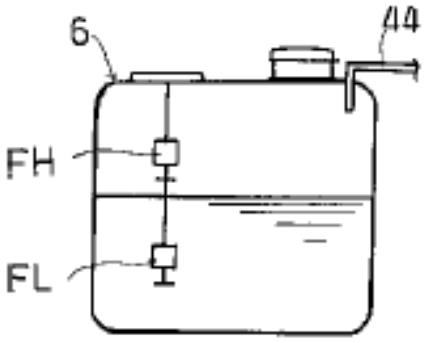

Figure 3 shows internal fuel tank 6 and refueling hose 44, which links internal fuel tank 6 to external fuel tank 43. *Id.* ¶ 11. Yoshida uses "an upper limit float switch FH . . . provided inside the internal fuel tank 6 as a detector for detecting the upper limit fuel level of the stored fuel" and "a lower limit float switch FL . . . provided inside the internal fuel tank 6 as a detector for detecting the lower limit fuel level of the stored fuel." *Id.* ¶ 14. Thus, Yoshida's "refueling apparatus . . . automatically resupplies fuel from the external fuel tank 43 to the internal fuel tank 6." *Id.* ¶ 16.

d) Summary of Hockner

Hockner describes a device for preventing overfilling of fuel tanks at a gasoline station. Ex. 1035 ¶ 1, Abstract. Hockner explains that prior art tank trucks had multiple compartments, each equipped with a fill-level sensor connected to a computer that calculated the quantities filled into and dispensed from that compartment. *Id.* ¶ 2. This approach only monitored fill level "in an indirect manner." *Id.* ¶ 3. While optical or thermistor threshold sensors were also known for preventing overfilling tanks, such sensors had to be observed and, therefore, "involve[d] uncertainty." *Id.* ¶ 4.

Hockner seeks to avoid these disadvantages with a system that "easily transmit[s] information about reaching a predetermined fill level and . . . initiate[s] automatic closing of the appropriate inlet valves." *Id.* ¶ 7. In particular, the tanks in a filling station include a fill-level threshold sensor that is connected to a transmitter. *See id.* ¶¶ 12–15. "During communication between the transmitter 1, the receiver 2, and an interrogation circuit associated with the transmitter 1, the individual fill-level threshold sensors 3 in the separate tanks 8 may be queried in rapid succession, and the information sent to the transmitter 1." *Id.* ¶ 18. Hockner explains that "[i]t is practical to connect the transmitter 1 to an evaluation circuit that shuts off a valve controlling the hose 6 connected to the tank 8 in question when a signal is received that indicates that the specified maximum fill level has been reached." *Id.* ¶ 19.

e) Summary of Mitrovich

Mitrovich describes a refueling apparatus that automatically stops when a desired refueling level is reached. *See* Ex. 1034, 1:15–17. Figure 2 is reproduced below:

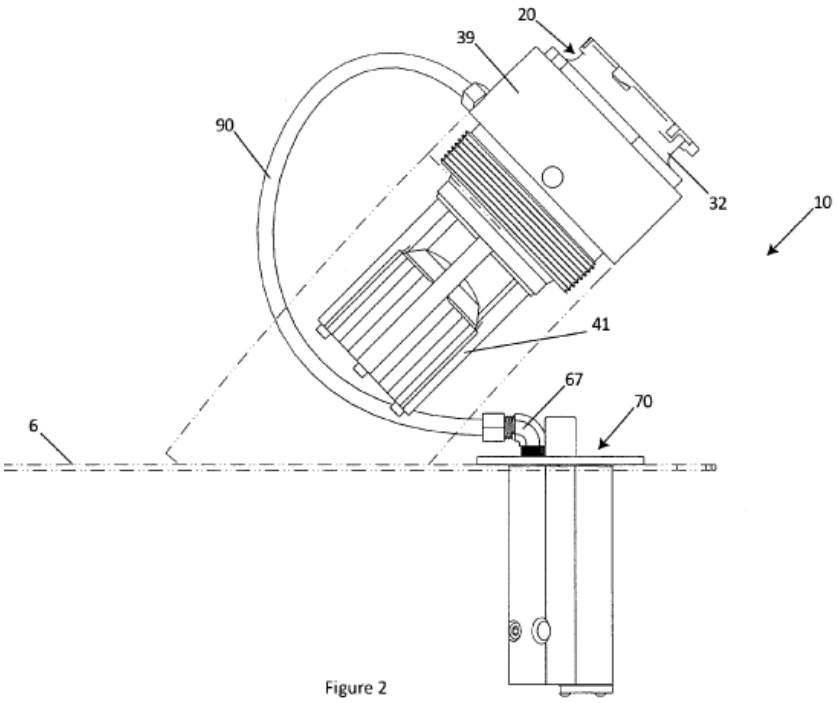

Figure 2

As depicted in Figure 2, the refueling apparatus includes "fluid flow control valve 20 which, working in concert with a float valve (float control module) 70, can be opened or closed, thereby shutting off a flow of fuel into a container 6 (e.g., fuel tank)." *Id.* at 2:24–28. Bleed conduit 90 "fluidly interconnect[s] the two components and allow[s] the float control module 70 to automatically close the fluid flow control valve 20 upon a predetermined level of fluid in the container being reached. . . ." *Id.* at 4:19–23.

f) Summary of Burns

Burns discloses a "method of on-site refueling, i.e., delivering petroleum and similar products from a tank truck into customer vehicles or other tanks at a customer's site, that ensures the accurate delivery of products." Ex. 1015, Abstract. Burns' method is implemented by "a delivery truck 50, having a plurality of compartments 52, 54, 56, and 58 and a corresponding outlet valve 62, 64, 66, and 68 that controls the flow of the product from each compartment to a manifold, and then through a pump and

associated meter to a connected hose." *Id.* at 8:28–33, Fig. 2. Burns' delivery truck further includes a digital computer system having a "controller that allows the on-board computer to read the accumulating gallonage being passed through the truck meter(s), and to set relay contacts that directly control the flow of fuel into vehicles." *Id.* at 5:54–56, 5:66–6:3.

g) Summary of Adler

Adler discloses a portable service station mounted on a vehicle, for dispensing fuels and lubricants to vehicles in the field or at remote points from a permanent gas station. Ex. 1016, 1:1–20. Adler's portable gas station includes pipes 46–49 connected to hoses that are stored on reels 52–59. *Id.* at 2:6–13, 2:45–50, 4:55–5:3, Figs. 1, 5. The portable gas station achieves "an optimum disposition of products-dispensing hose reels and other auxiliary parts necessary for providing efficient and flexible dispensing of various products and to enable quick servicing of several vehicles simultaneously while out in the field." *Id.* at 2:6–11.

5. Claim 48

Petitioner contends that Gerardot, Robinson, Yoshida, Hockner, and Mitrovich together teach every limitation of proposed substitute claim 48 and that an ordinarily skilled artisan would have been motivated to combine those references to yield the claimed subject matter. *See* Opp. RMTA 4–18; Sur-Reply RMTA 1–9. Our analysis focuses on the limitations in claim 48 reciting "fuel delivery connections comprising a fuel level sensor for detecting a low and high fuel level," starting and stopping fuel flow based on detection of low and high fuel levels,[6] and motivation to combine,

[6] In particular, we focus on the limitations in proposed substitute claim 48 reciting "starting fuel flow to each fuel tank by signaling an automatically operable valve . . . when the fuel level sensor associated with each tank

particularly with respect to the requirement that signaling for the automatically operable valves is "issued remotely from the fuel delivery connections." As discussed below, these aspects of Petitioner's obviousness ground are unpersuasive. While these weaknesses in Petitioner's case are sufficient to find for Patent Owner, for the sake of completeness we also consider Patent Owner's arguments regarding objective indicia. In our view, Patent Owner's objective indicia weigh only modestly in favor of nonobviousness.

a) The "Fuel Delivery Connections" Limitation

Proposed substitute claim 48 recites "fuel delivery connections comprising a fuel level sensor for detecting a low and high fuel level in the tanks to which the fuel delivery connection is connected." As discussed in Section III.C.3.a), we determine that the phrase "fuel delivery connections comprising a fuel level sensor" requires that the fuel delivery connections are physically connected to the fuel level sensor. And as discussed in Section III.C.3.b), we determine that "low" fuel level means "empty or nearly empty" and "high" fuel level means "full or nearly full."

Petitioner has not provided a persuasive explanation of how the combination teaches every aspect of the "fuel delivery connections" limitation. Although Petitioner frames its challenge as a single combination of the five cited references, *see* Opp. RMTA 3, Petitioner's arguments regarding this limitation are better understood as two alternatives: a first alternative in which Yoshida teaches the limitation, and a second alternative in which Mitrovich teaches the limitation. *See* Tr. 28:14–24. Petitioner does

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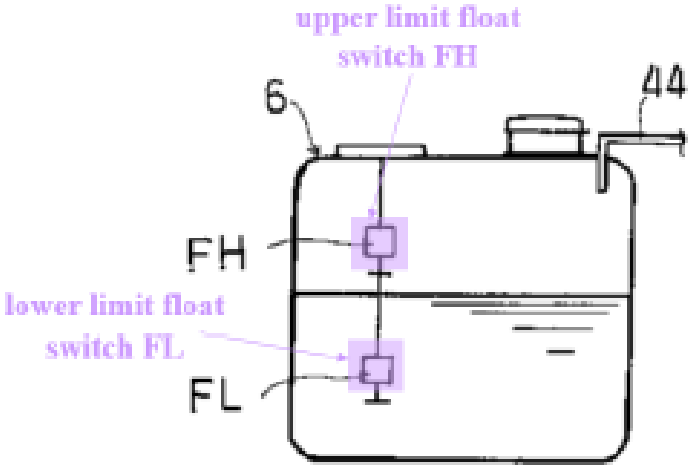
detects a low fuel level" and "stopping fuel flow to each fuel tank by signaling the automatically operable valve . . . when the fuel level sensor . . . detects a high fuel level." RMTA A1.

not argue that an ordinarily skilled artisan would have combined Yoshida and Mitrovich to arrive at this limitation. *See id.* at 29:8–30:3.

As to the first alternative, Petitioner contends that "Yoshida discloses a fuel sensor that detects both low and high fuel levels of fuels [sic] and a fuel delivery connection including between hose 44 and internal tank 6." Opp. RMTA 5–6. Petitioner provides the following annotated version of Yoshida's Figure 3:



Petitioner's annotated version of Figure 3 illustrates how Petitioner correlates Yoshida's components to the limitations of claim 48. *Id.* at 6. In particular, Petitioner labels and highlights (in purple) Yoshida's upper limit float switch FH and lower limit float switch FL. *Id.*

Patent Owner argues that Yoshida fails to disclose the claimed fuel delivery connections comprising a fuel level sensor because "Yoshida's internal fuel tank (6) is supplied by a refueling hose (44) that is shown just to be a drop tube at a distinctly different part of the fuel tank from the built-in sensors." RMTA 14–15. Patent Owner points out that Yoshida shows "no structure . . . between the hose 44 and the tank 6 for introducing a hose" and "Yoshida's sensors (FH and FL) are separate from this unshown fuel intake line (44) structure." *Id.* at 15 (emphasis omitted); Reply RMTA 2.

We agree with Patent Owner that Yoshida does not disclose fuel delivery connections comprising a fuel level sensor under the construction we have adopted, which requires a physical connection between the fuel delivery connection and the fuel sensor. Petitioner's only rebuttal on this point is to argue that the claim merely requires a logical or operational connection, not a physical or structural connection, between the fuel delivery connections and the fuel level sensor. *See* Opp. RMTA 7–8; Sur-Reply 3. That argument is unpersuasive for the reasons we discussed in Section III.C.3.a). Petitioner does not point to, and we do not find, any indication in Yoshida that refueling hose 44 is physically or structurally connected to float switches FH or FL. Yoshida's Figure 3 shows refueling hose 44 entering fuel tank 6 independently of, and without any physical connection to, float switches FH and FL. Ex. 1014, Fig. 3; *see also* Tr. 34:6–10 (Petitioner agreeing that in Yoshida, the supply hose and the sensor are separate). Yoshida's description says nothing of any physical connection between float sensors FH and FL and refueling hose 44, and instead simply states that upper limit float switch FH and lower limit float switch FL are "provided inside the internal fuel tank 6," with "upper limit float switch FH . . . positioned above the lower limit float switch FL." Ex. 1014 ¶ 14.

Turning to the second alternative, Petitioner argues that Mitrovich discloses the "fuel delivery connections" limitation because it "describes that a fluid flow control valve module 20 includes a shutoff valve, and fluid level sensor 70 automatically controls the opening and closing of said shutoff valve to start and stop refueling." Opp. RMTA 10. According to Petitioner, Mitrovich's

> fluid level sensor is configured to automatically close the fluid flow control valve upon the sensor sensing that said fluid level is

> higher than a predetermined level, and to automatically open the fluid flow control valve module upon the sensor sensing that said fluid level is lower than a predetermined level in said container.

Id. (citing Ex. 1034, 6:12–34, 7:9–19).

Patent Owner counters that "Mitrovich's float control module fails to disclose the claimed high and low level detecting, because it only detects a high level." Reply RMTA 4. Patent Owner argues that Mitrovich does not teach detecting a high and low level but instead describes "a mechanism similar to a common toilet tank, with *one* float that detects a high level (when pushed up to a predetermined level) and a 'not high level' (when not pushed up to that level)." *Id.*

We agree with Patent Owner that Petitioner has not shown that Mitrovich's fluid level sensor 70 detects "low" and "high" fuel levels under the constructions we have adopted — namely, "empty or nearly empty" and "full or nearly full." Mitrovich's goal is to provide a refueling apparatus that automatically stops when a desired refueling level is attained. Ex. 1034, 1:15–17, 1:25–28, 2:24–28. Consistent with that goal, Mitrovich discloses that fluid flow control valve 20 permits fluid to flow "as long as the flow control module[70]'s float valve is open" but "[w]hen the fluid level reaches a preset level," fluid flow control valve 20 prevents further fluid flow to the container. *Id.* at 5:3–20. Mitrovich describes opening or closing the valve based on whether the fluid level is higher or lower than a single "predetermined level." *Id.* at 6:25–31, 7:9–19. Because Mitrovich senses only whether the fluid level is higher or lower than a single preset level, it does not teach a fuel level sensor for detecting a low (i.e., empty or nearly empty) and high (i.e., full or nearly full) fuel level.

Petitioner responds to Patent Owner's argument regarding the absence of low fuel level detection in Mitrovich by pointing back to Yoshida. *See* Sur-Reply RMTA 6. But Yoshida is deficient for the reasons already discussed, and Petitioner does not propose combining Yoshida's low fuel sensor with Mitrovich. *See* Tr. 29:8–30:3. We have also considered the testimony of Mr. Berry to which Petitioner directs us. *See* Ex. 1039 ¶¶ 61–62. That testimony has little impact on our analysis because Mr. Berry's testimony essentially repeats Petitioner's arguments with no further explanation or detail. *See* Opp. RMTA 11–12. Mr. Berry does not explain, for example, why an ordinarily skilled artisan would have understood Mitrovich to disclose detecting two different fluid levels, as opposed to one predetermined level.

Petitioner argues, and Mr. Berry testifies, that "a low and high fuel level sensor was well-known in the art." *Id.* at 12 (citing Ex. 1001, 3:43–45); Ex. 1039 ¶ 62. That assertion does not support that Mitrovich, the reference Petitioner relies on, teaches that limitation. Indeed, Mr. Berry's and Petitioner's reliance on the teachings in the '906 patent to support that assertion appears to exemplify improper hindsight. *See Otsuka Pharm. Co. v. Sandoz, Inc.*, 678 F.3d 1280, 1296 (Fed. Cir. 2012) ("The inventor's own path itself never leads to a conclusion of obviousness; that is hindsight.").

Accordingly, Petitioner has not shown that the proposed combination teaches the "fuel delivery connections" limitation.

b) Starting and Stopping Fuel Flow Based on Detecting Low and High Fuel Levels

Proposed substitute claim 48 recites "starting fuel flow to each fuel tank by signaling an automatically operable valve . . . when the fuel level sensor associated with each tank detects a low fuel level" and "stopping fuel

flow to each fuel tank by signaling the automatically operable valve . . . when the fuel level sensor . . . detects a high fuel level." RMTA A1. In addressing these aspects of claim 48, Petitioner relies on Mitrovich as disclosing "automatically starting fuel flow to a fuel tank when a low fuel level is detected and automatically stopping fuel flow to the tank when a high fuel level is detected by a controlling fuel valve." Opp. RMTA 15. For the same reasons just discussed, we are not persuaded that Mitrovich discloses detecting a low and high fuel level. Thus, Petitioner's arguments regarding these limitations are unpersuasive.

c) Motivation to Incorporate Remote Signaling

Proposed substitute claim 48 further recites that the signaling to the automatically operable valve is "issued remotely from the fuel delivery connections." RMTA A1. Petitioner relies on Hockner to disclose signaling issued remotely from fuel delivery connections. Opp. RMTA 15. With respect to the motivation to incorporate this feature from Hockner into the proposed Gerardot-based combination, Petitioner contends that an ordinarily skilled artisan would have "understood that providing a single control center allows an operator to monitor the refueling operations of all fuel tanks from a single location outside the hot zone." *Id.* at 17; *see also id.* at 18 (arguing that "having a centralized control station outside the hot zone has several benefits" including keeping sensitive components "out of the harsh temperature and environmental conditions of the refueling zone"); Ex. 1039 ¶¶ 76–77 (Mr. Berry testifying the same); Sur-Reply RMTA 9 (arguing that ordinarily skilled artisans "knew that the small risk to personnel from using an automatic refueling system could be made even smaller by routing the signal to a remote location because if the processor malfunctioned, personnel could perform maintenance outside of the hot zone").

Thus, the premise of Petitioner's motivation argument is that a skilled artisan would have incorporated remote signaling so as to permit operators to monitor and perform maintenance from outside the hot zone. Yet Petitioner does not point to any disclosure in any of the cited references suggesting that there are risks of having an operator in the hot zone or that it would be beneficial to permit an operator to monitor refueling operations from outside the hot zone. While it is unnecessary for a patent challenger to show that the cited references themselves supply a teaching, suggestion or motivation to combine, *KSR*, 550 U.S. at 415, the motivation analysis nevertheless remains focused on the state of the art at the time of the invention. *See Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354 (Fed. Cir. 2013); *see also TQ Delta, LLC v. Cisco Sys., Inc.*, 942 F.3d 1352, 1362 (Fed. Cir. 2019) (reversing Board's obviousness determination because the expert testimony on which it was based was untethered to supporting contemporaneous evidence and failed to provide a "meaningful explanation for why one of ordinary skill in the art would be motivated to combine these references *at the time of this invention*") (emphasis in original). Here, Petitioner has not provided any persuasive evidence to show that ordinarily skilled artisans at the time of the invention would have recognized the presence of operators near equipment during refueling as a problem. *See Leo Pharmaceutical Prods., Ltd. v. Rea*, 726 F.3d 1346, 1353 (Fed. Cir. 2013) (noting that "an invention can often be the recognition of a problem itself").

Petitioner relies on Hockner as teaching the remote signaling feature, but Hockner's purpose is simply to provide a system that prevents overfilling of tanks at a filling station for environmental reasons. Ex. 1035 ¶¶ 1, 4–5. When asked at the hearing whether any of the cited references

describe any risks or disadvantages of having an operator near fracking equipment while it is operating, Petitioner pointed to Yoshida. *See* Tr. 41:23–43:2. However, we find no disclosure in Yoshida relating to worker safety or the dangers of operators being near fracking equipment. Yoshida's stated goal is to prevent a continuously operating engine generator from running out of fuel. Ex. 1014, Abstract, ¶ 3. Moreover, Yoshida describes that "the starting/stopping of the engine generator 1, the resupply of fuel, and the like are performed by operating the instrument box 15 from the outside of one side face of the cover 2." *Id.* ¶ 12. Yoshida's teaching that operators use an instrument box on the cover of the machine to operate the machine runs counter to Petitioner's reliance on Yoshida as suggesting the dangers of placing operators in the hot zone.

Petitioner also points to an "OSHA[7] letter that says when you implement an automatic system, then there's suddenly de minim[i]s risk by virtue of that being automatic." Tr. 42:2–6. The OSHA letter is a document that includes in its footer an address on OSHA's website. *See* Ex. 1031, 1. The footer also includes the notation "2/26/2020." The letter is dated June 11, 1996 and is addressed to Mr. Ted Hillman in response to his request for an interpretation of OSHA's regulations addressing fire protection during the fueling of mobile equipment, specifically 29 C.F.R. § 1926.152(g)(10). *Id.* The OSHA letter states that

> the requirement to shut off the engines of mobile equipment during the fueling operation is intended to prevent injuries due to fire. We agree that if the equipment is equipped with a Wiggins Refueling System, and the equipment is refueled outdoors or in a well ventilated open structure, the intent of § 1926.152(g)(10)

[7] OSHA stands for the Occupational Safety and Health Administration.

> is met and that conducting diesel fueling operations with the engine running would be a de minimis condition.

Id. Petitioner relies on the OSHA letter to argue that an ordinarily skilled artisan would have been motivated to provide control of the automatically operated valves from outside the hot zone to minimize risk to personnel. *See* Opp. MTA 8–9, 21; Ex. 1029 ¶ 53; Opp. RMTA 17–18; Ex. 1039 ¶ 77.

An initial problem with Petitioner's reliance on the OSHA letter is that Petitioner has not provided persuasive evidence that it reflects the state of the art or the knowledge of ordinarily skilled artisans at the time of the invention. Petitioner does not explain when or how the OSHA letter was published and provides no evidence that ordinarily skilled artisans would have consulted documents of this kind or knew where to find them. When asked about this at the hearing, Petitioner referred to the testimony of Mr. Berry (*see* Tr. 43:3–44:6), but Mr. Berry's testimony regarding the OSHA letter also does not establish that it was known by or available to ordinarily skilled artisans during the prior art period. *See* Ex. 1029 ¶¶ 27, 53, 66; Ex. 1039 ¶¶ 27, 52.

Further, as Patent Owner points out, the OSHA letter provides little information about the capabilities of the system that created the de minimis exception or why those features create an exception to the requirement to shut off engines during fueling. *See* RMTA 10. The OSHA letter's reference to an "Automatic Fuel Shutoff System" (Ex. 1031, 1) suggests that automatic fuel shutoff sufficiently eliminates the risk of fire to warrant an exception. But Petitioner relies on the OSHA letter as motivation for the inclusion of both Mitrovich's automatic valve control based on a fuel level reading, as well as Hockner's remote signaling feature. Opp. MTA 8–9. As we pointed out in our Preliminary Guidance,

> given Petitioner's position that Mitrovich's automatic valve controlling would already reduce hot refueling risks to *de minimis* . . . , Petitioner's proffered reason for issuing the valve control signals remotely from the fuel delivery connections (i.e., further risk mitigation) does not adequately explain how or why an ordinarily skilled artisan would have combined the signals issued remotely from the fuel delivery connections, as taught by Hockner, with the automatic valve control of Mitrovich.

PG 12. Petitioner responds that even with automatic control, monitoring by operators may still be needed and "the small risk to personnel could be made even smaller by routing the signal to a remote location before it reaches the valve, because if the processor malfunctions, personnel can perform maintenance outside of the hot zone." Opp. RMTA 18 (citing Ex. 1039 ¶ 77). We are not convinced. As discussed above, none of the cited references describes a concern for placing operators in the hot zone during fueling. The OSHA letter, even leaving aside the issue of whether it reflects knowledge of ordinarily skilled artisans at the time of the invention, indicates that risk of injury due to fire when refueling a running engine is de minimis when an automatic shutoff system is included. Thus, we are not persuaded that an ordinarily skilled artisan would have been motivated by operator safety to modify a system that included an automatic fuel shutoff system to also include Hockner's remote signaling feature.

We also note that the '906 patent describes the hazards of operators manually refueling equipment during fracking operations. *See* Ex. 1001, 1:18–21. Indeed, Mr. Berry references this description in the '906 patent as providing motivation for Petitioner's proposed combination. *See* Ex. 1029 ¶ 53. In the absence of any evidence that the risks or disadvantages of operators being near equipment during fueling was known before the date of the invention, Petitioner's motivation for incorporating remote signaling

appears to be simply following the path laid out in the '906 patent itself. *See Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1985) ("[T]here must be some reason for the combination other than the hindsight gleaned from the invention itself.").

For these reasons, we find that Petitioner has not provided a persuasive reason to modify the proposed Gerardot-based system to include Hockner's remote signaling feature.

d) Objective Indicia of Nonobviousness

Patent Owner argues that objective indicia in the form of commercial success and industry praise weigh in favor of nonobviousness. *See* RMTA 21–25; Reply RMTA 9–12. Petitioner disputes Patent Owner's arguments regarding objective indicia. Opp. RMTA 19–25; Sur-Reply 10–12. For the reasons discussed below, we find that Patent Owner is entitled to a presumption of nexus, that the evidence of commercial success weighs only modestly in favor of nonobviousness, and that the industry praise evidence is weak and carries little or no weight in the obviousness analysis.

(1) Nexus

"For objective indicia of nonobviousness to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention." *Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 33, 32 (PTAB Jan. 24, 2020) (precedential); *see also In re Affinity Labs of Tex., LLC*, 856 F.3d 883, 901 (Fed. Cir. 2017) ("Evidence of [objective indicia] is only relevant to the obviousness inquiry 'if there is a nexus between the claimed invention and the [objective indicia].'"). "[T]he patentee bears the burden of showing that a nexus exists.'" *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019) (quoting *WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339,

1359 (Fed. Cir. 1999)). A presumption of nexus applies "when the patentee shows that the asserted objective evidence is tied to a specific product and that product 'embodies the claimed features, and is coextensive with them.'" *Lectrosonics*, Paper 33, 32 (quoting *Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1373 (Fed. Cir. 2019)).

Here, Patent Owner argues that the "Frac Shack" system was designed to employ the method of proposed substitute claim 48. *See* RMTA 21–23. In support of that assertion, Patent Owner provides the testimony of Mr. Van Vliet, an inventor of the '906 patent and founder of Patent Owner. *See* Ex. 2020 ¶¶ 2–4. Mr. Van Vliet testifies that "the employees of my company practice, and have always practiced this method [in proposed substitute claim 48] using my company's automatic frac equipment refueller, the Frac Shack." *Id.* ¶ 12. Mr. Van Vliet's declaration includes or references photographs and a video to illustrate the features and operation of various iterations of the Frac Shack. *Id.* ¶¶ 13–14, 17–18. Patent Owner's briefing provides additional detail on how the materials Mr. Van Vliet references show Frac Shack practicing the method of proposed substitute claim 48. *See* RMTA 21–22. According to Mr. Van Vliet, "the patented method of the '906 Patent . . . is implemented whenever the referenced Frac Shacks are/were used, and the Frack Shacks are the 'heart' of my company, as providing frac refueling services using the Frac Shack is my company's main product." Ex. 2020 ¶ 16. We find that Patent Owner's showing is sufficient to raise a presumption of nexus.

We have considered Petitioner's counterarguments regarding nexus but they do not dissuade us from applying a presumption of nexus. First, Petitioner argues that Mr. Van Vliet's declaration refers to the proposed substitute claim 48 of Patent Owner's original Motion to Amend, and

therefore cannot establish nexus for the proposed substitute claim 48 of the Revised Motion to Amend. Opp. RMTA 22–23. Petitioner is correct in noting that claim 48 in the Revised Motion to Amend omits certain limitations that were recited in the version of claim 48 in Patent Owner's original Motion to Amend. *See id.*; *see also* RMTA 1 (explaining that the claims in the Revised Motion to Amend are the same as those in the original Motion to Amend except that they do not have certain limitations that the Board's Preliminary Guidance indicated may lack written description support); PG 7 (preliminarily determining that "Patent Owner has not directed us to written description support for 'repeating the securing, detecting, pumping, and controlling steps at the second well site,' as recited in proposed substitute claims 48, 49, and 51"). In particular, claim 48 in the Revised Motion to Amend no longer recites "transporting the portable fuel delivery system to a second well site; and repeating the securing, detecting, pumping, and controlling steps at the second well site." *Compare* MTA A2, *with* RMTA A2. However, we disagree that this difference renders Patent Owner's showing insufficient. As Patent Owner points out, "[i]f Patent Owner practices the claim with the limitation, it must practice it without." *See* Reply RMTA 9–10 (citing *Wahpeton Canvas Co., Inc. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989)). Petitioner's arguments do not persuade us that the differences between the original and revised proposed substitute claim 48 undermine coextensiveness for the Frac Shack system.

Petitioner also argues that Mr. Van Vliet is not an engineer or a patent attorney and did not review the entire prosecution history or prior art of record. Opp. RMTA 23. We are not persuaded that Mr. Van Vliet lacks a sufficient basis for his testimony regarding the Frac Shack's use of the steps recited in claim 48. As summarized above, the evidence shows that Mr. Van

Vliet is an inventor of the '906 patent and is familiar with the operation and features of the Frac Shack system. *See* Ex. 2020 ¶¶ 2–18.

In addition, Petitioner argues that Mr. Van Vliet has not offered an adequate explanation of what portion of Frac Shack's success is due to the '906 patent as compared to the invention of the Parent Patent.[8] Opp. RMTA 25. Yet nexus does not require that objective indicia (such as commercial success) must be attributed exclusively to one or the other of two related patents. The Federal Circuit has found nexus to multiple related patents many times[9] and has explained that this result is appropriate if "the claims of both patents generally cover the same invention." *Fox Factory*, 944 F.3d at 1377. Petitioner does not identify any significant features recited in the Parent Patent that are absent from proposed substitute claim 48.

Accordingly, we determine that Patent Owner has made a sufficient showing that it is entitled to a presumption of nexus.

(2) Commercial Success

Patent Owner's showing of commercial success relies on the testimony of Mr. Van Vliet. *See* RMTA 23 (citing Ex. 2020 ¶¶ 4–9). Mr. Van Vliet testifies that Patent Owner "recently recorded $110M (U.S.) in sales per year, the vast majority of which (approximately 97% of sales) is attributable to the refueling service using the Frac Shack." Ex. 2020 ¶ 7. Mr. Van Vliet further testifies that the Frac Shack system's operating days have steadily increased, from 2,373 in 2015 to 17,202 in 2019. *Id.* ¶ 8.

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[8] "Parent Patent" refers to U.S. Patent No. 9,346,662. *See supra* § I.C.
[9] *E.g.*, *WBIP, LLC, v. Kohler Co.*, 829 F.3d 1317, 1324, 1331 (Fed. Cir. 2016); *PPC Broadband, Inc. v. Corning Optical Communications RF, LLC*, 815 F.3d 734, 737, 747 (Fed. Cir. 2016); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1345, 1350 (Fed. Cir. 2012).

Based on an internal assessment that about 16,000 gallons are pumped on average per operating day, Mr. Van Vliet testifies that Frac Shack refuellers pumped over 275 million gallons of fuel in 2019. *Id.* ¶ 9.

We find that Patent Owner's evidence of growth and the revenues it has earned from Frac Shack weighs in favor of nonobviousness, but only modestly so. As Petitioner points out, Patent Owner's evidence fails to provide any context regarding market size or market share. *See* Opp. RMTA 23–24. When asked at his deposition, Mr. Van Vliet was unaware of how the Frac Shack's usage compared to the usage of other fracking refueling systems. *Id.*; Ex. 1038, 89:17–90:6. We recognize that, as Patent Owner notes, sales figures alone can provide some evidence of commercial success. *See* Reply RMTA 10–11 (citing *Tec Air v. Denso Mfg. Mich.*, 192 F.3d 1353, 1360–61 (Fed. Cir. 1999)). However, the lack of context-providing market data significantly diminishes the probative value of Patent Owner's raw revenue and growth figures. *See Novo Nordisk A/S v. Caraco Pharmaceutical Labs., Ltd.*, 719 F.3d 1346, 1356 n.5 (Fed. Cir. 2013) ("[T]he most probative evidence of commercial sales is not overall sales, but whether those sales represent 'a substantial quantity in th[e] market.'") (quoting *In re Applied Materials, Inc.*, 692 F.3d 1289, 1300 (Fed. Cir. 2012)); *see also In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996) ("This court has noted in the past that evidence related solely to the number of units sold provides a very weak showing of commercial success, if any.").

Accordingly, we determine that Patent Owner's commercial success evidence weighs only modestly in favor of nonobviousness.

(3) Industry Praise

Patent Owner's argument that the Frack Shack has received praise and recognition is based on three isolated statements of industry participants.

RMTA 24–25. For the reasons discussed below, we agree with Petitioner that Patent Owner's industry praise arguments are unpersuasive. *See* Opp. RMTA 19–21.

Patent Owner relies on an email from Mr. Randy Arkinstall stating, "[T]his new type of ERS technology is a new step in being able to reduce the risk of injury, property damage and environmental events associated in hot re-fuelling." RMTA 24; Ex. 2025, 1. Mr. Arkinstall provided this email in response to a request from Mr. Van Vliet for feedback that he could show to others. Ex. 2025, 1. Most of the feedback in Mr. Arkinstall's email related to personnel and the final comment regarding the technology is vague and generic. *Id.* Patent Owner also relies on a comment by Mr. Rob Montgomery of Calfrac Well Services that "[t]he Frac Shack system increases the efficiency of our crew, has had major positive impact on our safety record and has almost eliminated the environmental risk due to spills." RMTA 24; Ex. 2026, 1. As Patent Owner freely acknowledges, Patent Owner drafted this comment and only asked Mr. Montgomery for approval to attribute this testimonial to Calfrac. RMTA 24–25. These comments of praise, which were either ghostwritten or solicited by Patent Owner for marketing purposes, are not the type of industry praise that is probative of nonobviousness. *See Apple Inc. v. Samsung Elecs. Co.*, 839 F.3d 1034, 1053 (Fed. Cir. 2016) (en banc) (observing that industry praise weighs against obviousness because competitors "are not likely to praise an obvious advance over the known art"); *In re Cree*, 818 F.3d 694, 702 (Fed. Cir. 2016) ("While 'praise in the industry for a patented invention, and specifically praise from a competitor tends to "indicate that the invention was not obvious,"' self-serving statements from researchers about their own

work do not have the same reliability.") (quoting *Power-One v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1352 (Fed. Cir. 2010)).

Patent Owner also points to an excerpt in an Inspection Summary Report of the Frac Shack stating, "The system is truly innovative in a lot of regards and quite frankly is the Best Available Practice I have encountered." RMTA 24; Ex. 2024; Ex. 2020 ¶ 20. The Inspection Summary Report appears to be more objective than the other two documents, but it is unclear from the report what features in the Frac Shack were considered innovative or the basis for that assessment. The report's emphasis is on the Frac Shack's compliance with Canadian safety standards concerning signage, wiring, and other features that have no apparent relationship to the subject matter of proposed substitute claim 48. Ex. 2024, 1–3. When asked at his deposition, Mr. Van Vliet had no information on what the writer of the report thought to be innovative, or the writer's background and experience with fracking refueling systems. Ex. 1038, 43:5–14, 45:14–46:3.

Thus, we assess Patent Owner's evidence of industry praise as having little to no probative value with respect to nonobviousness.

e) Conclusion

When considering all of the evidence of obviousness and nonobviousness together (*see In re Cyclobenzaprine Hydrochloride Extended-Release Capsule Patent Litig.*, 676 F.3d 1063, 1079 (Fed. Cir. 2012)), we conclude that Petitioner has not shown by a preponderance of the evidence that the subject matter of claim 48 would have been obvious over the prior art.

6. Claims 49–62

Petitioner treats claim 48 as representative for its challenges to all of the proposed substitute claims. *See* Opp. RMTA 4. As to claims 49–62,

Petitioner simply refers back to arguments in its Petition to address any limitations beyond those recited in claim 48. *See id.* at 18–19; Sur-Reply RMTA 9–10. Claims 49 and 50 recite the same limitations discussed above as driving the analysis with respect to claim 48. *See* RMTA, A2–A3. The remaining proposed substitute claims depend, directly or indirectly, from claim 50. Thus, Petitioner's arguments do not establish the obviousness of these claims for the same reasons discussed above with respect to claim 48.

IV. CONCLUSION

For the foregoing reasons, we grant Patent Owner's Revised Motion to Amend, as summarized in the following table:

Motion to Amend Outcome	**Claims**
Original Claims Cancelled by Amendment	2, 8, 10, 18, 19, 28–30, 32–34, 37, 38, 40–42, 45, 47
Substitute Claims Proposed in the Amendment	48–62
Substitute Claims: Motion to Amend Granted	48–62
Substitute Claims: Motion to Amend Denied	
Substitute Claims: Not Reached	

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that Patent Owner's Revised Motion to Amend is granted;

FURTHER ORDERED that Petitioner's Motion to Exclude is denied; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our Decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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