

No. 19-1778

IN THE
United States Court of Appeals for the Federal Circuit

OREN TECHNOLOGIES, LLC,
Appellant,

v.

PROPPANT EXPRESS INVESTMENTS LLC,
PROPPANT EXPRESS SOLUTIONS LLC,
Appellees.

Appeal from the United States Patent and Trademark Office,
Patent Trial and Appeal Board, *Inter Partes* Review No. IPR2017-01918.

**APPELLEES' COMBINED PETITION FOR REHEARING AND
REHEARING *EN BANC***

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August 23, 2021

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CERTIFICATE OF INTEREST

Case No. 19-1778

Oren Technologies, LLC v. Proppant Express Investments LLC; Proppant Express Solutions LLC

Filing Party/Entity: Proppant Express Investments LLC; Proppant Express Solutions LLC

I certify the following information and any attached sheets are accurate and complete to the best of my knowledge.

Date: August 23, 2021 Signature: /s/ Mark T. Garrett

Name: Mark T. Garrett

1. Represented Entities (Fed. Cir. R. 47.4(a)(1)) – Provide the full names of all entities represented by undersigned counsel in this case.

Proppant Express Investments LLC; Proppant Express Solutions LLC

2. Real Party in Interest (Fed. Cir. R. 47.4(a)(2)) – Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.

None

3. Parent Corporations and Stockholders (Fed. Cir. R. 47.4(a)(3)) – Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.

Hi-Crush PODS, LLC, a privately held corporation, owns over 10% of Proppant Express Investments LLC. Hi-Crush PODS, LLC is wholly owned by Hi-Crush Inc.

Big Box Proppant Investments LLC, a privately held corporation, owns over 10% of Proppant Express Investments LLC.

Grit Energy Solutions, LLC, a privately held corporation, owns over 10% of Proppant Express Investments LLC, which owns over 10% of Proppant Express Solutions LLC.

4. Legal Representatives – List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

Norton Rose Fulbright US LLP: Jeffrey P. Kitchen; W. Andrew Liddell; Jeremy B. Albright; Catherine Garza; Charles B. Walker, Jr.

5. Related Cases – Provide the case titles and numbers of any case known to be pending in this court or any other court or agency that will directly affect or be directly affected by this court’s decision in the pending appeal. Do not include the originating case number(s) for this case. Fed. Cir. R. 47.4(a)(5). See also Fed. Cir. R. 47.5(b).

Proppant Express Investments v. Oren Technologies, LLC, Nos. 20-1557, 20-1572 (Fed. Cir.) (consolidated)

Oren Technologies, LLC v. Proppant Express Investments LLC, No. 20-1146 (Fed. Cir.)

6. Organizational Victims and Bankruptcy Crimes – Provide any information required under Fed. R. App. P. 26.1(b) (organizational victims in criminal cases) and 26.1(c) (bankruptcy case debtors and trustees). Fed. Cir. R. 47.4(a)(6).

None

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STATEMENT OF COUNSEL

Based on my professional judgment, I believe the Panel decision is contrary to the following precedents of this Court: *In re NuVasive*, 841 F.3d 966 (Fed. Cir. 2016); *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336 (Fed. Cir. 2018).

Dated: August 23, 2021

/s/ Mark T. Garrett

Counsel of Record for Appellees

INTRODUCTION

The Panel’s decision contravenes binding precedent on two important legal issues. First, in *In re NuVasive*, 841 F.3d 966 (Fed. Cir. 2016), this Court held that a patent owner’s entitlement “to notice of and a fair opportunity to meet the grounds” of invalidation is satisfied if an IPR petitioner or the Board provided constructive notice of those grounds, such that the patent owner “*should have*” known to address them. *Id.* at 972 (emphasis added). Here, based on an undisputedly proper finding issued after thorough briefing and argument that the prior art rendered obvious a container compartment holding 40,000 pounds of particulates, the Board invalidated a limitation requiring a container compartment capable of holding “at least 30,000 pounds” of the same. Yet the Panel reversed, deeming it dispositive that PropX’s petition did not “specifically direct[]” the obviousness of a container holding 40,000 pounds to the “at least 30,000 pounds” limitation, Op. at 13, even though it is literally axiomatic that a container that can hold 40,000 pounds of particulates is a container that can hold “at least 30,000” pounds of it. Because Oren had a full opportunity to address the obviousness of a container capable of holding 40,000 pounds, and because both the petition’s express language and the simple fact that 40,000 is “at least 30,000” should have put Oren on notice that its limitation was in jeopardy, the Panel’s decision contravened *NuVasive*.

Second, in *Applications in Internet Time, LLC v. RPX Corp.*, 897 F.3d 1336, 1356 (Fed. Cir. 2018), this Court held that where the Board fails to consider critical evidence and adequately explain its reasoning, it violates the APA’s minimum requirements for agency decisionmaking. Here, in rejecting PropX’s theory that the “at least 30,000 pounds” limitation was met because a skilled artisan would have understood that prior-art containers disclosing a capacity of 26,250 pounds were in fact built with a safety factor and were thus capable of holding 1.15 times that amount (the “Safety Factor Theory”), the Board failed to mention, much less consider and adequately explain its rejection of, the arguments and critical trial evidence PropX marshaled in support of that theory. Instead, the Board simply noted that the prior-art reference at issue did not expressly “disclose anything about a safety factor,” even though PropX’s extensive showing of what a skilled artisan would have understood did not depend on an express disclosure. The Panel’s ruling that the Board’s unexplained rejection of the Safety Factor Theory was supported by substantial evidence therefore contravened *Applications in Internet Time*.

ARGUMENT

I. The “Specifically Direct” Standard The Panel Applied Contravened *NuVasive* And Led To An Absurd Result.

The Panel’s application of the APA to the Board’s decision was overly rigid, clearly erroneous, and contrary to *NuVasive*. At issue before the Board was

whether the trivial limitation of a container holding “at least 30,000 pounds” of proppant was met. The Board found, despite Oren’s extensive argument to the contrary, that a skilled artisan would have modified a prior-art container with supports from another reference to yield a container with 40,000 pounds of capacity per compartment (the “40,000 Pounds Theory”)—a finding Oren did not challenge on appeal. *See* Op. at 12-14. Unsurprisingly, based on that finding, the Board concluded the “at least 30,000 pounds” limitation was met. *Id.* The Panel, however, ruled that the Board’s conclusion violated the APA because, the Panel said, PropX failed to “specifically direct[]” the 40,000 Pounds Theory “to the 30,000 pounds limitation.” Op. at 13-14. In so holding, the Panel contravened *NuVasive*. *See* 841 F.3d at 971-72.

A. In *NuVasive*, The Court Held That A Patent Owner Cannot Complain Of Unfair Surprise After Receiving Constructive Notice Of An Argument.

In *NuVasive*, which PropX relied on before the Panel, Response Br. at 29, the Board held that the Michelson reference, by itself, satisfied two disputed dimensional limitations of a spinal fusion implant claim: that the implant had a length that was both greater than 40 mm and at least 2.5 times its width. 841 F.3d at 970. The Board so held despite the fact that the petitioner argued a *different theory* in its petition: that the *Frey* reference taught an implant whose length was at least 2.5 times its width, and that it would have been obvious to modify Frey’s

implant to have a length greater than 40 mm, as taught by Michelson. *Id.* at 968-69. The petition also “point[ed] out,” in one brief passage, “that Michelson also teaches many of the [claim] limitations, [and] stated that ‘[l]ike Frey, Michelson discloses example lateral fusion implants having an elongated shape’ and ‘dimensions that are longer than wide,’” citing a section of Michelson that included a discussion of Michelson’s Figure 18, which showed the embodiment of Michelson on which the Board ultimately relied for its disputed findings. *Id.* at 969-70.

On appeal, the Court readily conceded that the Board had *not* relied on petitioner’s theory for why the length-to-2.5 times-width ratio was satisfied. *Id.* at 971 (explaining that the Board relied exclusively on Michelson’s Figure 18 and “indeed, did [not] find a prior-art implant having a length at least 2.5 times its width and then explain the obviousness of a combination of that limitation with the distinct requirement of sufficient length”). However, the Court rejected the patent owner’s argument that the Board’s exclusive reliance on Michelson’s Figure 18 violated the APA.

Instead, the Court held that, even though the petition “*did not make a clear or direct reference to that limitation* [requiring a length at least 2.5 times width] or *a clear or direct assertion that the 2.5 ratio is shown in Michelson, in Figure 18 or elsewhere*[,],” the petition’s “citation of the text discussing Figure 18, plus the

reference to ‘longer than wide’ implants, *should have put [the patent owner] on notice* that it was obliged to use its Patent Owner Response to address Figure 18 and its relationship to the length/width ratio claim limitation,” considering that the only limitation addressing a comparison of length to width is the one requiring length at least 2.5 times width. *Id.* at 972 (emphasis added). In other words, the petition’s indirect link between the prior art and the disputed limitation satisfied the APA even though the Petition did not specifically direct that prior art to that limitation.

B. PropX’s 40,000 Pounds Theory Had A Sufficient Link To The 30,000 Pounds Limitation To Put Oren On Notice.

As noted above, PropX’s principal argument directed at the “at least 30,000” pounds limitation was that the 30,000 pounds limitation was met because a skilled artisan would have understood the prior-art container’s factor of safety. However, the petition also explained that, for various technical reasons, modifying the prior art as described in the 40,000 Pounds Theory *was preferable* to “relying on a factor of safety.” Response Br. at 30 (citing Appx129-130 (citing Appx1727 ¶ 142)). Only the 30,000 pounds limitation was discussed relative to a safety factor. *See* Op. at 11-12; Appellant’s Opening Br. at 36-38 (citing Appx142). Thus, PropX’s explanation adequately tied the 40,000 Pounds Theory to that limitation. *NuVasive*, 841 F.3d at 972. Accordingly, Oren should have known that the 40,000

Pounds Theory placed the 30,000 pounds limitation in jeopardy. *Id.* Indeed, the basic fact that 40,000 is “at least 30,000” clearly put Oren on notice.

The Panel’s decision to ignore this explanation and hold that PropX had to “specifically direct” its 40,000 Pounds Theory to the 30,000 pounds limitation (Op. at 13-14) contravened *NuVasive*. The Court should vacate the Panel’s holding and affirm the Board’s finding that the 30,000 pounds limitation was met.

C. Even Absent The Link, PropX’s Petition Should Have Put Oren On Notice.

Even absent the explicit link discussed above, Oren still “should have” been aware of the potential application of the 40,000 Pounds Theory to the 30,000 pounds limitation. *NuVasive*, 841 F.3d at 972. First, as the Panel’s opinion reflected, the petition was directed to the claims, which included a link between the relevant limitations:

Claims 1-6, 9, 15, and 18-20 of the ’626 patent recite that the container includes sidewall supports “to provide structural support to the sidewalls *when* large volumes of proppant are positioned within the interior volume” wherein “*the large volumes are at least 30,000 pounds.*”

Op. at 11 (emphasis added). Second, and most importantly, Oren undisputedly had notice of the 40,000 Pounds Theory—both in terms of the motivation for the modification (to increase the capacity of the prior-art container to 40,000 pounds per compartment) and that adding the supports PropX invoked would achieve that

increased capacity. That fact is reflected in Oren’s Patent Owner Response, where Oren stated:

Petitioners and Dr. Wooley believe that this [a container full of 80,000 to 84,000 pounds or proppant] is what a POSITA would be motivated to achieve, and that reinforcing [the prior-art] containers would be necessary *to achieve this outcome*. But they are wrong, as a POSITA would never be motivated to create and use a container weighing that much.

Appx534 (emphasis added) (cited at Response Br. at 28). Oren thus argued—unsuccessfully—that one skilled in the art would not have modified the prior art to create containers containing compartments holding 40,000 pounds of proppant. *See* Response Br. at 28 (citing Appx534-536 and Appx34-35, which cites internally to Appx22-24). But it never argued—nor could it have, given the mathematical truism—that such modified containers would not meet the “at least 30,000 pounds” limitation. *See* Response Br. at 25-29.

D. The Panel Had No Basis To Question Whether The 40,000 Pounds Theory Would Have Produced A Container Capable Of Holding 40,000 Pounds.

The Panel also concluded that it did “not think [PropX’s 40,000 Pounds Theory] achieves the result stated by the Board” because “that theory and the evidence supporting it do not address any specific capacity that [the prior-art] container, modified with [the prior-art] support braces, would have had, whether it would have been greater than 30,000 pounds, or the obviousness of any specific increased capacity to a skilled artisan.” Op. at 14. But that reasoning does not

excuse its contravention of *NuVasive*. The Panel’s statements and conclusion are irreconcilable with the fact that no specific capacity other than one meeting the floor of 30,000 pounds was required by the limitation in question (Op. at 11), and—by Oren’s own admission—that PropX and PropX’s expert addressed the achievement of capacities necessarily greater than 30,000 pounds (Appx534-536; Response Br. at 13-14 (citing PropX evidence and arguments)).

Furthermore, the Panel’s speculation that there was a question about whether the prior-art container modified to include the other prior-art supports “would, without more, be enough to structurally support” 30,000 pounds (Op. at 14) contravened the content of the ’626 Patent itself, which did not disclose how to accomplish such capacity with sidewall supports (*see* Appx55-69, especially Appx61, Appx64 at 3:23-34, Appx65 at 6:58-61, Appx66 at 7:17-37) in any more detail than PropX did through PropX’s evidence and arguments (*see* Response Br. at 7-8 and 12-14 (citing PropX evidence and arguments)). Thus, since the patent itself assumed without further teachings that one skilled in the art would be able to support a container so that it can hold at least 30,000 pounds of proppant, there could have been no question that the same skilled artisan could have done the same when modifying Smith’s container, as PropX explained. *See Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1570 (Fed. Cir. 1997) (the “patent itself does not

disclose the level of detail that [the patentee] would have us require of the prior art”).

E. Neither *Magnum Oil Tools* Nor *EmeraChem* Supports The Board’s Contravention Of *NuVasive*.

Neither *Magnum Oil Tools* nor *EmeraChem* broadened how to interpret the APA in a way that rendered the Board’s decision improper.

In *Magnum Oil Tools*, 829 F.3d 1364, 1379 (Fed. Cir. 2016), the Court found the Board improperly shifted the burden to patent owner to disprove obviousness based on a combination of references that were not supported by “particularized arguments” from the petitioner. In contrast, it is undisputed—as Oren’s Patent Owner Response reflects—that PropX presented particularized arguments for why and how a POSITA would have modified the prior-art container with the prior-art supports to achieve a strengthened container that could hold 40,000 pounds of proppant per compartment. Response Br. at 28. The Court has also characterized the APA violation in *Magnum Oil Tools* as one that involved the “mix[ing of] arguments raised in two different grounds of obviousness.” *Arthrex, Inc. v. Smith & Nephew, Inc.*, 935 F.3d 1319, 1328 (Fed. Cir. 2019). It is undisputed here that the ground of rejection in question never changed. Thus, *Magnum Oil Tools* is inapposite.

EmeraChem Holdings, LLC v. Volkswagen Grp. Of Am., Inc., 859 F.3d 1341 (Fed. Cir. 2017), is too. There, the petitioner cited three lines from the Stiles

reference to satisfy claim 17, which required nitrogen and hydrogen. *Id.* at 1348, 1350. At institution, the Board also cited that section of Stiles in discussing the obviousness of claim 1. *Id.* at 1350. The Board then, unprompted, found that Stiles disclosed two *different* gases—carbon dioxide and steam—and that the disclosures satisfied claims 3 (carbon dioxide), 16 (steam), and 20 (steam). *Id.* at 1348-51. The Board so found even though there had been no assertion by the petitioner that such disclosures were relevant to *any* limitation in the case. *See id.* Thus, the patent owner in *EmeraChem* had no notice of any need to dispute whether Stiles disclosed carbon dioxide or steam. Here, by contrast, Oren fully litigated before the Board the question of whether a container holding 40,000 pounds was obvious.

II. The Panel’s Finding That The Board’s Rejection Of The Safety Factor Theory Was Supported By Substantial Evidence Is Clearly Erroneous And Contravened *Applications In Internet Time*.

Even setting the issue above aside, the Panel’s conclusion that the Board’s rejection of PropX’s Safety Factor Theory “is supported by substantial evidence” (Op. at 12 n.2) contravenes this Court’s precedent. In *Applications In Internet Time*, addressed in PropX’s briefing before the Panel, *see* Response Br. at 35-36, the Court emphasized the strict judicial review required by the APA of agency findings and conclusions under Supreme Court precedent. 897 F.3d at 1356. The Court ruled that, in view of that standard, substantial evidence did not support a

Board finding that failed to consider contrary critical evidence and rejected contrary theories without explanation. *Id.*

Here, PropX's Safety Factor Theory never depended on an express disclosure of a 1.15 safety factor in the main prior-art reference, Response Br. at 35-36 (citing Appx142), so the Board's observation that the reference lacked such an express disclosure did not address PropX's theory, Appx34. Moreover, as Appx34-35 shows, the Board did not cite, much less consider, any of the critical trial evidence and corresponding arguments that PropX used to support its Safety Factor Theory, which included Oren-submitted industry standards that showed prior-art containers like those at issue possessed safety factors greater than 1.15 and admissions from Oren's expert on cross-examination that a skilled artisan would have understood that the prior-art container would "more likely than not" have met those safety factors. *See* Response Br. at 36-38 (providing record cites for such trial evidence and arguments). As a result, substantial evidence did not support the Board's ruling under the APA, and the Panel's contrary decision (Op. at 12 n.2) contravened *Applications in Internet Time* and should be vacated. The Court should affirm the 30,000 pounds limitation was met on the basis of PropX's Safety Factor Theory. *See* Response Br. at 35-40.

CONCLUSION

For the foregoing reasons, the Court should grant rehearing or rehearing en banc and affirm the Board's judgment that the 30,000 pounds limitation was met.

Respectfully submitted,

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August 23, 2021

Counsel for Appellees

ADDENDUM

NOTE: This disposition is nonprecedential.

**United States Court of Appeals
for the Federal Circuit**

OREN TECHNOLOGIES, LLC,
Appellant

v.

**PROPPANT EXPRESS INVESTMENTS LLC,
PROPPANT EXPRESS SOLUTIONS LLC,**
Appellees

2019-1778

Appeal from the United States Patent and Trademark
Office, Patent Trial and Appeal Board in No. IPR2017-
01918.

Decided: July 23, 2021

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N. DEBROW; JONATHAN S. FRANKLIN, PETER B. SIEGAL,
Washington, DC.

Before NEWMAN, O'MALLEY, and CHEN, *Circuit Judges*.

PER CURIAM.

Oren Technologies, LLC (“Oren”) appeals the decision of the Patent Trial and Appeal Board (“PTAB” or “Board”), ruling on *inter partes* review (“IPR”) that claims 1–7, 9, 10, and 12–20 (all the challenged claims) of U.S. Patent No. 9,403,626 (“the ’626 patent”) are unpatentable on the ground of obviousness.¹ Oren had charged Proppant Express Investments LLC (“PropX”) with infringement of the ’626 patent, together with continuation U.S. Patent No. 9,511,929 (“the ’929 patent”) and a third related patent, U.S. Patent No. 9,296,518 (“the ’518 patent”) in the United States District Court for the Southern District of Texas. While the district court case was pending, PropX filed this petition for IPR of the ’626 patent, and corollary petitions for the ’929 and ’518 patents. The PTAB found the ’626 patent invalid for obviousness. Oren appealed. We conclude that the PTAB erred in basing its obviousness finding on a ground of unpatentability not presented by petitioner and in its evidentiary analysis on the objective evidence of nonobviousness. We reverse-in-part, vacate-in-part, and remand.

BACKGROUND

The ’626 patent is for a “Proppant Storage Vessel and Assembly Thereof.” Proppant is particulate material, such as silica sand, used in the process of hydraulic fracturing that is commonly called “fracking.” Fracking is “the injection of fluid into shale beds at high pressure in order to free up petroleum resources (such as oil or natural gas).”

¹ *Proppant Express Inv., LLC v. Oren Techs., LLC*, No. IPR2017-01918, Paper 83 (P.T.A.B. Feb. 14, 2019) (“Board Op.”).

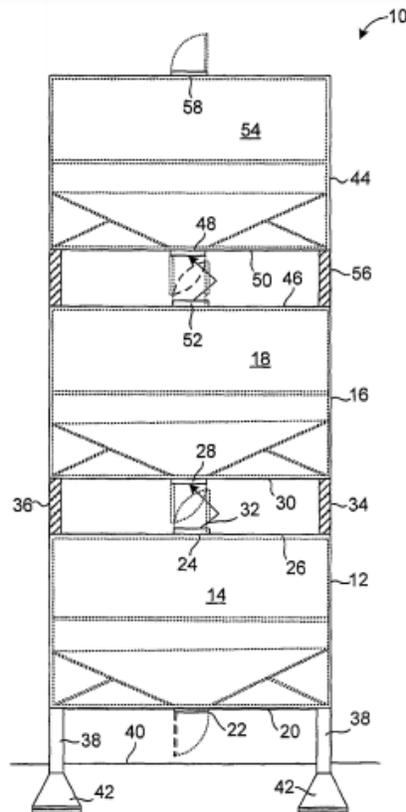
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Fracking, MERRIAM-WEBSTER DICTIONARY. Proppant is inserted into the well and shale rock to preserve the pressure-induced fractures in the rock and thus to facilitate flow of oil and gas into the well. The record states that a fracking well may require several tons of proppant.

The sources of proppant tend to be remote from well sites, and the proppant must be contained, transported, stored, and delivered to the well site. Oren states that methods previously used, such as proppant storage in railroad cars and delivery by pneumatic trailers, were inconvenient, noisy, wasteful, dusty, and unsafe.

The '626 patent describes and claims a container structure that Oren states enables containment, transportation, storage, and efficient release of large volumes of proppant. Figure 1 of the '626 patent shows the containers stacked for transport, storage, and use:

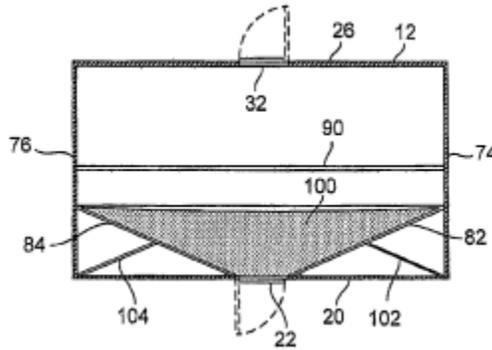


'626 patent, Fig. 1.

The containers are structured so that the proppant in each container can flow through hinged hatches, and is discharged at the well site through the outlet on the bottom container. The specification states that “the hatches 24 and 28 will form a unique and guided flowpath whereby the proppant in the interior volume 18 of the second container 16 can flow directly into the opening 24 and into the interior volume 14 of the first container 12.” '626 patent, col. 5, ll. 38–42.

Patent Figure 6 shows the structure of the individual container, with support members 102 and 104 and ramps

82 and 84, described as providing support and strength for the heavy loads for which these containers are intended:



'626 patent, Fig. 6.

Figure 6 also shows hatches 22 and 32 through which the proppant flows from stacked container to container.

Claim 18 is representative:

18. A container structurally strengthened to transport and store large volumes of proppant effectively therein, the container comprising:

a top; a bottom, having an outlet formed therein; sidewalls coupled to the top and bottom, so as to define an interior volume of the container thereby to store the proppant therein;

a plurality of sidewall supports positioned to provide structural support to the sidewalls when large volumes of proppant are positioned within the interior volume, the proppant having a substantially spherical shape and a tightly graded particle distribution, the plurality of sidewall supports including a plurality of support braces extending in a substantially horizontal position, the container including a container frame structurally arranged to support another container when filled with large volumes of proppant and when positioned in a

vertically stacked arrangement thereabove, and the large volumes are at least 30,000 pounds;

ramps downwardly inclined and extending inwardly from the sidewalls to direct the proppant toward the outlet when the proppant is stored therein, a plurality of support members attached to a bottom surface of the ramps and extending downwardly toward the bottom, and at least one support brace of the plurality of support braces being positioned vertically higher than the ramps;

a plurality of support members attached to a bottom surface of the ramps and extending downwardly toward the bottom; and

a hatch positioned proximate the outlet, the hatch being moveable between open and closed positions.

'626 patent, col. 11, l. 52–col. 12, l. 16.

Other independent claims are directed to the system of multiple containers, an additional conveyor, and the method of delivering large quantities of proppant to the fracking site. Dependent claims add additional limitations.

I

Procedural Issues – Issue Preclusion

PropX filed IPR petitions against the '626 patent and its continuation, the '929 patent, and the same panel of the PTAB conducted separate trials. The Board first considered the '626 patent, and in a Final Written Decision dated February 14, 2019, the Board held all the challenged claims of the '626 patent unpatentable on the ground of obviousness. Board Op. at 52. Then, 27 days later, the PTAB issued a Final Written Decision on the continuation '929 patent and held that claims 4, 7, 10, 12, 15, 18, and 19, directed to the same claim limitations at issue in the '626 patent, were patentable. *Proppant Express Invs., LLC v.*

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Oren Techs., LLC, No. IPR2017-02103, Paper 100 (P.T.A.B. Mar. 13, 2019) (“’929 Board Op.”). Both sides, in their briefs filed on this appeal, recognized that the ’626 and ’929 patent decisions were in direct conflict and could not be reconciled. PropX advised the court that it had requested PTAB reconsideration of the ’929 decision.

While the present appeal was awaiting decision, the PTAB reconsidered its ’929 holding. The PTAB then held all claims except claim 4 of the ’929 patent unpatentable. *Proppant Express Invs., LLC v. Oren Techs., LLC*, No. IPR2017-02103, 2020 WL 2562742 (P.T.A.B. May 20, 2020) (“’929 Reconsideration Op.”). The PTAB stated that “we erred in our analysis of this limitation [of “at least 30,000 pounds” in the ’929 patent] given our prior analysis in the -01918 Proceeding [for the ’626 patent].” ’929 Reconsideration Op. at *2.

Meanwhile, two days before the PTAB issued the ’929 Reconsideration Decision, this court affirmed the district court’s claim construction of certain claims terms, reported at *Sandbox Logistics LLC v. Proppant Express Investment LLC*, 813 F. App’x 548 (Fed. Cir. 2020). On that claim construction, the parties had stipulated to non-infringement of the ’626, ’929, and ’518 patents, and the district court had entered final judgment in favor of PropX. *Id.* at 551. Following our affirmance of claim construction and non-infringement, neither party appealed from the ’929 Reconsideration Decision.

Both sides filed supplemental briefs in this appeal on issue preclusion. PropX argues that “the Board’s final written decision in IPR2017-02103 . . . , as modified on rehearing, has dispositive, preclusive effect on this appeal,” because “[Oren] did not appeal.” PropX Suppl. Br. 1. Oren responds that preclusion does not arise because the basic requirements of issue preclusion are not met and, further, because Oren did not have a meaningful incentive to appeal the ’929 Reconsideration Decision.

The Restatement (Second) of Judgments § 27 states:

When an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment, the determination is conclusive in a subsequent action between the parties, whether on the same or a different claim.

Issue preclusion requires not only identity of issues, but also adequacy of review and finality of decision. *Id.* This court has recognized that issue preclusion may apply to PTAB proceedings. For example, in *Papst Licensing GMBH & Co. KG v. Samsung Electronics America, Inc.*, 924 F.3d 1243 (Fed. Cir. 2019), this court applied issue preclusion to the meaning of a claim term that was “materially identical” to that construed by the Board for a related patent; the court explained that the Board’s claim construction “resolved [all the] issues now before us, and those resolutions were essential to the Board’s decision.” *Id.* at 1252.

PropX argues that the Board’s ’929 Reconsideration Decision precludes our review of the Board’s ’626 Decision, for the claims in both patents are the same or similar, and the “issues Oren raises here are identical to issues the Board resolved against Oren in the ’929 IPR final written decision.” PropX Suppl. Br. 2. PropX states that because Oren did not appeal the ’929 Reconsideration Decision, that decision became final for preclusion purposes.

Oren responds that the Board’s unappealed ’929 Reconsideration Decision does not preclude our review of the ’626 decision, and refers to the recognized equitable exceptions to issue preclusion, as recited in the Restatement (Second) of Judgments § 28. Preclusion does not apply when:

There is a clear and convincing need for a new determination of the issue . . . (b) because it was not

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sufficiently foreseeable at the time of the initial action that the issue would arise in the context of a subsequent action, or (c) because the party sought to be precluded, as a result of the conduct of his adversary or other special circumstances, did not have an adequate opportunity or incentive to obtain a full and fair adjudication in the initial action.

Id. § 28(5). The purpose of the equitable exceptions to issue preclusion is to “serve the twin goals of fairness and efficient use of private and public litigation resources.” *Nat’l R.R. Passenger Corp. v. Pa. Pub. Util. Comm’n*, 288 F.3d 519, 525 (3d Cir. 2002). The exceptions assure fairness and flexibility as circumstances warrant.

Oren argues that it lacked incentive to litigate the PTAB’s invalidation of all but one of the ’929 claims for two reasons: first, that validity of claim 4 had been sustained and provides some protection for the ’929 subject matter; and second, that after stipulated judgment of non-infringement, Oren “could not have obtained damages or an injunction” for infringement of the ’929 patent by PropX. Oren Suppl. Br. 5.

In *Power Integrations, Inc. v. Semiconductor Components Industries, LLC*, 926 F.3d 1306, 1312–13 (Fed. Cir. 2019), this court explained that principles of fairness negate imposing issue preclusion when the party sought to be precluded “had a considerably greater incentive to continue litigating” an issue in a second case than it had in a first case. *Id.* (citing *Papst*, 924 F.3d at 1251–52). We conclude that issue preclusion does not apply here, because of Oren’s lack of incentive to litigate the ’929 patent given the timing of this court’s decision affirming the district court’s stipulated judgment of non-infringement and because of the survival of a claim in the ’929 patent as compared to the invalidation of all challenged ’626 patent claims.

We turn to the merits of the appeal of the PTAB’s ’626 patent decision.

II

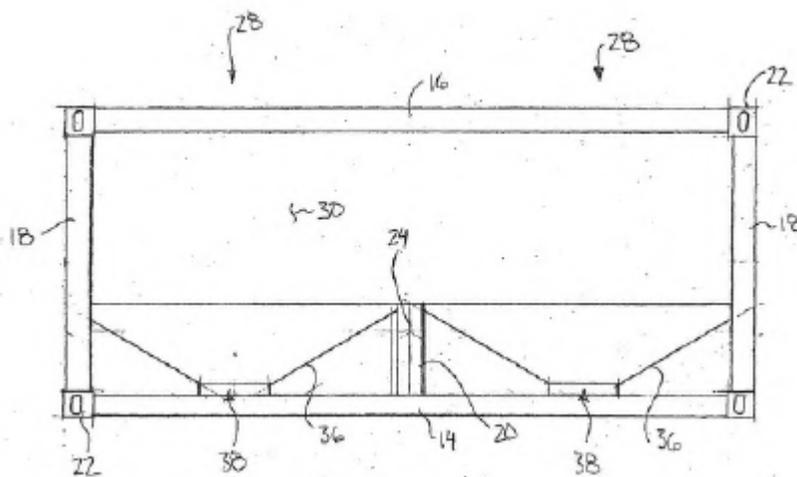
The Prior Art

The PTAB held all challenged claims of the '626 patent unpatentable as obvious. The Board relied in its final decision on five references, Smith, Claussen, Hedrick, Krenek, and Racy, in various combinations. Oren raises challenges to the Board's treatment of two of these references, Smith and Claussen. With respect to Smith, Oren argues that the Board improperly relied on a theory of modifying Smith that was never presented by the petitioner for the relevant limitation. With respect to Claussen, Oren states that there is no teaching or suggestion in Claussen of a support member and of including support members in the '626 container structure as claimed. Oren also argues that its container and system provide advantages that have been recognized in the industry and achieved significant commercial success.

Of the prior art, we need only discuss the Smith reference, U.S. Patent Publication No. 2008/0226434, to reach our decision. The Smith reference is the foundation of the Board's analysis. Smith shows "an intermodal hopper container" having two compartments and "a structural frame defining a rectangular volume suitable for stacking with conventional intermodal containers." Smith, Abstract. The Smith container has "plural compartments," each of which "has a hopper formed at a bottom end." Smith, Abstract. Figure 15 depicts the Smith two-compartment container:

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Smith, Fig. 15.

Smith states that its container has a “maximum payload of 52,500 pounds,” with each compartment holding a maximum of 26,250 pounds. Smith, ¶ 56.

Smith was cited during examination of the '626 application, and Oren argued that a significant distinction of Oren's container was its ability to hold and manage a greater weight than the limit stated in Smith. Claims 1–6, 9, 15, and 18–20 of the '626 patent recite that the container includes sidewall supports “to provide structural support to the sidewalls when large volumes of proppant are positioned within the interior volume” wherein “*the large volumes are at least 30,000 pounds.*” The examiner allowed the claims over Smith after Oren's amendment adding the “at least 30,000 pounds,” limitation.

In this IPR proceeding, PropX argued that despite an explicit limitation in Smith to a maximum capacity of 26,250 pounds per compartment, the Smith container “would be capable of holding 30,000 pounds of proppant” because it “would have had to have been designed using a *safety factor* of 1.15 with respect to maximum payloads.”

Board Op. at 34 (quoting Wooley Decl. ¶ 181). The Board observed, however, that Smith does not mention a “safety factor” that would allow Smith’s capacity beyond the recited maximum of 26,250 pounds.²

Nevertheless, the Board reasoned that the 30,000 pounds limitation was met by the combined references because the Board agreed with PropX that a skilled artisan would have been motivated to modify Smith to carry more proppant than the disclosed 26,250 pounds. The Board reasoned:

[E]ven if Smith’s 20-foot container is only capable of carrying 52,500 pounds, or 26,250 pounds per compartment, the claimed limitation is satisfied through the proposed modification of Smith, in which Petitioner proposes to modify and reinforce Smith’s container to carry more proppant, possibly above 80,000 pounds, or about 40,000 pounds per compartment.

Board Op. at 34–35. The Board concluded that: “Because Petitioner proposes to modify Smith’s container to be capable of holding about 80,000 pounds of proppant, or 40,000 pounds per compartment, the claimed limitation is satisfied.” Board Op. at 35.

As Oren points out, this modification theory was not advanced to the Board by PropX in relation to the 30,000 pound limitation. J.A. 141–42. The modification theory was presented in the context of providing a motivation to add Hedrick’s bracing structure to Smith’s container to meet the limitation of a “plurality of structural supports positioned to provide structural support to the first plurality of sidewalls.” ’626 patent, col. 9, ll. 4–5; Board Op. 18–

² We understand the Board to have thus rejected the safety factor theory, a conclusion that is supported by substantial evidence.

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19, 22–24; J.A. 128–33. PropX’s expert calculated that the full volume of the Smith container of proppant would weigh around 79,000 to 84,000 pounds, which is greater than the maximum payload of 52,500 pounds disclosed by Smith. J.A. 1722, 1726–27 (¶¶ 130–31, 140–42). PropX argued, therefore, that a skilled artisan would have been motivated to increase the payload capacity beyond Smith’s disclosed maximum to take advantage of the unused volume. J.A. 129. But those arguments were not specifically directed to the 30,000 pound limitation. J.A. 141–42. It was error by the Board to rely on this unrepresented theory for finding the 30,000 pound limitation obvious.

The “Board must base its decision on arguments that were advanced by a party, and to which the opposing party was given a chance to respond.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016); *Emera-Chem Holdings, LLC v. Volkswagen Grp. of Am., Inc.*, 859 F.3d 1341, 1348 (Fed. Cir. 2017) (noting that the APA imposes particular procedural requirements on the USPTO regarding timely notice and the opportunity to respond to matters of fact and law asserted). We have held that the Board erred when it relied on a prior art reference that was unasserted for meeting a particular limitation, even though the passage from the reference that the Board relied on for disclosing the limitation had been block quoted in the petition and institution decision, in a different context. *EmeraChem*, 859 F.3d at 1350. Petitioner’s identification of the reference as a motivation to combine was also insufficient for the Board on its own to rely on the reference for teaching a missing limitation. *Id.* at 1352. *In M & K Holdings, Inc. v. Samsung Elecs. Co., Ltd.*, we held that the Board erred in finding a claim was anticipated when the petitioner asserted only obviousness because the Board’s decision deprived the patent owner of an opportunity to respond to a claim interpretation that underlay the anticipation theory. 985 F.3d 1376, 1385 (Fed. Cir. 2021).

Likewise, here, the Board erred by repurposing the theory of a motivation to modify Smith to increase its capacity as a basis for finding the 30,000 pound limitation met. PropX did not assert this theory of obviousness in its petition. *See Magnum Oil Tools*, 829 F.3d at 1381. Nor was the theory raised by the Board's institution decision (or at any time before the final written decision). *See Emera-Chem*, 859 F.3d at 1348, 1352. Therefore, relying on this theory in finding claims obvious was reversible error because the petitioner bears the burden of proving obviousness and Oren had no notice or opportunity to respond. *See Magnum Oil Tools*, 829 F.3d at 1380–81.

Moreover, we do not think the theory of modifying Smith achieves the result stated by the Board. The Board found a skilled artisan would have been motivated to modify Smith to increase its load capacity and would have found it obvious to accomplish the increased capacity by including Hedrick's support braces in Smith's container. Board Op. 19, 22–24. But that theory and the evidence supporting it do not address any specific capacity that Smith's container, modified with Hedrick's support braces, would have had, whether it would have been greater than 30,000 pounds, or the obviousness of any specific increased capacity to a skilled artisan. Although the container could volumetrically hold more than 30,000 pounds of proppant, as argued in support of the motivation to modify, that does not necessarily mean Smith modified by Hedrick's support braces would, without more, be enough to structurally support the weight of 30,000 pounds. These gaps only further illustrate that the Board's unilateral modification of Smith to purportedly meet the 30,000 pound limitation was an "unpatentability theor[y] never presented by petitioner and not supported by record evidence." *Magnum Oil Tools*, 829 F.3d at 1381.

Claims 1–6, 9, 15, 18–20 recite the 30,000 pound limitation, and we reverse the Board's decision on these claims. Although Oren also challenges the Board's reliance on the

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Claussen reference for meeting the support members limitation, because all of the claims at issue that recite the support members limitation also recite the 30,000 pound limitation, and given our reversal on the 30,000 pound limitation, we need not address Claussen.³

III

Objective Indicia of Nonobviousness

The remaining claims at issue, which do not recite the 30,000 pound limitation, are claims 7 and 10–14. For these claims, the Board failed to properly analyze the objective indicia evidence and, therefore, we remand.

As discussed in *Graham v. John Deere Inc.*, 383 U.S. 1 (1960), objective indicia are an integral part of the obviousness analysis. *Id.* at 18–19. Commercial success and industry praise are recognized evidence of nonobviousness, for the way persons in the field of an invention perceive its advantages “may often be the most probative and cogent evidence in the record.” *Polaris Indus., Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1071 (Fed. Cir. 2018). Such evidence may establish that a new device having relatively small difference in a crowded field was not obvious to persons of skill in that field. The objective indicia are part of the totality of evidence concerning obviousness. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538–39 (Fed. Cir. 1983).

“For objective evidence of secondary considerations to be accorded substantial weight, its proponent must establish a nexus between the evidence and the merits of the claimed invention.” *ClassCo, Inc. v. Apple, Inc.*, 838 F.3d

³ Oren does not raise any arguments related to Hedrick, Krennek, or Racy, and whether it would have been obvious to modify Smith according to those prior art references. Therefore, we do not address those portions of the Board’s decision.

1214, 1220 (Fed. Cir. 2016) (internal quotation marks omitted). That is, “objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.” *Polaris Indus.*, 882 F.3d at 1072. There can be “a presumption of nexus for objective considerations when the patentee shows that the asserted objective evidence is tied to a specific product” and that product “is the invention disclosed and claimed in the patent.” *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1329 (Fed. Cir. 2016) (internal quotation marks omitted); *see also Fox Factory, Inc. v. SRAM, LLC*, 944 F.3d 1366, 1374 (Fed. Cir. 2019) (“[W]hat we do require is that the patentee demonstrate that the product is essentially the claimed invention.”). The presumption can apply “even when the product has additional, unclaimed features.” *PPC Broadband, Inc. v. Corning Optical Commc’ns RF, LLC*, 815 F.3d 734, 747 (Fed. Cir. 2016); *see also Fox Factory*, 944 F.3d at 1374–75. Once established, this presumption of nexus is rebuttable with evidence showing the objective evidence is “due to extraneous factors other than the patented invention.” *WBIP*, 829 F.3d at 1329 (quoting *Demaco*, 851 F.2d 1387, 1393 (Fed. Cir. 1988)).

Oren presented evidence that mapped its commercialized SandBox container to the claimed container of the ’626 patent, J.A. 6954–7010, and we conclude the Board’s finding that Oren had established a presumption of nexus is supported by substantial evidence. Board Op. 30. PropX’s arguments that the application of this presumption was unwarranted are not persuasive. SandBox is a commercialized product that Oren showed is the claimed container of the ’626 patent. *See Fox Factory*, 944 F.3d at 1373–74 (holding that the patentee is required to “demonstrate that the product is essentially the claimed invention”); *WBIP*, 829 F.3d at 1331 (“[Patentee] was entitled to the presumption of nexus for its objective evidence of non-obviousness because it established that the specific products . . . are embodiments of the invention in the asserted claims.”).

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The Board next found that PropX rebutted the presumption of nexus with evidence showing that aspects of a broader SandBox system other than the claimed container product were responsible for the system's success. Board Op. 30–33. The Board credited the fact that Oren “leases an equipment set that includes boxes, a conveyor (as part of [Oren's] cradle . . .), rig mats, a fork lift, a light-duty loader, and chassis (plural, which are trailers).” Board Op. 30 (citing J.A. 691); *see* J.A. 691–92 (citing evidence that Oren leases or rents “an equipment set,” “the entire set,” and “the entire equipment set”). In addition, the Board found persuasive the testimony of Oren's own witnesses regarding the importance of the non-container aspects to the success of the overall system. The Board concluded that Oren's commercial success and industry praise were “largely” a result of these non-container features “rather than the features of the challenged claims.” Board Op. 33.

However, in doing so, the Board did not contend with and weigh any of the evidence potentially showing that the SandBox container itself is *also* an important contributor to the commercial success and praise of the system. Board Op. 30–33. Oren presented significant revenue numbers generated from the lease and license of the SandBox product. J.A. 557 n.3; J.A. 7572 ¶ 6; J.A. 7574 (“Equip lease/license/other”). A PropX real-party-in-interest, Liberty Oilfield Services, LLC, (“Liberty”) entered into a 5-year contract with Oren's operating subsidiary, SandBox Logistics, for the “patented sand delivery process and containerization equipment.” J.A. 557; J.A. 7575–76. The containerized sand solution, specifically, was noted to be effective. J.A. 560; J.A. 7590. And a market analyst declared that the “sand in a big box” was a “disruptive technology” for the fracking industry. J.A. 561–62; J.A. 6223–24.

The Board should have addressed this evidence. Although the evidence the Board did consider showed that other features of Oren's system are important to the

system's success, and Oren has not disputed that finding, "[i]t is not necessary . . . that the patented invention be solely responsible for the commercial success, in order for this factor to be given weight appropriate to the evidence, along with other pertinent factors." *Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1273 (Fed. Cir. 1991). Thus, failure to address the Sandbox container-specific evidence was legal error by the Board. On remand, the Board must consider this evidence to properly decide the issue of obviousness.

CONCLUSION

We reverse on claims 1–6, 9, 15, 18–20 the Board's finding of obviousness because the Board impermissibly relied on a theory not raised by petitioner and which Oren had no notice of and opportunity for responding to, and remand on claims 7 and 10–14 for further analysis of the objective indicia consistent with this opinion.

REVERSED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

The parties shall bear their own costs.

CERTIFICATE OF SERVICE

I hereby certify that, on the 23rd day of August, 2023, I electronically filed the foregoing with the Clerk of Court using the CM/ECF system, which thereby served a copy upon all counsel of record.

Upon acceptance by the Court of the e-filed document, the required eighteen paper copies of the petition will be delivered to the Court via Federal Express, priority overnight, within the time provided in the Court's rules.

Dated: August 23, 2021

/s/ Mark T. Garrett

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**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATIONS

Case Number: 19-1778

Short Case Caption: Oren Technologies, LLC v Proppant Express Investments LLC; Proppant Express Solutions LLC

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