

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PROFRAC HOLDING CORPORATION and
U.S. WELL SERVICES, LLC,
Petitioner,

v.

HALLIBURTON ENERGY SERVICES, INC.,
Patent Owner.

IPR2023-01319
Patent 7,841,394 B2

Before HUBERT C. LORIN, JAMES J. MAYBERRY, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

DOUGAL, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. *Background and Summary*

Petitioner, ProFrac Holding Corporation and U.S. Well Services, LLC, filed a Petition requesting *inter partes* review of claims 1–27 (the “challenged claims”) of U.S. Patent No. 7,841,394 B2 (Ex. 1001, “the ’394 patent”). Paper 2 (“Pet.”). Patent Owner, Halliburton Energy Services, Inc., argues that Petitioner’s request is deficient and should not be granted. Paper 6 (“Preliminary Response” or “Prelim. Resp.”).

Applying the standard set forth in 35 U.S.C. § 314(a), which requires demonstration of a reasonable likelihood that Petitioner would prevail with respect to at least one challenged claim, we institute an *inter partes* review.¹

B. *Related Matters*

The parties identify the following pending district court litigation: *Halliburton Energy Services, Inc. v. U.S. Well Services, LCC and ProFrac Holding Corp.*, No. 6:22-cv-00906-ADA (W.D. Tex.). Pet. 2; Paper 4, 2.

C. *The ’394 Patent*

The ’394 patent is titled “METHOD AND APPARATUS FOR CENTRALIZED WELL TREATMENT” and is directed to a method of stimulating multiple wells from a central location. Ex. 1001, codes (54), (57). The ’394 patent teaches using a well operation factory and a manifold to service multiple wells from a central location. *Id.* at code (57). The ’394 patent describes simultaneously stimulating a plurality of wells from a central location using fluid that “can be any combination of proppant, fracturing fluid, gelling agent, friction reducer, and acid.” *Id.* at 1:43–51.

¹ Our findings and conclusions at this stage are preliminary, and thus, no final determinations are made.

D. Illustrative Claim

Of the challenged claims, claims 1, 24, 25, 26, and 27 are independent. Claim 1 is reproduced below:

1. A system for centralized well operations comprising:
 - a well treatment operations factory which manufactures and pumps a well stimulation fluid;
 - a first connection between a first well and the well operations factory;
 - a second connection between a second well and the well operations factory; andmeans for simultaneously flowing:
 - a first stimulation fluid to the first well and not to the second well; and
 - a second stimulation fluid to the second well and not to the first well;wherein the first stimulation fluid and the second stimulation fluid have different compositions.

Ex. 1001, 7:56–8:2.

E. Evidence

Petitioner's grounds of unpatentability rely on the following evidence:

Name	Patent Document	Exhibit
Crossley	WO 2005/111369 A1 (Nov. 24, 2005)	1005
Albers	US 7,451,820 B2 (Nov. 18, 2008)	1006
Lehman	US 2004/0050550 A1 (Mar. 18, 2004)	1009

F. Asserted Grounds

Petitioner asserts the following grounds of unpatentability (Pet. 3), supported by the declaration of Michael Nikolaou (Ex. 1003):

Claim(s) Challenged	35 U.S.C. §²	Reference(s)/Basis
1–27	103	Crossley, Albers
11, 13	103	Crossley, Albers, Lehman

II. ANALYSIS

A. Legal Standards

Petitioner bears the burden to demonstrate unpatentability. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). At this preliminary stage, we determine whether the information presented in the Petition shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims would have been obvious over the proposed combinations of prior art. *See* 35 U.S.C. § 314(a).

A claim is unpatentable as obvious if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). We resolve the question of obviousness based on underlying factual determinations, including: (1) the scope and content of

² The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. § 103 effective March 16, 2013. We refer to the pre-AIA version of § 103, because the ’394 patent issued before that date.

the prior art; (2) any differences between the prior art and the claims; (3) the level of skill in the art; and (4) when in evidence, objective indicia of nonobviousness. *See Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

We apply these principles to the Petition’s challenges.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of the invention. *Id.* at 13, 17. Petitioner asserts that a person of ordinary skill in the art (“POSITA”) would have had:

at least a bachelor of science in chemical engineering, mechanical engineering, materials science, or metallurgical engineering or an equivalent field and at least two years of academic or industry experience in the oil and gas industry, including experience with process control systems. A person having [more] education but less professional experience, and vice versa, may . . . also qualify as a POSITA.

Pet. 3–4 (citing Ex. 1003 ¶ 4). Patent Owner does not dispute this. Prelim. Resp. 2. We are persuaded, on the present record, that Petitioner’s proposal is consistent with the problems and solutions in the ’394 patent and prior art of record. We adopt Petitioner’s definition of the level of skill for the purposes of this Decision.

C. Claim Construction

In *inter partes* review, we construe claims 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), including 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. 37 C.F.R. § 42.100(b) (2023). We construe “those terms . . . that are in controversy, and only to the extent necessary to resolve

the controversy.” *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

The parties agree that “means for simultaneously flowing” in claims 1 and 24–27 is subject to 35 U.S.C. 112 ¶ 6. Pet. 5–6; Prelim. Resp. 2. The parties further agree that the function is “simultaneously flowing,” and that the corresponding structure is “a manifold and equivalents thereof.” Pet. 6; Prelim. Resp. 2.

As both parties agree, we adopt this construction for the purposes of this Decision. No other constructions are necessary at this time.

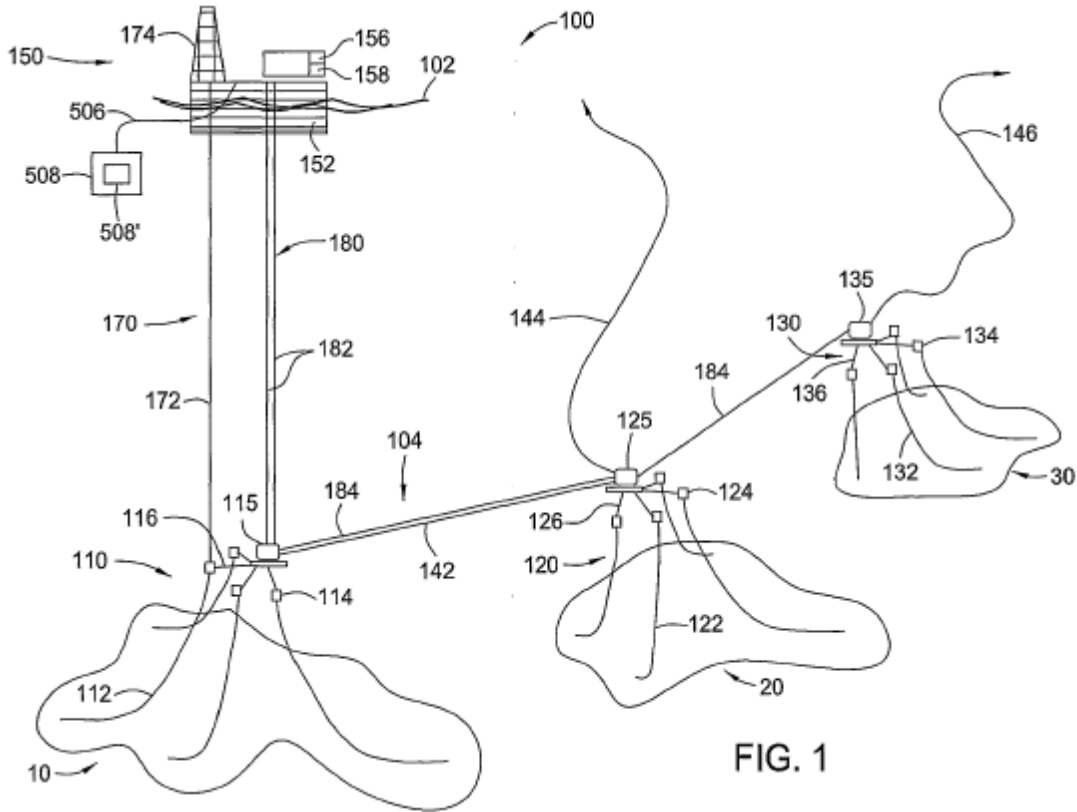
D. 35 U.S.C. § 103 – Crossley, Albers

Petitioner challenges claims 1–27 as rendered obvious over the combination of Crossley and Albers. Pet. 11–61. Patent Owner argues Petitioner has not demonstrated a reasonable likelihood of success. Prelim. Resp. 25–49. For the reasons expressed below, we determine that Petitioner has established a reasonable likelihood of succeeding in showing that at least one claim is unpatentable.

1. Crossley

Crossley is titled “SYSTEM AND VESSEL FOR SUPPORTING OFFSHORE FIELDS,” and is directed to a system having a relocatable floating vessel with “(1) an operations control system for providing subsea well-site operations such as power and communications; and (2) an intervention system for conducting intervention services to an individual subsea well such as workover services and maintenance services.” Ex. 1005, codes (54), (57).

Figure 1, reproduced below, illustrates “a system for supporting multiple-well-site offshore hydrocarbon-bearing oil fields.” *Id.* ¶ 12.



In Figure 1 above, three oil fields 10, 20, 30 are produced through three separate well-sites depicted as 110, 120 and 130. *Id.* ¶ 43. Each well-site includes a plurality of wells 112, 122, and 132. *Id.* Production export lines 144, 146 carry produced fluids to a gathering and processing facility. *Id.* ¶ 46. Manifolds 115, 125, and 136 connect the wells to the export lines either directly, or through a flow line 142. *Id.*

Operations control system 180 is located on floating vessel 150. *Id.* ¶ 48. Control operations may include:

the injection of chemicals such as hydrate, paraffin, or wax inhibitors into flow lines. Subsea equipment that is subject to control operations includes, but is not limited to, valves and chokes (not shown) associated with wellheads, e.g., 114, 124 and 134, and respective flow-lines, e.g., lines 142, 144 and 146 and christmas trees.

Id.

As part of the operations control system, control link 182 extends from the floating vessel 150 to collection manifold 115. *Id.* ¶ 49. A second link connects the subsea well-sites 110, 120, 130 together, through their respective manifolds 115, 125, 135, forming an inter well-site controls network 184. *Id.* Control modules are incorporated into the collection manifolds 115, 125, 135. *Id.* Crossley defines “control module” as “any electrical or fluid manifold apparatus for directing communication, power, signals and/or fluids to subsea equipment.” *Id.*

The control links can include electrical power cables, data and communication lines, two chemical distribution lines, a hydraulic delivery line, a jacket and a pair of armor layers. *Id.* ¶ 50. Concerning the chemical distribution lines, Crossley teaches that “[c]hemicals may be delivered from the lines 428, 428' and then through the manifold 115 for treatment of flow lines, valves, and even the wellbores as appropriate.” *Id.*

2. *Albers*

Albers is titled “METHOD FOR FRACTURE STIMULATING WELL BORES,” and relates to “a method for fracture stimulating well bores using gaseous nitrogen and/or liquid carbon dioxide combined with substantially dehydrated proppant.” Ex. 1006, code (54), 1:65–67. Albers teaches equipment to prepare stimulating fluid that is pumped to the wellhead and into the well through a work string to fracture-stimulate the down hole formation. *Id.* at 3:54–4:3, 5:42–47.

3. *Analysis of Claim 1*

Petitioner argues that the combination of Crossley and Albers renders obvious claim 1. Pet. 11–35. We first address Patent Owner’s argument over Dr. Nikolau’s testimony. We then address the limitations of claim 1, broken into three sections.

a) Dr. Nikolaou's Testimony

Patent Owner argues that

Wide swathes of Dr. Nikolaou's declaration merely provide conclusory and unsupported opinions that substantively mirror the Petition. *E.g., compare* Pet. at 27-33 *with* Ex. 1003 at ¶¶ 82-91; *compare* Pet. at 34-35 *with* Ex. 1003 at ¶¶ 94-95.

Prelim. Resp. 47–48.

The paragraphs highlighted by Patent Owner include extensive citations in support of the statements made by Dr. Nikolaou. For example, paragraph 95 of Dr. Nikolaou's declaration includes four citations to three different documents and refers back to a prior paragraph in the declaration. The noted paragraphs all appear to include support in the evidence of record. Further, Patent Owner only provides a general allegation without discussing any particular paragraph or opinion. Thus, it is unclear which opinions Patent Owner considers conclusory.

Further, whether the declaration and Petition include similar or even identical statements is not a reason, by itself, to give the declaration little to no weight. As noted by Patent Owner (Prelim. Resp. 47–49), it is only when these statements are conclusory that they should be given little to no weight. *See, e.g., TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) (“conclusory expert testimony is inadequate to support an obviousness determination”).

For these reasons, and at this stage, we decline Patent Owner's invitation to give little to no weight to Dr. Nikolaou's testimony as a whole.

b) Claim 1, Section 1

Claim 1 requires, *inter alia*:

1. A system for centralized well operations comprising:
 - a well treatment operations factory which manufactures and pumps a well stimulation fluid;
 - a first connection between a first well and the well operations factory;
 - a second connection between a second well and the well operations factory.

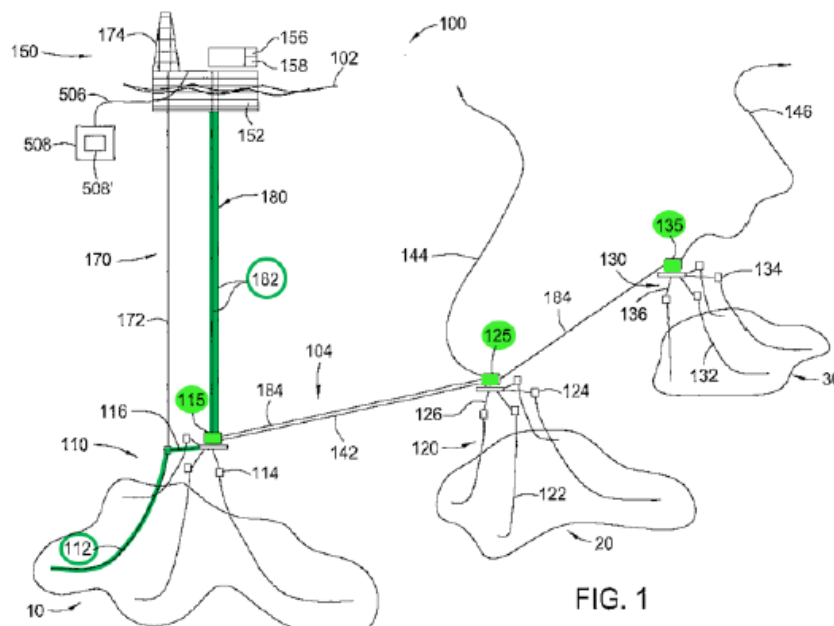
Ex. 1001, 7:56–62.

Petitioner relies on Crossley for teaching a system for centralized well operations. Pet. 18–20. Among other teachings, Petitioner points to Crossley for “disclos[ing] ‘[a] system for supporting multiple-well-site[s], offshore, hydrocarbon-bearing fields, each well-site has one or more wells.’” *Id.* at 18 (quoting Ex. 1005, Abst.) (emphasis omitted) (second and third alterations in original).

Petitioner relies on the combination of Crossley and Albers to teach the well treatment operations factory. *Id.* at 20–23. Petitioner argues that Crossley teaches an operations control system including a delivery system for “**the injection of chemicals** such as hydrate, paraffin, or wax inhibitors **into flow lines**’ and may also ‘**include pumps and other electrically or hydraulically actuated equipment.**’” *Id.* at 20 (quoting Ex. 1005 ¶ 48). With reference to Crossley Figure 1, Petitioner argues that Crossley teaches “that each well 112, 122, and 132 has a flow line jumper 116, 126, and 136 ‘in order to transport production or **injection fluids**,’ and that that such flow line jumpers tie into a collection manifolds 115, 125, and 135.” *Id.* at 22 (quoting Ex. 1005 ¶ 45).

Petitioner argues that Albers teaches manufacturing a well stimulation fluid. *Id.* at 21. Petitioner notes that Albers discusses preparing a stimulation fluid from multiple ingredients which is ultimately pumped to a “well to fracture-stimulate the formation.” *Id.* at 21–22 (quoting Ex. 1006, 2:27–30³). Petitioner also cites Albers for “explain[ing] that ‘**difference** [sic] **concentrations** may be appropriate **based on the formation to be fracture-stimulated.**” *Id.* at 23 (quoting Ex. 1006, 5:28–30).

Petitioner relies on Crossley for teaching the first and second connections. *Id.* at 23–26. Petitioner provides the below marked-up version of Crossley Figure 1 to identify the first connection. *Id.* at 24.



Petitioner adds green to Crossley Figure 1 to highlight control link 182, flow line jumper 116, well 112, and manifolds 115, 125, and 135. *Id.* Petitioner argues that

³ The Petition cites Ex. 1006, 2:25–27; however, this appears to be a typographical error.

the vessel is **connected** to manifold 115 via control link 182, which is further **connected** via flow line jumper 116 and associated “tree” (“*a first connection*”) to well-site 110 and well 112 (“*a first well*”). The vessel is also connected to collection manifolds 125 and 135 for well-sites 120 and 130, respectively, via similar connections.

Id.

Concerning the second connection, Petitioner provides two different alternatives. *Id.* at 25–26. Petitioner points to tree 114 in Figure 1, and argues that it can be connected to a well different from that at 112. *Id.* at 26. Thus, this well can be connected to vessel 150 through control link 182, manifold 115 and its own flow line jumper connected to tree 114 (the second connection). *Id.*

Petitioner also argues, with reference to Crossley Figure 1, that well 122 is connected to vessel 150 through control link 182, manifold 115, control link 184, manifold 125, flow line jumper 126, and the associated tree (“the second connection”). *Id.* at 25.

Patent Owner does not contest the individual teachings of Crossley or Albers discussed above. *See generally* Prelim. Resp. 27–47. Patent Owner does contest the combination of Crossley and Albers (*id.* at 42–47), which we address below in our discussion of the reason to combine.

(1) Reason to Combine

Petitioner argues that “[i]t would have been obvious to combine the teaching of Albers’s techniques related to dynamic formation-dependent oil-well stimulation fluids with Crossley’s teachings concerning[] a centralized oilfield operations system.” Pet. 11. Petitioner further argues that “[a] POSITA would have understood that . . . Albers’s fracture-stimulating equipment (and associated dynamic fluid manufacturing and optimized oil

well-stimulation fluid techniques), would have been implementable on Crossley's 'vessel 150' . . . in conjunction with the 'control delivery system 158.'" *Id.* at 11–12.

In particular, Petitioner argues that Albers teaches how to manipulate the level of hydration of the proppant delivered to the wellhead to produce more oil and gas. *Id.* at 15–16 (citing Ex. 1006, 6:5–7, 6:25–29, 7:27–35, Fig. 4). Thus, "a POSITA would have been motivated by these disclosures to combine Crossley . . . [and] Albers so that wells drilled in formations with lower permeability will be stimulated to produce more oil and gas, a clear benefit." *Id.* at 16 (citing Ex. 1003 ¶ 59).

Petitioner also argues that "combining the teachings of Crossley's system with Albers's teachings results in multiple wells to be treated simultaneously and with different fluids based on the specific formation being drilled, which would reduce time needed to have clusters of producing wells complete production." *Id.* at 17; *see also* Ex. 1003 ¶ 61.

Patent Owner argues that Crossley and Albers would not be combined in the manner presented because one of skill in the art would have used Crossley's intervention system, as opposed to the control delivery system. Prelim. Resp. 42–45. Patent Owner argues that Crossley teaches that "it is Crossley's intervention system and not the operations control system that would flow the types of fluids that are the subject of the '394 Patent claims, *i.e.*, "injection of **acid or other treating fluids**." *Id.* at 44–45 (quoting Ex. 1005 ¶ 37).

Though Crossley does teach that the intervention system can be used for the injection of treating fluids, it also teaches that the control delivery system can be used for the treatment of the wellbore. Ex. 1005 ¶ 50.

Crossley states that “[c]hemicals may be delivered from the lines 428, 428' and then through the manifold 115 for *treatment* of flow lines, valves, and even the wellbores as appropriate.” *Id.* (emphasis added). In view of this additional teaching that the control delivery system can also be used for the treatment fluids, which is not addressed by Patent Owner, this argument is best left for further development of the record.

Patent Owner then argues that Crossley’s intervention system teaches away from combining Alber’s system with Crossley’s control delivery system, because of this same teaching. Prelim. Resp. 45–47. In view of Crossley’s additional teaching concerning treatment of a wellbore with the control delivery system, this argument is best left for further development of the record.

After review of the evidence and arguments, including those summarized above, we determine that a reasonable likelihood of prevailing has been shown that the combination of Crossley and Albers teaches or suggests the claim limitations of the first section of claim 1.

c) Claim 1, Section 2 – Means for Simultaneously Flowing

Claim 1 also requires:

means for simultaneously flowing:

- a first stimulation fluid to the first well and not to the second well; and
- a second stimulation fluid to the second well and not to the first well.

Ex. 1001, 7:56–67.

As previously discussed, the parties agree that “means for simultaneously flowing” is subject to 35 U.S.C. 112 ¶ 6. Pet. 5–6; Prelim. Resp. 2. The parties further agree that the function is “simultaneously

flowing,” and that the corresponding structure is “a manifold and equivalents thereof.” Pet. 6; Prelim. Resp. 2.

Petitioner points to Crossley’s manifolds 115, 125, and 135 as reading on the claimed “means for simultaneously flowing.” Pet. 27. Petitioner further explains that Crossley teaches that the operations control system provides “well-site operations simultaneously to each of the first well-site and a second well-site.” *Id.* (quoting Ex. 1005 ¶ 26). Petitioner continues:

Crossley further teaches that its “control line”—*i.e.*, control lines 182 and 184—are connected “into a control module on the **manifold** [(115, 125, 135)], and then branch to the various wellheads. Such a control line allows for the monitoring and control of valves, gauges, and other subsea equipment. Control lines also allow for one or more power lines **or chemical delivery lines to be delivered from the ocean surface, downward to the clustered wells.**” EX-1005, [0005] (emphasis added). EX-1003-¶84.

Pet. 27. Based on these teachings and others, Petitioner argues that Crossley’s control system 180 controls manifolds 115, 125, and 135, with their corresponding valves, to simultaneously deliver selected fluids to particular wells. *Id.* at 27–28 (citing e.g., Ex. 1005 ¶¶ 28, 36).

Petitioner also marks-up Crossley Figure 4 (reproduced below), to show that the control lines can include two separate flow channels for chemicals. *Id.* at 32–33.

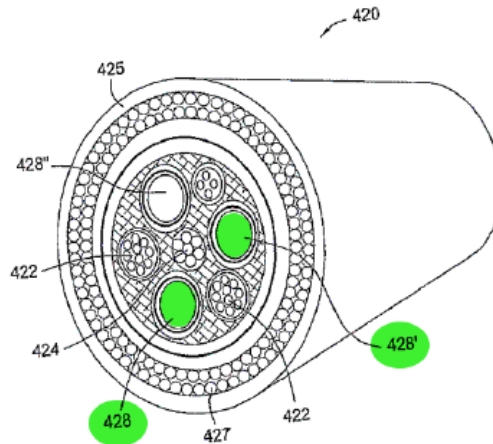


FIG. 4

Petitioner adds green to Crossley Figure 4 to highlight channels 428 and 428', which Crossley teaches are both used for the delivery of chemicals. *Id.* (citing Ex. 1005 ¶ 50, Fig. 4). Petitioner quotes Crossley as teaching “Chemicals may be delivered from the lines 428, 428' and then through the manifold 115 for treatment of flow lines, valves, and even **the wellbores as appropriate.**” *Id.* (quoting Ex. 1005 ¶ 50). Petitioner’s declarant testifies that “[i]n the Crossley/Albers system, the optimized well-stimulation fluids would be delivered through lines 428 and 428,' which expressly permit the “*simultaneous*” distribution of well-stimulation fluids to a single well or to two different wells—one through 428 and second through 428'.” Ex. 1003 ¶ 91.

Patent Owner argues that the Petition does not show how Crossley teaches or suggests simultaneously flowing one fluid to one well and a second fluid to a different well, where neither fluid is also flowing to the other well. Prelim. Resp. 28, 30–31. In particular, Patent Owner argues that Crossley does not teach “*selective* control over manifolds, or more specifically, *selective* control over manifolds that would enable simultaneous flow of one fluid to one well and another fluid to another well.” *Id.* at 32.

Patent Owner acknowledges that Crossley teaches “individual fluid distribution lines 428 and 428’,” and further that Crossley teaches “that control modules may be incorporated into collection manifolds 115, 125, and 135 and used, in relevant part, to direct fluids to subsea equipment.” *Id.* at 32–33. However, Patent Owner argues, the specifics of those control modules are not given and therefore any flow through the pipe that contains both lines 428 and 428’ must either provide the contents of both lines to the well, or neither, and the same fluids would be provided to all wells that were to receive fluids. *Id.* at 33; *see also id.* at 33–35.

Based on the current record, we determine that Petitioner has sufficiently demonstrated that one of skill in the art would understand Crossley as teaching that Crossley’s control modules within the manifolds provide separate control to the individual fluid distribution lines 428 and 428’. The Petition points to Crossley as teaching control lines that “allow[] for the monitoring and control of valves” and the “one or more . . . chemical delivery lines to be delivered from the ocean surface, downward to the clustered wells.” Pet. 27 (quoting Ex. 1005 ¶ 5) (emphasis omitted). We do not agree, based on the current record, that Crossley teaches a control line can only control a valve associated with all chemical delivery lines, as opposed to a valve associated with each delivery line.

We determine that the record provides a reasonable likelihood of showing that separate valve control would be suggested to one of skill in the art. The above teachings of Crossley’s two separate fluid channels and valve control in the manifold, must be considered together with other teachings relied on in the Petition. For example, the Petition also relies on Crossley for teaching the delivery of chemicals to “the wellbores as appropriate” (Pet. 32–33 (quoting Ex. 1005 ¶ 50) (emphasis omitted)), and on Albers for

teaching that different concentrations of fluid stimulant may be appropriate based on the characteristics of the formation (*id.* at 23 (citing Ex. 1006 5:28–30)).

After review of the evidence and arguments, including those summarized above, we determine that a reasonable likelihood of prevailing has been shown that the combination of Crossley and Albers teaches or suggests the claim limitations of the second section of claim 1.

d) Claim 1, Section 3 – Different Compositions

Claim 1 also requires:

wherein the first stimulation fluid and the second stimulation fluid have different compositions.

Ex. 1001, 8:1–2.

As just discussed above, Petitioner relies on Albers for teaching **“different concentrations may be appropriate based on the formation to be fracture-stimulated.”** Pet. 34 (quoting Ex. 1006, 5:28–30). Petitioner further argues that “the Crossley/Albers system would pump two different well–stimulation fluids (i.e., manipulating the concentration of well–stimulation fluid per formation) simultaneously into two different wells because a POSITA would recognize that technique as both beneficial and economically efficient.” *Id.* at 34–35 (citing Ex. 1003 ¶ 95⁴).

Patent Owner does not directly address this argument. Rather, Patent Owner argues that the Petition “fails to show that Albers’s fracture–stimulating equipment is capable of manufacturing two different stimulation fluids having two different compositions that could be simultaneously flowed into two different wells using Crossley’s operations control system.”

⁴ The citation to Ex. 1003 ¶ 96 is a typographical error.

Prelim. Resp. 36–37.⁵ Patent Owner argues that the Petition should show how Albers could be bodily incorporated into Crossley to teach the above limitation. *Id.* at 36–39.

The Petition does not rely on Albers for teaching a device that prepares two different compositions at the same time. Rather, as discussed above, the Petition relies on Albers for teaching that different formations, i.e., wells, may require different compositions. Patent Owner does not contest this, or address the understanding of one of skill in the art in view of this teaching combined with the teachings of Crossley. At this stage, there is no evidence that such a modification or duplication of Albers system to prepare two separate compositions is beyond the skill of one of ordinary skill in the art.

After review of the evidence and arguments, including those summarized above, we determine that a reasonable likelihood of prevailing has been shown that the combination of Crossley and Albers teaches or suggests the claim limitations of the third section of claim 1.

e) Conclusion

After review of the evidence and arguments, including those summarized above, we determine that a reasonable likelihood of prevailing has been shown that the combination of Crossley and Albers teaches or suggests the limitations of claim 1.

⁵ Patent Owner makes a similar argument with regard to claim 27, that the Petition does not show how “Albers’s fracture-stimulating equipment is capable of manufacturing and simultaneously pumping a plurality of well stimulation fluids.” Prelim. Resp. 42.

4. *Claims 2–27*

Petitioner argues that claims 2–27 are rendered obvious over the combination of Crossley and Albers. Pet. 35–61. Claims 2–23 all depend from claim 1. Ex. 1001, 8:3–9:4. Independent claims 24–27 are substantially similar to claim 1. *Compare id.* at 7:56–8:2 *with id.* at 9:5–10:29. Thus, Petitioner largely relies on its arguments over claim 1 for teaching the limitations of claims 24–27. Pet. 57–61.

Having determined that Petitioner has shown a reasonable likelihood of prevailing with respect to claim 1, it is unnecessary to address these additional claims.

E. 35 U.S.C. § 103 – Crossley, Albers, Lehman

Petitioner argues that claims 11 and 13 are rendered obvious by the combination of Crossley, Albers, and Lehman. Pet. 61–64. Patent Owner does not address this ground. *See generally* Prelim. Resp.

Having determined that Petitioner has shown a reasonable likelihood of prevailing with respect to claim 1, it is unnecessary to address these additional claims.

F. 35 U.S.C. § 325(d) – Discretionary Denial

Patent Owner requests that we exercise discretion to deny the Petition under 35 U.S.C. § 325(d). Prelim. Resp. 14–25. We decline. Contrary to Patent Owner’s argument, we do not perceive Crossley as “cumulative” of Weaver. *Id.* at 17–20. Crossley explicitly describes two separate fluid delivery lines as follows:

[Fluid distribution] Lines 428 and 428’ are preserved for the delivery of chemicals, such as hydrate inhibition fluids. Chemicals may be delivered from the lines 428, 428’ and then through the manifold 115 for treatment of flow lines, valves, and even the wellbores as appropriate.

Ex. 1005 ¶ 50; *see also id.* at Fig. 4. Weaver does not appear to include such a disclosure. Thus, Patent Owner does not persuade us that exercising our § 325(d) discretion is appropriate where, on their face, the asserted references do not appear to be cumulative of the references cited during prosecution.

III. CONCLUSION

For the foregoing reasons, we have determined that there is a reasonable likelihood that the Petitioner would prevail with respect to at least one claim challenged in the Petition. We, therefore, institute trial.

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, *inter partes* review as to claims 1–27 of U.S. Patent 7,841,394 B2 is instituted; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial; the trial will commence on the entry date of this decision.

IPR2023-01319
Patent 7,841,394 B2

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