

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WELLMATICS, LLC, GR ENERGY SERVICES MANAGEMENT, LP, GR
ENERGY SERVICES OPERATING GP, LLC, AND GR WIRELINE, L.P.,

Petitioners

v.

CANATEX COMPLETIONS SOLUTIONS, INC.

Patent Owner

Case IPR2023-01149

U.S. Patent 10,794,122

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	Expert Declaration of John Rodgers, Ph.D., P.E.
2002	<i>Curriculum Vitae</i> of John Rodgers, Ph.D., P.E.
2003	Excerpts from The American Heritage Dictionary (2 nd College Ed. 1982)
2004	Excerpts from The Oxford American Desk Dictionary (1998)
2005	U.S. Patent Application Publication No. U.S. 2019/0257297
2006	U.S. Patent No. 6,082,454
2007	U.S. Patent No. 9,695,656
2008	Prysmian Group ESP Cables – Flat Cables brochure
2009	U.S. Patent No. 4,383,803
2010	Definition of “sucker rod pump” from SLB Energy Glossary (2023)
2011	Excerpts from Webster’s New World College Dictionary (4 th Ed. 1999)
2012	Lyons et al., “Standard Handbook of Petroleum and Natural Gas Engineering,” (3 rd Ed. 2016)
2013	Excerpts from Transcript of Sept. 26, 2023 Markman Hearing in <i>Canatex Completions Solutions, Inc. v. Wellmatics et al.</i> , Civil Action No. H-22-CV-3306
2014	49 C.F.R. § 173.50
2015	Transcript of August 3, 2023 Testimony of Dr. Gary Wooley in IPR2022-01372
2016	“Oilfield Explosive Safety,” American Petroleum Institute, API Recommended Practice 67 (Third Ed. Oct. 2019)

Exhibit No.	Description
2017	Excerpts from Bellarby, Jonathan, “Well Completion Design,” Elsevier, Vol. 56 (2009)
2018	“The Defining Series: Electrical Submersible Pumps,” Schlumberger (Jan. 1, 2015)
2019	Excerpts from Takacs, Gabor, “Electrical Submersible Pumps Manual: Design, Operations and Maintenance,” Gulf Professional Publishing (2 nd Ed. 2018).
2020	Coiled Tubing ESP Cable brochure, Schlumberger
2021	Grove et al., “Explosion-induced damage to oilwell perforating gun carriers,” ISSN 1743-3509, WIT Press (2006)
2022	Definition of “shaped charge” from SLB Energy Glossary
2023	Defendants’ Response to Plaintiff’s Motion for Preliminary Injunction (Dkt. 59) in <i>Canatex Completions Solutions, Inc. v. Wellmatics</i> , Civil Action No. 4:22-CV-3306
2024	Avenger® Motor Lead Extension brochure, Summit ESP
2025	Trident® brochure, Schlumberger
2026	Fetoui, “ESP cable,” Production Technology
2027	Kosmicki et al., “Jet Pumps Improve Bakken Shale Economics,” Hart Energy (Feb. 1, 2017)
2028	Degollado, “explosion Atascosa County Sheriff: Perforating gun somehow exploded, www.ksat.com (Jan. 15, 2013)
2029	“Oil field blast kills one worker, injures another in New Mexico,” Reuters (Mar. 12, 2015)
2030	Accident Report Detail, “Perforating Gun Kills Employee And Injures Another” Report ID 0627700 www.osha.gov (Sept. 14, 2005)
2031	29 C.F.R. § 1910.109
2032	Excerpts from 27 C.F.R., § 555, Subparts D, F, and K

Exhibit No.	Description
2033	“Federal Explosives Licenses and Permits,” Bureau of Alcohol, Tobacco, Firearms and Explosives (Aug. 11, 2023)
2034	Excerpts from 49 C.F.R., §§ 171, 172, 173, 174, 177, and 180
2035	“How Does an Electric Submersible Pump (ESP) Work?,” Kimray, Inc.
2036	Schlumberger REDA ESP System Cables brochure

I. INTRODUCTION

Patent Owner Canatex Completions Solutions, Inc. (“Patent Owner”) requests that the Board deny institution of *inter partes* review, as the Petition fails to demonstrate a reasonable likelihood of showing unpatentability of any claim. There are two lynchpin issues: (1) whether Petitioners’ primary reference, Bebak, teaches a “source of fluid pressure” within its pump assembly release adapter; and (2) whether it would have been obvious to modify Bebak’s release adapter to include the electrically initiated explosive charge of Forehand’s perforating gun release tool. Because the answer to both issues is “no,” Petitioners fail to carry their threshold burden for institution.

Independent claims 1 and 13 require a releasable connection with a “second part comprising: ... a source of fluid pressure.” However, Bebak is directed toward a release adapter for downhole pumps (e.g., electrical submersible pumps) that is actuated by hydraulic pressure generated by ***a pump at the surface***. The fluid pressure is communicated ***from the pump at the surface*** to the release tool via a fluid line that runs down coiled tubing and into the release adapter.

In Ground 1, Petitioners assert that claims 1 and 13 are anticipated by Bebak. However, Bebak clearly lacks a “source of fluid pressure” within its release adapter. Instead, the source of fluid pressure is at the surface, with a fluid line merely conveying that fluid pressure from the surface to the release adapter. Recognizing

this, Petitioners offer an unreasonably broad construction of “source of fluid pressure” as simply “component(s) that communicate(s) fluid pressure” so that they can identify *any* component that transports fluid as a “source.” Tellingly, Petitioners provide no evidence to support this broad construction aside from the *verbatim, ipse dixit* parroting of their expert, Dr. Gary Wooley.¹ In contrast, Patent Owner provides an abundance of objective evidence demonstrating that “source” has a widely accepted, commonly understood meaning in the oil and gas industry as “origin.” *Infra* Section III. When “source of fluid pressure” is appropriately applied, Bebak fails to teach that limitation. Petitioners thus fail to meet their threshold burden as to Ground 1. *Infra* Section IV.A.

Recognizing this fundamental flaw with Bebak, Petitioners assert in Ground 3 that independent claims 1, 7 (requiring a source of fluid pressure in the form of a “combustible”) and 13 are rendered obvious by Bebak in view of Forehand. However, Forehand’s release tool has a fundamentally different design for a fundamentally different application than the tool of Bebak. In stark contrast to

¹ Virtually all of Dr. Wooley’s substantive “opinions” are a copy-and-paste of the exact statements in the Petition. As shown throughout this Preliminary Response, his declaration should be accorded no weight because it provides no additional explanation or evidentiary value—it merely restates the attorney-argument in the Petition, most of which is conclusory.

Bebak’s hydraulically-actuated release tool for downhole pumps, Forehand teaches an electrically-actuated ***explosive charge*** release tool ***for perforating guns***. Forehand’s release tool is designed to automatically release the perforating guns into the well when the perforating guns are detonated, resulting in a ***highly explosive “shockwave”*** that effectuates the tool release.

Petitioners offer only a superficial obviousness analysis that completely ignores the significant and important distinctions between Bebak and Forehand’s tool designs and applications—distinctions that would strongly discourage a POSA from even considering the idea of taking Forehand’s explosive charge and incorporating it into Bebak’s much safer and less destructive hydraulic design. *Infra* Section IV.B.1-2. Even beyond that, Petitioners purported obviousness analysis is largely conclusory, factually incorrect, and relies almost exclusively on Dr. Wooley’s *verbatim* recitation of the attorney-argument in the Petition. *Infra* Section IV.B.3. Petitioners fail to provide *any* plausible reason that a POSA would have been motivated to replace Bebak’s hydraulic actuation with Forehand’s electrically actuated explosive charge. Petitioners also fail to explain how Bebak’s release adapter—with its fundamentally different hydraulic-design—could be modified to accommodate Forehand’s electrically actuated explosive charge detonation system with *any* expectation of success. *Infra* Section IV.B.4. Consequently, Petitioners fail to carry their threshold burden with respect to Ground 3.

Because all of Petitioners' challenges to independent claims 1, 7 and 13 are fundamentally premised on Grounds 1 or 3, denial of institution is warranted.²

II. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this Preliminary Response only, Patent Owner does not dispute the qualifications of a person having ordinary skill in the art ("POSA") proposed by Petitioners. Petition, 7. All references to a POSA herein are made pursuant to that definition. Patent Owner reserves the right to propose its own qualifications should the Board decide to institute trial. Patent Owner's expert, Dr. John Rodgers, far exceeds the qualifications of a POSA. Ex. 2001 ¶¶4-12, 43; *see generally*, Ex. 2002.

Patent Owner does dispute, however, Petitioners' vague tack-on list of things that "[a] POSA would have known." Petition, 7-8. As this Preliminary Response demonstrates, Patent Owner fails to come anywhere close to demonstrating that the claimed invention is anticipated or rendered obvious. Petitioners cannot short-circuit their evidentiary burden for obviousness using a generalized listing of unsubstantiated statements to justify generically combining any feature from one

² The deficiencies of Petitioners' challenges to other claim elements are also addressed below. *Infra* Section V. However, the Board need not address those deficiencies given that denial of institution is warranted based on Petitioners' failure to demonstrate a reasonable likelihood of success as to Grounds 1 and 3.

type of downhole release tool with any other type of downhole release tool. Regardless, Patent Owner briefly addresses the most egregious of those unsubstantiated assertions.

Petitioners first allege that “[t]here are a *finite* number of ways of actuating a downhole tool” and that they “would *all* be viewed as design alternatives by a POSA.” Petition, 7. This supposed “finite” number is a listing of generic *categories* of entirely different release principles (e.g., hydraulic, electric, combustible), each of which includes *countless* different ways of releasing tools using those principles. Ex. 2001 ¶¶44-46. Moreover, neither Petitioners nor Dr. Wooley provide any explanation or support for the notion that *all* types of release mechanism are “design alternatives” for all other types of release mechanisms. *Id.* ¶47. As the Preliminary Response demonstrates, whether the release-principles of one downhole tool could be or would be considered a viable design alternative for use in another release tool depends on numerous factors, including the design-purpose of each tool and the compatibility of the first downhole tool’s release-mechanism with the second downhole tool’s design and design-purpose. *Id.*

Petitioners next allege that “[i]nternal chambers, pistons, collets, locking sleeves, slips, pins, equalization ports, and fishnecks ... would be viewed *as interchangeable design choices*.” Petition, 8. This assertion is irrational, as many of these components are fundamentally different and serve fundamentally different

purposes, meaning they cannot be “interchangeable” by definition. Ex. 2001 ¶48. For example, a fishneck is used so that downhole tools can be retrieved “fished” from a well, while a locking sleeve serves an entirely different purpose of holding a component in place. *Id.*

Petitioners also assert that “[c]ombustion and hydraulics are interchangeable ways of actuating releasable connections,” apparently to suggest that a POSA would have automatically found it obvious to replace a combustion release tool design with a hydraulic design and *vice versa*. Petition, 8. The Preliminary Response demonstrates that this is simply not true (*infra* Section IV.B)—not only are combustion and hydraulics designs not generically “interchangeable” but a POSA would be strongly discouraged from swapping one such design for the other. Ex. 2001 ¶49.

III. CLAIM CONSTRUCTION

The '122 Patent is subject to the claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (*en banc*). 37 C.F.R. § 42.100(b). While Patent Owner believes that the terms “source of fluid pressure” has a readily apparent meaning to a POSA, claim construction is necessary based on the Petitioners’ interpretation and mapping of that term to the prior art.

A. The plain and ordinary meaning of “source.”

Independent claims 1 and 13 recite a “second part comprising ... a *source of fluid pressure* in communication with the expansion chamber, wherein, upon activation, the *source of fluid pressure* is configured to apply fluid pressure to move the locking piston from the locking position toward the release position.”³

“In some cases ... claim construction ... involves little more than the application of the widely accepted meaning of commonly understood words. In such circumstances, general purpose dictionaries may be helpful.” *Phillips*, 415 F.3d at 1323. “Source” is such a word, which has a widely accepted meaning as “origin”—i.e., the place from which something originates. Ex. 2001 ¶52 (citing Ex. 2003 at 8 (defining “source” as “place or thing from which something comes or derives; point of *origin*”)); Ex. 2003 at 7 (defining “origin” as “point of origination; *source*”); Ex. 2004 at 6 (defining “source” as “place, person, or thing from which something issues or originates”); Ex. 2004 at 5 (defining “origin” as “beginning or starting points; *source*”)).

This meaning is consistent with the specification, which teaches that the source of fluid pressure may be a combustible 42, or alternatively a gas cylinder, within the second part 14 of the release tool. Ex. 2001 ¶53 (citing Ex. 1001, 4:5-

³ All emphasis herein has been added unless indicated otherwise.

12). In the combustion embodiment, when the combustible 42 ignites and burns it creates fluid pressure that travels to the piston 32 via ports 44. Ex. 2001 ¶54 (citing Ex. 1001, 3:59-65). A POSA would readily understand that the “source” of fluid pressure in this embodiment is combustible 42 and the fluid ports 44 are merely components that communicate fluid pressure from the source—the ports 44 are not a source of the fluid pressure. *Id.* This is further evidenced by the fact that the ports 44 are never referred to or identified as a “source.” *Id.* (citing Ex. 1001, 3:59-65). Rather, the ports 44 are merely described and depicted as a fluid pathway for conveying fluid *from* the combustible 42—i.e., the “source of fluid pressure.” *Id.*

Likewise, in the gas cylinder embodiment the “source of fluid pressure” is the gas cylinder, and the ports 44 would again be the fluid pathway for conveying fluid pressure from the gas cylinder. *Id.* ¶55 (citing Ex. 1001, 3:55-58).

The specification also discloses an embodiment where fluid pressure is provided “from the surface” via “a fluid line.” *Id.* ¶56 (citing Ex. 1001, 3:55-59 (“For example, there may be a a fluid line that provides gas or liquid to expansion chamber 38 ***from surface, etc.***”). A POSA would understand that in this embodiment the “source of fluid pressure” resides at the surface, such as a hydraulic pump that communicates fluid to the release tool via the fluid line. *Id.* While the fluid line is a component that communicates the fluid pressure from the pump, the fluid line is not itself the source of fluid pressure. *Id.* Consequently, while the specification discloses

an embodiment where a source of fluid pressure is at the surface, the claims are not directed to that embodiment because independent claims 1 and 13 expressly require that the “source of fluid pressure” is a component of the “second part” of the “releasable connection for a downhole tool string.” *Id.*

The plain and ordinary meaning of “source” is further evidenced by other patent publications in the oil and gas industry, including Petitioners’ own patent application. *Id.* ¶57. For example, U.S. Patent Application Publication 2019/0257297 to Petitioner GR Energy Services Management, LP is directed toward a pumping system comprising “a **fluid source (tank) 130**” (blue) and “fluid pump 126.” *Id.* (citing Ex. 2005 ¶[0029]).

Patent Owner Annotated Figure

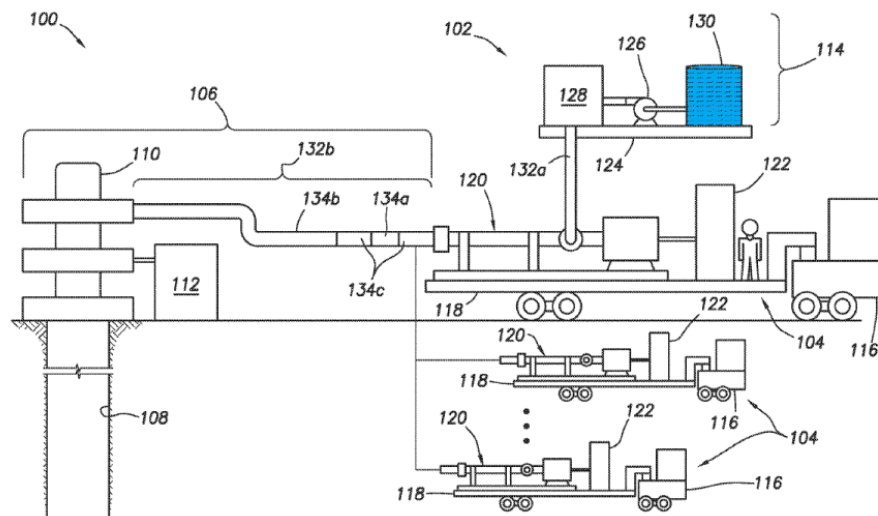


FIG. 1

As shown, the only fluid “source” in the entire system is tank 130, which the pump 126 draws fluid from and pumps through fluid connectors 132a, pump assembly 120,

and fluid connectors 132b to the wellsite. *Id.* ¶58 (citing Ex. 2005 ¶¶[0029]-[0030]). The “source” of fluid is tank 130 and the “source” of fluid pressure is pump 126, and connectors 132a and 132b are merely the mechanisms for conveying the fluid and pressure in the system. *Id.* Thus, contrary to Petitioners’ position in these proceedings, they clearly recognize the distinction between a “source” (e.g., a tank, pump) and the means for transporting something (e.g., fluid connectors) from a source. *Id.*

Likewise, U.S. Patent No. 6,082,454 is directed toward spooled coiled tubing strings and teaches, in reference to Figure 1, that a “hydraulic line 162 is preferably run along the tubing 111 for supplying fluid under pressure from *a surface source* to hydraulically operated devices” and further that “the hydraulically operated downhole devices are activated by supplying fluid under pressure from *a source at the surface* (not shown) *via the hydraulic line 162.*” Ex. 2001 ¶59 (citing Ex. 2006 at 4:64-5:9).

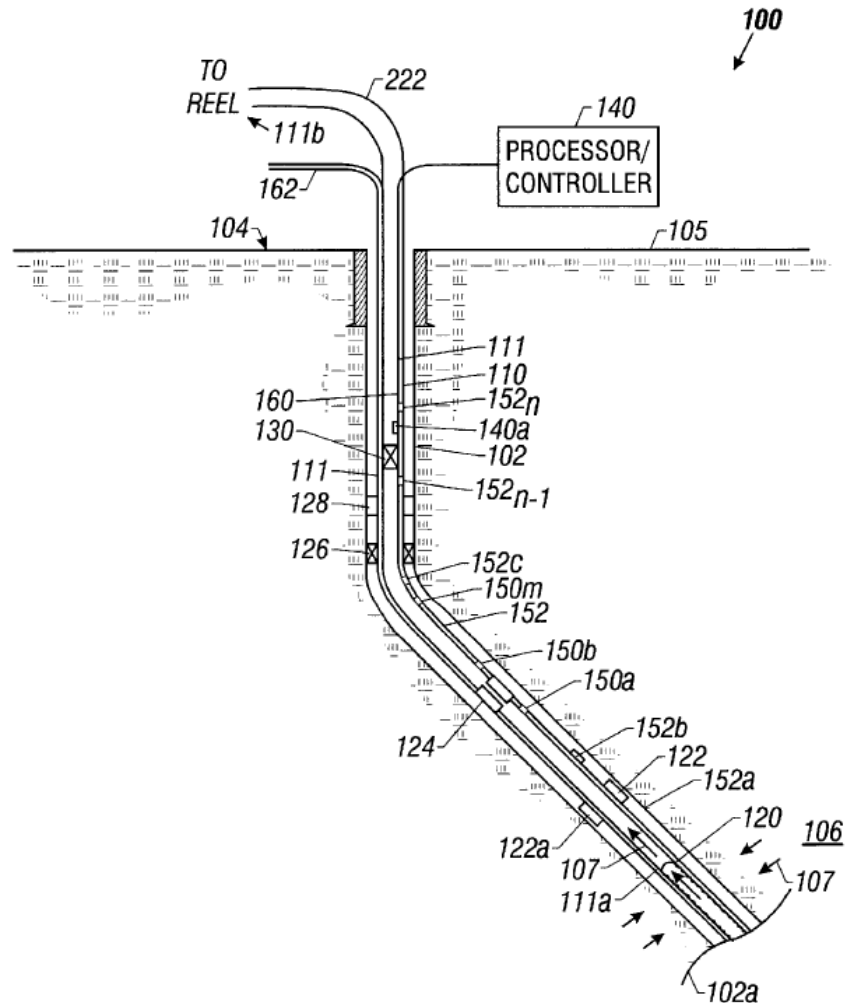


FIG. 1

U.S. Patent No. 9,695,656 also distinguishes a “source of fluid pressure” (i.e., the “origin” of the fluid pressure) from the components used to communicate the fluid pressure from the source. *Id.* ¶59 (citing Ex. 2007 at 13:23-35 (“The external **source** of fluid may be located at surface.... The shifting tool may be configured to be coupled *to a conduit, such as coiled tubing, a work string, or the like for communicating with a source of fluid pressure.*”)). Similarly, U.S. Patent No.

4,383,803 is directed toward “a fluid-actuated, double-action piston” that is “connected by *fluid pressure lines to a source of fluid pressure* disposed above ground.” *Id.* ¶61 (citing Ex. 2009, Abstract, 3:54-60).

The Schlumberger (SLB) Energy Glossary also provides guidance as to the meaning of “source.” For instance, it defines a “sucker rod pump” as “[a]n artificial-lift pumping system using a surface *power source* to drive a downhole pump assembly.” Ex. 2001 ¶62 (citing Ex. 2010). In other words, the “power source” is the device at the surface where the power originates, not the wires running downhole to the pump assembly. *Id.*

All of these neutral publications use the term “source” consistent with its ordinary meaning as the place from which something originates, not to refer to any component that merely conveys something (e.g., fluid, power, pressure) from a source. *Id.* ¶63. Consistent with the specification, dictionary definitions, and usage in the oil and gas industry, the term “source of fluid pressure” should thus be accorded its plain and ordinary meaning as the place from which something originates (e.g., a combustible, gas cylinder). *Id.*; see also *WI-Lan, Inc. v. Acer, Inc.*, 712 F. Supp. 2d 549, 588 (E.D. Tex. May 11, 2010) (construing “source of” to mean “place or device that *originates*”).

B. Petitioners’ proposed construction lacks any evidentiary support.

Petitioners argue that “source of fluid pressure” should be construed to refer to “component(s) that communicate(s) fluid pressure,” which would encompass literally anything that fluid passes through. Ex. 2001 ¶64 (citing Petition, 18). To justify this construction, Petitioners rely on a feigned misunderstanding of the specification to implicitly argue that the patentee used the term “source of fluid pressure” in a manner inconsistent with its ordinary meaning such that fluid lines must be encompassed. Petition, 18 (arguing that “by the specification’s express language” fluid lines must be encompassed by “source of fluid pressure.”).

Petitioners rely on the following two passages—read in conjunction—to argue that the specification refers to a “fluid line” as a “source of fluid pressure:”

Fluid pressure may include pressure applied by a liquid or a gas, which may be communicated to expansion chamber 38 in various ways. For example, there may be a *gas cylinder* that releases gas pressure upon activation, a *fluid line* that provides gas or liquid to expansion chamber 38 *from surface, etc.*

Other combustibles 42 may be used, or *other sources of fluid pressure as discussed above*, depending on the preferences of the user and the specifications for a particular situation.

Ex. 1001, 3:53-58, 4:9-10. Petitioners assert that in this passage “*other sources of fluid pressure*” refers to the previously referenced *fluid line*. But Petitioners’ argument is belied by the correct, natural reading of the specification. Ex. 2001 ¶65.

The portion of the specification describing the fluid line specifically states that the “gas or liquid” in the fluid line is sourced “*from the surface*” (i.e., the source). *Id.* ¶66. As explained above, the widely accepted and common meaning of “source” is the place from which something originates, which the specification clearly teaches is the “*surface*”—not the fluid line. *Id.* A POSA would readily understand that in this embodiment the “source of fluid pressure” necessarily resides at the surface, such as a hydraulic pump that communicates fluid to the release tool via the fluid line. *Id.*

A fundamental flaw with Petitioners’ interpretation of these passages is that it ignores the widely accepted meaning of the commonly understood word “source.” *Id.* ¶67.⁴ Petitioners disregard the ordinary meaning of “source” so that they can argue that “sources of fluid pressure” refers to the previously referenced “fluid line.” But as explained above, a POSA would easily understand it to be referring to the “surface” because a “source” refers to the origin, and the “fluid line” is not the origin

⁴ In the underlying litigation, counsel for Petitioners admitted that “source” is a “common word” and Judge Bennett pressed counsel on their disregard of its established meaning, correctly pointing out that “if you were to go out and use the term ‘source,’ *most folks in hearing that would think origin*. You know, you say source of a river, they would think headwaters. You say source, they would think *the beginning of something*. So, source has a meaning in the English language.” Ex. 2013 at 4, ll. 21- 5, ll. 17.

of anything. *Id.* Petitioners thus fail to demonstrate that the patentee intended to redefine or use the term “source” inconsistent with its customary meaning. See *iRobot Corp. v. ITC*, 767 Fed. Appx. 944, 946 (Fed. Cir. 2019) (“There is no indication in the specification that the patentee intended to act as its own lexicographer to define ‘instructions’ in a way inconsistent with its plain meaning.”).

Moreover, even if there was some ambiguity as to whether “sources of fluid pressure” refers to the previously referenced “fluid line” or “surface,” it would still not amount to a **clear** redefinition of “sources of fluid pressure.” Ex. 2001 ¶68. See *Ancora Techs., Inc. v. Apple, Inc.*, 744 F.3d 732, 734 (Fed. Cir. 2014) (“A claim term should be given its ordinary meaning in the pertinent context, unless the patentee has made **clear** its adoption of a different definition or otherwise disclaimed that meaning.”). At most, there would be ambiguity as to whether the statement “other sources of fluid pressure as discussed above” refers to the “**fluid line**” as Petitioners propose or the “**surface etc**” as Patent Owner asserts. *Id.*

Petitioners also argue that Patent Owner is seeking to improperly exclude the surface source embodiment, contrary to the “strong presumption against a claim construction that excludes a disclosed embodiment.” Petition, 18. However, “[i]t is often the case that different claims are directed to and cover different disclosed embodiments. **The patentee chooses the language and accordingly the scope of his claims.**” *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1383 (Fed.

Cir. 2008). Just as the patentee intentionally limited the scope of independent claim 7 to cover only “combustible” embodiments of the invention, the patentee likewise limited the scope of independent claims 1 and 13 to cover embodiments where the “source of fluid pressure” is within the “second part.” If the patentee had intended for the claims to cover a source of fluid pressure at the surface, it could have drafted a system claim where the “source of fluid pressure” is not required to be a component of the “second part” of the releasable connection. Consequently, there is no basis in the law for the Board to go out of its way to ignore the plain language of the claims to cover embodiments that the claims are clearly not directed to.

Petitioners further contend that “in light of the open-ended claim language itself and the specification, a POSA would understand the claimed ‘source of fluid pressure’ to include both ***sources*** that actually create fluid pressure at the desired location and ***sources*** that guide fluid pressure created elsewhere to the desired location, including fluid lines from the surface.” Petition, 19 (citing Ex. 1002, ¶71). Petitioners again ignore the fact that “source” has a well-known, customary meaning in the art as the place from which something *originates*, as demonstrated by numerous objective pieces of evidence above. Ex. 2001 ¶69. Thus, Petitioners’ mischaracterization of fluid lines as “***sources*** that guide fluid pressure” has no factual or evidentiary support. And while Petitioners rely on the declaration of Dr. Wooley to support this assertion, he merely parrots back the same circular statement

verbatim without any additional explanation or evidentiary support. *Xerox Corp. v. Bytemark, Inc.*, IPR2022-00624, Paper No. 9 at 15 (Aug 24, 2022) (precedential) (“Dr. Jones does not cite to any additional supporting evidence or provide any technical reasoning to support his statement. Thus, the cited declaration testimony is conclusory and unsupported, adds little to the conclusory assertion for which it is offered to support, and is entitled to little weight.”) (citing 37 C.F.R. § 42.65(a)). Indeed, neither Petitioners nor Dr. Wooley provide even a scintilla of corroborating evidence that “source” has the remarkably broad meaning they propose. For example, they do not provide any evidence of *anyone* ever referring to a fluid line as a “source of fluid pressure.” In contrast, Patent Owner provides ample objective evidence showing that “source” has a commonly accepted and well-established meaning in the art, including Petitioners’ own publication.

Petitioners also rely on the Examiner’s application of the claims to the prior art during examination. Petition, 37. In doing so, Petitioners fail to account for the fact that the Examiner applied the “broadest reasonable interpretation” (“BRI”) standard. *In re Am. Acad. Of Sci. Tech Ctr.*, 367 F.3d 1359 (Fed. Cir. 2004) (explaining that “the PTO is obligated to give claims their broadest reasonable interpretation during examination”); *See also TriVascular, Inc. v. Samuels*, 812 F.3d 1056 (Fed. Cir. 2016) (explaining that “the broadest reasonable interpretation standard is broad”). As such, the Examiner’s application of the term “source of fluid

pressure” under the broader BRI standard does not dictate the meaning of the term “source of fluid pressure” under the narrower *Phillips* claim construction standard applicable here. See e.g., *Life Spine, Inc. v. Globus Medical, Inc.*, IPR2022-01434, Paper No. 12 (PTAB Mar. 24, 2023) (rejecting the examiner’s broad application of the term “complementary” because “that rationale at best comports with the ‘broadest reasonable interpretation’ standard the Examiner was required to apply and ***not the Phillips claim construction standard applicable here***”); Ex. 2001 ¶70. Even setting aside the differing claim construction standards, the Examiner’s application of “source of fluid pressure” was misplaced because, as demonstrated above “source” has an established customary meaning in the art that refers to the place from which something originates, not the simply the means for conveying something. See Ex. 2001 ¶70.

For the reasons above, Petitioners’ overly broad interpretation of “sources of fluid pressure” should be rejected. It is inconsistent with the established meaning of “source” as evidenced by numerous objective pieces of evidence. Petitioners’ proposed construction is also so broad that it would allow for any component through which fluid travels within a tool would be a “source,” depriving the term of all meaning. *Id.* ¶71. The proposal is also inconsistent with the specification, which never refers to or identifies a fluid line or port that conveys fluid from the surface as a “source,” but instead merely teaches that a fluid line or port may be used to

communicate fluid pressure “*from*” a source at the surface. *Id.* Petitioners attempt to conflate a “source” of fluid with the means for conveying fluid (e.g., a conduit or fluid line) from the “source” should be rejected.

IV. THE PETITION FAILS TO DEMONSTRATE UNPATENTABILITY OF ANY CLAIM

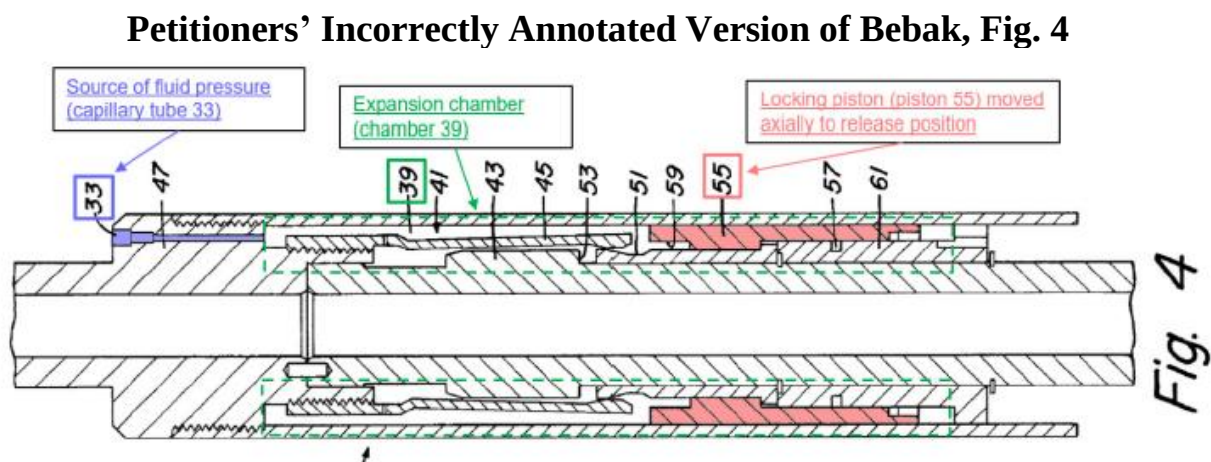
In Ground 1, Petitioners allege that Bebak anticipates independent claims 1 and 13. However, Bebak does not teach or suggest a “source of fluid pressure” within its release adapter and thus cannot anticipate. Because Grounds 2 and 4 do not address this deficiency and rely solely on the “source of fluid pressure” mappings of Ground 1, they also fail to anticipate or render obvious these claims.

Appreciating this deficiency, Petitioners allege in Ground 3 that independent claims 1, 7 and 13 are unpatentable because it would have been obvious to replace Bebak’s hydraulic-actuation mechanism with the electrically initiated explosive charge of Forehand. However, not only would a POSA have not been motivated to make the proposed combination, a POSA would have strongly been discouraged from doing so. Petitioners thus fail to demonstrate the unpatentability of any independent claim under Ground 3.

A. Claims 1, 13: Bebak’s release tool lacks a “source of fluid pressure.” (Ground 1)

As explained below, Bebak does not anticipate independent claims 1 and 13

because Bebak does not teach or suggest that its release adapter 17 includes the required “source of fluid pressure.” Recognizing this, Petitioners propose an overly broad construction that would allow literally any component that “communicates” fluid in a downhole tool (e.g., any fluid path) to be a “source of fluid pressure.” Based on this overly broad meaning, Petitioners argue that the capillary tube 33 (purple below) in Bebak’s release adapter 17 meets the “source of fluid pressure” limitation:



Petition, 34-35. However, a POSA would understand that a “source of fluid pressure” is the origin of fluid pressure. *Supra* Section III.

A POSA would not understand capillary tube 33 to be an “origin of fluid pressure” because it is merely a conduit for conveying fluid pressure *from the source*—namely the hydraulic pump that “pump[s] hydraulic fluid down through capillary tube 33.” Ex. 2001 ¶¶73-74 (quoting Ex. 1007 at 2:59-62; *see also* 1:39-42 (“The locking mechanism is actuated *from the surface* by pumping hydraulic fluid

down through capillary tube...”). In other words, the capillary tube 33 merely “communicates fluid pressure” (as Petitioners concede, Petition at 36), but it is clearly not the *origin* of the fluid pressure, which would be the hydraulic pump located thousands of feet uphole at the surface. *Id.* ¶74.

Petitioners also allege in a conclusory fashion that “capillary tube 33 . . . is an ‘origin of fluid pressure’ in the second part.” Petition, 36 (citing Ex. 1002 ¶121). Tellingly, Petitioners do not provide any explanation to support this assertion. Nor do Petitioners cite any objective evidence (e.g., dictionaries, treatise). The only purported “evidence” that Petitioners cite to support this attorney argument is the testimony of Dr. Wooley, which is entitled to no weight because it merely parrots the conclusory statement without any additional supporting evidence or reasoning. *Compare* Petition, 36 with Ex. 1002 ¶121; *See Xerox*, IPR2022-00624, Paper 9 at 15. Even setting aside this lack of evidence, Petitioners’ position that Bebak’s capillary tube 17 is the “origin” of fluid pressure is false. Ex. 2001 ¶¶75-76. As discussed in Section III.A above, “source” has a well-known, common meaning as the place from which something originates. *Id.* The fluid pressure of Bebak does not originate within the release tool, but rather originates with a hydraulic pump thousands of feet uphole. *Id.*

Because Bebak lacks a “source of fluid pressure” within its release tool, Petitioners and Dr. Wooley resort to fantastical mappings that should seriously call

into question their credibility. Specifically, they assert “to the extent it is argued that Bebak’s hydraulic pump at the surface providing hydraulic pressure down to the capillary 33 constitutes the claimed ‘source of fluid pressure,’ a POSA would also consider the hydraulic pump to ‘comprise’ the claimed ‘second part.’” Petition, 27; *see also id.* at 37 (“a POSA can consider the hydraulic pump and capillary tube to ‘comprise’ the claimed ‘second part.’”). In other words, they offer the absurd theory that a hydraulic pump located *thousands* of feet uphole from the release tool could somehow be considered a portion of the second part of the downhole release tool. Ex. 2001 ¶77.⁵ Yet, neither Petitioners nor Dr. Wooley provide any explanation as to why or how a POSA would understand a pump located thousands of feet uphole from the release tool to make up part of the release tool. Indeed, Dr. Wooley again parrots the Petition’s attorney argument without any explanation or identifying any evidence supporting his opinion. *Compare* Petition, 37 *with* Ex. 1002 ¶96. Such testimony is entitled to no evidentiary weight. *Xerox*, IPR2022-00624, Paper 9 at 15.

⁵ Despite Petitioners’ proposed construction being broad enough to encompass Bebak’s surface pump, in the parallel litigation Petitioners ***never*** argued that Bebak’s hydraulic pump could somehow be considered to makeup the claimed “second part.” Instead, Petitioners only alleged (incorrectly) that the “capillary tube 33” is the source of fluid pressure within the release tool of Bebak. Ex. 2023 at 15.

Regardless, Dr. Wooley’s conclusory theory is inconsistent with the plain claim language and the specification. Ex. 2001 ¶78. The claims are not directed toward a “system” of disparate components. *Id.* Rather, they are directed toward an apparatus—i.e., “a releasable **connection** for **a downhole** tool string.” *Id.* The claims plainly require that that “source of fluid pressure” is part of the “second part,” which itself used in the **downhole** string. *Id.* A POSA would thus not understand a hydraulic pump located at the surface to somehow be a component of the claimed release tool. *Id.*

The specification fully supports this understanding. It only describes and depicts the claimed “second part” as comprising downhole components as part of a downhole “releasable connection” that is raised and lowered through the wellbore via a wireline or tubing. *Id.* ¶79 (citing Ex. 1001 at 1:5-8, 2:43-47). While the specification teaches that a source of fluid pressure can reside at the surface, such a source is clearly not a component of the second part, but instead would be a separate and distinct component located at the surface that is in fluid communication with the second part (e.g., via a fluid line). *Id.* (citing Ex. 1001 at 3:55-58).

In short, a POSA would not understand Bebak to teach or suggest a source of fluid pressure within the release adapter because the capillary tube 33 is not a “source of fluid pressure” and a POSA would not understand the hydraulic pump—located thousands of feet uphole at the surface—to somehow make up any portion of the

alleged second part. *Id.* ¶80.

B. Claims 1, 7, 13: The combination of Bebak and Forehand does not render obvious a “source of fluid pressure” (claims 1, 13) or “combustible” (claim 7) in the second part (Ground 2)

Because Bebak does not disclose a “source of fluid pressure” within its release adapter, the Petition alleges that it would have been obvious to modify Bebak’s release adapter 17 by adding Forehand’s explosive charge such that the “shockwave” created by the shaped charge would initiate the release. Petitioners’ superficial obviousness analysis ignores the drastically different applications and designs of Bebak and Forehand’s release tools, which fundamentally undermines the proposed combination. When each reference is read in context, not only would a POSA not have been motivated to combine Forehand’s explosive charge with Bebak, a POSA would have been strongly discouraged from doing so. Ex. 2001 ¶89. Consequently, Petitioners fail to carry their burden of demonstrating a reasonable likelihood that independent claims 1, 7 or 13 are obvious.

1. Overview of Asserted Art

a) Bebak’s Hydraulic-Based “Release Adapter” for Pumps

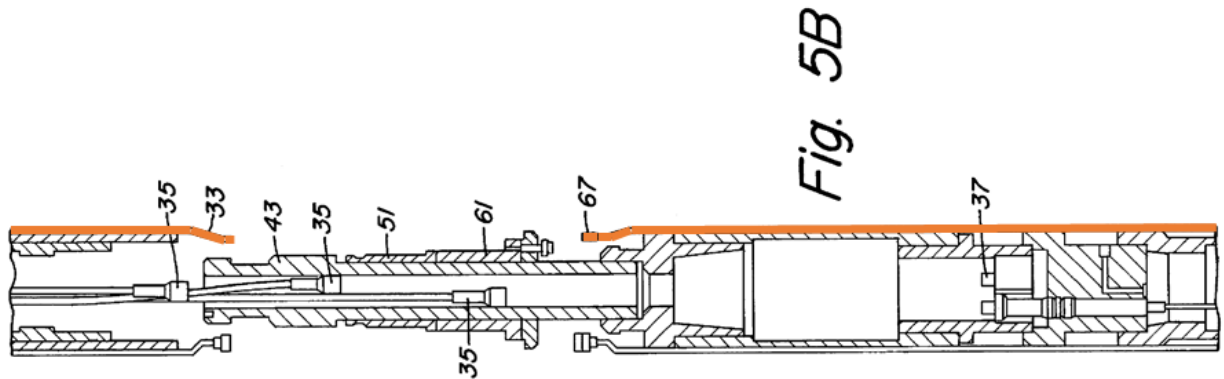
As Bebak’s “Summary of the Invention” explains, the release adapter is designed for *submersible pump assemblies*, which are used in the production stage

of a well to produce hydrocarbons from the formation. Ex. 2001 ¶91 (citing Ex. 1007 at 1:31). Bebak actuates its release adapter 17 by pumping hydraulic fluid from a pump at the surface, down capillary tube 33, and into chamber 39, which causes piston 55 to shift and shear pins 57. *Id.* ¶92 (citing Ex. 1007 at 2:59-67). This allows the piston 55 to shift in the downhole direction, allowing the collet 41 to release the profile 51. *Id.* Lifting the coiled tubing string then separates the uphole portion of the release tool from the submersible pump assembly. *Id.*

There are four aspects of this release adapter design that are important to keep in mind. *Id.* ¶93. First, the release adapter 17 is reusable at minimal cost and effort because the only damage caused by releasing the release adapter 17 is the shearing of pins 57. *Id.* ¶¶94. Once the lower part of the release adapter 17 is pulled to surface via its fishing neck, the release adapter 17 can easily be reconditioned for reuse. *Id.* Second, because the release mechanism relies on hydraulic fluid pumped from the surface, the release tool is much safer for personnel to physically handle and transport than tools containing explosives. *Id.* ¶95. Third, because the release tool does not rely on explosives, it is not subject to stringent permits and transport requirements for explosives and it can be handled by personnel that do not have explosives training. *Id.* ¶96 (citing Exs. 2014, 2016, 2031-2034). Fourth, Bebak's release is initiated using fluid control lines, and fluid control lines would be present to control other downhole equipment even if the release adapter was not in the

system. *Id.* ¶97 (citing Ex. 1007 at 2:67-3:4; Ex. 2020). Thus, the fluid control line used to actuate Bebak's release adapter can simply be run downhole along with the other fluid control lines 67 (orange below) used in the system. *Id.*

Patent Owner Annotated Figure



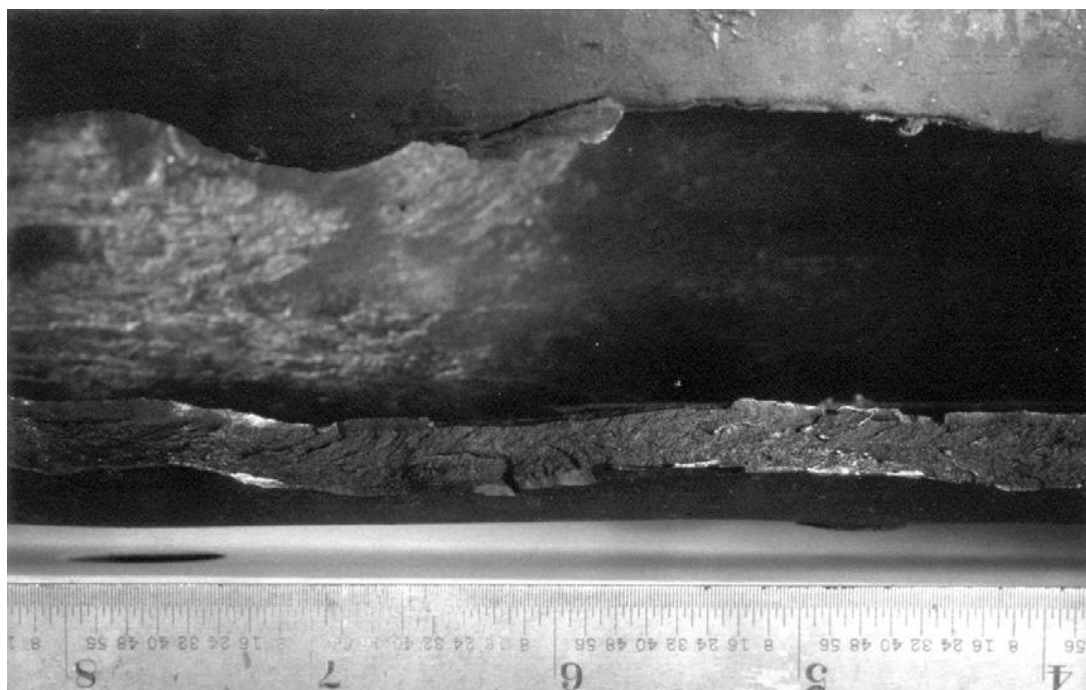
Fifth, Bebak does not rely on electrical actuation of its release mechanism and in fact specifically teaches that it does not want to rely on electrical actuation or use wireline. Ex. 2001 ¶98 (citing Ex. 1007 at 1:16-23, 3:14-16). Bebak's design instead takes advantage of the fluid control lines to both control and provide energy for the release mechanism without the added complexity that would come with electrical actuation, leaving the release tool as a simple mechanical-hydraulic design with zero electrical functionality and without the need for wireline. *Id.* ¶¶98-99.

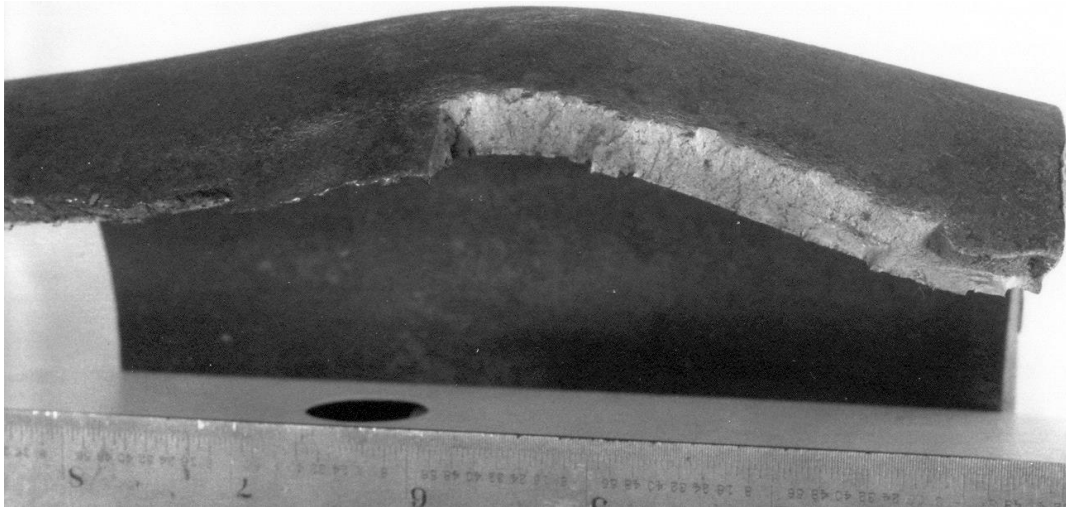
b) Forehand's Explosive Charge-Based "Automatic Release Mechanism" for Perf Guns

While Bebak is focused on pump assemblies used in the production stage of a well, Forehand is focused on a release tool for perforating guns that are used in the

completion stage of a well. Ex. 2001 ¶100 (citing Ex. 1008 at 1:6-12). Perforating is a fundamentally different and more dangerous application involving the use of high explosives to blast holes in the surrounding formation so that the formation can subsequently be fractured. *Id.* (citing Ex. 1008 at 1:51-52).

Forehand explains that these high-explosive “shaped charges” create an “explosive shock wave,” which a POSA would understand to refer to a high-velocity jet of molten metal that penetrates the perf gun housing, the wellbore casing (e.g., steel, cement) and the formation. *Id.* ¶101 (citing Ex. 1008 at 5:50-51 (“Detonation of shaped charge 68 creates an explosive shock wave...”); Ex. 2022 (defining “shaped charge” as “[a]n explosive device that utilizes a cavity-effect explosive reaction to generate **a high-pressure, high-velocity** jet that creates a perforation tunnel. The **extremely high pressure and velocity** of the jet cause materials, such as steel, cement and rock formations, to flow plastically around the jet path, thereby creating the perforation tunnel.”)). These explosive charges cause significant damage to the surrounding structure of the perf gun, as illustrated in the photos below:

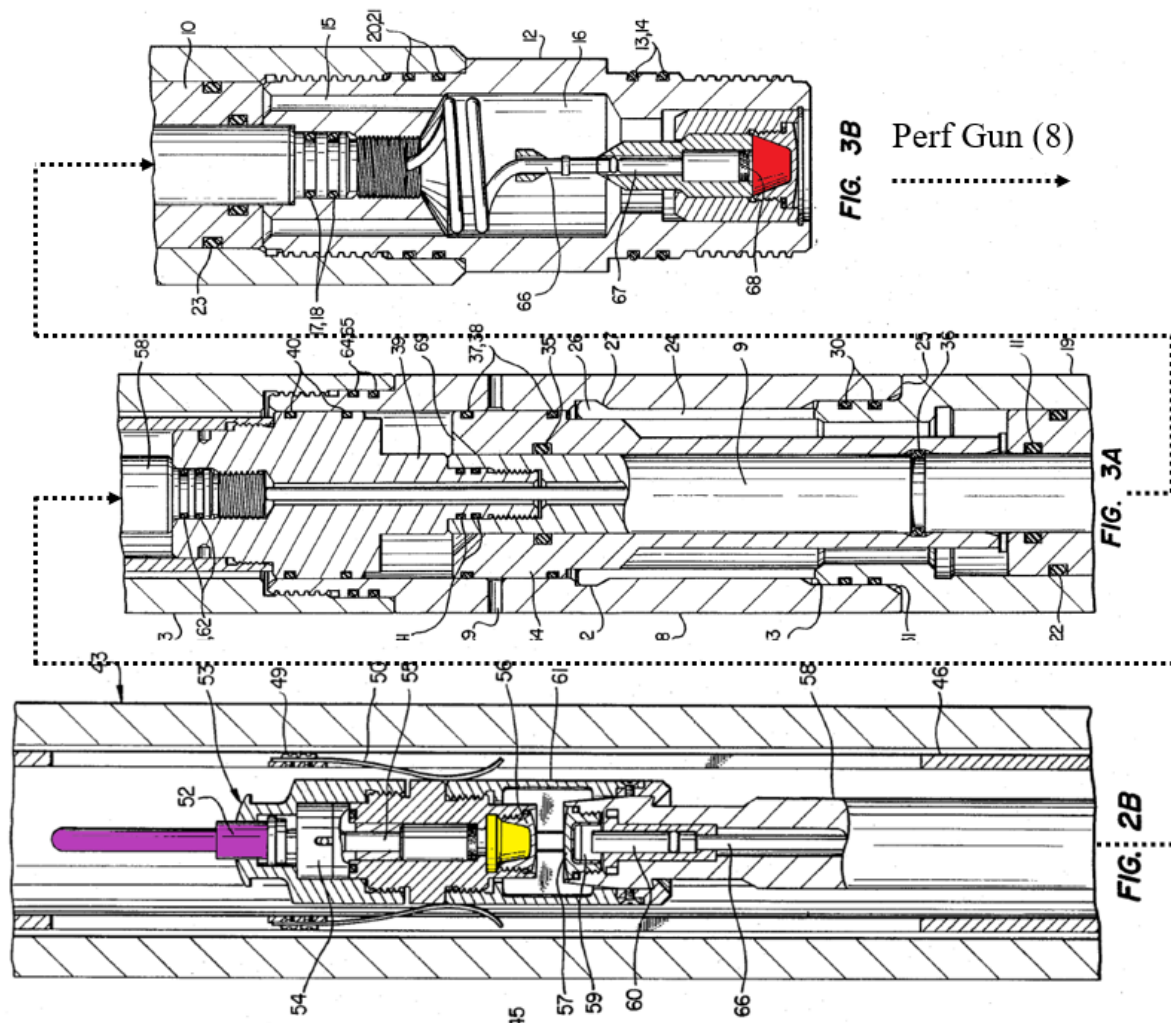




Id. ¶¶102-106 (discussing damage shown in Exhibit 2021 at 9).

Forehand is focused on creating a release mechanism that does not rely on a discrete step in the operation to release the perf gun, nor the addition of any “particular tools or machinery” not already present in the perforating gun application to perform the release. *Id.* ¶107 (citing Ex. 1008 at 1:39-43). To that end, Forehand discloses an “automatic release mechanism” that releases the perforating gun and part of the release mechanism into the wellbore upon explosive detonation of a perforating gun. *Id.* (citing Ex. 1008 at 1:51-54). More specifically, as shown in Figures 2A-3B below, Forehand’s automatic release mechanism relies on a series of shaped charges 56 (yellow), 68 (red):

Patent Owner Annotated Figure



Id. Specifically, firing pin 52 (purple) is physically impacted to initiate a chain reaction of shape charge explosions, beginning first with shape charge 56 followed by shaped charge 68 and then the shape charges within perforating guns 8. *Id.* (citing Ex. 1008 at 5:38-50).

There are six aspects of Forehand's release tool that are important to keep in mind. *Id.* ¶108. First, Forehand relies on the detonation of shaped charges to create

an explosive “shockwave” to effectuate release of its tool. *Id.* ¶109. Shaped charges are “high explosives” that cause a violent explosion designed to destroy and deform. *Id.* (citing Ex. 2017 at 4; Ex. 1008 at 5:38-52). Second, because Forehand uses shaped charges the automatic release adapter is not reusable due to the excessive damage, which is why Forehand simply dumps the released portion of the release mechanism and the perforating guns to the bottom of the well (in the “rathole”). *Id.* ¶110 (citing Ex. 1008 at 2:19-25). Third, there must be a mechanism to detonate the release charges (e.g., an electrical initiation mechanism for remotely detonating the explosives from the surface using wireline cable). *Id.* ¶111. Fourth, because Forehand relies on explosives to trigger its release, it is significantly more dangerous than release tools that do not rely on explosives. *Id.* ¶112 (citing Ex. 2028 at 2; Ex. 2029; Ex. 2030). Fifth, the presence of explosives in Forehand’s release adapter necessarily means it would be subject to the stringent transportation and handling requirements and could only be handled by personnel certified to handle explosives. *Id.* ¶113 (citing Exs. 2014 at 1; 2034 at 218; 2034 at 327; 2017 at 6; 2012 at 3; 2016 at 66-88; 2032; 2033). Sixth, explosively actuated devices like Forehand’s are generally less reliable than hydraulically actuated tools due to the intense shock loading caused by the explosion. *Id.* ¶114.

2. A POSA would have been strongly discouraged from combining Forehand with Bebak.

Petitioners' superficial obviousness analysis is premised on broad statements that ignore the detailed teachings of Bebak and Forehand. *Id.* ¶¶115-116. However, before turning to that analysis, Patent Owner first explains why a POSA would have lacked a motivation to combine Forehand with Bebak, and why Bebak teaches away from the use of electrically-actuated explosive charges. *Id.*

Petitioners acknowledge that Forehand's release is caused by "detonation of **an explosive charge**" and assert that the explosive charges are "combustibles." Petition 22, 62. Nevertheless, Petitioners propose adding an explosive charge "like Forehand's" to Bebak's release adapter so that a hydraulic pump and fluid lines would not be needed and so that Bebak's tool could be released remotely using an electrical signal. *Id.* at 59. There are several reasons a POSA would not have been motivated to modify Bebak as proposed. Ex. 2001 ¶117.

For one, shaped charges ("explosive charges") create a highly destructive shockwave that permanently damages and deforms the device housing the shaped charge. *Id.* ¶118. Petitioners themselves admit that shaped charges "are used to **punch a hole** in the casing, cement, and formation" and that the "detonation **blasts a hole** through the casing and cement and into the formation." Petition, 5. Despite this admission, Petitioners and Dr. Wooley assert that a POSA would have been motivated to place an explosive charge "within the expansion chamber" of Bebak.

Id. at 60.

A POSA would have been strongly discouraged from relying on an explosive charge, because an explosive charge would permanently damage and deform the physical structure surrounding the explosive, including the outer housing and portion of the locking piston facing the explosive charge. Ex. 2001 ¶119. As previously discussed, Bebak's hydraulic fluid design is redressable because the only physical damage is to the shear pins 72. *Id.* (citing Ex. 1007 at 1:48-51). If an explosive charge were imparted into Bebak's alleged expansion chamber, the explosion would render the release adapter unusable for future use. *Id.*

Imparting an explosive charge into Bebak's release adapter would also make the tool significantly more unsafe for transportation and handling. *Id.* ¶120. Because shaped charges are high explosives, they pose a serious risk to human health and safety. *Id.* (citing Ex. 2012 at 3; Ex. 2017 at 6). A POSA would have thus been discouraged from relying on explosives over the much safer hydraulic actuation already provided by Bebak. *Id.*

A POSA would have also been discouraged from relying on an explosive charge in Bebak because there are stringent guidelines for the transportation and handling of explosives. *Id.* ¶121. It is considerably more burdensome and costly to transport a downhole tool that relies on explosives, and field personnel must be specifically trained in explosives to handle such tools. *Id.* In Bebak, the pumping

personnel present on the wellsite would be able to handle and operate the “as-is” release adapter but modifying it to incorporate an explosive release would prevent those same personnel from handling or operating the release adapter without additional explosive training and/or certification. *Id.*

A POSA would have further recognized that the use of an explosive charge in Bebak’s alleged expansion chamber would increase the risk of malfunction because of the shock loads and resulting stresses from the detonation. *Id.* ¶122. Bebak’s release adapter 17 is designed to be actuated using hydraulic fluid pressure, which is obviously not an explosive and does not generate a “shockwave.” *Id.* For example, if an explosive charge were placed in the alleged expansion chamber of Bebak, it would be positioned between the collet 45 and the relatively thin outer housing of the release adapter. *Id.* ¶123. An explosive shockwave, high-velocity jet and high dynamic pressures would be expected to cause significant damage to both the collet and outer housing, which could interfere with the release of the tool such as by jamming the mechanism. *Id.* It could also result in fragments or pieces of the release adapter being released into the wellbore, which could interfere with fishing the pump out as taught by Bebak. *Id.* (citing Ex. 1007 at 1:48-51). A POSA would understand that one of the reasons that Forehand’s explosive charge is located so far from the piston and collet is to allow the shockwave to dissipate so that it reduces the likelihood of malfunction and deformation of the release components. *Id.*

The physical properties of shaped charges also render them incompatible with the release adapter of Bebak, which is designed for downhole pump environments where the operating environment necessarily involves high temperature that would cause the explosives material to degrade rapidly. *Id.* ¶¶124-125 (citing Ex. 2017 at 5-6; Ex. 2016 at 49-52).

Relying on an electrically-initiated explosive charge in Bebak would also require a separate means of safely electrically actuating the explosive charges, which would require the use of wireline. *Id.* ¶126. For example, the API recommends the secure communication through a wireline. *Id.* (citing Ex. 2016 at 25, 32-33). This would unnecessarily add a layer of complexity to Bebak's release adapter, which is comparatively much simpler to initiate using hydraulic fluid pressure provided by the surface pump. *Id.*

These are all apparent, major disadvantages of relying on explosive charges to release a downhole tool, which is why it was very uncommon to use high explosives as an actuation means in downhole tools. *Id.* ¶¶127-128. This may beg the question—then why does Forehand rely on explosive charges? The answer is simple. Forehand's automatic release tool is designed for use in a perf gun string, which *already* relies on many explosive charges within the perf gun. *Id.* ¶128. Because a perforating gun already relies on many shaped charges, the addition of additional explosive charges to release the perforating guns does not impart these

additional disadvantages (e.g., it does not require additional personnel training/certification because such personnel are already present on site for perforation operations). *Id.* In stark contrast, Bebak relies on a hydraulic release mechanism that does not involve explosive charges and thus does not have any of these disadvantages. *Id.* ¶129.

Moreover, “obviousness may be defeated if the prior art indicates that the invention would not have worked for its intended purpose or otherwise teaches away from the invention.... A reference teaches away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken in a claim.” *Mieresonne v. Google, Inc.* 849 F.3d 1379, 1382 (Fed. Cir. 2017) (internal citations and quotations omitted). Petitioners ignore the express disclosures of Bebak that further teach away from the proposed modifications.

In addition to imparting an explosive charge into Bebak’s alleged expansion chamber, Petitioners also propose detonating the explosive charge remotely using an **electrical** signal. Petition, 59-60. Yet, Bebak expressly teaches away from reliance on electricity to actuate the release of release adapter 17. Ex. 2001 ¶130. As Bebak explains:

Downhole release tools for submersible pump bottom hole assemblies are well known in the art. **Unfortunately**, some of these devices require remote operation or actuation that requires electrical power to be available at the downhole assembly.... In another prior art device, the

release tool **is electrically actuated** and requires the use of a wire line cable.... Thus, an improved apparatus and method for releasing a submersible pump bottom hole assembly is needed.

Id. (quoting Ex. 1007 at 1:12-27). To that end, Bebak’s invention involves a release adapter 17 that is hydraulically actuated and does not rely on electricity. *Id.* ¶131. Bebak teaches that “[t]he release tool of the present invention has several advantages **Unlike prior art devices**, the release tool of the present invention does **not** rely on electricity to be actuated.” *Id.* (quoting Ex. 1007 at 3:14-16). A POSA would understand Bebak to thus expressly teach away from relying on electricity to trigger release of release adapter 17. *Id.*

Moreover, a POSA would be discouraged from following the path set forth in Forehand—i.e., using an electrically-actuated explosive charge to initiate release—based on the design of Bebak. *Id.* ¶132. In the downhole pump application of Bebak, it was commonplace to utilize hydraulic control lines to control downhole equipment beneath the pump. *Id.* (citing Ex. 2020). A POSA would have thus been discouraged from modifying Bebak to rely on an entirely distinct form of release actuation when Bebak’s release adapter relies on hydraulic lines that would already be present to control other downhole equipment. *Id.*

3. Petitioners’ obviousness theory is legally and factually defective.

Petitioners’ obviousness analysis ignores the issues discussed above because

they fundamentally undermine their obviousness assertion. *Id.* ¶133. Petitioners’ analysis is supported only by the *verbatim* parroting of Dr. Wooley, which fails to provide any additional reasoning to support the assertions made in the analysis. *Compare* Petition 58-61 with Ex. 1002 ¶¶176-181. Given that Dr. Wooley’s declaration testimony is a copy-and-paste of the attorney-argument in the Petition, it should be accorded no weight. *Xerox Corp.*, IPR2022-00624, Paper No. 9 at 15. Each of Petitioners’ flawed arguments are addressed in turn.

Petitioners first argue:

Forehand describes an automatic gun release mechanism that uses a piston and collet locking mechanism actuated by pressure from the firing of the gun (***detonation of combustibles***). Because a POSA would readily know that a ***combustible*** generates internal pressure in a perforation gun, the release mechanism of Forehand actuated by ***combustible*** pressure would have suggested to a POSA that the piston and collet locking mechanism used by Bebak could likewise use pressure from a ***combustible*** placed in the expansion chamber instead of hydraulic pressure carried to the expansion chamber by a capillary tube.

Petition, 58. However, Petitioners and Dr. Wooley completely ignore the fact that Forehand relies on *explosive charges* and that Petitioners are proposing modifying Bebak to include *explosive charges* into Bebak’s alleged expansion chamber. Ex. 2001 ¶¶134-135. As discussed above, there are numerous problems associated with modifying Bebak to rely on explosive charges for its actuation. *Id.* Recognizing this, Petitioners and Dr. Wooley avoid using the term “explosive charges” in their analysis, and instead use the term “combustibles” as if Forehand discloses some

form of non-explosive charge actuation. However, because Forehand only discloses using high-explosive charges to initiate its release, Petitioners were required to explain why a POSA would have been motivated to modify Bebak's hydraulically-actuated release adapter to instead use electrically-actuated **explosive** charges as taught by Forehand.

Petitioners next argue, “[a] POSA would also have been motivated because Forehand and Bebak both relate to releasable connections for downhole applications.” Petition, 58. However, the fact that Forehand and Bebak both relate to releasable connection merely goes to whether those references qualify as “analogous art,” not whether a POSA had a motivation to combine features from Forehand into Bebak. Ex. 2001 ¶136. As demonstrated in detail above, not only was a POSA **not** motivated to add an electrically-actuated *explosive* charge to Bebak but a POSA would be **strongly** motivated to avoid doing so. *Id.*

Petitioners also argue that “[a] POSA would also have been motivated because the system of Forehand automatically releases gun strings when they fire, whereas Bebak's modified system has the advantage of releasing as desired (such as if the string were stuck) without firing the gun or if there were other tools but no gun.” Petition, 58-59. But this purported “motivation” is non-sensical given that Petitioners are proposing adding Forehand's explosive charge **to Bebak's alleged expansion chamber**. Ex. 2001 ¶137. Bebak's “as-is” system *already* allows for

“releasing as desired” because its release is not tied to the operation of the downhole pump (or any other tool for that matter). *Id.* Consequently, replacing Bebak’s hydraulic actuation mechanism with an electrically-actuated explosive charge as in Forehand would not provide the advantage of allowing Bebak’s release adapter to “release as desired”—it already “releases as desired” via its hydraulic actuation mechanism. *Id.*

Moreover, each of Bebak and Forehand rely on an actuation mechanism that would be expected to be present in their existing applications. *Id.* ¶138. Specifically, Bebak advantageously relies on hydraulic control lines which are used in downhole pumping applications, while Forehand likewise relies on explosives charges which are already used in perforating guns. *Id.* Petitioner’s proposed modification—removing Bebak’s hydraulic actuation and replacing it with electrically-initiated explosive charges—would eliminate this advantage of Bebak, adding unnecessary complexity and cost to its release adapter for no apparent reason other than Petitioners’ desire to invalidate the claims. *Id.*

Petitioners further assert that “[t]he combination of prior art references to include a combustible would have had a reasonable expectation of success because this **was a highly predictable art**, implementing the feature **would be simple**, and there **would be no reason for a POSA to doubt success**.... It also amounts to using **known prior art methods** according to their established functions to yield

predictable results.” Petition, 59 (citing Ex. 1002, ¶178). This is nothing more than a series of conclusory statements lacking any explanation or evidentiary support. Indeed, Dr. Wooley merely recites the exact same statements in his declaration, with one exception: “Furthermore, all of the above-mentioned motivations within the common sense and knowledge of a POSA would also have applied to this combination of Bebak and Forehand. Ex. 1002 ¶178. However, Dr. Wooley fails to provide any explanation or evidence supporting any of his *ipse dixit* testimony, including his tack-on assertion that adding Forehand’s explosive charge to Bebak involves “common sense” and information within the general knowledge of a POSA. *Id.*

The proposed combination here is anything but “simple” or “highly predictable,” because it involves replacing the hydraulic actuated mechanism of Bebak and with the fundamentally different electrically-actuated explosive charge of Forehand. *Id.* ¶¶139-140. This would require a fundamental redesign of Bebak’s release adapter requiring, among other things, significantly reinforcing the internal components of Bebak’s adapter (e.g., locking piston, housing wall) to withstand the explosion and shockwave create by the shaped charges. *Id.* ¶¶140-141. A proposed combination requiring such a fundamental redesign demands more than vague, conclusory assertions to prove obviousness. *see also DSS Tech. Mgmt. v. Apple Inc.*, 885 F.3d 1367, 1376 (Fed. Cir. 2018) (finding that the expert’s “conclusory

statements and unspecific expert testimony are insufficient to support the Board’s findings” on obviousness).

Even if the proposed combination was “simple” or part of a “highly predictable art” (it is not), Petitioners and Dr. Wooley fail to provide the required articulated rationale with reasonable underpinnings demonstrating that such modifications were “simple” or “highly predictable.” *see In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016) (“To satisfy its burden of proving obviousness, a petitioner cannot employ mere conclusory statements. The petitioner must instead articulate specific reasoning, based on evidence of record, to support the legal conclusion of obviousness.”). Consequently, their unexplained and unsubstantiated assertions cannot support a finding of obviousness. Ex. 2001 ¶142.

Petitioners further argue that:

A POSA would also have been motivated to combine Forehand’s combustible pressure feature with Bebak because there were a finite number of ways to generate force to move a release mechanism, which include hydraulics, combustibles, electric motors, ingestion of wellbore pressure, and tension. *Id.*, ¶179. A POSA would have viewed these as obvious design alternatives, each with certain advantages and disadvantages. *Id.*

Petition, 59-60. Once again, Petitioners argument is supported only by the parroting of Dr. Wooley. *See* Ex. 1002 ¶179. Regardless, Petitioners are apparently relying on the “obvious to try” rationale, which involves “choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success.” MPEP §

2143(I)(E). However, this rational requires showing among other things “a finding that at the time of the invention, there had been *a recognized problem or need in the art*, which may include a design need or market pressure.” *Id.* Petitioners here make no such showing of a “recognized problem or need in the art,” nor do they demonstrate that a POSA would have had a reasonable expectation of success in making this major design change to Bebak’s hydraulically-actuated system. Indeed, the mere fact that numerous ways to generate force to release a mechanism may have been known does not mean it is automatically obvious to use any of those mechanisms with any other device that requires release. Ex. 2001 ¶144.

While Petitioners offer the conclusory statement that these various mechanisms are “obvious design alternatives, each with certain advantages and disadvantages,” they do not provide any explanation or evidence to support this assertion, including analyzing any of these alleged “advantages and disadvantages.” *Id.* As demonstrated above, it was certainly not obvious to replace Bebak’s hydraulic actuation mechanism with an electrically-actuated explosive charge, nor would there be any apparent advantages from making those proposed modifications—only major disadvantages. *Supra* Section IV.B.2. Further, this response shows that proposed combination of Bebak and Forehand does not involve an “obvious design alternative”—a POSA would only consider designs that make sense for a given application and Forehand’s design simply makes no sense for Bebak’s release

adapter. Ex. 2001 ¶¶145-146.

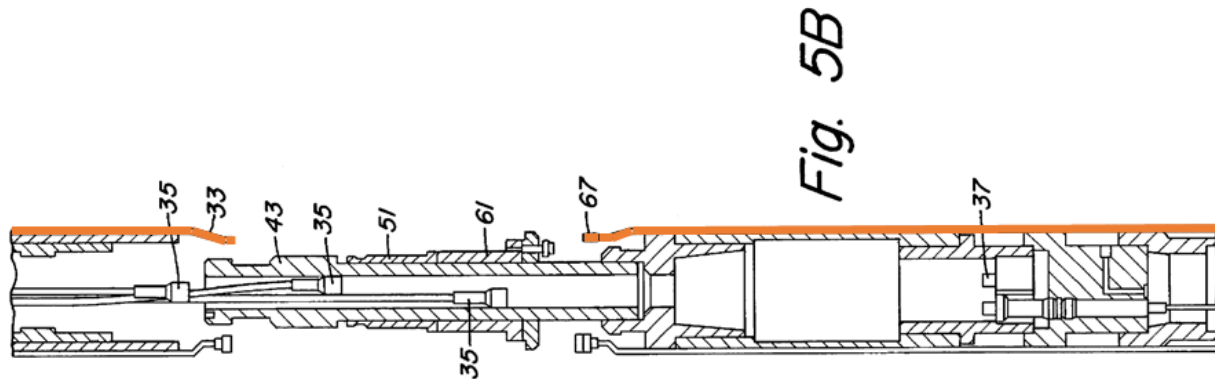
Petitioners next argue that:

A POSA would have been motivated to modify, for example, the hydraulic system of Bebak to use a combustible like Forehand's because it would not require the use of hydraulic pumps and lines to actuate the releasable connection, but instead would allow for the releasable connection to be actuated by an electrical signal to detonate and release the pressure from the combustible.

Petition, 59-60. Yet, Petitioners fail to provide any rationale or explanation as to why a POSA would have had any reason to move away from Bebak's hydraulic pump and capillary tubes 33 to actuate the release adapter. Ex. 2001 ¶148. Petitioners do not identify a single drawback or disadvantage of Bebak's reliance on hydraulic actuation to effectuate release, but instead just assume without explanation that a POSA would have been motivated to rely on an explosive charged detonated via electrical signal. *Id.* Petitioners are wrong for several reasons.

For one, Bebak's release adapter 17 is designed for use with downhole pump assemblies where fluid control lines are ordinarily run with the coiled tubing to control other downhole equipment. *Id.* ¶149. Figures 5A and 5B of Bebak show the fluid control line coupling 67 (orange) that allows for hydraulic fluid to be provided to equipment beneath the release adapter 17. *Id.*

Patent Owner Annotated Figure



Given that Bebak's release adapter 17 is used in applications that already require running fluid control lines down the wellbore, there is simply no reason a POSA would have been motivated to switch to an entirely different release mechanism, especially one that relies on an explosive charge that introduces the litany of disadvantages previously discussed. *Id.*

Additionally, neither Petitioners nor Dr. Wooley explain how actuating Bebak's release adapter using electrical signals or explosive charges would have been understood to provide any advantage over, or improvement upon, Bebak's hydraulic actuation. *Id.* ¶150. Absent such an explanation, Petitioners cannot plausibly demonstrate that a POSA would have been motivated to replace Bebak's hydraulic actuated release mechanism with the wildly different explosive charge release mechanism of Forehand. In fact, as previously explained, Bebak expressly teaches away from electric actuation, in addition to the numerous apparent, major

disadvantages associated with using explosive charges in a downhole tool previously discussed. *Id.* ¶150; *Supra* Section IV.B.2.

Petitioners also argue that “[s]uch electrical detonation systems were well known in the art for both firing perforation guns and releasing tool strings.” Petition, 60 (citing Ex. 1002 ¶179). First, the only evidence cited by Petitioners to support this statement is Dr. Wooley’s *ipse-dixit* testimony, which itself only cites Forehand and the Hunting Titan Brochure (HTB, Ex. 1009) as evidence. *Id.* But both Forehand and HTB relate specifically to wireline tools, and Bebak discourages the use of wireline to initiate release. Ex. 2001 ¶151 (citing Ex. 1007 at 1:12-24 (“Unfortunately, some of these devices require remote operation or actuation that requires electrical power to be available at the downhole assembly.... [I]n another prior art device, the release tool is electrically actuated and **requires the use of a wire line cable.**”)). Second, even if electrical detonation systems had been well known for use in applications not involving wireline, that still does not amount to a *motivation* or *rationale* for replacing Bebak’s hydraulic actuation system with Forehand’s explosive charges or electrical detonation. *Id.*; *KSR*, 550 U.S. at 418 (“A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.”).

Petitioners further assert that:

A POSA would also have been motivated to implement a “combustible disposed **within the expansion chamber**” because it would place the

combustible directly in the path of the component that needed to be moved by the pressure from the combustible, as opposed to a more indirect path such as the embodiments depicted in the figures of the '122 Patent that rely on multiple chambers to communicate pressure from the combustible to the locking piston. *Id.*, ¶ 180. A POSA would also have been motivated because a POSA would have known that pressure from an explosion dissipates as it passes through a volume from basic physics principles.

Petition, 60. This alleged motivation is not directed to whether it would be obvious to incorporate Forehand's electrically detonated explosive charge into Bebak. Ex. 2001 ¶¶152-153. Rather, this motivation falsely assumes that doing so would have been obvious, and further addresses whether it would have been obvious to *specifically locate* the explosive charge in the alleged expansion chamber. *Id.* ¶153. Because it would not have been obvious to modify Bebak to incorporate an electrically actuated explosive charge, it would certainly not be obvious to locate said explosive charge in any particular part of Bebak's release adapter. *Id.*

Petitioners finally argue that:

[A] POSA would have had a reasonable expectation of success in making this combination of Bebak and Forehand's features. Releasable connections are a long established and very predictable art, and the modification described amounts to replacement of one known pressure source with another. *Id.*, ¶181. A POSA would have been confident in the success of this approach.

Petition, 60-61.

However, these are yet again mere conclusory statements and not "articulate[d] specific reasoning, based on evidence of record, to support the legal conclusion of

obviousness.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Petitioners have provided no specific, articulated reasoning demonstrating that a POSA would have had a reasonable expectation of success in making the major modification proposed, or that a POSA would have recognized the modification to amount to nothing more than simple substitution. Ex. 2001 ¶155. Indeed, a POSA would have found there to be a high risk that the proposed modification would not be successful because of the shock wave and dynamic pressure resulting from the explosion, which would damage the release adapter and likely cause failure. *Id.* A POSA would have expected Bebak’s release adapter to require a fundamental redesign to account for such an explosion and the associated shock wave—a redesign discussed nowhere in the Petition. *Id.*

4. Petitioners fail to adequately explain their proposed modifications or show a reasonable expectation of success.

Petitioners propose replacing Bebak’s hydraulically actuated release mechanism with an electrically detonated explosive charge as taught by Forehand. However, Petitioners fail to provide any explanation as to how these proposed modifications could actually be made with any expectation of success. *Id.* ¶156.

For one, neither Petitioners nor Dr. Wooley explain how Bebak’s release tool adapter would be modified to allow for electrical actuation. *Id.* ¶157. Instead, they only vaguely assert that Bebak could be modified to “be actuated by an electrical

signal to detonate and release the pressure from the combustible.” Petition, 59-60. However, Bebak’s release adapter relies on a fundamentally different design—it is actuated using hydraulic pressure pumped down from a surface pump through a capillary tube connected to annular space of the adapter. Ex. 2001 ¶157. The Petition does not explain how Bebak’s release adapter could be or would be modified to transform it into an electrically actuated tool. *Id.* This is particularly problematic because Forehand’s electrical actuation system runs through the center of the automatic release mechanism, where the mechanism of Bebak is actuated via the annular space surrounding the central passageway. *Id.* A POSA would understand Bebak to require a fundamental redesign to allow for electrical actuation given where the surface pump’s fluid pressure enters the tool. *Id.*

Additionally, Petitioners fail to explain how an explosive charge could be incorporated into Bebak’s release adapter design without major structural changes. *Id.* ¶158. As Forehand explains, release of its automatic release tool requires a series of components, including ignition cartridge, explosive booster charge (55, 59, and 67), shaped charges (56, 68), and numerous other components required for those two charges to be detonated. *Id.* (citing Ex. 1008 at 5:40-43). In other words, adding an explosive charge to Bebak is not as simple as simply placing explosive shaped charge 68 into Bebak—it would also require at minimum the ignition cartridge, explosive booster charge (55, 59, and 67), and shaped charges (56, 68) to effectuate

the explosion that triggers shifting of the piston. *Id.* Petitioners fail to explain how these components could be incorporated into Bebak, including where they would even fit within Bebak’s design. *Id.*

Moreover, Forehand places its explosive charge 68 far from the piston 10, because it needs to allow the explosive shockwave to dissipate before reaching the piston. *Id.* ¶159. Placing an explosive charge in the annular space of Bebak (the alleged expansion chamber) would result in significant damage to the internal components of Bebak upon detonation, likely causing the tool to malfunction. *Id.* Petitioners simply fail to explain how Bebak’s release adapter could successfully be redesigned to accommodate such a wildly different actuation mechanism.

V. THE PETITION FAILS TO DEMONSTRATE UNPATENTABILITY OF SEVERAL OTHER LIMITATIONS

A. Claim 8: The combination of Bebak and Forehand does not render this claim obvious (Ground 3)

Petitioners fail to adequately explain or show that their proposed combination satisfies the requirements of claim 8. Petitioners instead allege only vaguely that “meeting this element is ***shown*** by the portion of the expansion chamber that includes the combustible and a second portion of the expansion chamber that includes the locking piston because fluid expands into both areas of Bebak and Forehand” and that “these portions would be bordering one another and would be connected and thus the volumes are in fluid communication.” Petition, 62.

Petitioners' position has no merit.

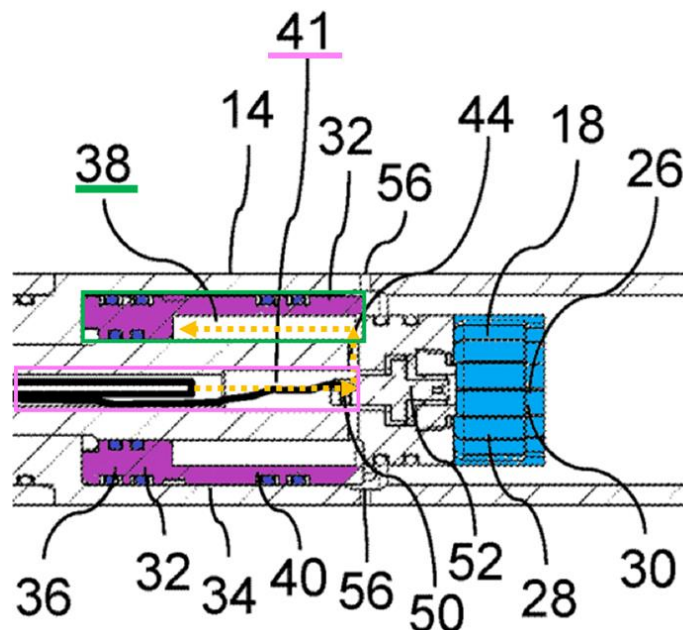
Tracking the language of claim 8, the specification teaches that the expansion chamber may include multiple volumes that fluid expands into, with the volumes being in fluid communication:

According to another aspect, **the expansion chamber** may comprise **a first volume** that contains the combustible, and **a second volume** that encloses at least a portion of the **locking piston**, the first volume being in fluid communication with the second volume.

Ex. 2001 ¶161(quoting Ex. 1001, 1:63-67).

In reference to the annotated version of Figure 1 below, a **first volume 41** (central passage, pink) contains the combustible, a **second volume 38** (annular space, green) comprises **piston 32** (purple) and both volumes are in **fluid communication** (orange) communicate via ports 44:

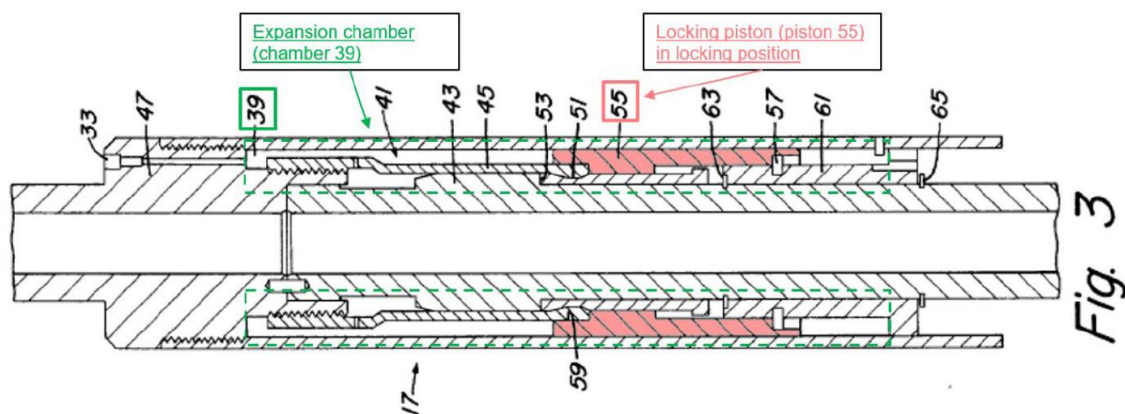
Patent Owner Annotated Figure



Id. ¶162. While element 38 is referred to as an “expansion chamber” and element 41 is identified as “combustion chamber,” the specification further explains that “[i]t will be understood that expansion chamber 38 and combustion chamber 41 may **be considered a single chamber.**” *Id.* ¶163 (citing Ex. 1001, 3:65-67). A POSA would thus understand the expansion chamber to refer to one or more volumes (e.g., both the pink and green volumes above) that the fluid expands into. *Id.* This is consistent with claim 8 reciting that the “expansion chamber” “comprises a **first volume** containing a combustile and a **second volume** enclosing at least a portion of the **locking piston**, with both volumes being in fluid communication.” *Id.*

Petitioners propose adding Forehand’s explosive charge “within the expansion chamber” of Bebak. Petition, 65. That would place the explosive charge of Forehand within the portion of the green box to the left of piston 55, outside of collet 45:

Petitioners’ Annotated Figure

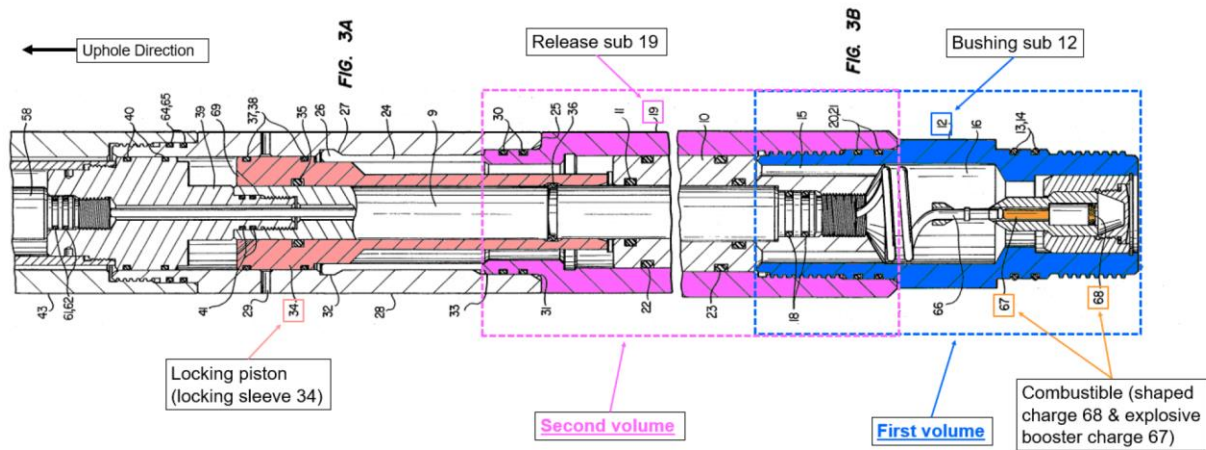


Ex. 2001 ¶164. Petitioners fail to explain how the space in the green box (annular

chamber 39) could somehow constitute two distinct “volumes.” *Id.* ¶165. While Petitioners rely on Dr. Wooley, he simply parrots the exact same conclusory statement found in the Petition. *Compare* Petition, 61 *with* Ex. 1002 ¶184. Regardless, a POSA would understand there to be only a single volume within the green box, which is where piston 55, collet 41, and explosive charge (as added by Petitioners) reside. Ex. 2001 ¶165. In other words, the green box identifies a single volume comprising multiple discrete components, just as the volume (green annular space) in Figure 1 of the ’122 patent is referred to as a single volume. *Id.* While the central passage through Bebak’s release adapter constitutes an additional volume, that volume is isolated from the alleged expansion chamber and clearly cannot satisfy the claim requirements. *Id.* Consequently, even if a POSA would have been motivated to place an explosive charge into the annular chamber 39 of Bebak, the combination still fails to satisfy the requirements of claim 8. *Id.*

Recognizing this, Petitioners argue that “Forehand shows the combustible as oriented as required by Claim 8.” Petition, 62. Petitioners then offer an annotated version of Figures 3A-3B *of Forehand* to show where the first and second volume allegedly exist *in Forehand*:

Petitioners' Annotated Figure



Id. But even if Forehand did show two volumes that satisfy the requirements of claim 8, Petitioners fail to explain *how* Bebak's release adapter could be modified to have that same configuration. Ex. 2001 ¶167. Indeed, Forehands' automatic release tool design is *fundamentally* different than the design of Bebak's release adapter. *Id.* Petitioners fail to explain *how* Bebak could be fundamentally redesigned to have the alleged two volume arrangement of Forehand, or *where* the additional volume could even be located in Bebak. *Id.*

Petitioners also fail to provide any reasoning as to why a POSA would have had any reason to include the same arrangement of alleged volumes of Forehand in the release adapter of Bebak. Petitioners instead simply incorporate by reference their "motivations already discussed with regard to Claim 7." Petition, 63. But those so-called "motivations" are only focused generally on whether it would have been obvious to combine Forehand's electrically-initiated explosive charge with Bebak,

not modifying Bebak's adapter to have the same arrangement of alleged volumes in Forehand. A POSA would understand, however, that modifying Bebak's release adapter in this manner would require a fundamental and significant redesign of Bebak's release adapter. Ex. 2001 ¶167.

Ultimately, Petitioners argue that because Forehand supposedly teaches the two volumes as claimed, it would automatically be obvious to completely redesign Bebak's release adapter to have that same design feature. But that is not how obviousness works. Petitioners must articulate a rationale with reasoned underpinning to demonstrate that a POSA not only had *a reason* to make this substantial modification but would have also had *a reasonable expectation of success*. Petitioners fail to provide the required reasoning or address reasonable expectation of success.

B. Claim 9: The combination of Bebak and Forehand does not render obvious a combustible “configured to be detonated by an electrical signal” (Ground 3)

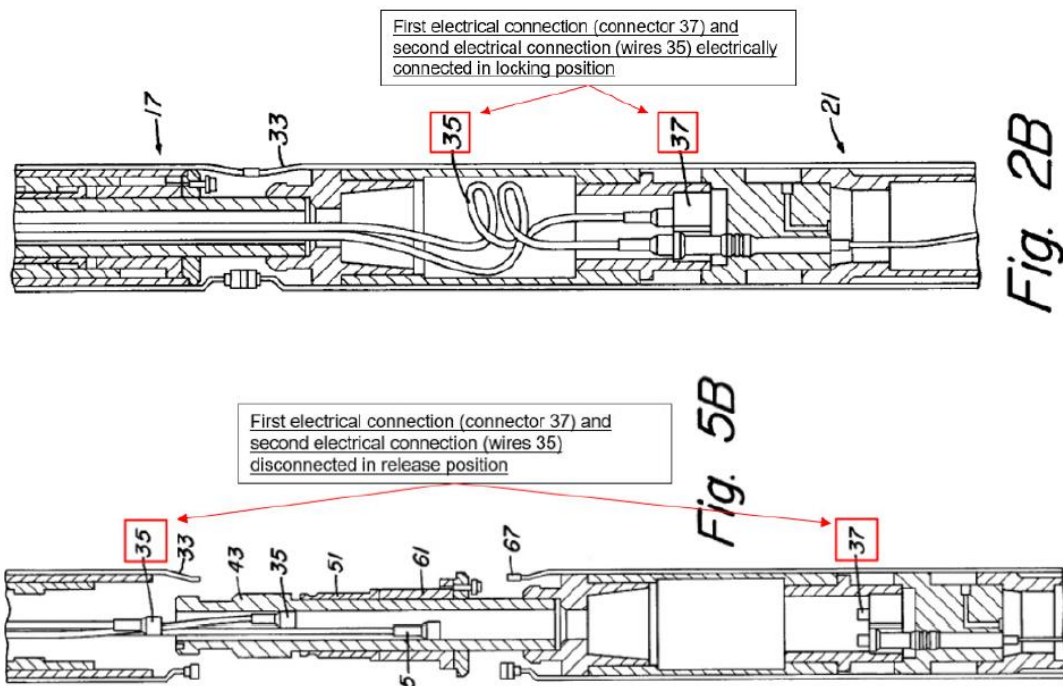
Petitioners fail to provide any explanation as to how Bebak's hydraulically actuated release adapter could be converted into an electrically-actuated tool (*supra* Section IV.B.4) or any *legitimate* reason a POSA would have chosen to do so (*supra* Section IV.B.3). Ex. 2001 ¶168. Indeed, Petitioners only vaguely propose sticking Forehand's explosive charge into the isolated annular chamber 39 of Bebak, without any discussion or explanation as to how Bebak could be modified to allow for

electrical actuation of that charge. *Id.* Petitioners’ arguments with respect to Claim 9 are just as unexplained, as Petitioners essentially argue that because Forehand teaches its tool could be electrically actuated, that automatically means that Bebak’s drastically different tool could have likewise been electrically actuated despite it having a fundamentally different design. *Id.* Petitioners fail to demonstrate obvious because they do not adequately explain how these proposed modifications could be made to Bebak.

C. Claims 12, 13: Bebak does not satisfy the “Electrical Limitation.” (Ground 1)

Dependent claim 12 and independent claim 13 recite “wherein the first part carries a first electrical connection, and the second part carries a second electrical connection, the first and second electrical connection being electrically connected when the releasable engagement profile of the second part engages the connection profile of the first part, and becomes disconnected when the releasable engagement profile disengages the connection profile” (hereafter the “Electrical Limitation”). As shown below, Petitioners identify connector 37 as the “first electrical connection” and wires 35 as the “second electrical connection”:

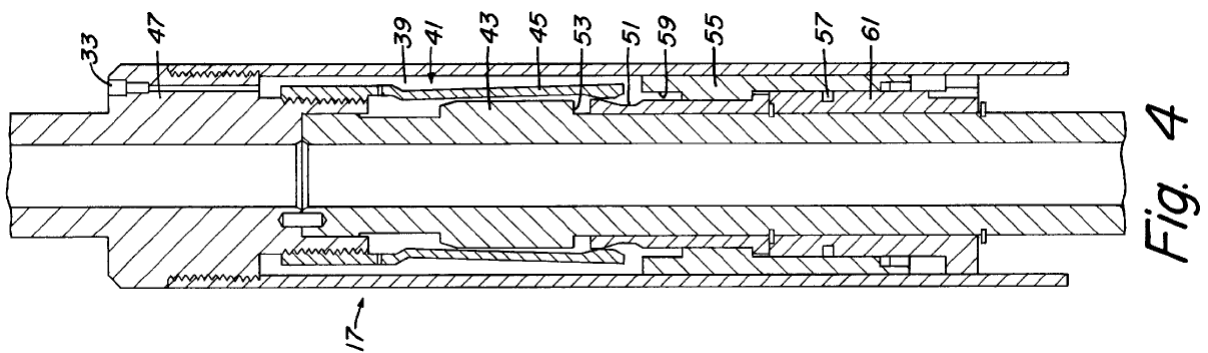
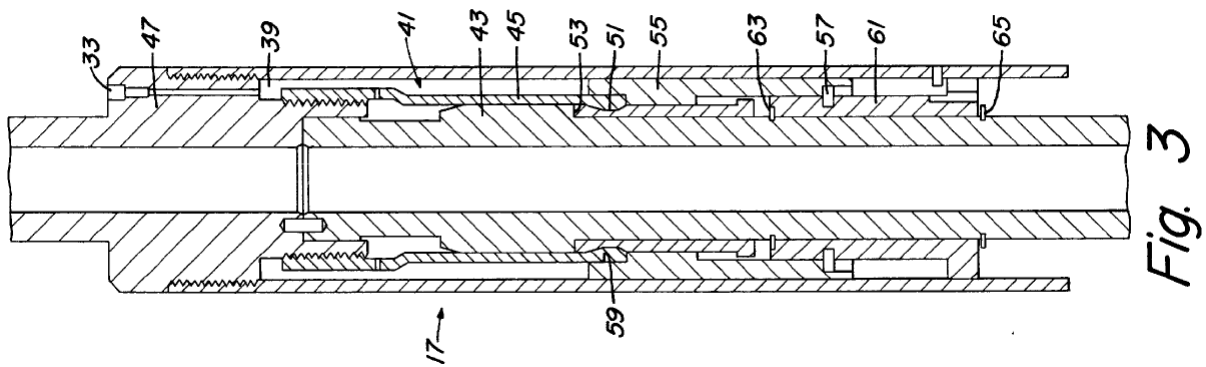
Petitioners' Annotated Drawings



Petition, 38. There are several fundamental flaws with Petitioners' analysis.

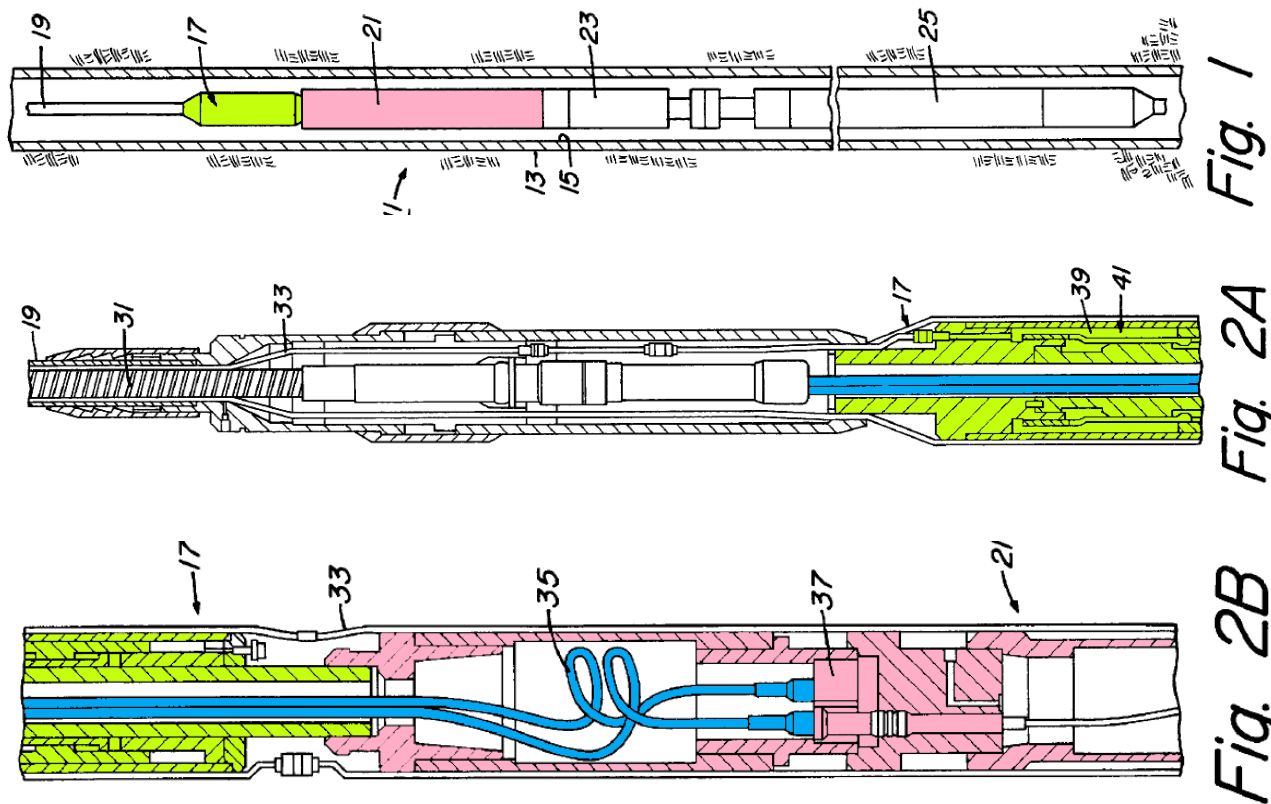
1. **Bebak's release adapter does not have any "electrical connections."**

A POSA would not understand the releasable connection of Bebak—"release adapter 17"—to have any electrical connections. Ex. 2001 ¶ 82. As shown below, Figures 3 and 4 of Bebak plainly depict the "release adapter 17," which does not include "connectors 37" or "wires 35." *Id.* ¶83 (citing Ex. 1007 at 2:11-15).



Bebak further makes clear that the “connectors 37 [are] located at the upper end *of pump 21.*” *Id.* (citing Ex. 1007 at 2:37-42). In other words, the connectors 37 are part of the pump 21, not the release adapter 17. *Id.* This is only further confirmed by Figures 1, 2A and 2B, which when viewed in conjunction with Figures 3 and 4 (which identify the “release adapter 17”) show that the portion of the wellbore assembly containing connectors 37 is located at the upper end of the pump (pink), which is beneath the release adapter 17 (green):

Patent Owner Annotated



Id. A POSA would thus understand that the extent of the release adapter 17 is the green portion, which does not include connector 37. *Id.*

With respect to the wires 35 (blue), Bebak explains that they are merely part of “power cable 31” that is dangled from above release adapter 17. *Id.* ¶184 (citing Ex. 1007 at 2:36-41). In other words, the wires 35 are part of the power cable 31 above the release adapter 17, but not part of the release adapter 17 itself. *Id.* Indeed, Figures 3 and 4 depict release adapter 17 without any power cables, because release adapter 17 provides no electrical functionality. *Id.* The mere fact that wires are dangled through the release adapter 17 does not itself mean that it has electrical

connections. *Id.*

2. Bebak's release adapter does not "carry" any electrical connections.

Bebak's release adapter also does not "carry" an electrical connection. *Id.* ¶85. As shown in Figure 2A above, to the extent any electrical connections are "carried" by the system depicted in Figures 1, 2A and 2B, they are carried by the pump 21 (pink) and not the release adapter 17 (green). *Id.* (citing Ex. 2004 at 3 (defining "carry" as "to support or hold up, esp. while moving"); Ex. 2003 at 4 (defining "carry" as "to hold or bear while moving"); Ex. 2011 at 4 (defining "carry" as "to hold or support while moving")). Specifically, it is the pump 21 that physically "supports" and "moves" the electrical connections as the entire assembly is lowered through the wellbore. *Id.*

In contrast, the wires 35 freely dangle through the central passage of the release adapter and the adapter can be released and separated without affecting or moving the electrical connection in any way. *Id.* Because the wires 35 are not supported or moved by the release adapter 17, a POSA would not understand them to be "carried" as required by the claims. *Id.* Likewise, because the connectors 37 are not part of the release adapter, a POSA would likewise not understand them to be "carried" by the release adapter. *Id.* This understanding is consistent with the specification, which only discloses embodiments where the electrical connections

52, 54 are physically supported by the release tool and the movement of the release tool is what moves the electrical connections. *Id.* ¶86 (citing Ex. 1001 at 4:31-36).

**3. Bebak’s release adapter does not have
“electrically connected” electrical connections.**

Even if Bebak’s release adapter 17 could be viewed as “carrying” electrical connections, the electrical connection between those two connections does not occur within the release adapter as required by the plain language of claims 12 and 13. Specifically, the Electrical Limitation requires “the first and second electrical connection ***being electrically connected when*** the releasable engagement profile of the second part engages the connection profile of the first part.” As explained above, the electrical connection between the wires 35 and connectors 37 occurs in the pump 21 (pink), not the release adapter 17 (green). Ex. 2001 ¶87.

In arguing that Patent Owner is wrong, Petitioners focus only on the “carries” language while ignoring the other portion of the claim language at issue—“the first and second electrical connection ***being electrically connected.***” Petition, 40-41. The claim thus not only requires that there are two electrical connections “carried” by the claimed release tool—those two electrical connections must be *connected* to one another “*when* the releasable engagement profile ... engages the connection profile.” Ex. 2001 ¶88. It would be readily apparent to a POSA that the electrical connection between the first and second electrical connections, which are “carried” by the first

and second parts respectively, necessarily occurs within the claimed releasable connection. *Id.* This is consistent with the specification, which teaches that the electrode 54 of first part 12 and the electrode 52 of second part 14 are connected within the releasable connection 10. *Id.* (citing Ex. 1001, 4:24-36). Because Bebak's electrical connection between wires 35 and connector 37 occurs within pump 21 and not release adapter 17, the electrical connection does not occur within a releasable connection as required by the claims. *Id.*

D. Claim 15: The Combination of Bebak and Forehand Fail to Render Obvious the “Concentric” Electrical Connections (Ground 4)

Petitioners argue that because the Examiner applied Read's alleged concentric connections to the claims, “a POSA would have known the teachings of Read and would have been motivated to use those teachings to combine the similar teachings of HTB and Bebak because both concern releasable connections.” Petition, 67. Yet, missing from this assertion is any actual reason a POSA would have actually been motivated to use concentric electrical connections at all in Bebak's release adapter. Ex. 2001 ¶169. Indeed, Petitioners essentially argue that because concentric electrical connections were allegedly known, a POSA would have automatically found it obvious to use them with Bebak simply because Bebak and HTB relate to releasable connections. *Id.* Moreover, the mere fact that the Examiner applied the completely different prior art reference Read—which is not even asserted in Ground

4—says nothing about whether there would have been a motivation to combine the fundamentally different Bebak and HTB. *Id.*

The remainder of Petitioners’ analysis is focused on demonstrating that concentric electrical connections were allegedly “ubiquitous in the art.” *Id.* ¶170. As an initial matter, Dr. Wooley’s testimony about the supposedly “ubiquitous” nature of such electrical connections is flatly contradicted by his August 3, 2023 testimony in another IPR involving perforating guns:

15 Q Would you agree that concentric electrical
16 connections are ubiquitous and well-known ways to
17 transfer electricity to downhole tools?

18 MR. STEIN: Objection. Scope.

19 A Yeah, in general, no. That's silly. There
20 are tools that have it. But to be ubiquitous, in my
21 understanding meaning it's everywhere, the answer is
22 no.

Ex. 2015 at 8 (p. 28, ll. 15-22). But even setting aside Dr. Wooley’s inconsistent testimony, even if such connections were “ubiquitous in the art,” that again says nothing about whether there was a reason to take one of those connectors and combine it with the Bebak’s release adapter. Ex. 2001 ¶170. Thus, Petitioners cannot demonstrate obviousness because they fail to provide even a single articulated reason that a POSA would have been motivated or prompted to use such a connection in Bebak. *Id.*

Additionally, Petitioners’ proposed combination is illogical and would simply

not work. Ground 4 builds upon Ground 1, which relies solely on Bebak. Thus, in the Ground 4 combination Bebak is *still* relying on hydraulic actuation—the release adapter has no electrical capability and is not released using electricity. *Id.* ¶171. As HTB makes clear and as a POSA would have appreciated, the HTB electrical concentric connections are **wireline** hardware and used in applications where a string of electrically operated downhole tools are placed in series in the same tool string. *Id.* This eliminates the need to manually wire each end of each tool at the wellsite by instead allowing the service company to simply thread the tools together, thereby automatically establishing electrical conductivity **through all** of the tools. *Id.* The concentric electrical connections of HTB can also help protect the electrical connection from the wellbore environment. *Id.* (citing Ex. 1009 at 3).

First, Bebak expressly teaches away from using wireline deployment because it limits where the pump motor can be placed. *Id.* ¶172 (citing Ex. 1007 at 1:17-25). Bebak instead relies on coiled tubing. *Id.* (citing Ex. 1007, 1:30-31). Petitioners fail to explain why a POSA would have been motivated to modify Bebak to rely on a wireline cable head adapter when Bebak expressly teaches away from the use of wireline with its release adapter.

Second, Bebak's release adapter does not rely on electricity and the only component in Bebak's system that relies on electricity is the downhole pump. *Id.* ¶173. Adding concentric electric connections within the collet/profile of Bebak

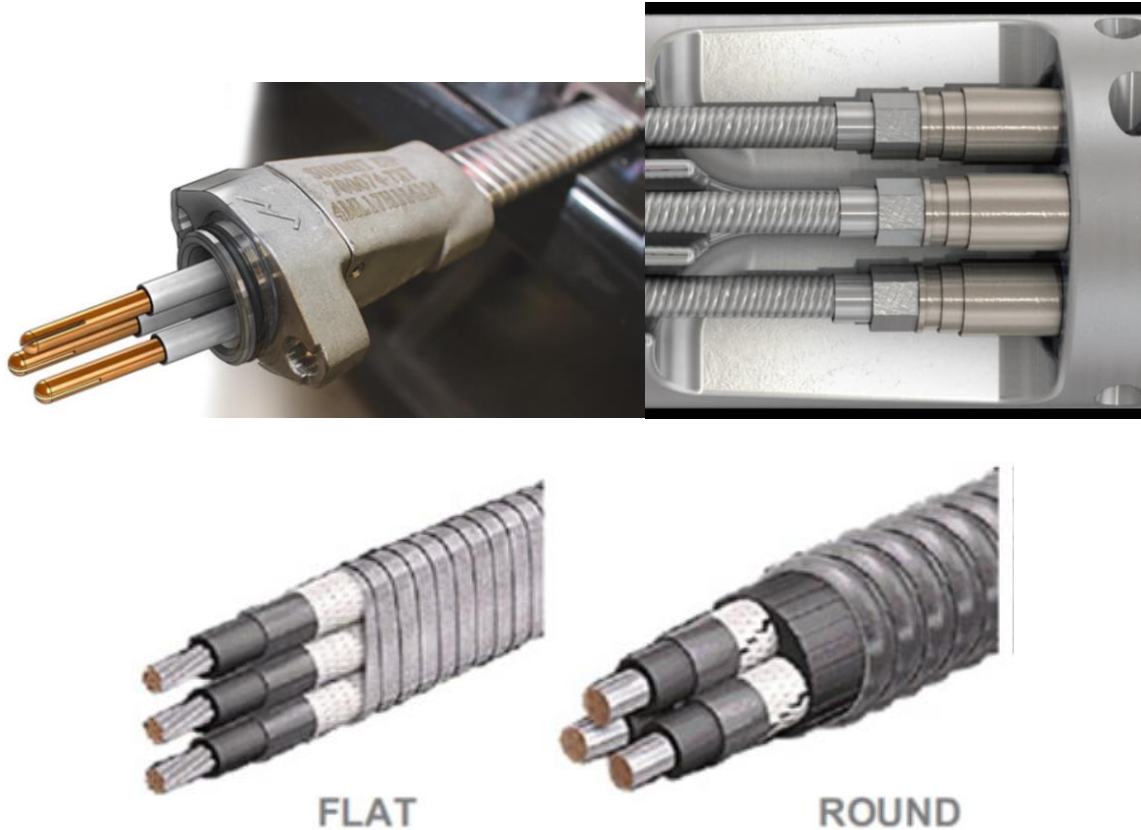
would actually make the release adapter more difficult to assemble and wire up. *Id.* In Bebak, the wires 35 are suspended through the release adapter 17 and connected directly to connector 37 of the pump. *Id.* Thus, there is a **single** direct connection point between wires 35 and connector 37. *Id.* If concentric connectors were added as proposed by Petitioners, then a wire would have to be (1) run from the power supply to the concentric electrical connection of the collet 45 and (2) another wire would have to be run from the concentric electrical connection of the profile 51 down to the top end of the submersible pump. *Id.* Thus, adding concentric connections would increase the complexity of assembling the release adapter into the system for no apparent reason. *Id.*

Third, while Petitioners vaguely cite HTB for its teaching about “protecting” electrical connections from corrosion, Petitioners proposed modifications would not improve the protection of the electrical connection in Bebak. *Id.* ¶174. In Bebak, the electrical connection is between wires 35 and connector 37, which is **beneath** the collet and profile in the release adapter. *Id.* But Petitioners are not proposing adding concentric connections where wires 35 and connector 37 connect—they are proposing needlessly adding concentric connections at the point of engagement between the collet and profile. Not only would this *not* improve electrical connection protection within Bebak’s release adapter (which occurs only at the top of the pump), it would actually create a new point of vulnerability where the two concentric

connections would connect to one another (i.e., within the collet/profile). *Id.*

Fourth, Petitioners completely disregard that concentric electrical connections have limited electrical capacity, making them incompatible with the release adapter of Bebak. *Id.* ¶175. The sole purpose of running wires 35 through release adapter 17 in Bebak is to supply power to an ESP, which requires significantly more power than the logging and perforating tools that the HTB adapter is designed for. *Id.* Specifically, ESPs require specialized high voltage, high current power cables to operate, which are not compatible or interchangeable with the electrical connections disclosed in HTB. *Id.* Indeed, the HTB products are rated for 600 VDC max and 2 A max (Ex. 1009 at 3), while ESPs require nominal AC voltage (RMS) of at least 460Vrms but more commonly 5,000 Vrms and with a current of up to 200 A. *Id.* (citing Ex. 2025 at 2; Ex. 2019 at 16, 21, 23-24, 25-27, 28; Ex. 2018 at 9; Ex. 2036 at 1; Ex. 2008 at 1-2; Ex. 2026 at 3). Simply put, the electrical connectors disclosed in HTB are incapable of delivering the amount of power required to operate a downhole pump as required by the release adapter of Bebak. *Id.*

Moreover, ESPs would be understood to require 3-phase power (AC) and thus need a 3-conductor cable. *Id.* ¶176 (citing Ex. 2019 at 16, 18; Ex. 2018 at 7; Ex. 2035 at 5-6; Ex. 2036 at 1; Ex. 2008 at 1). Examples are shown below:



Id. (citing Exs. 2024-2026). The adapter of HTB only has single conductor concentric connections for DC power, which means it is incapable of delivering the necessary power. *Id.* ¶176. Consequently, Petitioners not only fail to show that a POSA would have been motivated to combine concentric electric connections with Bebak's release adapter, they also fail to provide any evidence that such connections could plausibly meet the electrical requirements of the pumping applications that Bebak's release adapter is designed for. *Id.*

VI. CONCLUSION

For the reasons above, Patent Owner respectfully requests that the Board deny institution. Petitioners cannot prevail with respect to Ground 1 because Bebak fails

to teach that its release adapter comprises a source of fluid pressure as required by all independent claims. Petitioners cannot prevail with respect to Ground 3 because they fail to show a reasonable likelihood that a POSA would have found it obvious to modify Bebak's hydraulically-actuated release adapter for pump assemblies to instead rely on Forehand's electrically-actuated explosive charge for perf guns. Because Petitioners cannot prevail with respect to Grounds 1 and 3, Petitioners fail to meet their threshold burden as to any challenged.

Dated: October 12, 2023

Respectfully submitted,

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Registration No. 67,272

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CERTIFICATE OF COMPLIANCE

The undersigned certifies that this document complies with the type-volume limitations set forth in 37 C.F.R. § 42.24 *et seq.* This document, excluding those portions excluded pursuant to § 42.24(a)(1), contains 13,963 words as calculated by the “Word Count” feature of Microsoft Word for Office 365, the program used in creating it.

/Stephen D. Zinda/
Stephen D. Zinda

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e)(4), the undersigned certifies that on October 12, 2023, a copy of the foregoing document (*Patent Owner's Preliminary Response*, including all Exhibits), was served via electronic mail to the email of record of Petitioners:

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/Stephen D. Zinda/

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