

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SNF S.A.,
Petitioner,

v.

CHEVRON U.S.A., Inc.,
Patent Owner.

IPR2022-01534
Patent 10,626,320 B2

Before BARRY L. GROSSMAN, JEREMY M. PLENZLER, and
AMEE A. SHAH, *Administrative Patent Judges*.

GROSSMAN, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining No Challenged Claims Unpatentable

35 U.S.C. § 318(a)

Denying Petitioner's Motion to Exclude Evidence

I.INTRODUCTION

A. Background and Summary

SNF S.A. (“Petitioner” or “SNF”) filed a Petition for inter partes review of claims 1–25 of U.S. Patent No. 10,626,320 B2 (Ex. 1001, “the ’320 patent”). Paper 2 (“Pet.”). Chevron U.S.A., Inc. (“Patent Owner” or “Chevron”) timely filed a Preliminary Response to the Petition. Paper 8 (“Prelim. Resp.”). We have jurisdiction under 35 U.S.C. § 314. Under § 314, an inter partes review may not be instituted “unless . . . there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). The Board determines whether to institute a trial on behalf of the Director. 37 C.F.R. § 42.4(a) (2022).

We concluded that Petitioner satisfied the burden, under 35 U.S.C. § 314(a), to show that there was a reasonable likelihood that Petitioner would prevail with respect to at least one of the challenged claims. Accordingly, on behalf of the Director (37 C.F.R. § 42.4(a)), and in accordance with *SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1353 (2018), we instituted an *inter partes* review of all the challenged claims, on all the asserted grounds. Paper 12 (“Dec. Inst.”).

Patent Owner filed a Response. Paper 28 (“PO Resp.”). Petitioner filed a Reply. Paper 32 (“Reply”). Patent Owner filed a Sur-reply. Paper 36 (“Sur-reply”).

A hearing was held January 25, 2024. (Paper 45) (“Transcript or “Tr.”).

We have jurisdiction under 35 U.S.C. § 6. We enter this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has the burden of proving unpatentability of a claim by a preponderance of the evidence. 35 U.S.C. § 316(e).

Based on the findings and conclusions below, we determine that Petitioner has not proven by a preponderance of the evidence that claims 1–25 of the ’320 patent are unpatentable.

We also deny Petitioner’s Motion to Exclude Evidence (Paper 38; “Mot. Excl.”).

B. Real Parties-in-Interest

SNF identifies itself and SPCM S.A. as real parties-in-interest. Pet. 3. Chevron identifies itself as the real party-in-interest. Paper 5, 1. Patent Owner, Chevron, states that “Chevron U.S.A. is a wholly owned indirect subsidiary of Chevron Corporation.” *Id.*

C. Related Matters

Petitioner states that “[t]here are no related litigations.” Pet. 3. Patent Owner states, “there is a pending patent application that is a continuation of the ’320 patent, U.S. Patent Application No. 15/372,168.” Paper 5, 1.

D. The ’320 patent

We make the following findings of fact concerning the ’320 patent.

The ’320 patent is titled “Methods for Hydrocarbon Recovery.” Ex. 1001, code (54). The patent discloses the use of inverted water-soluble polymers to provide enhanced oil recovery (“EOR”) for oil extracted from the ground or other oil reservoirs. *Id.* at 1:13–21. Petitioner refers to these inverted polymer solutions with the acronym “IPS.” *See, e.g.*, Pet. 1 (“The claimed subject matter is directed to the well-known method of preparing inverted polymer solution (IPS) for use in enhanced oil recovery (EOR) operations”). The use of such polymers is acknowledged in the ’320 patent as being well-known. Ex. 1001, 1:22–30. As explained in the ’320 patent,

In the past, these polymers were made available commercially as powders or finely divided solids which were subsequently dissolved in an aqueous medium at their time of use. Because such dissolution steps are sometimes time consuming and often require rather expensive mixing equipment, such polymers are sometimes provided in water-in-oil emulsions wherein the polymer is dissolved in the dispersed aqueous phase. The *water-in-oil* emulsions can then be inverted to form *oil-in-water* emulsions at their time of use.

Ex. 1001, 1:22–30 (emphasis added); *see also* Pet. 1 (“The claimed subject matter is directed to the well-known method of preparing inverted polymer solution (IPS) for use in enhanced oil recovery (EOR) operations, which have been known for years prior to the filing of the ’320 patent.”).

As further described in the ’320 patent, these known inverted oil-in-water emulsions, however, “are often unable to pass through porous structures,” which “significantly limits their utility as . . . fluid mobility control agents in EOR [enhanced oil recovery] applications.” *Id.* at 1:33–36. According to the ’320 patent, the known emulsions also “cannot be efficiently inverted” when used for enhanced oil recovery. *Id.* at 1:36–39

The ’320 patent discloses that “[a]s used herein, ‘inverted’ refers to the point at which the viscosity of the inverted polymer solution has substantially reached a consistent viscosity” and “this may be determined for example by measuring viscosity of the inverted polymer solution periodically over time and when three consecutive measurements are within the standard of error for the measurement.” Ex. 1001, 17:34–41.

The written description of the disclosed invention is detailed, comprehensive, and contains numerous embodiments. The written description discusses various liquid polymer compositions (*id.* at 6:15), hydrophobic liquids (*id.* at 8:1), synthetic co-polymers (*id.* at 8:31), emulsifying surfactants

((*id.* at 11:64), process stabilizing agents (*id.* at 12:63), inverting surfactants (*id.* at 13:40), proportions of liquid polymer compositions (*id.* at 14:40), inverted polymer solutions (*id.* at 15:64), methods of use (*id.* at 29:27), and numerous specific examples of methods and materials (*id.* at 30:39).

Central to the issues presented by the parties, however, is a filter quotient, “filter ratio,” or “FR,” commonly used to determine performance of the emulsion or liquid polymer. *Id.* at 5:36–40.

The filter ratio *formula* is *not* a measurement unique to the ’320 patent. Ex. 1001, 31:4–14 (“The filter ratio (FR) of the inverted polymer solutions was determined using the *standard procedure* described, for example, in Koh [Ex. 1006] . . . Levitt [Ex. 1007] . . . and Magbagbeola [Ex. 1008]”) (emphasis added).¹

As described in the ’320 patent, the filter ratio is “calculated as the ratio of the time for 180 to 200 ml of the inverted polymer solution to filter divided by the time for 60 to 80 ml of the inverted polymer solution to filter.” Ex. 1001, 5:5–8. The filter ratio formula is:

$$FR = \frac{{}^t200 \text{ ml} - {}^t180 \text{ ml}}{{}^t80 \text{ ml} - {}^t60 \text{ ml}}$$

Id. at 5:10–13; 31:21–28; *see also, e.g.*, Ex. 1006 (Koh), 239 (disclosing this identical formula). This standard formula does *not* require a specific or standard filter pore size, nor does it require a specific or standard pressure or temperature. The standard formula for determining a filter ratio in the context of the ’320 patent

¹ Koh, Levitt, and Magbagbeola each are academic papers from Ph.D. or M.S. students at the University of Texas at Austin. Ex. 1001, 31:6–14. Each of these academic papers was “incorporated by reference in its entirety” into to the written description of the ’320 patent. *Id.*

depends solely on the time to filter specific amounts of an inverted polymer.

Id. at 5:36–43.

As disclosed in the '320 patent, the calculated filter ratio is *not* the critical parameter in determining performance of a specific polymer used for enhanced oil recovery. *Id.* at 5:58–61. The written description states that “[g]enerally, a lower FR indicates better performance.” *Id.* (citing, and incorporating by reference, U.S. Patent 8,383,560, which explains that “a desirable FR using this method is less than 1.5.”). According to the '320 patent, however, many polymers that have a filter ratio lower than 1.5 using a 5 micron² filter “exhibit poor injectivity – i.e., when injected into a formation, they tend to plug the formation, slowing or inhibiting oil production.” *Id.* at 5:64–6:1.

The written description states that a modified filter ratio test, using a smaller filter pore size and a lower pressure “provides a better screening method.” Ex. 1001, 6:1–5. The disclosed and claimed invention in the '320 patent uses the same filter ratio test *formula* to calculate the FR as disclosed in prior patents and publications, except that the 5 micron filter used in U.S. Patent 8,383,560 is replaced with a filter having a smaller pore size of 1.2 microns and a lower pressure of 15 psi, rather than “2 bars.”³ Ex. 1001, 5:45; 6:1–5. According to the '320 patent, inverted polymer solutions prepared by the methods described in the '320 patent, which is using a 1.2 micron filter and a pressure of 15 psi, “can provide a FR . . . of 1.5 or less.” *Id.* at 6:6–8. The '320 patent states that “[i]n field testing, these compositions can exhibit improved injectivity over

² A micron is a unit of length that is one millionth of a meter or 10^{-6} m. The micron is also known as a micrometer or by its abbreviation μm .

³ The bar is a metric unit of pressure. Two bars of pressure equal approximately 29 pounds per square inch (psi)).

commercially-available polymer compositions—including other polymer compositions having an FR (using a 5 micron filter) of less than 1.5,” which makes them “suitable for use in a variety of oil and gas applications, including EOR.”

Ex. 1001, 6:8–13.

E. Illustrative Claim

Among the challenged claims, claims 1, 24, and 25 are independent claims. Independent claims 1 and 24 are directed to a “method for preparing an inverted polymer solution.” Ex. 1001, 37:63–38:13; 39:27–40:11. Claim 1 requires “at least 39% by weight of one or more synthetic (co)polymers” (Ex. 1001, 38:1–2), whereas claim 24 requires “up to 35% by weight of one or more synthetic (co)polymers” (*id.* at 40:1–2). Except for this one difference, claims 1 and 24 are identical.

Independent claim 25 is directed to a “method for hydrocarbon recovery,” which injects an inverted polymer solution into a wellbore in fluid communication with a subsurface hydrocarbon reservoir. *Id.* at 40:12–31. Except for this difference, claim 25 and claim 1 are identical.

All of the challenged claims recite the same specific filter ratio parameter, which was calculated using the industry-standard formula discussed above. As stated in all the challenged claims, the filter ratio is “1.5 or less at 15 psi using a 1.2 μm filter.” *See, e.g., Id.* at 38:9–10 (claim 1); *see also id.* at 5:1–4 (stating “For purposes of this disclosure, including the claims, the filter ratio (FR) can be determined using a 1.2 micron filter at 15 psi (plus or minus 10% of 15 psi) at ambient temperature (e.g., 25° C.)”; *id.* at 5:14–16 (stating “For purposes of this

disclosure, including the claims, the inverted polymer solution is required to exhibit a FR of 1.5 or less.”).⁴

Independent claim 1 is illustrative and is reproduced below.

1. A method for preparing an inverted polymer solution comprising providing a liquid polymer (LP) composition comprising:
one or more hydrophobic liquids having a boiling point of at least 100° C.;
at least 39% by weight of one or more synthetic (co)polymers;
one or more emulsifier surfactants; and
one or more inverting surfactants;
inverting the LP composition in an aqueous fluid to provide an inverted polymer solution having a concentration of synthetic (co)polymer of from 50 to 15,000 ppm;
wherein the inverted polymer solution has a filter ratio of 1.5 or less at 15 psi using a 1.2 µm filter; and
wherein the inverted polymer solution is used in an enhanced oil recovery (EOR) operation.

Id. at 37:63–38:13.

⁴ The *disclosed* limitations of a pressure “plus or minus 10% of 15 psi” and “at ambient temperature (e.g., 25° C.)” are *not* included in the challenged claims.

F. Prior Art and Asserted Grounds

Petitioner asserts that the challenged claims are unpatentable on the following grounds (*see, e.g.*, Pet. 5–6):

Claims Challenged	35 U.S.C. § ⁵	Basis
1, 2, 13–15, 20–25	102 “and/or” 103	Li ⁶ (2 separate and distinct grounds)
3–12, 16–19	103	Li, Pich ⁷
24	103	Li, BASF ⁸
1–25	103	Pich, “and any of” Koh, ⁹ Levitt, ¹⁰ or Magbagbeola ¹¹ (3 separate and distinct grounds)
24	103	Pich, “any of” Koh, Levitt, or Magbagbeola, and BASF (3 separate and distinct grounds)

Petitioner also relies on the declaration testimony of Reza Barati, Ph.D. *See* Ex. 1012.

⁵ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296–07 (2011), took effect on September 16, 2011. The changes to 35 U.S.C. §§ 102 and 103 in the AIA do not apply to any patent application filed before March 16, 2013. Because the application for the patent at issue in this proceeding has an effective filing date after March 16, 2013, we refer to the AIA version of the statute.

⁶ Li et al., US 10,442,980 B2, issued Oct. 15, 2019 (Ex. 1003, “Li”).

⁷ Pich et al., US 2011/0118153 A1, published May 19, 2011 (Ex. 1004, “Pich”).

⁸ Reichenbach-Kline et al., US 9,701,890 B2, issued July 11, 2017 (Ex. 1005, “BASF”).

⁹ Koh, H., *Experimental Investigation of the Effect of Polymers on Residual Oil Saturation*, 2015 (Ex. 1006, “Koh”).

¹⁰ Levitt, D.B., *The Optimal Use of Enhanced Oil Recovery Polymers Under Hostile Conditions*, 2009 (Ex. 1007, “Levitt”).

¹¹ Magbagbeola, O.A., *Quantification of the Viscoelastic behavior of High Molecular Weight Polymers used for Chemical Enhanced Oil Recovery*, 2008 (Ex. 1008, “Magbagbeola”).

Patent Owner relies on the Declaration testimony of Gary Pope, Ph. D. (*see* Ex. 2001, Ex. 2014).

II.ANALYSIS

A. *Legal Standards*

“To anticipate a claim, a prior art reference must disclose each and every element of the claim, either explicitly or inherently.” *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 910 (Fed. Cir. 2022) (citing *Eli Lilly & Co. v. Zenith Goldline Pharms., Inc.*, 471 F.3d 1369, 1375 (Fed. Cir. 2006). “While those elements must be arranged or combined in the same way as in the claim, the reference need not disclose the elements in the very same terms used by the patent.” *Id.* (citing *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009) (“[T]he reference need not satisfy an *ipsissimis verbis* test.” (citing *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990)))). “And ‘[e]ven if a reference’s teachings are insufficient to find anticipation, that same reference’s teachings may be used to find obviousness’ where it suggests some reason to modify the prior art to obtain the claimed limitations.” *Id.* (citing *CRFD Rsch., Inc. v. Matal*, 876 F.3d 1330, 1345 (Fed. Cir. 2017) (emphasis added)). “The question of what a reference teaches and whether it describes every element of a claim is a question for the finder of fact.” *Id.* (citing *Med. Instrumentation & Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1221 (Fed. Cir. 2003)). In an *inter partes* review, the Board is the finder of facts.

Inherent anticipation is a key issue in the proceeding before us. *E.g.*, Pet. 2 (“The remaining feature of claim 1 is *an inherent physical property of the IPS*, namely the filter ratio (“FR”), being less than 1.5 when calculated using measurements taken at a particular pressure (15 psi) and with a specific filter (1.2 μm);” *id.* at 2–3 (“Invention cannot result from selecting known inherent physical

properties of a composition and claiming those properties, particularly where the prior art recognizes the desirability of the same value for the selected inherent physical property.”). In *Arbutus Biopharma Corp. v. ModernaTX, Inc.*, 65 F.4th 656, 662 (Fed. Cir. 2023), the main issue before the Board was whether a claim element was “inherently disclosed.” The Federal Circuit stated that “[a] limitation is inherent if it is the “natural result flowing from” the prior art’s explicit disclosure” (quoting *Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1379 (Fed. Cir. 2003)). The Federal Circuit also stated “[a] patent “can be invalid based on inherency when the patent itself makes clear that a limitation is ‘not an additional requirement imposed by the claims ... but rather a property necessarily present’.” *Arbutus*, 65 F.4th at 662 (quoting *Hospira, Inc. v. Fresenius Kabi USA, LLC*, 946 F.3d 1322, 1332 (Fed. Cir. 2020) (quoting *In re Kubin*, 561 F.3d 1351, 1357 (Fed. Cir. 2009)). Thus, inherent anticipation requires “merely that the disclosure of the prior art is sufficient to show that the natural result flowing from the operation as taught in the prior art would result in the claimed product.” *Id.* (quoting *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1343–44 (Fed. Cir. 2005)).

Also, as explained in *Net MoneyIN*,

unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.

Net MoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359, 1371 (Fed. Cir. 2008). “The requirement that the prior art elements themselves be arranged as in the claim means that claims cannot be treated . . . as mere catalogs of separate parts, in disregard of the part-to-part relationships set forth in the claims and that give the

claims their meaning.” *VirnetX Inc. v. Mangrove Partners Master Fund, Ltd.*, No. 2020-2272, slip op. at 14 (Fed. Cir. Mar. 30, 2023) (citing *Therasense, Inc. v. Becton, Dickinson & Co.*, 593 F.3d 1325, 1332 (Fed. Cir. 2010) (internal quotation marks omitted)).

Whether the challenged claims would have been obvious over the cited references also is at issue in this proceeding. Section 103 forbids issuance of a patent when “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when available, evidence such as commercial success, long felt but unsolved needs, and failure of others.¹² *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966); *see KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.”). The Court in *Graham* explained that these factual inquiries promote “uniformity and definiteness,” for “[w]hat is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.” 383 U.S. at 18.

The Supreme Court made clear that we apply “an expansive and flexible approach” to the question of obviousness. *KSR*, 550 U.S. at 415. Whether a patent

¹² Patent Owner does not direct us to any persuasive objective evidence of non-obviousness.

claiming the combination of prior art elements would have been obvious is determined by whether the improvement is more than the predictable use of prior art elements according to their established functions. *Id.* at 417. To support this conclusion, however, it is not enough to show merely that the prior art includes separate references covering each separate limitation in a challenged claim.

Unigene Labs., Inc. v. Apotex, Inc., 655 F.3d 1352, 1360 (Fed. Cir. 2011). Rather, obviousness additionally requires that a person of ordinary skill at the time of the invention “would have selected and combined those prior art elements in the normal course of research and development to yield the claimed invention.” *Id.*

In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason *why* a person of skill in the art would have made the combination. *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1366 (Fed. Cir. 2017).

Moreover, in determining the differences between the prior art and the claims, the question under 35 U.S.C. § 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Litton Indus. Prods., Inc. v. Solid State Sys. Corp.*, 755 F.2d 158, 164 (Fed. Cir. 1985) (“It is elementary that the claimed invention must be considered as a whole in deciding the question of obviousness.”); *see also Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537 (Fed. Cir. 1983) (“[T]he question under 35 U.S.C. § 103 is not whether the differences *themselves* would have been obvious. Consideration of differences, like each of the findings set forth in *Graham*, is but an aid in reaching the ultimate determination of whether the claimed invention as a whole would have been obvious.”).

As a factfinder, we also must be aware “of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *KSR*, 550 U.S. at 421.

Applying these general principles, we consider the evidence and arguments of the parties.

B. Level of Ordinary Skill in the Art

The level of skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). “This reference point prevents . . . factfinders from using their own insight or, worse yet, hindsight, to gauge obviousness.” *Id.*

“The *Graham* analysis includes a factual determination of the level of ordinary skill in the art. Without that information, a . . . court cannot properly assess obviousness because the critical question is whether a claimed invention would have been obvious at the time it was made to one with ordinary skill in the art.” *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962 (Fed. Cir. 1986); *see also Ruiz v. A.B. Chance*, 234 F.3d 654, 666 (Fed. Cir. 2000) (“The determination of the level of skill in the art is an integral part of the *Graham* analysis.”).

Factors pertinent to a determination of the level of ordinary skill in the art include: (1) educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of workers active in the field. *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (citing *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (quoting *Env’t Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983)). These factors are not exhaustive but

merely are a guide to determining the level of ordinary skill in the art. *Daiichi Sankyo*, 501 F.3d at 1256. In determining a level of ordinary skill, we also may look to the prior art, which may reflect an appropriate skill level. *Okajima*, 261 F.3d at 1355.

Petitioner asserts that a person of ordinary skill in the art would have had “either: (1) a Ph.D. in the field of petroleum engineering, chemistry, polymer chemistry, chemical engineering, and/or a related field, and (2) having at least 2-3 years of work experience in the synthesis and development of chemical flooding techniques for EOR [sic].” Pet. 17 (citing Ex. 1012 ¶ 18). Other than citing Dr. Barati’s testimony, Petitioner does not state the basis for these conclusions.

Dr. Barati offers a similar, but slightly different, opinion. Ex. 1012 ¶ 18. Dr. Barati refers to “four factors” that “may be considered” in determining the level of ordinary skill (*id.* at ¶ 16), but does not provide any facts, data, or analysis based on the four identified factors. Thus, we do not know how, or whether, these factors informed Dr. Barati’s opinion.

Dr. Barati opines that “a POSITA^[13] would have had a PhD in Chemical or Petroleum Engineering (or related science or engineering discipline) with 2-3 years of experience in the design and implementation of methods for hydrocarbon recovery including use of polymer compositions in such recovery methods.” Ex. 1012 ¶ 18. Alternatively, according to Dr. Barati, “a POSITA might substitute several years of actual design or implementation experience for the advanced degree.” *Id.*

¹³ “POSITA,” or variations of this acronym, is common patent law jargon for a “person having ordinary skill in the art” to which the claimed invention pertains. *See* 35 U.S.C. § 103 (2011).

Petitioner’s and Dr. Barati’s asserted level of ordinary skill are reproduced in the chart below.

Petitioner	Dr. Barati
A POSITA would be a person with <i>either</i> : (1) a Ph.D. in the field of petroleum engineering, chemistry, polymer chemistry, chemical engineering, and/or a related field, <i>and</i> (2) having at least 2-3 years of work experience in the synthesis and development of chemical flooding techniques for EOR. Pet. 17 (emphases added).	a POSITA would have had a Ph.D. in Chemical or Petroleum Engineering (or related science or engineering discipline) with 2-3 years of experience in the design and implementation of methods for hydrocarbon recovery including use of polymer compositions in such recovery methods. Alternatively, a POSITA might substitute several years of actual design or implementation experience for the advanced degree. Ex. 1012 ¶ 18.

We determine the emphasized words “either” and “and” in Petitioner’s proposed level of skill are confusing.

The specific level of skill is important in determining the patentability issues. *See, e.g., Kyocera Senco Industrial Tools Inc. v. I.T.C.*, 22 F.4th 1369, 1375–78 (Fed. Cir. 2022). In *Kyocera*, the adopted level of ordinary skill in the art required “experience in power nailer design.” *Id.* at 1375–76. A proffered expert had “advanced degrees in engineering and extensive experience in the design and manufacture of fastener driving tools” but lacked specific experience in “powered nailer design.” *Kyocera*, 22 F.4th at 1376. The Federal Circuit held it was an abuse of discretion to admit testimony from the proffered expert “on any issue that is analyzed through the lens of an ordinarily skilled artisan.” *Id.* at 1377–1378.

In our Decision to Institute this proceeding, we adopted Dr. Barati’s proposed level of skill based on the prior art, the sophistication of the technology disclosed in the ’320 patent, and Dr. Barati’s opinion testimony. Dec. Inst. 17 (“we adopt Dr. Barati’s definition of the level of ordinary skill”).

Patent Owner states it “does not dispute the level of skill applied by the Board in its institution decision.” PO Resp. 7.

Accordingly, in this Decision, based on the evidence and the arguments of the parties, we maintain and adopt the level of ordinary skill stated in the Decision to Institute. In this proceeding, a person of ordinary skill would have had a Ph.D. in Chemical or Petroleum Engineering (or related science or engineering discipline) with 2-3 years of experience in the design and implementation of methods for hydrocarbon recovery including use of polymer compositions in such recovery methods. Alternatively, a person of ordinary skill might substitute several years of actual design or implementation experience for the advanced degree. *See* Ex. 1012 ¶ 18.

C. Claim Construction

We construe each claim “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. [§] 282(b).” 37 C.F.R. § 42.100(b). Under this standard, claim terms are generally given their ordinary and customary meaning as would have been understood by a person of ordinary skill in the art at the time of the invention and in the context of the entire patent disclosure. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005) (en banc) (“We have frequently stated that the words of a claim ‘are generally given their ordinary and customary meaning.’” (citations omitted)).

Petitioner asserts that “[a]ll claim terms should be given their ordinary and customary meaning to a POSITA at the time of invention in light of the specification” and does not assert a specific definition of any claim term. Pet. 17.

Patent Owner does not propose any claim construction in its Response, nor does Patent Owner comment on Petitioner’s proposed claim construction. *See* PO Resp. In its Sur-reply, however, Patent Owner includes a Section heading II.A.2.b

that states “SNF’s Belated Claim Construction Regarding IPS Concentration Does Not Excuse Its Unexplained Modification.” Sur-reply 6. This Section, however, does not specifically identify the asserted “belated claim construction.” *Id.* 6–7. It merely discusses Dr. Barati’s use of “2,000 ppm” for one of Li’s examples rather than “3,000 ppm.” *Id.* (citing “Ex. 1012, Ex. C at 11”). We do not consider this to be a proffered claim construction by Petitioner or Dr. Barati.

Claims must be construed “only to the extent necessary to resolve the controversy.” *AstraZeneca AB v. Mylan Pharms. Inc.*, 19 F.4th 1325, 1345 (Fed. Cir. 2021) (quoting *Vivid Techs., Inc. v. American Science & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999); *see also Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy’” (citations omitted))). We determine that a specific construction of the claims is not necessary to reach a decision in this *inter partes* review of the challenged claims.

We now turn to the merits of Petitioner’s asserted Grounds of unpatentability.

D. Ground 1A; Anticipation of Claims 1, 2, 13–15, and 20–25 Based on Li

Ground 1, as stated by Petitioner, is that claims 1, 2, 13–15, and 20–25 are “anticipated and/or obvious” based on the disclosure in Li. Pet. 30. This asserted Ground presents two separate and distinct grounds. We re-label them as Ground 1A, Anticipation, and Ground 1B, Obviousness.

Novelty under 35 U.S.C. § 102 and nonobviousness under 35 U.S.C. § 103 are separate conditions of patentability. *Cohesive Techs., Inc. v. Waters Corp.*, 543 F.3d 1351, 1363 (Fed. Cir. 2008). The tests for anticipation and obviousness are different. *Id.* at 1364. The elements of proof for anticipation and obviousness are

different. *Duro-Last, Inc. v. Custom Seal, Inc.*, 321 F.3d 1098, 1107–08 (Fed. Cir.2003). Thus, “it does not follow that every technically anticipated invention would also have been obvious.” *Cohesive Techs.*, 543 F.3d at 1364; *see also Ericsson Inc. & Telefonaktiebolaget LM Ericsson v. Intellectual Ventures*, IPR2014-01471, slip op. at 14 (PTAB Mar. 18, 2015) (Paper 10) (“Although Petitioner may assert that all the elements . . . are found in the prior art, we note that not every anticipated claim [would have been] obvious.”); *cf. Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. 2019) (“it is well settled that ‘a disclosure that anticipates under § 102 also renders the claim invalid under § 103, for ‘anticipation is the epitome of obviousness.’”).¹⁴

1. Li (Ex. 1003)

We make the following findings regarding Li.

Li “relates to improved emulsions of mobility control polymers that can be used to increase recovery of crude oil from a subterranean hydrocarbon-containing formation.” Ex. 1003, 1:6–9. Li discloses an aqueous flooding fluid or a mobility control agent that comprises a cross-linked water-soluble polymer and an

¹⁴ The issue presented in *Realtime Data* was whether the Board erred in its determination that a person of ordinary skill in the art would have been motivated to combine the teachings of two references, O'Brien and Nelson. *Realtime Data*, 912 F.3d at 1372. The Court concluded that, in this case, the Board was not required to make any finding regarding a motivation to combine because the Board did not rely on Nelson for the disclosure of a particular element or teaching. *Id.* at 1373. The Board relied on Nelson simply to demonstrate that a person of ordinary skill in the art would have understood that the string compression disclosed in O'Brien was, in fact, a type of dictionary encoder. *Id.* at 1372–73. Thus, whether anticipation automatically renders a claim invalid under § 103 is dicta in the *Realtime Data* case. *See also, Adasa v. Avery Dennison*, 55 F.4th at 910 (“[e]ven if a reference's teachings are insufficient to find anticipation, that same reference's teachings may be used to find obviousness’ where it suggests some reason to modify the prior art to obtain the claimed limitations.”).

emulsifying surfactant, in which “the aqueous flooding fluid as injected into the well has a filter ratio of from 1 to about 1.5 and a flow rate of at least 0.1 g/s when the membrane filter size is 5 microns and the pressure is 20 psi.” *Id.* at 3:4–26.

Li discloses that “[t]ypically, the polymer emulsion is ‘inverted,’ or converted into a water-continuous emulsion with the aid of a high HLB surfactant and high shear, during the dilution process.” *Id.* at 6:10–13. The water-soluble polymer can be a synthetic polymer such as “an ionic, high molecular weight polyacrylamide, produced by the copolymerization of acrylamide with an anionic monomer such as sodium acrylate or sodium 2-acrylamido-2-methylpropanesulfonate.” Ex. 1003, 6:19–24. The water-soluble polymer can be a copolymer. *Id.* at 8:18–19. “The water-soluble polymer can be included in an aqueous flooding fluid in an amount of about 100 ppm to about 10000 ppm.” *Id.* at 19:20–22.

Regarding a “filter ratio” test, Li also discloses:

A recognized laboratory test to measure the ability of an aqueous flooding fluid to move through a subterranean formation without blocking the pores of the formation is called a filter ratio test. An example of this type of test is described in The American Petroleum Institute standards RP 63. In a filter ratio test, a standard volume of an aqueous flooding fluid containing a specific concentration of polymer is passed through a filter under a constant pressure. The time required for the solution to pass through the filter is recorded after specific volumes of solution have passed through the filter. The filter ratio is calculated as the ratio of the filter time for the final portion of solution, over the filter time for the initial, equal-sized portion of solution. Ideally, the aqueous flooding fluid should pass through the filter at a constant rate throughout the test, causing no pore-blocking during filtration, so that the filter ratio should be equal to one. The actual measured filter ratio is typically above one, however, so an upper limit to the filter ratio under a specific set of conditions is normally used in order to determine the suitability of an aqueous flooding fluid for use in a mobility control application.

Id. at 20:20–40.

Li discloses in Example 2’s Products I, III, and VII that an oil phase of the product can consist of a “parrafinic” [sic, paraffinic] solvent such as Exxsol D80. Ex. 1003, 30:49–65, 31:21–40, 32:35–33:6. Li discloses Example 2’s Products I–VIII have filter ratios ranging from 0.95 to 1.13. *Id.* at 34:15–38.

2. *Independent Claims 1, 24, 25*

As discussed in Section I.E, concerning an illustrative claim, independent claims 1, 24, and 25 are similar. Moreover, the issues raised by Patent Owner in its Response are directed to the filter ratio and copolymer limitations in the independent claims. PO Resp. 14–35. Patent Owner does not address specifically any of the dependent claims. *Id.*

Petitioner provides a clause-by-clause analysis of all the challenged independent claims asserting where Li discloses, either explicitly or inherently, each step or limitation of independent claims 1, 24, and 25. Petitioner cites throughout its analysis to both Li (Ex. 1003) and the Declaration testimony of Dr. Barati (Ex. 1012).¹⁵

Patent Owner asserts that Dr. Barati’s experiments “are inadequate” to show inherent anticipation. PO Resp. 16. According to Patent Owner, Dr. Barati’s test results “disprove” Petitioner’s inherency argument (*id.*), are based on “improper

¹⁵ Dr. Barati’s Declaration testimony is 290 pages, including attached exhibits. Dr. Barati currently serves as the Don W. Green Professor of Chemical and Petroleum Engineering at the University of Kansas and also as the Director of the Tertiary Oil Recovery Program. Ex. 1012 ¶ 3. Dr. Barati also is the manager of PetroEcomonic Solutions, LLC, “a consulting firm in the oil and gas area.” *Id.* Details of Dr. Barati’s education and experience are provided in his “curriculum vitae,” which is at Appendix A of his Declaration. *See also* Ex. 1012 ¶¶ 6–11 (summarizing Dr. Barati’s research, teaching, publications and other experience).

hindsight” (*id.* at 21), are missing critical data and facts (*id.* at 25), and failed to accurately recreate Li’s disclosed testing (*id.* at 31).

Petitioner acknowledges that “Li expressly describes IPSs having FRs that were *calculated using a different formula* than the ’320 patent.” Pet. 32 (emphasis added). Dr. Barati, however, *did not follow* Li’s disclosed method calculations. Instead, Dr. Barati conducted a series of tests using the inverted polymers disclosed in Li, but then used the “standard procedure” described in the ’320 patent, Koh, Levitt, and Magbagbeola for determining a filter ratio, which included testing “at 15 psi (plus or minus 10%) using a 1.2 μ m filter.” *Id.* (citing Ex. 1001, 31:4–27; Ex. 1012 ¶ 76).

To establish that the claim steps or limitations are inherently disclosed in Li, Dr. Barati conducted a series of tests based on Li’s disclosure. Dr. Barati conducted tests specifically on Li’s disclosed products I, III, and VII. Ex. 1012, Ex. C.¹⁶ Dr. Barati’s 17-page summary of his experiments in Exhibit C of Exhibit 1012 include a detailed discussion of his testing procedure and data of his testing results.

Dr. Barati’s conclusion from his testing of Li’s products I, III, and VII is:

The liquid polymer compositions of Products I, III and VII of Li each had a weight % of the copolymer greater than 39 weight %. The liquid polymer composition of Modified Product I of Li had a weight % of the copolymer less than 35 weight %. The inverted polymer solutions made from Products I, III, VII, and Modified Product I of Li that were dewatered and kept at 70 °C for 18 hours achieved a FR < 1.5 calculated using the FR as defined in Kim U.S. 10,626,320. The dewatered inverted polymer solution made from Product 1 and

¹⁶ To avoid confusion, we use the same document identifiers used by Dr. Barati, which refers to attachments to Exhibit 1012 as “Exhibits A, B, or C.” Exhibits A, B, and C are *not* independent exhibits in this proceeding; they are attachments to Exhibit 1012.

Modified Product I also showed a FR < 1.5 (using the FR as defined in U.S. 10,626,320) without being heated at 70 °C for 18 hours.

Ex. 1012, Ex. C, 15.¹⁷

Dr. Barati also provides claim charts for all the challenged claims stating where in the cited references a specific step or limitation is disclosed. *See* Ex. 1012, Ex. B, Part 1 (for the “Li-based” grounds) and Part 2 (for the “Pich-based” grounds).

*a. Dr. Barati’s Test Results Fail to Prove
Inherent Anticipation Based on Li*

Patent Owner asserts that Dr. Barati’s test results fail to prove inherent anticipation. PO Resp. 16. We agree with Patent Owner’s position that “[n]one of Dr. Barati’s tests met the claim limitations without the addition of a ‘dewatering’ step that Dr. Barati now concedes reflects a modification to Li’s examples.” PO Resp. 16.

To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Cont’l Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991).

Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient. [Citations omitted.] If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the

¹⁷ Again, to avoid confusion, this citation format is to page 15 of Exhibit C, which is an attachment to Exhibit 1012 in this proceeding.

questioned function, it seems to be well settled that the disclosure should be regarded as sufficient.

Id. at 1260 (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

Patent Owner, and the Declaration testimony (Exs. 2001, 2014) of its proffered expert, Dr. Gary Pope,¹⁸ take issue with the procedures and results of Dr. Barati's testing. Patent Owner asserts "Dr. Barati's experiments are inadequate to show inherent anticipation." PO Resp. 16 (bold capitalized font in heading deleted). Patent Owner asserts:

The Board should reject Grounds 1-3 that are based on Dr. Barati's testing for three reasons. First, Dr. Barati's test results fail to prove inherent anticipation as a legal matter. None of Dr. Barati's tests met the claim limitations without the addition of a "dewatering" step that Dr. Barati now concedes reflects a modification to Li's examples.

Second, the Board should reject Dr. Barati's testing because it is infected with hindsight. Dr. Barati did not simply test Li using procedures a POSITA would have used; he used improper hindsight based on the '320 patent itself to modify Li's examples.

Third, Dr. Barati's test results are unreliable. Dr. Barati failed to disclose the source or verify the contents for nearly all of the starting materials he used. Making matters worse, he purports to have taken almost no written recordings or observations for his experiments. And Dr. Barati's results are not comparable to Li's and do not comport with Li's objectives, such as increasing viscosity through activation.

¹⁸ Dr. Pope was retained by counsel for Patent Owner "to analyze certain opinions set forth in the Barati Declaration." Ex. 2014 ¶ 3. Dr. Pope earned a Ph.D. in Chemical Engineering. *Id.* ¶ 6. He worked in industry doing research "on the use of polymers and surfactants for enhanced oil recovery (EOR)." *Id.* ¶ 7. He also served as a Professor, and Chair of the Department, of Petroleum Engineering at the University of Texas at Austin. *Id.* ¶ 8. In this role, he served as a "Supervisor" for the Koh, Levitt, and Magbagbeola academic papers cited in the '320 patent and relied on as references in this proceeding. *Id.* ¶¶ 25, 105, 106. Details of his education, experience, and publications are in his CV, which is Exhibit 2002.

PO Resp. 16. Patent Owner concludes that “Dr. Barati’s own experimental testing shows that Li’s examples do not inherently meet the claims.” *Id.* at 17.

i. Dewatering

Patent Owner questions Dr. Barati’s addition of a dewatering step in Dr. Barati’s testing of Li’s examples. PO Resp. 17. According to Patent Owner, Li does not teach “dewatering.” Sur-reply 2.

Li clearly discloses the following:

Additional processing steps can be optionally performed in order to, for example, adjust the product pH, or *remove water or other solvents from the reaction product in order to produce a solid polymer product*. The final polymer product form is thus dictated by the choice of the formula and the processing steps employed, so that a polymer product comprised of a liquid solution, a liquid emulsion, or a dry solid can be produced.

Ex. 1003 17:56–63 (emphasis added). Patent Owner asserts, “this one-sentence disclosure [in Li] is not a teaching to dewater an emulsion; instead, it is an option to produce a solid polymer product instead of an emulsion.” PO Resp. 18 (citing Ex. 2014 ¶¶ 73–75). Dr. Pope’s cited testimony is that “a POSITA¹⁹ would not have inferred from the examples that they were necessarily (or even preferably) dewatered.” Ex. 2014 ¶ 73; *see also id.* ¶ 75 (“A POSITA would not have understood this ambiguous teaching [in Li] of removing water to create a solid polymer product to be in fact referring to the distinct category of dewatered emulsions. . . . [P]ractitioners would have understood the categorical differences between a ‘standard emulsion’ and a ‘dewatered emulsion.’”).

Patent Owner asserts that among the versions of Li’s products tested by Dr. Barati, the “Before Dewatering” samples “are the closest to how a POSITA would

¹⁹ An acronym for the patent law phrase of “a person of ordinary skill in the art.”

have naturally practiced Li's examples." PO Resp. 17 (citing Ex. 2014 ¶ 72). Patent Owner asserts, and Dr. Pope testifies that of the various products in Li tested by Dr. Barati, the "Before Dewatering" tests all failed to meet the filter ratio limitation included in all the challenged claims. Patent Owner and Dr. Pope each rely on the following annotated excerpt chart from Dr. Barati's Declaration testimony:

Product	Before Dewatering		
	2000 ppm, 2h inversion +2h dilution		
	mu-10s-1-30C	FR, 1.2 micron, 15 psi, 47mm	FR, 5 micron, 15 psi, 47mm
I	17.4	1.63	1.18
III	7.2	1.88	1.33
VII	2.1	1.99	1.62
Modified Product I	17.4	1.72	1.31

This chart is Patent Owner's Annotated excerpt from Dr. Barati's Declaration testimony. Ex. 1012, Ex. C, 14 (blue box added). *See* PO Resp. 17; Ex. 2014 ¶ 72

As Dr. Pope testifies, "[e]very one of [the "Before Dewatering"] tests failed to meet the claimed filter ratio." Ex. 2014 ¶ 72. Neither Petitioner nor Dr. Barati provide any persuasive evidence supporting why Dr. Barati calculated filter ratios both "before dewatering" and "after dewatering," but relied only on the "after dewatering" data to support its argument that the challenged claims are anticipated by Li. Li's examples, however, provide no disclosure of a dewatering step. Moreover, we have not been directed to persuasive evidence that using a dewatering step in Li's examples was inherent in Li's disclosed procedures.

Dr. Barati testified at his deposition that he did *not* rely solely on Li for the asserted dewatering step, but relied on other references. *See* Ex. 2011, 74:17–75:13 (stating he relied on other references to disclose a dewatering step).

In its Reply, Petitioner argues that Patent Owner “unreasonably holds Dr. Barati’s testing of Li’s examples to a much stricter standard than the disclosures of the ’320 Patent, Li, and Pich” and that Patent Owner’s position “is not based upon any actual testing to determine the FR of the Li examples.” Reply 2. These arguments misconstrue the burden of proof in this proceeding.

In *inter partes* reviews, a petitioner bears the burden of proving unpatentability of the challenged claims, and the burden of persuasion never shifts to the patent owner. *Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail in this proceeding, Petitioner must support its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). Here, Petitioner’s *evidence* does not meet that burden of proof.

As shown in the chart above, the evidence on which Petitioner and Dr. Barati relies shows that every test conducted *before* dewatering, that is following Li’s disclosed examples, failed to establish the specific filter ratio required by all the challenged claims. Accordingly, we determine that the evidence on which Petitioner relies fails to prove by a preponderance of the evidence that Li anticipates any of the challenged independent claims. We agree with Patent Owner that Dr. Barati’s described test procedures leave too many unanswered questions about why he chose the variables and procedures he chose to test Li’s examples when those variables and procedures are not disclosed or inherent in Li.

3. *Dependent Claims 2, 13–15, and 20–23*

Dependent claims 2, 13–15, and 20–25 each depend directly or indirectly from independent claims 1, 24, and 25, and thus include the same filter ratio limitations of these independent claims. Accordingly, because Dr. Barati’s testing of Li without dewatering failed to establish that Li included the claimed filter ratio

in claims 1, 24, and 25, we also determine that Petitioner fails to prove by a preponderance of the evidence that Li anticipates any of the challenged dependent claims.

*E. Ground 1B Obviousness of Claims 1, 2, 13–15, and 20–25
Based on Li*

“[I]nherency may supply a missing claim limitation in an obviousness analysis,” but “the use of inherency ... must be carefully circumscribed in the context of obviousness.” *Paul Hartmann AG v. Attends Healthcare Prod., Inc.*, No. 2022-1724, slip op. at 6 (Fed. Cir. Mar. 4, 2024) (quoting *PAR Pharm., Inc. v. TWI Pharm., Inc.*, 773 F.3d 1186, 1194–95 (Fed. Cir. 2014)). As stated in *Paul Hartmann*, “[a] claim limitation is inherent ‘only when the limitation at issue is the ‘natural result’ of the combination of prior art elements.” *Id.* (quoting *In re Oelrich*, 666 F.2d at 581). “In other words, ‘the mere fact that a certain thing may result from a given set of circumstances is not sufficient’ to find a limitation as inherent.” *Id.* “Instead, the ‘limitation at issue necessarily must be present’ in the combination.” *Id.* (quoting *PAR Pharm.*, 773 F.3d at 1195–96.)

Petitioner fails to provide any persuasive evidence or argument that claims 1, 2, 13–15, and 20–25 would have been obvious in view of Li. As discussed above, anticipation and obviousness are different grounds, requiring different analyses, and different evidence. Petitioner fails to establish what modifications in Li would have been obvious and why it would have been obvious to make the modifications with a reasonable expectation of success. The word “obvious” appears in Ground 1 only in the analysis of claim 24, clause D, on page 37 of the Petition, where Petitioner merely states the conclusion that this clause “would be obvious” [sic, the statute requires a temporal component to establish the claim “would have been obvious”].

Accordingly, we determine that Petitioner fails to provide the requisite evidence and arguments that claims 1, 2, 13–15, and 20–25 would have been obvious in view of Li.

*F. Ground 2; Obviousness of Claims 3–12 and 16–19
Based on Li and Pich*

1. Pich (Ex. 1004)²⁰

We make the following findings concerning the disclosure in Pich.

Pich is titled “Method of Continuous Dissolution of Polyacrylamide Emulsions for Enhanced Oil Recovery (EOR).” Ex. 1004, code (54). Pich discloses “continuously dissolving, in the injection water, a stable invert emulsion of acrylamide (co)polymer containing at least one inverting agent, and a water soluble polymer.” *Id.*, code (57). According to Pich, a test for a stable emulsion that can be used “consists in measuring the time taken by given volumes of solution containing 1000 ppm of active polymer to flow through a filter,” and “[t]he solution is contained in a cell pressurized to 2 bars and the filter has a diameter of 47 mm and a pore size of 5 microns.” *Id.* ¶ 24. For this test, “[t]he times required to obtain 100 ml (t_{100 ml}); 200 ml (t_{200 ml}) and 300 ml (t_{300 ml}) of filtrate are therefore measured and a filtration quotient (or filter ratio denoted ‘FR’) is defined, expressed by” the following formula:

$$FR = \frac{t_{300 \text{ ml}} - t_{200 \text{ ml}}}{t_{200 \text{ ml}} - t_{100 \text{ ml}}}$$

Id. ¶ 25. “A typical acceptability criterion of the industry is $FR < 1.5$.” *Id.* ¶ 27.

²⁰ We note that the Pich reference, U.S. Pub. No. US2011/0118153, eventually issued as U.S. Pat. No. 8,383,560. The ’560 Pich issued patent is incorporated by reference into the challenged ’320 patent. Ex. 1001, 5:59–61.

Pich discloses “a method for dissolving, in line and continuously, a reverse emulsion of acrylamide (co)polymer to the active polymer injection concentration of 500 to 2000 ppm, in order to obtain the filterability lower than 1.5 in less than 5 minutes of mixing contact time.” *Id.* ¶ 36. An oil phase can be prepared by using Exsol D100 and sorbitan oleate. *Id.* ¶¶ 78–80.

2. *Claims 3–12 and 16–19*

Petitioner provides a clause-by-clause analysis of all the challenged dependent claims in Ground 2, asserting where Li or Pich disclose, either explicitly or inherently, each step or limitation of dependent claims 3–12, 16–19. Pet. 39–46. Petitioner cites throughout its analysis to Li (Ex. 1003), Pich (Ex. 1004), and the Declaration testimony of Dr. Barati (Ex. 1012) for evidentiary support. Petitioner also provides reasons why a person of ordinary skill would have been motivated to combine these references with a reasonable expectation of success in doing so. Pet. 46. Petitioner relies on Li for the disclosure of the filter ratio requirements that are included in all the challenged claims. We have determined above in Grounds 1A and 1B that Petitioner’s evidence fails to disclose or suggest that Li teaches the filter ratio requirements as claimed. Pich does not compensate for the failures in Li’s disclosure. *See, e.g.*, PO Resp. 40 (“Because SNF’s arguments as to the independent claims fail for the reasons above, its arguments in Ground 2 fail for the same reasons.”).

Patent Owner also asserts that Pich fails to disclose or suggest the limitations in claim 5. Dependent claim 5 specifically states “the inversion of the LP composition comprises a single step, and wherein the single step comprises diluting the LP composition in the aqueous fluid in an in-line mixer having a mixer inlet and a mixer outlet to provide the inverted polymer solution.” Ex. 1001, 38:22–26. Petitioner relies on Pich for this limitation. Pet. 41, 54.

It is Petitioner's position that "[i]t would have been an obvious design choice of a POSITA choosing from a limited number of known prior art design alternatives (e.g., Pich's positioning of an in-line mixer) to optimize the design for a system of EOR to obtain predictable results." Pet. 40 (citing Ex. 1012 ¶ 108). According to Petitioner,

Li and Pich provide a motivation for a POSITA to combine their teachings to arrive at claims 3–12 with a reasonable expectation of success as they are in the same field of endeavor of EOR methods using an IPS and these claims recite known design options (e.g., single or multi-step processes, mixer location) with commercially available equipment operating under known design parameters (e.g., a pressure drop between 15 and 400 psi from mixer inlet to outlet).

Pet. 43. Petitioner concludes that a person of ordinary skill "would have a reasonable expectation of success in combining the teachings of Li and Pich as an obvious design choice to optimize the design for a system of EOR to obtain the predictable result" as set forth in claim 5, as well as other dependent claims. *Id.* (citing Ex. 1012 ¶ 144).

Patent Owner asserts that "Pich expressly discourages mixing in a single step, stating '[t]he in line dissolution of very large quantities (up to several m³/h) of polyacrylamide emulsions to a final concentration of 1000 to 2000 ppm is not feasible by a single direct mixing by static mixer.'" PO Resp. 41 (citing Ex. 1004 ¶ 131; Ex. 2014 ¶¶ 94, 102). Patent Owner also asserts "Pich discloses the test results from inverting its standard acrylamide emulsion using a variety of mixing configurations and conditions." PO Resp. 41. Pich's results for single-step mixing showed a filter ratio "higher than 5." Ex. 1004 ¶¶ 108–110 (explaining the "FR is higher than 5" for the "assembly No. 2"); Ex. 2011 at 127:10-15 (Dr. Barati's deposition testimony that "Example 2" resulted in a filter ratio higher than 5 which would have been unacceptable). Consistent with the negative results for single-

step mixing, Pich states that Figure 2 shows “an installation not conforming complying [*sic*] with the invention.” Ex. 1004, ¶ 65 (“FIGS. 2 and 3 are diagrams of an installation not conforming complying with the invention.”). Neither Petitioner nor Dr. Barati discusses these disclosures in Pich. We determine that these disclosures in Pich provide additional reasons why Li and Pich *do not* establish that claim 5 would have been obvious.

*G. Ground 3; Obviousness of Claim 24
Based on Li and BASF*

1. BASF (Ex. 1005)

We make the following findings concerning the BASF reference.

BASF “relates to a process for tertiary mineral oil production in which an aqueous injection fluid comprising at least a water soluble polyacrylamide-(co) polymer dissolved in the aqueous fluid is injected into a mineral oil deposit and the aqueous injection fluid is prepared by mixing a liquid dispersion polymer composition comprising particles of polyacrylamide-(co)polymers dispersed in an organic, hydrophobic liquid with an aqueous fluid.” Ex. 1005, 1:14–22. BASF discloses that “it is known in the art to use inverse emulsions of polyacrylamide (co)polymers for enhanced oil recovery (EOR) in particular for use on offshore platforms” and “[s]uch inverse emulsions typically comprise about 30 wt. % of polymers.” *Id.* at 2:28–32. BASF discloses that a liquid dispersion polymer composition comprising “20% to 59.9% by weight of an organic, hydrophobic liquid having a boiling point > 100° C” and “40% to 79.9% by weight of particles of at least one water soluble polyacrylamide-(co)polymer.” *Id.* at 4:7–12.

2. Claim 24

As we have noted above, independent claim 1 requires “at least 39% by weight of one or more synthetic (co)polymers” (Ex. 1001, 38:1–2), whereas

independent claim 24 requires “up to 35% by weight of one or more synthetic (co)polymers” (*id.* at 40:1–2). Except for this one difference, claims 1 and 24 are identical.

Petitioner has argued in Grounds 1A and 1B that claim 24 is anticipated or obvious based on Li alone. *See* Pet. 30. We have held that Petitioner has not met its burden of proof for Grounds 1A and 1B. As a third challenge to claim 24, Petitioner also asserts that claim 24 would have been obvious based on Li and BASF.

Petitioner provides a clause-by-clause analysis of claim 24 in Ground 3, asserting where Li or BASF disclose, either explicitly or inherently, each step or limitation of claim 24. Pet. 46–48. Petitioner cites throughout its analysis Li (Ex. 1003), BASF (Ex. 1005), and the Declaration testimony of Dr. Barati (Ex. 1012) for evidentiary support. Petitioner also provides reasons why a person of ordinary skill would have been motivated to combine these references with a reasonable expectation of success in doing so. *Id.* at 47–48.

Petitioner relies on Li for all the elements and limitations in claim 24 except for the “up to 35% by weight” limitation, which Petitioner labels as element “24D.” Pet. 47 (“Li Discloses Claim Elements 24A–24C, and 24E–24I;” “BASF Discloses Claim Element 24D” (bold font deleted)). We have determined in Grounds 1A and 1B, however, that Petitioner has *not* proven with a preponderance of the evidence that Li discloses the specific filter ratio limitation required in claim 24. Thus, for this reason alone, Petitioner’s Ground 3 challenge based on Li and BASF, fails. It also fails because BASF does not disclose the “up to 35% by weight of one or more synthetic (co)polymers” limitation in claim 24.

Petitioner relies on two portions of BASF for the “up to 35% by weight of one or more synthetic (co)polymers” limitation — one teaching 30% weight

(“Such inverse emulsions typically comprise about 30 wt. % of polymers”) (Pet. 47 (citing Ex. 1005, 2:31-32)), and another teaching 31–33% weight (“Polymer contents: 31–33% by weight”) (*id.* (citing Ex. 1005, 16:33)). Patent Owner asserts that Petitioner “did not test the polymer composition taught in BASF, but instead modified Product I in Li to test a composition with an emulsion having 34.07% polymer content.” PO Resp.44 (citing Ex. 1012, Ex. C at 14). Table 5 from Dr. Barati’s Declaration testimony is reproduced below showing his “Modified Product 1” with a “(Co)polymer Weight Percent” of “34.07.”

III. Results

a. CoPolymer Weight Percent of Liquid Polymer Composition:

	PI	PIII	PVII	Modified Product I
(Co)polymer Weight Percent of Liquid Polymer Composition	40.62	40.61	40.87	34.07

Table 5 CoPolymer Weight % of Liquid Polymer Composition

Table 5 from Ex. 1012, Ex. C, 14

Patent Owner asserts that “[n]either Li nor BASF, however, teach an emulsion with a weight percentage of 34.07.” PO Resp. 44. Moreover, neither Petitioner nor Dr. Barati provides persuasive evidence for further modifying the polymer content percentage disclosed in BASF or provides a factual basis as to why a person of ordinary skill would have had a reasonable expectation of success in achieving the claim limitations with Dr. Barati’s additional modification. Accordingly, we determine that Petitioner has not provided a preponderance of evidence to find claim 24 unpatentable based on Li in view of BASF.

H. Ground 4; Obviousness of Claims 1–25 Based on Pich and any of Koh, Levitt, or Magbagbeola

1. Koh (Ex. 1006)

We make the following findings of fact concerning Koh.

Koh is a Ph.D. dissertation entitled “Experimental Investigation of the Effect of Polymers on Residual Oil Saturation.” Ex. 1006, ii. Koh studies “Transport and In-situ Rheology of EOR Polymers” which includes “Filterability and Filterability Improvement Methods.” *Id.* at xi, 86–95. Koh studies the filterability of heating a “[s]cleroglucan solution containing 1250 ppm polymer in synthetic sea water.” *Id.* at 93. Koh discloses “[a] concentrated solution (5000 ppm) of scleroglucan was prepared” from a “polymer powder (2.5 g) [that] was dispersed in DI water (200 g) in a Waring® blender at low speed for 90 seconds.” *Id.* at 88. Koh discloses the filterability of “5000 ppm scleroglucan in deionized water after four consecutive high-pressure filtrations” with the resulting filtration ratio of 1 using a 1.2 micron filter and 15 psi pressure gradient. *Id.* at 94. Koh discloses that “[s]cleroglucan showed improved filterability after subjected to a purification method developed in the lab” and that “NVP co-polymers showed good filterability with filtration ratios less than 1.2 given the hydration is carefully achieved.” *Id.* at 95.

2. *Levitt (Ex. 1007)*

We make the following findings of fact concerning Levitt.

Levitt is a Ph.D. dissertation entitled “The Optimal Use of Enhanced Oil Recovery Polymers Under Hostile Conditions.” Ex. 1007, ii. Levitt studies “the design of a mobility control process using polyacrylamide and related acrylic polymers under hostile conditions” and corresponding stability and filtration properties, in particular those that are “high molecular weight polymers [that] have filtration ratios on the order of 1.2 or less.” *Id.* at vii. Levitt discloses:

Polymers were hydrated in a manner similar to that described by Foshee with the following exceptions. Whereas Foshee et al. (1976)[]recommend adding polymer powder over the course of 60 seconds such that all polymer is added before the solution develops too much viscosity to allow adequate dispersal, it was found that extending

the time of addition to 3-4 minutes, as is necessary for higher concentration stocks, did not prevent this.

Id. at 10–11. Levitt further discloses:

Filter ratio was measured using a stainless steel Fann filter press bell filled with at least 220 mL of polymer. The bell was pressurized to 15 psi using argon. A 90 mm diameter 1.2 micron Millipore cellulose filter was used. Effluent was collected in a graduated cylinder and the time for 60, 80, 180, and 200 mL to be filtered was recorded. The filter ratio is then calculated as

$$F.R. = \frac{t_{200\text{mL}} - t_{180\text{mL}}}{t_{80\text{mL}} - t_{60\text{mL}}};$$

unless otherwise noted.

Id. at 11.

3. *Magbagbeola (Ex. 1008)*

We make the following findings of fact concerning Magbagbeola.

Magbagbeola is a Master's thesis entitled "Quantification of the Viscoelastic Behavior of High Molecular Weight Polymers used for Chemical Enhanced Oil Recovery." Ex. 1008, iii. Magbagbeola studies "a proposed Universal Viscosity Model (UVM) for the apparent viscosity of polymer solutions flowing in permeable media and to determine the parameters of this model and how they vary with the polymer characteristics." *Id.* at vii.

Magbagbeola discloses that "[t]he chemical components required include: polymer (usually in powder form) and the various electrolyte salts such as NaCl, CaCl₂, MgCl₂·6H₂O, NaHCO₃, etc." *Id.* at 25. Magbagbeola further discloses:

A fully hydrated and consistent polymer solution will filter through a 1.2µm sized Millipore™ hydrophilic cellulose filter paper under 15 psi at a relatively constant rate (see Figure 3.1) and will give a filtration ratio (F.R) less than or equal to 1.2. The viability of a polymer solution is measured by its ability to pass the filtration test (i.e. a F.R ≤ 1.2). The filtration ratio is a measure of the time taken to filter the same

volume of polymer solution at the beginning and end of the filtration process. It is expressed as:

$$F.R. = \frac{t_{200ml} - t_{180ml}}{t_{80ml} - t_{60ml}}$$

Id. at 27–28.

4. Claims 1–25

It is beyond reasonable dispute that each of Pich, Koh, Levitt, and Magbagbeola are expressly incorporated by reference into the '320 patent's Specification. *See* Ex. 1001, 5:59–60 (the Pich published application matured into U.S. Pat. No. 8,383,560); 31:4–15 (incorporating Koh, Levitt, and Magbagbeola by reference)

Petitioner provides a clause-by-clause analysis of the challenged claims. Pet. 50–58. Petitioner also asserts that a “POSITA would have been motivated to combine Pich with the standard procedure for determining FR disclosed in Koh, Levitt, or Magbagbeola.” *Id.* at 48. Petitioner asserts this conclusion is supported because:

Pich and each of Koh, Levitt, and Magbagbeola are in the same field of endeavor of EOR by adding polymer to aqueous fluids to form an IPS for injection into mineral oil boreholes and each addresses use of an IPS having a FR less than 1.5. A POSITA would have been motivated to use the admittedly known ‘standard procedure’ for determining an acceptable FR disclosed for example in Koh, Levitt, or Magbagbeola, which is more stringent and thus likely to provide greater assurance of meeting end user requirements for standard offshore pumping.

Pet. 49 (citing Ex. 1012 ¶ 167).

Patent Owner's primary argument is that Koh, Levitt, and Magbagbeola are *not* directed to inverted polymer solutions as required by all the challenged claims. PO Resp. 49–50. These three references are directed to powdered polymers, not inverted polymer solutions. According to Patent Owner, “[m]erely being ‘known’

as a [FR or filter ratio] test for powders, however, is not sufficient for obviousness in a combination using inverted polymer solutions.” *Id.* at 50 (citing Ex. 2014 ¶ 112).

Dr. Pope’s Declaration testimony on this issue is persuasive because of his intimate familiarity with the Koh, Levitt, and Magbagbeola references. Dr. Pope was the faculty supervisor for each of these three student papers. Ex. 2014 ¶¶ 105, 106) (“I supervised the work of Heesong Koh, David Levitt, and Oluwaseun Magbagbeola, and can confirm based on my personal knowledge that they all prepared polymer solutions by hydrating powder polymers to make aqueous polymer solutions—they did not use inverted polymer solutions.”). Dr. Pope also testifies:

Koh, Levitt, and Magbagbeola do not make any mention of applying their filter ratio test to an inverted polymer solution, and in my opinion, one of ordinary skill in the art would not have known if the filter ratio test described in Koh, Levitt, and Magbagbeola using a 1.2 micron filter could usefully be applied to an inverted polymer solution. To the contrary, *one of ordinary skill in the art would not have expected the filter ratio criteria for inverted polymer solutions to be the same as aqueous polymer solutions prepared by hydrating polymer powders. Also, one of ordinary skill in the art would not have known from Koh, Levitt, and Magbagbeola the filter ratio threshold to select for an inverted polymer solution.*

Ex. 2014 ¶ 111 (emphasis added). Dr. Pope also testifies that “it was recognized in the art that there were numerous tradeoffs between powder polymers and inverted emulsion polymers.” *Id.* ¶ 112.

Dr. Barati has now admitted that his description of Koh, Levitt, and Magbagbeola as describing inverted polymer solutions was “a mistake.” Ex. 2011, 295:19-296:12. Dr. Barati testified at his deposition as follows:

Q. Powders are inverted polymer solutions?

A. The IPS label [inverted polymer solution] on that is a mistake. I agree with you. The IPS label on that is a mistake. But we are referring to the Koh's product in general. I understand that Koh and Levitt are using powders, not emulsions. But they are borrowing their method from an emulsion procedure.

Q. But you agree that Koh, Levitt, and also Magbagbeola are directed to powders, not inverted polymer solutions, correct?

A. Yes.

Ex. 2011, 296:2–12.

Dr. Pope provides a detailed explanation of the different properties and results involved in using inverted polymer solutions and powders. Ex. 2014 ¶¶ 105–113. Dr. Pope points out, for example, that when a filter ratio of an inverse emulsion was tested using a 1.2 micron filter, that test failed, with the filter becoming “progressively plugged” such that emulsion no longer passed through the filter and insufficient volume passing through to even allow a filter ratio to be determined. *Id.* ¶ 112 (citing Ex. 2004, 8). Dr. Pope further testifies that the “emulsion polymer could only pass a filter ratio test when the filter was changed to a 3 micron filter,” whereas “a powder polymer solution passed the filter ratio test using the 1.2 micron filter.” *Id.*

Dr. Pope also testifies that

the '320 patent inventors correlated the polymer transport in cores with filter ratios of inverted polymer solutions that they were testing in order to arrive at a threshold (1.5) that would not result in plugging of the core. Ex. 1001 at Fig. 20 (showing the permeability reduction factor and skin normalized factor as correlated with filtration ratio). Dr. Barati provided no analogous correlation data that would give meaning to a filter ratio threshold and instead conclude that a POSITA would have picked a number without any basis and called it “design choice” and “optimizat[ion].”

Ex. 2014 ¶ 115 (citing Pet. 59; Ex. 1012 ¶ 167).

Based on giving substantial weight to Dr. Pope’s testimony, we determine that the preponderance of the evidence supports Patent Owner’s arguments. Based on the evidence, using the filter ratios disclosed in Koh, Levitt, and Magbagbeola for powders would not have been an obvious design choice for a person of ordinary skill in the relevant technology. We recognize that the level of ordinary skill in this proceeding is high, a Ph.D. in Chemical or Petroleum Engineering (or related science or engineering discipline) with 2-3 years of experience in the design and implementation of methods for hydrocarbon recovery including use of polymer compositions in such recovery methods. The evidence, however, as described above, does not support that filter ratios used in powder technology and in inverted polymer solutions are an interchangeable “design choice,” as asserted by Petitioner.

Accordingly, we determine that Petitioner has not established that claims 1–25 would have been obvious based on Pich and any of, Koh, Levitt, or Magbagbeola.

I. Ground 5; Obviousness of Claim 24 Based on Pich, any of Koh, Levitt, or Magbagbeola, and BASF

Petitioner asserts that “[t]o the extent Patent Owner contends that Pich does not teach a LP composition with up to 35% by weight of one or more synthetic (co)polymers ([24D]), BASF teaches that feature. Pet. 58 (citing Ex. 1012, ¶ 246).

Based on the evidence discussed in Grounds 3 and 4, we determine that Petitioner has not established by a preponderance of the evidence that claim 24 is not patentable.

III. CONCLUSION

Based on the evidence and analysis above, we determine that Petitioner has not established that any challenged claim is not patentable based on any of the asserted grounds.

IV. Motion to Exclude

A. Background

Petitioner filed a Motion to Exclude Exhibit 2004, paragraph 52 of Exhibit 2001, and paragraph 112 of Exhibit 2014. Paper 38 (“Mot. Excl.”). Patent Owner filed a Response to the Motion to Exclude. Paper 39 (“PO Resp. Mot. Excl.”). Petitioner filed a Reply to the Motion. Paper 41 (“Reply Mot. Excl.”).

B. Motion to Exclude

Petitioner moves to exclude Patent Owner’s Exhibit 2004 under Fed. R. Evid. 402 and 403. Mot. Excl. 1. Further, Petitioner moves to exclude portions of Patent Owner’s declarant’s, Dr. Gary Pope’s, testimony, Exhibits 2001 and 2014, under Fed. R. Evid. 302, 403, 702, and 703. *Id.*

Exhibit 2004 is a paper titled “Tradeoffs Between Emulsion and Powder Polymers for EOR,” and is authored by S. Jouenne, A. Klimenko, and D. Levitt. The paper is described as “prepared for presentation at the SPE Improved Oil Recovery Conference held in Tulsa, Oklahoma, USA, 11–13 April 2016.” Exhibit 2004, 1.

Exhibit 2001 and 2014 are declaration testimonies of Patent Owner’s declarant, Gary Pope, Ph.D. Mot. Excl. 1. Paragraph 52 of Exhibit 2001 and Paragraph 112 of Exhibit 2014 refer to Exhibit 2004.²¹

²¹ Exhibit 2001 was filed with Patent Owner’s Preliminary Response on January 20, 2023, *prior* to institution of this proceeding. Exhibit 2014 was filed with

Petitioner asserts that Exhibit 2004 is not prior art based on the relevant priority date and “is thus irrelevant for the purpose of establishing the teachings of the prior art to one of ordinary skill in the art.” Mot. Excl. 2. Petitioner further asserts that “[t]he probative value of Exhibit 2004 is substantially outweighed by the undue prejudice flowing from Dr. Pope’s and Chevron’s improper reliance on [Exhibit 2004] to show purported information known to one of ordinary skill in the art at the relevant time of invention.” *Id.* at 3. Petitioner, in responding to Patent Owner’s arguments, argues that “Dr. Pope cannot establish the state of the art by relying exclusively on non-prior art documents and his reliance on only irrelevant evidence is fatal to the admissibility of his opinions in these paragraphs.” Reply Mot. Excl. 2.

Patent Owner argues that “[a]lthough Exhibit 2004 includes a date that is four months after the priority date listed on the ’320 patent, it is still relevant to the state of the art at the time and thus should not be excluded.” PO Resp. Mot. Excl. 1. Patent Owner argues that Exhibit 2004 “was prepared at nearly the same time as the priority date of the ’320 patent, having been prepared for a conference that took place four months after the December 8, 2015 date listed on the cover of the ’320 patent.” PO Resp. Mot. Excl. 3. Additionally, Patent Owner asserts that “Chevron relied on [Exhibit 2004] for its testing evidence showing that powder polymers and IPSs perform differently, even when subjected to the same tests.” *Id.* at 3–4 (citing PO Response at 59–60). Patent Owner asserts that Petitioner “makes absolutely no arguments as to how any purported prejudice would be ‘unfair’ or ‘substantially outweigh[]’ the probative value.” *Id.* at 4. Patent Owner argues that “SNF

Patent Owner’s Response on August 16, 2023, *after* institution of this proceeding. Paragraph 52 of Exhibit 2001 and Paragraph 112 of Exhibit 2014 refer to Exhibit 2004 and are substantially identical. We cite to Exhibit 2014.

provides no precedent supporting its position that [Exhibit 2004] should be excluded because it is dated four months after the priority date of the '320 patent.” *Id.* at 5.

Dr. Pope does *not* rely on Exhibit 2004 as a reference to establish that the challenged claims are not patentable. He cites it to establish that “it was recognized in the art that there were numerous tradeoffs between powder polymers and inverted emulsion polymers.” Ex. 2014 ¶ 112. To support his premise that a person of ordinary skill would recognize the performance differences between powder polymers and inverted emulsion polymers, Dr. Pope refers to the direct comparison and test results in Exhibit 2004 of “two industrial and commercially-available polymers, one in powder form from the gel process, and the other in an inverse emulsion.” *Id.* (citing Ex. 2004, 1, 8).

It is well-established law that “the Board can rely on evidence other than just prior art” in the Board’s opinions. *Yeda Rsch. v. Mylan Pharms. Inc.*, 906 F.3d 1031, 1041 (Fed. Cir. 2018). In *Yeda*, the Federal Circuit acknowledged:

[t]he statute permits IPR petitioners to rely on evidence beyond the asserted prior art. Section 312(a)(3) of Title 35 specifies that a petition should include both ‘copies of patents and printed publications that the petitioner relies upon,’ and ‘affidavits or declarations of *supporting evidence and opinions*.’ So do the regulations. *See* 37 C.F.R. § 42.104(b) (describing the content of the petition, including both ‘the patents or printed publications relied upon for each ground,’ and ‘supporting evidence relied upon to support the challenge’).

Id. This same evidentiary latitude extends to Patent Owners and their experts in relying on evidence beyond the asserted prior art. In *Yeda*, the Federal Circuit also stated:

The Board has recognized that non-prior art evidence of what was known ‘cannot be applied, independently, as teachings separately combinable’ with other prior art, but ‘can be relied on for their proper

supporting roles, e.g., indicating the level of ordinary skill in the art, what certain terms would mean to one with ordinary skill in the art, and how one with ordinary skill in the art would have understood a prior art disclosure.’

Yeda, 906 F.3d at 1041 (citing *Dominion Dealer Sols., LLC v. AutoAlert, Inc.*, IPR2014-00684, 2014 WL 5035359, at *5 (P.T.A.B. Oct. 6, 2014)).

In the proceeding before us, we determine that Dr. Pope cites and relies on Exhibit 2004 in his Declaration testimony (Ex, 2014 ¶ 112) for its “proper supporting roles,” e.g., indicating the level of ordinary skill in the art, what certain terms would mean to one with ordinary skill in the art, and how one with ordinary skill in the art would have understood a prior art disclosure. *See also Qualcomm Inc. v. Apple Inc.*, 24 F.4th 1367, 1376 (Fed. Cir. 2022) (“even though evidence such as expert testimony and party admissions are not themselves prior art references, they are permissible evidence in an *inter partes* review for establishing the background knowledge possessed by a person of ordinary skill in the art.”).

Accordingly, we determine Dr. Pope’s and Patent Owner’s reliance on Ex. 2004 is permissible evidence in this proceeding for the limited purpose for which it was cited.

Moreover, our general approach for considering challenges to the admissibility of evidence was outlined in *Corning Inc. v. DSM IP Assets B.V.*, IPR2013-00053, Paper 66, 19 (PTAB May 1, 2014). As stated in *Corning*, similar to a district court in a bench trial, the Board, sitting as a non-jury tribunal with administrative expertise, is well-positioned to determine and assign appropriate weight to evidence presented. *Id.* (citing *Donnelly Garment Co. v. NLRB*, 123 F.2d 215, 224 (8th Cir. 1941) (stating, in the context of reviewing an administrative determination of the National Labor Relations Board based on findings by a Trial Examiner, “We think that experience has demonstrated that in a trial or hearing

where no jury is present, more time is ordinarily lost in listening to arguments as to the admissibility of evidence and in considering offers of proof than would be consumed in taking the evidence proffered . . . One who is capable of ruling accurately upon the admissibility of evidence is equally capable of sifting it accurately after it has been received . . . ”)).

Moreover, “there is a strong public policy for making all information filed in an administrative proceeding available to the public.” *Liberty Mut. Ins. Co. v. Progressive Cas. Ins. Co.*, CBM2012-00010, slip op. at 40 (PTAB Feb. 24, 2014) (Paper 59). Rather than excluding evidence that is allegedly hearsay, confusing, misleading, untimely, and/or irrelevant, we will simply not rely on it or give it little or no probative weight, as appropriate, in our analysis. “In an *inter partes* review, we regard it as the better course to have a complete record of the evidence to facilitate public access, as well as appellate review.” *Sony Computer Entm’t Am. LLC v. Game Controller Tech. LLC*, IPR2013-00634, slip op. at 31 (PTAB Apr. 14, 2015) (Paper 32); *see also Gnosis S.p.A. v. S. Alabama Med. Sci. Found.*, IPR2013-00118, slip op. at 43 (PTAB June 20, 2014) (Paper 64) (citing *Donnelly*, 123 F.2d at 224 (“If the record on review contains not only all evidence which was clearly admissible, but also all evidence of doubtful admissibility, the court which is called upon to review the case can usually make an end of it, whereas if evidence was excluded which that court regards as having been admissible, a new trial or rehearing cannot be avoided.”))).

Accordingly, we deny Petitioner’s motion to exclude Exhibit 2004 and portions of Exhibit 2001 and 2014.

V. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, that Petitioner has not shown by a preponderance of the evidence that any of claims 1–25 is unpatentable;

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

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

VI. SUMMARY TABLE

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 13–15, and 20–25	102	Li		1, 2, 13–15, and 20–25
1, 2, 13–15, and 20–25	103	Li		1, 2, 13–15, and 20–25
3–12 and 16–19	103	Li, Pich		3–12 and 16–19
24	103	Li, BASF		24
1–25	103	Pich with any of Koh, Levitt, or Magbagbeola		1–25
24	103	Pich with any of Koh, Levitt, or Magbagbeola, and BASF		24
Overall Outcome				1–25

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