

Filed on behalf of: FLEX-CHEM HOLDING COMPANY, LLC and FLEX-
CHEM SERVICES CORPORATION

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PHARAOH ENERGY SERVICES, LLC
Petitioner,

v.

FLEX-CHEM HOLDING COMPANY, LLC
Patent Owner.

Case No. IPR2024-00822
Patent No. 10,697,282

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBIT LIST

Exhibit No.	Description of Document
2001	Petition for Inter Partes Review of US Patent No. 9,944,843 (Claims 1-13)
2002	WO 2013/081609 A1 Ayers
2003	Specialized Scheduling Order dated 7/10/2023 from US District Court Case No. 23-cv-316 Doc. No.25
2004	USPTO Memorandum to Members of the Patent Trial and Appeal Board re Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation dated June 21, 2022
2005	USDC National Judicial Caseload Profile for the Western District of Oklahoma
2006	Order dated 5/17/2024 from US District Court Case No. 23-cv-316 Doc. No. 57
2007	Complaint dated 4/13/2023 from US District Court Case No. 23-cv-316 Doc. No.1
2008	Defendant Pharaoh Energy Services, LLC's Answer Affirmative Defenses, and Counterclaims to First Amended Complaint dated 1/11/2024 from US District Court Case No. 23-cv-316 Doc. No.48
2009	Pharaoh's Invalidity Contentions for 10,697,282 dated 4/22/2024 from US District Court Case No. 23-cv-316
2010	First Amended Complaint dated 12/28/2023 from US District Court Case No. 23-cv-316 Doc. No.46

2011	Declaration of Paige S. Stradley in support of Patent Owner's Preliminary Response to U.S. Patent No. 10,697,282
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Patent Owner Flex-Chem Holding Company, LLC, and Flex-Chem Services Corporation (collectively, “Patent Owner” or “Flex-Chem”) submit this Preliminary Response to the Petition for *Inter Partes* Review of U.S. Patent No. 10,697,282 (“the ’282 patent”) (Paper 1; “Petition”) filed by Pharoah Energy Service, LLC. (“Petitioner” or “Pharoah”).

I. INTRODUCTION

Petitioner has launched a multi-front attack on the validity of the ’282 patent, including by filing this Petition for *inter partes* review. The Petition should be denied for any one of the following reasons.

First, despite Petitioner’s misleading assertions to the contrary, the references relied upon to support its unpatentability grounds are the same or substantially the same as art considered by the Office during prosecution. Though Petitioner was aware of the need to explain how the Office erred in its treatment of these references in a manner material to patentability, the Petition fails to do so with proper facts and evidence. Patent Owner’s own analysis herein, which applies the test set forth in *Advanced Bionics*, warrants discretionary denial under 35 USC § 325(d).

Second, the Petition should be denied on the merits because it does not establish a reasonable likelihood that Petitioner would prevail with respect to at

least one challenged claim. The Petition contains two grounds alleging unpatentability, with each ground challenging multiple claims. Petitioner has the obligation to point out specifically where each limitation of the '282 patent claims is found in the prior art and to explain any differences between the prior art and the claimed invention. Petitioner's high-level treatment of the claims fails to account for all aspects of the claimed methods, including a failure to establish that multiple claim limitations are disclosed or even suggested in the asserted art and proposed combination of asserted art. In particular, Petitioner fails to establish that the cited art discloses the remediation of metal-polymer complexes in pre-existing wells in subterranean shale formations.

Moreover, while the Petitioner provides brief legal sections on anticipation and obviousness, the grounds themselves contain barebone assertions that do not apply the requisite legal analyses acknowledged in the Petition itself. Each ground of unpatentability presents conclusory arguments that lack any real explanation or factual analysis. Likewise, Petitioner's expert Jeffrey H. Harwell offers only minimalist assertions on what a person of ordinary skill in the art ("POSA") would understand from the cited prior art, how that art specifically discloses the claimed subject matter, and why the challenged claims are anticipated or would have been obvious. The Harwell Declaration (Ex. 1003) repeats, essentially *verbatim*, the

same legally insufficient arguments from the Petition and presents them as though they are facts, rather than applying his purported expertise and setting forth additional facts, evidence, and well-reasoned opinions to support Petitioner's alleged unpatentability grounds.

It is not surprising that the Petition and Harwell Declaration contain incomplete and legally insufficient arguments, because the cited references simply do not anticipate or render obvious the challenged claims. The Petition and Harwell Declaration fail to demonstrate a *prima facie* case of unpatentability for any of the challenged claims and the Petition should be denied on the merits.

Third, discretionary denial under *Fintiv* is appropriate for efficiency reasons. Instituting trial here would result in redundant litigation of issues between these proceedings and a parallel, ongoing action in the U.S. District Court for the Western District of Oklahoma, which involves the '282 patent and three related patents. Petitioner here challenges the patentability of the same claims as in the district court action in view of the same alleged prior art. Moreover, the parties in the district court litigation have already completed significant discovery, including opening expert reports, and district court trial is scheduled for January 2025, approximately nine months prior to any potential FWD on or around October 18, 2025. Simply put, Petitioner's unconvincing challenge here is a duplicative

offshoot of a much larger action in district court, which will be completed well before any merits-based decision here. Discretionary denial in view of *Fintiv* is the more efficient outcome.

In view of the following detailed discussion, the Board should deny institution of *inter partes* review.

II. OVERVIEW OF THE '282 PATENT

A. Specification

The '282 patent is directed to formulations and methods for remediating subterranean-formed metal-polymer complexes that form in and obstruct wells in subterranean formations. Ex. 1001 at Abstract, 2:20-24. In particular, the '282 patent relates to a process to cause metal cations and polymers to disassociate from metal-polymer complex byproducts of a fracturing process. *Id.* at 4:62-65.

In one embodiment, the method of the '282 patent includes injecting a metal-polymer complex remediation mixture containing a metal complexing agent, e.g., between 0.1% and 95% by weight of the mixture, into a subterranean formation adjacent to a well at a pressure below the fracture pressure of the formation, and removing the remediation mixture from the subsurface after a sufficient contact time. Ex. 1001, Abstract, 2:43-64. This specific embodiment was shown to “remediate polymer-containing, subterranean-formed metal-polymer

complexes in shale formations.” *Id.* Maintaining the remediation mixture in the formation for a sufficient time is said to “cause the subterranean-formed metal-polymer complex to dissociate and dissolve, thereby creating a low viscosity flow back fluid comprising the spent metal-polymer complex remediation mixture and the metal-polymer complex components.” 2:52-60. The flow back fluid is then removed from the well to improve hydrocarbon production relative to production immediately prior to performance of the method. *Id.* at 2:60-64.

III. OVERVIEW OF THE REFERENCES IN THE GROUNDS

A. Ayers

U.S. Patent No. 9,410,405 to Ayers (Ex. 1004; “Ayers”), titled Compositions and Methods for Enhanced Hydrocarbon Recovery, is generally directed to “a method ... for increasing flow, production, or recovery of oil and gas hydrocarbons from a subterranean formation.” Ex. 1004, Abstract.

The compositions described in Ayers (alternately referred to as compositions, formulations, and fluid formulations) are said to generate oxygen or carbon dioxide gas through decomposition of a peroxygen compound in the formulation to create gas pressure in a subterranean formation. *Id.* Such compositions “can be allowed to contact the wellbore ... or a hydrocarbon-bearing subterranean formation for a sufficient period of time to increase flow, production,

and/or recovery of hydrocarbons.” *Id.* at 22:20-24. A “sufficient period” is said to allow the composition to generate O₂ or CO₂ gas pressure with sufficient mechanical energy and/or action to: (1) physically alter, fragment, rubblize, fracture, crack, pit, and/or create fluid preferential pathways within a portion of the treated subterranean formation, (2) mobilize, release, migrate, realign, and/or redistribute portions of the treated subterranean formation, (3) to create or cause secondary porosity in a portion of the treated subterranean formation, and (4) to sufficiently mobilize, remove, release, realign, and/or redistribute blockage or damage in the subterranean formation. *Id.* at 22:60-23:42

The compositions of Ayers may include an alkali metal chelate (*see e.g.*, Ex. 1004 at 1:51-53, 34:60-64), which serves the function of “extending the life of the peroxygen and making the peroxygen more stable in the well bore or subterranean formation and increasing the peroxide penetration in the formation.” Ex. 1004, 1:62-2:1. If an alkali metal chelate is contained in a composition, the concentration may be between 0.00001% to 5.0% by weight of the composition when “introduced into the wellbore or subterranean formulation” as “determined by dividing the weight of the chelate by the total weight of the [introduced] composition.” *Id.* at 36:20-22.

Ayers also refers to “stock or concentrate compositions” having a surfactant and an alkali metal chelate at a concentration greater than about 0.2% and less than about 5% by weight of the non-water components, which may be diluted to “working strength,” e.g., with water. *Id.* at 41:21-29; *see also id.* at 34:60-67. A composition diluted with water for injection into the well is referred to as a “treatment solution.” *Id.* at 32:23-26, 32:48-33:8. This diluted “treatment solution,” naturally has a concentration of components, such as chelates, substantially less than the range provided above for “stock or concentrate compositions.”

In this regard, Ayers discloses a composition provided as a two-part system (Component A and Component B) such as the following in “aqueous-based concentrated form.”

Component A in a concentrate form can include:
Ethoxylated Fatty Acid—25 g/L to 350 g/L
Surfactant/Terpene Mixture—25 g/L to 400 g/L
Sodium EDTA—0.2 to 20 g/L
Component B in a concentrate form can include:
Hydrogen Peroxide—25 g/L to 400 g/L
Surfactant/Terpene Mixture—5 g/L to 50 g/L

Id. at 31:51-67. Application of such compositions as a “treatment solution” is said to “consist[] of mixing ... Component A [containing a chelate] with the surfactant-stabilized hydrogen peroxide (Component B) and diluting with fresh or brine

water.” *Id.* at 32:23-30; *see also id.* at 32:55-58 (composition is easy to dilute and apply).

As background, Ayers presents a summary of “acid treatments” known in the art, i.e., “[m]atrix stimulation treatments using acids, or acids in combination with water, surfactants, or other chemicals.” Ex. 1001 at 11:14-12:17. Ayers discloses that “the use of acids or acid blends to enhance hydrocarbon recovery ... actually can result in formation damage and blockages such as sludge (e.g., acid and ferric iron-induced asphaltic sludge), liberation of fines and precipitate formation, and emulsion blocks from spent acid viscous emulsions.” Ayers further notes that “[t]ypically, acid treatment of shale for gas recovery has not been successful.” *Id.* at 12:10-17.

In view of these disadvantages, Ayers provides compositions that act mechanically on subterranean formations such as shale using gas pressure, as opposed to acid treatments that “generally exhibit very rapid and aggressive [chemical] reactions with minerals ... and other materials common to many formations.” *Id.* at 11:45-49. In this sense, the potential use of acids in an Ayers composition is only for adjusting pH. *Id.* at 35:66-36:4, 41:56-61 (describing compositions having a pH of less than about 10.0 and greater than about 4.0 which “may be adjusted by adding an acid or a base to the composition”).

B. Frenier

U.S. Patent No. 6,436,880 to Frenier (Ex. 1005; “Frenier”), titled Well Treatment Fluids Comprising Chelating Agents, is directed to “[a]n acidic fluid that is useful in stimulation and workover operations, and in particular, for the control of iron in acidizing operations, the removal of alkaline earth carbonate scale in scale removal operations, and matrix or fracture acidizing operations,” i.e., acid treatments. Ex. 1005, Abstract. The acid fluid comprises “an acid, such as hydrochloric acid; water; and a hydroxyethylamino carboxylic acid,” preferably HEDTA and HEIDA. *Id.* Frenier states that the invention relates to “the stimulation of hydrocarbon wells and in particular to acid fluids and methods of using such fluids in treating a subterranean formations having low permeability.” *Id.* at 1:6-9.

Frenier states in its Background that “[i]n order for oil to be ‘produced,’ that is travel from [a subterranean rock formation] to the wellbore (and ultimately to the surface), there must be a sufficiently unimpeded flowpath from the formation to the wellbore.” Ex. 1005 at 12-19. This flowpath is said to be “through the formation rock – e.g., sandstone, carbonates – which has pores of sufficient size and number to allow a conduit for the oil to move through the formation.” *Id.* at 1:19-22.

Frenier is not directed to and does not disclose remediation of subterranean-formed metal-polymer complexes. Instead, Frenier speaks to methods of acid-treating subterranean formations generally, where a well treatment fluid is injected through a wellbore and into a subterranean formation. Ex. 1005 at 4:44-47. This chemical treatment method is used to “enhance[e] the productivity of hydrocarbon wells by creating alternate flow paths by removing portions of a wellbore coating, dissolving small portions of the formation, or removing near wellbore formation damage.” *Id.* at 1:55-65. The only specific formation types on which Frenier discloses for its acid treatment methods are sandstone or carbonate subterranean formations. *Id.* at 13:3-19 (claim 28); *see also id.* at 10:30-11:19 (Example 4 and its Table 3) (increasing permeability in limestone cores with an initial permeability of 27-77 md [i.e., millidarcies]).

IV. LEVEL OF ORDINARY SKILL IN THE ART

The Petition provides the following definition for a person of ordinary skill in the art (“POSA”) at the time of the invention claimed in the ’282 patent:

[a person having] at least a bachelor’s degree in chemistry, chemical engineering, petroleum engineering, geology, or the equivalent, and at least two years of experience in oil and natural gas well treatments, or an equivalent amount of relevant work and/or educational experience.

For the purposes of this POPR, Patent Owner adopts this definition of a POSA.¹

V. CLAIM CONSTRUCTION

In *inter partes* reviews filed after November 13, 2018, the Board construes claim terms based on their ordinary and customary meaning in accordance with *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*); 83 Fed. Reg. 51340 (October 11, 2018).

The Petition references the litigation in the Western District of Oklahoma, Case No. 5:23-cv-00316-JD (“Parallel Litigation”), and states that “for the purposes of this Petition (and any subsequent PTAB proceedings), Petitioner adopts and applies the plain and ordinary meaning of the claims terms” in view of Flex Chem’s responsive claim construction brief in the Parallel Litigation. Petition at 14-15 citing Ex. 1010. However, the Petition does not explain the plain and ordinary meaning for any limitation of the challenged claims. Nor does it cite to Flex Chem’s responsive claim construction brief with any particularity so the Board can understand the meaning of any claim limitation discussed therein.

¹ In the event the Board institutes trial, Patent Owner reserves the right to offer a different definition of the POSA.

*Securus Techs., Inc. v. Global Tel*Link Corp.*, IPR2015-00153, Paper 12 at 8 (P.T.A.B. May 1, 2015) (quoting *DeSilva v. DiLeonardi*, 181 F.3d 865, 867 (7th Cir. 1999) (“A brief must make all arguments accessible to the judges, rather than ask them to play archaeologist with the record.”)).

Nonetheless, for the purposes of this proceeding, Patent Owner agrees to accept the construction for any claim terms from the ’282 patent it presented in district court, i.e., “metal(s),” “pH modifier,” “fracture pressure,” “shale formation,” and “metal polymer complex;” none of which require a construction different from the plain import of the claim language itself. Ex. 1010 at 5, 10, 13, 15, 17, 22.

VI. THE BOARD SHOULD EXERCISE ITS DISCRETION PURSUANT TO § 325(d) AND DENY INSTITUTION

The Board should deny institution under 35 USC § 325(d) because Petitioner’s references are the same as, or cumulative to, what the Examiner considered during prosecution, and the Petition fails to demonstrate that the Examiner erred in any material way.

Under § 325(d), the Board applies a two-part test:

(1) [a] whether the same or substantially the same art previously was presented to the Office or [b] whether the same or substantially the same arguments previously were presented to the Office; and

(2) if either condition of first part of the framework is satisfied, whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims.

Advanced Bionics, LLC v. MED-EL Electromedizinische Geräte GmbH, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential) (“*Advanced Bionics*”).

Both parts of the test support a discretionary denial here.

The Petition contains a very brief and incomplete section on § 325(d), which provides only a single conclusory assertion: “The Office has not previously considered the prior art, the arguments presented herein, or any substantially similar art or arguments regarding the ’282 Patent.” Petition at 4 (Section V.D). The section then states “[p]etitioner relies on the following patents and printed publications:” without identifying any references.

Petitioner knows the importance of addressing § 325(d) in the Petition itself, including the need to support its position with facts and evidence. Indeed, the same Petitioner presented a factual analysis under *Advanced Bionics* in a separate but concurrently filed Petition directed to a related patent in the Parallel Litigation. See IPR2024-00815, Paper 1 (Ex. 2001) (Petition for *Inter Partes* Review of U.S. Patent No. 9,944,843 (Claims 1-13)) at 5-9 (325(d) analysis under both parts of

Advanced Bionics test).² Petitioner’s failure to provide any real analysis here is to its own peril.

Under *Advanced Bionics*, “[i]f a condition in the first part of the framework is satisfied and the petitioner fails to make a showing of material error, the Director generally will exercise discretion not to institute *inter partes* review.” IPR2019-01469, Paper 6 at 8-9. This legal standard “reflects a commitment to defer to [the] previous Office evaluations of the evidence of record unless material error is shown.” *Id.* at 9.

A. The Same or Substantially the Same Art Previously was Presented to the Office

In analyzing whether the same or substantially the same art or arguments were previously presented to the Office, the Board considers various factors, including: (i) the similarities and material differences between the asserted art and the prior art previously presented to the Office; (ii) the cumulative nature of the asserted art and the prior art previously evaluated by the Office; and (iii) the extent

² Although Petitioner’s 325(d) analysis in the concurrently filed Petition is significantly more robust than that included in this Petition, Petitioner still falls short for the reasons described in Patent Owner’s Preliminary Response in IPR2024-00815.

of the overlap between the arguments made before the Office and the manner in which Petitioner relies on the prior art or the patent owner distinguishes the prior art. *Id.* at 8–10; *see also Becton, Dickinson & Co. v. Braun Melsungen AG*, IPR2017-01586, Paper 8, 17–18 (Dec. 15, 2015).

The Petition does not identify any of the art previously considered by the Office, or even attempt to explain why the art supporting Petitioner’s alleged invalidity grounds, i.e., Ayers and Frenier (*supra*), is not the same or substantially the same as that presented to the Examiner during prosecution. This is not surprising. Frenier and a PCT counterpart of Ayers were both before the Examiner during prosecution. Petitioner’s conclusory allegations on § 325(d) are false and meritless.

For one, Frenier is a reference cited on the face of the ’282 patent that Patent Owner submitted in an IDS and the Examiner previously considered. Ex. 1001 at 2 (identifying U.S. 6,436,880 to Frenier et al.); Ex. 1002 at 231-243 (3/21/19 IDS identifying Frenier as U.S. Patent Cite No. 8), 208-218 (Examiner noting that she “considered” Frenier (U.S. Patent Cite No. 8) by not lining through it on the Examiner signed copy of the IDS). The Frenier reference relied upon in the Petition is identical to the Frenier reference considered during prosecution. *See* Ex. 1001 at 4 (Frenier is U.S. 6,436,880).

Second, Patent Owner submitted, and the Examiner considered WO 2013/081609 to Ayers (Ex. 2002; “Ayers ’609;”), which is also cited on the face of the ’282 patent. Ex. 1001 at 2 (identifying WO ’609 published in June 2013); Ex. 1002 at 231-243 (3/21/19 IDS identifying Ayers ’609 as Foreign Patent Cite No. 3), 208-218 (Examiner noting that she “considered” Ayers ’609 (Foreign Patent Cite No. 3) by not lining through it on the Examiner signed copy of the IDS).

The Petition states that the earliest effective filing of the ’282 patent is October 25, 2013 “solely for the purposes of the filing.” Petition at 6. It also acknowledges that Ayers issued, and the U.S. application of Ayers was filed after this earliest effective filing date. Petition at 3 (filing date 5/29/14; issue date 8/9/16). As such, the Petition relies upon Ayers only under 35 USC § 102(a)(2) in view of the filing date of counterpart PCT application PCT/US2011/062697 (“PCT ’629”). *Id.* Ayers ’609 is the publication of PCT ’697 and published on June 3, 2013. Ex 2002 at 1. Its content is essentially identical to Ayers, except that Ayers issued with different claims. *See* Ex. 1004 *passim*; *cf.* Ex. 2002 *passim*.

In similar cases, the Board has found references to be substantially the same under § 325(d) where both references share the same specification but have different claims. *See, e.g., Alarm.com, Inc., v. Vivint, Inc.*, IPR2022-00728, Paper 6 at 19-20 (P.T.A.B. Nov. 1, 2022); *Ivantis, Inc. et al v. Sight Sciences, Inc.*

IPR2022-01530, Paper 14 at 13-14 (P.T.A.B. Mar. 27, 2023). In *Alarm*, the Board found two different patents, with different claims, to be the same for purposes of § 325(d) because the two patents “share[] the same written description and drawings in all relevant parts.” IPR2022-00728, Paper 6 at 20. Likewise, in *Ivantis*, the Board found that a patent application cited in the petition was the same as a patent that was before the Examiner, despite not having identical claims, because the two references “contain[] identical text and figures.” IPR2022-01530, Paper 14 at 12. The same is true in this case: the disclosures of Ayers and Ayers ’609 are identical in substance and share the same written description and drawings notwithstanding differences in claims.

That both references relied upon in Petitioner’s unpatentability grounds are the same or substantially the same as art presented to the Office is itself sufficient to satisfy part one of the *Advanced Bionics* test. *Advanced Bionics* at 16, 19; *Ziegmann v. Stephens*, IPR2015-01860, Paper 13 at 19-20 (P.T.A.B. Sept. 6, 2017) (same). There is no need to consider whether the same arguments previously were presented to the Office.

B. The Petition Fails to Demonstrate that the Office Erred in a Manner Material to the Patentability of the Challenged Claims

When filing the Petition, Petitioner was aware of the factors the Board considers under *Advanced Bionics*, including factors considered under part two of the test. *See* Ex. 2001 at 6 (Petitioner acknowledging in a concurrent proceeding its role in explaining how the Office erred, and in presenting additional evidence and facts in the petition that warrant reconsideration of prior art and documents). Petitioner declined to examine any *Advanced Bionics* factors in the Petition, and thus makes no assertions under part two of the *Advanced Bionics* test. As such, Petitioner cannot demonstrate that the Office erred in a manner material to patentability of the challenged claims.

The Board should deny the Petition under § 325(d).

Petitioner also should know that it is not entitled to reply to a patent owner's preliminary response absent a "showing of good cause." 37 C.F.R. § 42.108(c) (2021). A petitioner "may not neglect to address an issue with the expectation that additional briefing will be permitted in reply." *See Edwards Lifesciences Corp. v. Boston Scientific Scimed Inc.*, IPR2017-00444, Paper 8 at 3 (P.T.A.B. May 22, 2017) (denying petitioner authorization to file a reply to address § 325(d) arguments). Petitioner had an opportunity to provide a fulsome analysis under

Advanced Bionics in the Petition but declined to do so. And because Petitioner was aware of the need to address § 325(d) in the Petition itself, it should not be permitted to reply to Patent Owner's § 325(d) analysis.

VII. CLAIMS 1-13 ARE NOT UNPATENTABLE OVER EITHER OF PETITIONER'S ALLEGED GROUNDS

“The Director may not authorize an *inter partes* review to be instituted unless the Director determines that the information presented in the petition . . . shows that 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) (emphasis added).

To be considered, a petition for *inter partes* review must identify, “in writing and with particularity, each claim challenged, the grounds on which the challenge to each claim is based, and the evidence that supports the grounds for the challenge to each claim.” 35 U.S.C. § 312(a)(3). The Board's rules further specify that a petition must include “[a] full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent[,]” and identify “where each element of [each challenged] claim is found in the prior art patents or printed publications relied upon [and] the relevance of the evidence to the challenge

raised.” 37 C.F.R. §§ 42.22(a)(2); *see also* 42.104(b)(4) (a petition for *inter partes* review must identify how the construed claim is unpatentable under the statutory grounds on which the petitioner challenges the claims).

As the Board has instructed time and again, a petition for *inter partes* review must tell a story; mere conclusory attorney argument, or conclusory statements from an expert, are not sufficient to carry the burden of demonstrating unpatentability. Indeed, petitions have been routinely denied under 35 U.S.C. § 314(a) in view of USPTO regulatory requirements from the outset of *inter partes* review in 2013. *See e.g., Zetec, Inc. v. Westinghouse Electric Company, LLC*, IPR2014-00384, Paper 10 (P.T.A.B. July 23, 2014) at 6, 8 (denying institution on anticipation grounds that presented underdeveloped arguments), 12 (denying institution on obviousness grounds supported by perfunctory assertions); *Printing Industries of America v. CTP Innovations, LLC*, IPR2013-00474, Paper 16 (P.T.A.B. Dec. 13, 2013) at 11, 13 (denying institution on anticipation and obviousness grounds for failure to explain how the cited portions of the reference correspond to the limitations for which they are cited); *Lake Cable*, IPR2013-00528, Paper 11 (P.T.A.B. February 19, 2014) at 19 (denying institution on obviousness grounds because petition did not articulate an adequate reason why a POSA would have modified references to meet a claim limitation).

More recently, Director Vidal affirmed and made precedential an institution denial because a petitioner's arguments regarding inherency and obviousness were supported only by a conclusory expert declaration. *Xerox Corp. v Bytemark, Inc.*, IPR2022-00624, Paper 12 (Director Vidal February 10, 2023) at 2, 5 ("Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, *verbatim*, Petitioner's conclusory arguments."). In the now precedential decision, the Board denied institution because neither the petition nor the expert declaration "provided sufficient evidence or persuasive reasoning" to support disclosure of required claim elements in the prior art, or to explain why a POSA would have found those elements obvious. *Xerox Corp. v Bytemark, Inc.*, IPR2022-00624, Paper 9 (P.T.A.B. August 23, 2022) at 14; *see also id.* at 15 (citing *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed.Cir. 2000)).

As set forth below, trial should not be instituted on the merits because the anticipation and obviousness analyses provided in the Petition and its associated expert declaration are conclusory and deficient on several fronts. The Petition therefore fails to show a reasonable likelihood that any claim of the '282 patent is unpatentable.

A. Ground 1: Anticipation by Ayers

Anticipation under 35 U.S.C. § 102 is a question of fact, including whether or not a claim element is inherent in the prior art. *Eli Lilly and Company v. Zenith Goldline Pharmaceuticals, Inc.*, 471 F. 3d 1369, 1375 (Fed.Cir. 2006) (citing *In re Schreiber*, 128 F.3d 1473, 1477 (Fed.Cir. 1997)). Because the hallmark of anticipation is prior invention, a prior art reference must not only disclose all elements of the claim, but must also disclose those elements as “arranged as in the claim.” *Net MoneyIN, Inc. v. Verisign, Inc.*, 545 F.3d 1359, 1369 (Fed.Cir. 2008).

It is permissible to consider not only the literal teachings of the prior art, but also the inferences the skilled artisan would be reasonably expected to draw from the reference. *Eli Lilly v. Los Angeles Biomedical Res. Inst.*, 849 F.3d 1073, 1074–75 (Fed.Cir. 2017); *In re Preda*, 401 F.2d 825, 826 (CCPA 1968). In the context of anticipation, however, the question is never whether a prior art reference “suggests” the claimed subject matter. *Astra Zeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1055 (Fed.Cir. 2010).

A prior art reference may anticipate a claim when it does not expressly spell out the limitations as arranged or combined as in the claim, but only “if a POSA, reading the reference, would ‘at once envisage’ the claimed arrangement or combination.” *Kennametal, Inc. v. Ingersoll Cutting Tool Co.*, 780 F.3d 1376, 1381

(Fed.Cir. 2015). It is also well established that the disclosure of a genus in the prior art is not necessarily a disclosure of every species that may be a member of that genus. *Atofina v. Great Lakes Chemical Corp.*, 441 F. 3d 991, 999 (Fed.Cir. 2006) (citing *In re Baird*, 16 F.3d 380, 382 (Fed.Cir.1994)); *see also id.* (“There may be ... species encompassed within a genus that are not disclosed by a mere disclosure of the genus”).

Petitioner agrees with Patent Owner that “[w]hen the prior art discloses a range which touches or overlaps the claimed range, but no specific examples falling within the claimed range are disclosed, the reference anticipates the claims [only] if the claimed subject matter is disclosed in the reference with ‘sufficient specificity.’” Petition at 17 (citing MPEP § 2131.03). In circumstances where claims are directed to a narrow range, and the reference teaches a broader range, other facts must be considered to determine whether the narrow range is specifically disclosed. MPEP 2131.03 (citing *Atofina* 441 F.3d at 999); *see also* MPEP § 2131.02 (“The question of ‘sufficient specificity’ is similar to that of ‘clearly envisaging’ a species from a generic teaching”).

Patent Owner also agrees that “[f]or a disclosure to be ... inherent it must be a necessary feature or result of an embodiment sufficiently described and enabled in the prior art reference.” Petition at 17. However, Patent Owner further notes that

“[i]nherency ... may not be established by probabilities or possibilities[,]” and “[t]he mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 639 (Fed.Cir. 2011) (quoting *In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981)).

1. Claim 1

a) The Petition fails to show that Ayers discloses the preamble of claim 1

The preamble of claim 1 calls for “[a] method for remediating a subterranean-formed metal-polymer complex in a pre-existing well in a subterranean shale formation.”

A claim preamble has the import that the claim, as a whole, suggests for it. *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620 (Fed.Cir. 1995). If the preamble recites limitations of the claim or is “necessary to give life, meaning, and vitality” to the claim, then the preamble should be construed to be a claim limitation. *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed.Cir. 1999).

Here, the preamble refers to a “subterranean-formed metal-polymer complex in a pre-existing well in a subterranean shale formation,” and the body of the claim relies on the preamble to support the antecedent basis recited in the steps of the claimed method. In particular, the method of claim 1 recites steps that require, e.g.,

“injecting the metal-polymer complex remediation mixture into *the well* ... until at least some of the metal-polymer complex remediation mixture contacts *the subterranean-formed metal-polymer complex*” (Element 1[b]), “maintaining the metal-polymer complex remediation mixture in contact with *the subterranean-formed metal-polymer complex* ... to cause *the subterranean-formed metal-polymer complex* to dissociate and dissolve but not precipitate the metal” (Element 1[c]) (referring also to *the metal-polymer complex* components)), and “removing the low viscosity flow back fluid from *the well* ... thereby improving the hydrocarbon production of *the well* (Element 1[d]). Ex. 1001 at 14:27-55 (emphasis added).

The preamble should be considered a claim limitation because it recites limitations of the claim that are necessary to provide context to the claimed method, as a whole.

The Petition refers to the Abstract of Ayers for its alleged disclosure of “a method of using a fluid formulation [i.e., composition] for increasing flow, production, or recovery of oil and gas hydrocarbons from a subterranean formation.” Petition at 14. It then generally concludes without further evidence or explanation that Ayers “discloses this limitation.” *Id.*

The Petition fails to account for all limitations in the preamble of claim 1, which calls for remediating a *subterranean formed metal-polymer complex* in a pre-existing well in a *subterranean shale formation*. The Petition generally refers to increasing flow, production, or recovery in subterranean formations generally, but makes no mention of any *subterranean shale formations*. While the Petition refers to some “potential causes” of reduced flow, production, or recovery including cross-linked polymers (*id.* at 15), it fails to address any *subterranean-formed metal-polymer complexes*. The Petition also does not cite to the Declaration of Jeffrey Harwell (Ex. 1003) or any evidence or discussion therein on how these general disclosures from Ayers disclose the preamble with the specificity required for anticipation.

For these reasons alone, the Petition cannot support disclosure of the preamble by Ayers.

While Ayers exemplifies the creation of secondary porosity and increased permeability in a shale layer, these improvements were achieved with a composition generating sufficient gas pressure to fragment the shale layer. Ex. 1004, 44:60-45:44 (Example 3). This example does not relate to remediating any subterranean-formed metal-polymer complexes in a shale formation as the reason for increased permeability.

The Petition does not (and cannot be read to) explain how the preamble is specifically disclosed by Ayers. To the extent the Petition’s alleged general discussion of the terms “subterranean formation” and “cross-linked polymers” even relate to a method of remediating subterranean-formed metal-polymer complexes in shale formations, which they do not, the Petition fails to explain how a POSA would “at once envisage” the specific method of claim 1 preamble from the generic disclosures of Ayers. *Kennametal*, 780 F.3d at 1381; *Atofina*, 441 F.3d at 999 citing *In re Baird*, 16 F.3d at 382 (Fed.Cir.1994). Indeed, neither the Petition nor the Harwell Declaration assess how a POSA would have interpreted Ayers as it relates to the claim 1 preamble, nor could anyone reasonably suggest that the vague references to “damage or blockage causing polymers” *per se* constitutes “sufficient specificity” to disclose the metal-polymer complex required by the challenged claims.

**b) The Petition fails to show that Ayers discloses
Element 1[a]**

The Petition’s analysis of Element 1[a] is couched in terms of Ayers’s alleged disclosure of an “alkali metal chelate” that may be contained in a “fluid formulation” also containing a peroxygen, a surfactant, and a cosolvent. Petition at 15. The Petition then draws an unsupported false equivalence between the fluid

formulation of Ayers and the metal-polymer complex remediation mixture of Element 1[a]. *Id.* at 16. But neither the Petition nor the Harwell Declaration provide any evidence or explanation to support this alleged correlation. *Xerox*, IPR2022-00624, Paper 9 at 14. Instead, the only citation to the Harwell Declaration allegedly relevant to Element 1[a] simply states “the alkali metal chelate component in the fluid formulation [of Ayers] discloses a metal complexing agent.” *Id.* at 16 (citing Ex. 1003 at ¶ 86). This is a *verbatim* recitation from the Petition and does not (and cannot) establish that Ayer’s compositions constitute a metal-polymer complex remediation mixture. *Id.*

Moreover, the Petition alleges that the chelate concentration “may be between about 0.2 and about 5 percent by weight” (Petition, 16 (citing Ex. 1004 at 36:27-29)) but fails to acknowledge that this concentration is for “stock or concentrated compositions” determined relative to *the weight of the non-water components*. *Id.* at 36:27-29 (emphasis added), 41:21-29. This is not the concentration in the “working strength” or “treatment solution” composition from Ayers. The compositions actually “introduced into the wellbore or subterranean formation” in Ayers are diluted with, e.g., water, to provide a significantly lower chelate concentration range of about 0.00001 to 5.0 percent by weight, determined relative to the *total weight of the diluted composition*. Ex. 1004, 36:20-24

(emphasis added); *see also* Petition at 16 (citing Ex. 1004 at 36:27-29 (without providing the full context of the passage at 36:20-32)); Ex. 1004 at 32:23-26 (diluting Components A and B with fresh or brine water); 44:60-45:32 (Example 4) (150 gallons of diluted “treatment solution” containing *1.8% Component A and 8% Component B further mixed with water* obtained from the wellbore; treatment solution penetrates a subterranean shale layer and fragments it to cause secondary porosity and increased permeability).

Element 1[a] requires that the metal complex remediation mixture *itself*, i.e., that injected into the well and making contact with the metal-polymer complex in Elements 1[b] and [c] (*infra*) comprise between 0.1% and 95% by weight metal complexing agent. This is not a weight percent relative to only non-water components. The Petition fails to address this critical distinction and does not explain how a weight percent range of about 0.00001 to 5.0 percent in the Ayers treatment solution, as it is introduced into a well, is disclosed with the specificity required for anticipation of the claimed range. Petition at 17 (citing MPEP § 2131.03 and *Atofina* 441 F.3d at 999); *see also* MPEP § 2131.02 (“The question of ‘sufficient specificity’ is similar to that of ‘clearly envisaging’ a species from a generic teaching). The upper bounds of the broad treatment solution range from Ayers, i.e., 0.1 to 5.0 percent chelates, overlaps with the lower bounds of the

claimed 0.1 to 95% range. But the Petition points to no disclosures from Ayers on the chelate concentration in these diluted treatment solutions (introduced into the wellbore or subterranean formation), or explain how the five order-of-magnitude treatment solution range points to the claimed range with “sufficient specificity.” The Petition only makes a conclusory assertion that “Ayers anticipates this limitation of Element 1[a]” apparently relying on an apples to oranges comparison of a range for “stock” or “concentrated” compositions, which are substantially diluted prior the use in the Ayers’ methods.

**c) The Petition fails to show that Ayers discloses
Element 1[b]**

Element 1[b] requires *inter alia* “injecting the metal-polymer complex remediation mixture into the well ... until at least some of the [] mixture contacts the subterranean-formed metal-polymer complex” Ex. 1001, 14:33-42 (emphasis added). The Petition completely fails to account for these specific limitations.

Instead, the Petition relies on alleged general disclosures from Ayers regarding an “injection” at “pressure less than the reservoir hydraulic fracturing pressure,” “contact with, for example, blockage or damage in the wellbore or subterranean formation” including that resulting from “fracturing fluids” that may *inter alia* form “immobile emulsions or gels.” Petition at 17. The Petition does not

identify any passages from Ayers that specifically disclose metal-polymer complexes.

The Petition also fails to provide any evidence or explanation on how these general passages from Ayers disclose the entirety of Element 1[b] with the specificity required for anticipation. Instead, it cites to the Harwell Declaration to support the inapposite and conclusory proposition that “it would have been obvious to a [POSA]” that a “fracturing fluid ... may intrude the natural formation and have negative interactions, including forming [the claimed] metal polymer complexes” Petition at 17 (citing Ex. 1003 at ¶ 98) (emphasis added); *Astra Zeneca LP*, 633 F.3d at 1045 (anticipation analysis never considers whether a prior art reference “suggests” the claimed subject matter). This single cited paragraph repeats the Petition essentially *verbatim* and fails to provide any further evidence or explanation on how Ayers discloses (or even suggests) the claimed subject matter. *Xerox*, IPR2022-00624, Paper 9 at 14.

The Petition’s conclusory and unsupported allegations that metal polymer complexes “*may result*” due to previous injections of fracturing fluids and that a fracturing fluid “*may intrude* a natural formation and have negative interactions, including the formation of metal-polymer complexes” are also insufficient under principles of inherency. *Bettcher Indus*, 661 F.3d at 639 (inherency may not be

established by probabilities or possibilities). Moreover, the Petition fails to explain how a POSA would “at once envisage” the specifically required limitations of Element 1[b] from the generic disclosure of Ayers. *Kennametal*, 780 F.3d at 1381; *Atofina*, 441 F. 3d at 999.

**d) The Petition fails to show that Ayers discloses
Element 1[c]**

Element 1[c] requires *inter alia* “maintaining the metal-polymer complex remediation mixture in contact with the subterranean-formed metal-polymer complex ... thereby allowing the metal complexing agent to cause the [claimed complex] to dissociate and dissolve but not precipitate the metal.” Ex. 1001 at 14:42-52. Element 1[c] also requires the creation of “of a low viscosity flow back fluid comprising [*inter alia*] the metal-polymer complex components.” Again, the Petition completely fails to account for these specific limitations.

Instead, the Petition relies on alleged general disclosures from Ayers about a composition that “can be allowed to contact ... a subterranean formation ... for a sufficient period of time[,]” and that the Ayers’ composition “can be ‘allowed to contact blockage or damage ... for a sufficient time ... to sufficiently ... degrade and/or dissolve the permeability damage or blockage.” Petition at 19; *see also id.* at 20 (Ayers “alkali metal chelate” can allegedly scavenge “bound phases of metals

in a formation” and Ayers composition can “liquify” encountered inorganic or organic materials).

These passages, however, do not address the requirement for the “metal complexing agent *to cause* the subterranean-formed metal-polymer complex to dissociate and dissolve but not precipitate the metal.” As explained above, the compositions of Ayers are designed to generate O₂ or CO₂ gas and gas pressure to generally “mobilize, remove, release, realign, and/or redistribute blockage or damage.” *See* Section III.A (citing Ex. 1004 at 22:60-23:42). The Petition does not identify any passages from Ayers that specifically disclose any “alkali metal chelate” dissociating and dissolving the claimed metal-polymer complex or the use of its compositions to create a flow back fluid comprising *the* metal-polymer complex components.

The Petition also fails to identify any passages from Ayers specifically related to the claimed metal-polymer complex. It only makes unsupported and conclusory assertions related to inherency and Ayers’ “disclos[ure] [of] the limitations of Element 1[c]” to suggest this is so. But the Petition provides no evidence or explanation on how the cited passages from Ayers disclose the entirety of Element 1[c] with the specificity required for anticipation. Instead, it cites to the Harwell Declaration to support the narrow and conclusory statement that Ayers

“would inherently meet the limitation of at least ‘about’ 1 minute of contact time.”

Petition at 19-20 citing Ex. 1003 at ¶ 108. This is just one limitation from Element 1[c] and, again, Dr. Harwell just repeats the Petition essentially *verbatim*. *Xerox*, IPR2022-00624, Paper 9 at 14.

Even if the Petition asserted that Ayers inherently disclosed the entirety of Element 1[c], which it does not, its unsupported and conclusory allegation that “in-situ formed metal-polymer complexes would necessarily be encountered by the [Ayers composition]” and its scant reference to “scavenging ... bound phases of metals” would be insufficient. *Bettcher Indus*, 661 F.3d at 639. And if the Petition’s alleged general discussion of “subterranean formation[s],” and “dissolv[ing] ... permeability damage or blockage” could relate to a method of remediating subterranean-formed metal-polymer complexes, which they do not, the Petition fails to explain how a POSA would “at once envisage” Element 1[c] from these generic disclosures. *Kennametal*, 780 F.3d at 1381; *Atofina*, 441 F. 3d at 999

**e) The Petition fails to show that Ayers discloses
Element 1[d]**

Patent Owner incorporates its analysis of the claim 1 preamble herein.

Element 1[d] requires “removing the low viscosity flow back fluid [comprising the metal-polymer complex components] from the well, thereby improving the hydrocarbon production of the well.” Ex. 1001 at 14:53-55.

The Petition does not identify any passages from Ayers that specifically mention metal-polymer complexes or removing any low viscosity flow back fluids containing its components. The Petition only makes an unsupported and conclusory assertion that Ayers discloses the limitations of Element 1[d] in view of removing the Ayers’ composition from the wellbore to increase flow, production, or recovery of hydrocarbons. It does not provide any evidence or explanation about how these generic passages from Ayers disclose the entirety of Element 1[d] with the specificity required for anticipation, through a citation to the Harwell Declaration or otherwise.

In sum, the Petition fails to properly address multiple limitations of claim 1 with the sufficiency required for anticipation or explain how each complete element is disclosed as arranged in the claim. *Net MoneyIN*, 545 F.3d at 1369. Should the Board agree with Patent Owner’s contentions as to *any* element of claim 1, Petitioner cannot meet its burden under 35 U.S.C. § 314(a) to show a reasonable likelihood of anticipation by Ayers.

2. The Petition fails to meet Petitioner's burden as to the dependent claims.

It is axiomatic that dependent claims include all limitations of the independent claim from which they depend, here the “method for remediating a subterranean-formed metal-complex in a pre-existing well in a subterranean shale formation” comprising the four steps of claim 1. 35 USC §112(d). Because the Petition fails to establish a reasonable likelihood that Petitioner would prevail with respect to anticipation of claim 1 (*see* Sections VII.A.1.a-e), it also fails to meet Petitioner's burden with respect to dependent claims 2-3, 11-14 and 19.

Patent Owner provides the following additional responses on certain dependent claims.

a) Dependent Claim 2

Claim 2 depends from claim 1 and limits the metal complexing agent to citric acid, formic acid, or mixtures thereof.

The Petition cites to Ayers and its alleged disclosure of adding organic acids such as formic acid or citric acid to adjust the pH of the composition. Petition at 30. It then makes a conclusory assertion that a POSA would have “recognized as inherent citric and formic acid's chelating properties, rendering them suitable metal complexing agents,” and relies on an unsupported “acknowledged purpose of the claimed invention – to enhance hydrocarbon recovery” to improperly assert that “*it*

would be inherent to select a material capable of binding metal ions.” Petition at 22 (emphasis added).

The cited passages from Ayers relate to the use of different acids in “acid treatments” or “acidizing” operations but, when addressing citric and formic acid, relate only to pH adjustment. Petition at 21-22 (citing Ex. 1004 at 11:35–40, 35:66–36:2); Ex. 1001 at 2:17-24. The Petition fails to explain or provide any legal authority to support why formic acid or citric acid would be selected as the metal chelating agent for remediating subterranean-formed metal-complexes, i.e., dissolving them into their components, according to the method of claim 2. *See e.g.*, Ex. 1001 at 2:17-24. And the Petition does not explain why an amount of formic acid or citric acid used for pH adjustment in Ayers would be suitable for use as a metal complexing agent that dissociates or dissolves a metal-polymer complex into its components according to the claimed method.

Petitioner misunderstands the law of inherency and instead provides inapposite and unsupported assertions related to obviousness. Petition at 22; *Bettcher Indus*, 661 F.3d at 639. As Petitioner acknowledges, inherency does not relate to what a POSA would have done with the Ayers disclosure, but whether Ayers describes a “necessary feature or result of an embodiment sufficiently described and enabled in the prior art reference.” Petition at 14. All citations to the

Harwell Declaration (*id.* at 22 citing Ex. 1003 at ¶¶ 120, 122) repeat the same conclusory assertions made in the petition essentially *verbatim*. *Xerox*, IPR2022-00624, Paper 9 at 14.

b) Dependent Claim 19

Claim 19 depends from claim 1 and limits the contact time to between about 4 hours and 4 days.

The Petition provides a conclusory assertion that “any contact time between the composition in Ayers, which includes a chelating agent, and a subterranean-formed metal-polymer complex ... would seem to inherently meet the limitation of at least ‘about’ 4 hours of contact time.” Petition at 25. Inherency is not based on whether a contact time in Ayers *would seem to* meet the claim 19 limitations, but whether Ayers necessarily discloses the subject matter in the context of the claimed method for remediating metal-polymer complexes. *Bettcher Indus*, 661 F.3d at 639. And though the Petition cites to a single paragraph from the Harwell Declaration, Dr. Harwell repeats the same essentially *verbatim* without further evidence or analysis. *Id.* at 26 citing Ex. 1003 at ¶ 140.

In sum, Petitioner fails to meet its burden for instituting trial under 35 USC § 314(a) with regard to anticipation of any of the challenged dependent claims.

B. Ground 2: Obviousness over Ayers Alone or in Combination with Frenier

Obviousness is a question of law based on underlying findings of fact.

Graham v. John Deere Co., 383 U.S. 1, 17 (1966). The underlying factual considerations include: (1) the scope and content of the prior art, (2) the differences between the prior art and the claimed invention, (3) the level of ordinary skill in the art, and (4) any relevant secondary considerations. *Id.* at 17–18.

A patent claim composed of several elements is not obvious merely by demonstrating that each element was, independently, known in the prior art. *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct 1721, 1731 (2007). The test is whether the “differences between the claimed invention and the prior art are such that the claimed invention *as a whole* would have been obvious to a [POSA]” without consideration of “the manner in which the invention was made.” 35 U.S.C. § 103 (emphasis added); *see also* KSR, 127 S.Ct at 1731 (noting the importance of identifying a reason that would have prompted a POSA to combine the elements as the new invention does). The Federal Circuit continues to use a “flexible TSM test” as a primary guarantor against hindsight analysis. *Ortho-McNeil Pharm. v. Mylan Labs, Inc.*, 520 F.3d 1358, 1364-1365, (Fed.Cir. 2008).

Patent Owner agrees with Petitioner that “[a] party that petitions the Board for a determination of obviousness must show that ‘a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so.’” Petition at 34 citing *Apotex Inc. v. Wyeth LLC*, IPR2014-00115, Paper 94, slip op. at 11 (P.T.A.B. Apr. 20, 2015) (quoting *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994 (Fed.Cir. 2009)); see also *Unic. Of Strathclyde v. Clear-Vu Lighting LLC*, 17 4th 155, 160 (Fed. Cir. 2021); *Novartis Pharmaceuticals Corporation v. West-Ward Pharmaceuticals Int’l Ltd.*, 923 F.3d 1051, 1059 (Fed.Cir. 2019); *AstraZeneca LP v. Breath Ltd.*, 603 Fed. App’x 999, 1002 (Fed.Cir. 2015) (internal citations omitted). The Board has recently denied petitions for failing to properly apply the *Graham* factors in an obviousness analysis. See e.g., *Samsung Electronics Co., Ltd. V. Poer2B Inc.*, IPR2022-01378, Paper 12 (P.T.A.B March 15, 2023) at 15 citing *Graham*, 383 U.S. at 17 (denying institution because the Board could not “ascertain the difference between the claimed invention and the asserted prior art, as required”).

A reference teaches away from a claimed invention “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 by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed.Cir. 1994). If references taken in combination would produce a “seemingly inoperative device,” such references teach away from the combination and thus cannot serve as predicates for a *prima facie* case of obviousness. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1354 citing *In re Spinnoble*, 405 F.2d 578, 587, (C.C.P.A. 1969).

1. The Petition Fails to Establish Obviousness over Ayers Alone

a) Claim 1

As explained above in Sections VII.A.1-2, the Petition and accompanying Harwell Declaration fail to meet Petitioner’s burden for instituting IPR based on anticipation of claims 1, 2-3, 11-14, and 19, because it fails to establish that Ayers discloses *inter alia*, a method for remediating a *metal-polymer complex* in a pre-existing well *in a subterranean shale formation* (Claim 1 preamble), a metal-polymer complex remediation mixture comprising 0.1% to 95% of a metal chelating agent (Element 1[a]), where the steps of the claimed method are applied specifically to the metal-polymer complex (Elements 1[b],[d]) and the subterranean formation (Element 1[b], [c], [d]). These deficiencies of Ayers are not cured by Petitioner’s obviousness analysis, as the Petition does not provide an

adequate and independent basis to support obviousness under *Graham* and other relevant case law cited in the Petition. Petition at 27-28.

Specifically, the obviousness analysis from the Petition fails to identify any differences between Ayers and the challenged claims, and makes no attempt to explain why the POSA would have been motivated to achieve such differences with a reasonable expectation of success. *Graham*, 383 U.S. at 17-18; *KSR*, 127 S.Ct at 1731; Petition at 27 citing *Apotex*, IPR2014-00115, Paper 94 at 11. As such, the Petition lacks sufficient evidence or a rational underpinning to support how the limitations of the challenged claims would have been obvious over Ayers. It also fails to explain how any of the challenged claims are obvious *as a whole* without any hindsight, as required by statute. *See* 35 USC § 103. In essence, the Petition appears to hang its hat on anticipation by Ayers, and so it neglects address obviousness analysis under *Graham* and other cases cited in the Petition itself. Petition at 27-28.

Petitioner's obviousness assertion over Ayers is an incomplete and patchwork analysis contained within a single ground directed to both Ayers alone and Ayers in view of Frenier. As such, it was challenging for Patent Owner (and should likewise be challenging to the Board) to unearth Petitioner's analysis separate and apart from any alleged disclosures from Frenier. Even if that were

possible, the Petitioner clearly has not met its burden to institute IPR on any of the challenged claims for obviousness over Ayers. To be sure, a search of the Petition and the Harwell Declaration will show that the terms “motivation” and “reasonable expectation of success” only appear once in Petitioner’s obvious analysis. And these single recitations are applied to a conclusory motivation to combine Ayers with Frenier, not how POSA would have *achieved the inventions of the challenged claims* with a reasonable expectation of success in view of Ayers. Petition at 28-30; Ex. 1003, ¶¶ 68-76; Petition at 27 citing *Apotex*, IPR2014-00115, Paper 94 at 11.

In general, the Petition incorporates statements and arguments from its flawed anticipation analysis combined with unsupported conclusory assertions about a POSA that Dr. Harwell repeats essentially *verbatim*. *Xerox*, IPR2022-00624, Paper 9 at 14. For example, the Petition asserts that “[i]t would have been obvious to a [POSA] to apply the disclosures of Ayers to a method for remediating a subterranean formed metal-polymer complex in a pre-existing well in a subterranean shale formation” (Petition at 30 (citing Ex. 1003 at ¶ 148)), “Ayers, ... as informed by the knowledge of a [POSA], discloses Element 1[a]” (*id.* at 33; *see also id.* at 34, 37 (same unsupported conclusory assertion for Elements 1[b] and 1[d])), and “a [POSA] would recognize the optimal contact time by

experimentation and trial and error” (*id.* at 35 (citing Ex. 1003 at ¶ 189)). Petitioner offers no citations to the Harwell Declaration or other evidence to support these conclusory assertions. *Id.*

For at least these reasons, the Petition fails to establish (both factually and legally) that claim 1 is obvious over Ayers, and therefore the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to claim 1 on this obviousness ground.

b) Claim 21

Independent claim 21 is similar to claim 1 but includes the additional step of “observing a well production decrease” (Element 21[a]). The preamble and Elements 21[b], [c], [d]. and [e] are essentially the same as the claim 1 preamble and its Elements 1[a], [b], [c] and [d]. As such, the Petition incorporates the arguments provided for the claim 1 preamble and its Elements 1[a], [b], [c] and [d], and relies on the same to support obviousness of the claim 21 preamble and Elements 21[b], [c], [d]. and [e]. Petition at 60-61 (preamble), 61-62 (Element 21[b]), 62 (Element 21[c]), 62-63 (Element 21[e]).

The Petition fails to establish (both factually and legally) that claim 21 is obvious over Ayers for the same reasons as claim 1 and, therefore, the Petitioner

cannot establish a reasonable likelihood that it would prevail with respect to claim 21 on this obviousness ground.

c) The Dependent Claims

Again, dependent claims include all limitations of the independent claim from which they depend, here the “method for remediating a subterranean-formed metal-polymer complex in a pre-existing subterranean shale formation” comprising the four steps of claim 1. 35 USC §112(d). Because the Petition fails to establish a reasonable likelihood that Petitioner would prevail with respect to obviousness of claim 1 or claim 21 over Ayers, it also fails to meet Petitioner’s burden with respect to obviousness of claims 2-20, and 22 over Ayers.

As a first matter, outside of identifying the claims associated with Ground 2 (Petition at 4), the Petition fails to assert that Ayers discloses or renders obvious all limitations of claims 9-10, or that these claims are obvious *as a whole* over Ayers. Instead, Petitioner’s obviousness analysis only relies on Frenier to support its analysis. Petition at 45 (claim 9), 45-49 (claim 10).

With respect to all other challenged claims, neither the Petition nor the Harwell Declaration address how the POSA would have been motivated to arrive at the claimed inventions with a reasonable expectation of success. Petition at 27 citing *Apotex*, IPR2014-00115, Paper 94 at 11. Conclusory statements that Ayers

either discloses or renders obvious certain claim limitations do not assess obviousness under Section 103 and *Graham*, which collectively require an explanation as to why a POSA would consider the claims obvious as a whole without hindsight.

With respect to dependent claims 2-3, 11-14, and 19, the Petition rehashes Ayer's insufficient disclosures from Ground 1 (anticipation) and then summarily alleges that Ayers either discloses the dependent claim limitations or renders such limitations obvious to a POSA. Petition at 37-38 (claims 2-3), 38 (claims 49-51), 59-60 (claim 19). These conclusory statements, which are either not supported with citations to the Harwell Declaration or repeated by Dr. Harwell essentially *verbatim* (*see* Ex. 1003, ¶¶ 208-210, 214), do not cure the deficiencies of the Petition as to obviousness of claim 1.

The same is true for dependent claims 4-8 and 20. For each of these claims, the Petition points to citations from Ayers and then summarily concludes, without further evidence or explanation, that the dependent claim limitations are either disclosed in Ayers or would have been obvious to a POSA. Petition at 38-40 (claims 4-5), 42-44 (claims 6-8), 60 (claim 20). Again, the Harwell Declaration is either not cited (*see* analysis of claims 8 and 20) or repeats the same insufficient

and conclusory allegations from the Petition essentially *verbatim*. See Ex. 1003, ¶¶ 218 (claim 4), 122 (claim 5), 233, 237 (claim 6), 243 (claim 7).

For at least these reasons, the Petition fails to establish (both factually and legally) that any of claims 2-20, and 22 is obvious over Ayers, and therefore the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to any claim on this obviousness ground.

2. The Petition Fails to Establish Obviousness over Ayers in view of Frenier

a) Failure to explain any differences between the Ayers and Frenier, or between the Ayers/Frenier combination and the challenged claims

The Petition includes a section on the “motivation to combine Ayers and Frenier.” See Petition at Section VII.B.iii. In that section, the Petition generally states that “a [POSA] would have been motivated to combine the teachings of Ayers and Frenier to produce obvious, beneficial, and predictable results” such as “increasing the permeability of subterranean formations of presently low permeability.” *Id.* at 28. It then attempts to support this general assertion with conclusory statements and arguments such as “both [Ayers and Frenier] seek to enhance hydrocarbon production using treatment mixtures that include chelating agents” (*id.*), Frenier specifically discloses fluid formulations for acid treatment, which Ayers recognizes as a well-established technique within the industry (*id.* at

29), “[c]ombining [Ayers] with Frenier’s dedicated matrix acidizing fluid could create a synergistic effect” (*id.*), and a POSA “would have recognized that it was possible that Ayers’ composition might lack some of the specific properties desired for optimal stimulation” (*id.* at 30).

While these conclusory assertions provide some general and unsupported reasoning on why Ayers and Frenier are allegedly analogous art, Section VII.B.iii fails to address how Frenier discloses or suggests any claim elements missing from Ayers, any differences between Ayers/Frenier and the challenged claims, or why a POSA would have motivated to achieve the inventions of the challenged claims as a whole in view of the combination with a reasonable expectation of success. In fact, none of these purportedly *potential benefits* are discussed in the context of “a method for remediating a subterranean formed metal-polymer complex in a pre-existing well in a subterranean shale formation” according to the steps of claim 1 or claim 21, as is required by each of the challenged claims. Nor does the Petition explain how such *potential benefits* would motivate a POSA to arrive at any differences between Ayers and Frenier themselves, or differences between Ayers/Frenier and the challenged claims. It also fails to cite to the Harwell Declaration to support any of its conclusory statements about a POSA’s recognitions or motivations in view of the Ayers/Frenier combination.

As discussed below, the obviousness analyses provided in Sections VII.B.1-22 of the Petition are not conducted using a proper *Graham* analysis, including a failure to explain the differences between the alleged prior art and the challenged claims. They also fail to provide any factual basis to support how a POSA would have been motivated to *achieve the inventions of the challenged claims* with a reasonable expectation of success. As such, the Petition lacks sufficient evidence or a rational underpinning to support how each limitation of the challenged claims would have been obvious over the Ayers/Frenier combination, and how the challenged claims are obvious *as a whole* without any hindsight, as required by statute. *See* 35 USC § 103.

b) Ayers teaches away from its combination with Frenier in the context of the challenged claims

As explained in Section III.A, Ayers is directed to using gas pressure to fracture rock and states that “[s]tudies on the effects of the use of acids or acid blends to enhance hydrocarbon recovery have found that the use of these fluids actually can result in formation damage and blockages such as sludge (e.g., acid and ferric iron-induced asphaltic sludge), liberation of fines and precipitate formation, and emulsion blocks from spent acid viscous emulsions.” Ex. 1004 at 11:53-60. According to Ayers, “[t]ypically, acid treatment of shale for gas

recovery has not been successful.” *Id.* at 12:15-17. As such, Ayers specifically discourages the use of acid treatments like those disclosed in Frenier for the treatment of wells in shale formations, and Ayers and Frenier would not be combinable to address the claimed methods for “remediating a subterranean formed metal-polymer complex in a pre-existing well in a subterranean shale formation.” The combination would lead to a composition that includes the components of the “acid treatments” of Frenier, which Ayers says are inoperable in shale treatments. *McGinley*, 262 F.3d at 1354. A POSA would not have been motivated to combine the two.

Moreover, Ayers and Frenier are directed to very different mechanisms of action. Ayers is a mechanical treatment involving gas pressure released through the decomposition of a peroxygen to, e.g., increase permeability, while Frenier is a chemical treatment where acid treatment components serve this purpose. *See* Sections III.A (Ayers) and III.B (Frenier). There would be no motivation to combine the two given their different mechanisms of operation. Separately, given that the Petition essentially considers Ayers and Frenier to disclose the same or similar disclosures to support other purposes in its analysis (Petition at 28-30), there would be no reason to combine them such that Frenier provides any disclosures missing from Ayers.

c) Failure to explain why Claim 1 is obvious in view the Ayers/Frenier combination.

1) Claim 1

Though the Petition cites to passages from Frenier allegedly relating to each element of claim 1, it does not explain how such excerpts cure the deficiencies of Ayers alone (*see* Sections VI.A.1-6 and VI.B.1), including how the Ayers/Frenier combination discloses or suggests, e.g., a method for *remediating metal-polymer complexes* in pre-existing wells in *subterranean shale formations* (Preamble), providing a metal-polymer complex remediation mixture comprising 0.1 to 95% of the claimed metal complexing agent (Element 1[a]), injecting *the* remediation mixture into the well until at least some of *the* mixture contacts *the* metal polymer complex” (Element 1[b]), maintaining *the* metal-polymer complex remediation mixture in contact with *the* metal-polymer complex thereby allowing *the* metal complexing agent to cause *the* metal polymer complex to dissociate and dissolve (Element 1[c]), or removing *the* low viscosity flow back mixture [comprising spent remediation mixture and metal-polymer complex components] from the well, thereby improving the hydrocarbon production of the well” (Element 1[d]). *See generally* Petition at 30-37.

Petitioner’s obvious analysis in Section VII.B.1 only provides conclusory assertions on how the Ayers/Frenier combination discloses the claim 1 elements.

This insufficient treatment of obviousness under *Graham* includes Frenier's alleged disclosure of methods for removing (by dissolution) near wellbore formation damage in workover operations *generally* (Petition at 30-31), well treatment fluids containing the alleged chelating agent hydroxyethylamino carboxylic acid (*id.* at 31-32), injecting a well treatment fluid composition via a wellbore into a subterranean formation *generally* (*id.* at 34), maintaining treatment solutions in contact with the subterranean formations *generally* (*id.* at 35), and enhancing the productivity of hydrocarbon wells *generally* by removing near wellbore formation damage, including increasing or restoring the flow of an oil well in a *limestone formation* (*id.* at 36-37).

None of these allegations, however, address or explain how Frenier teaches or suggests any claim elements missing from Ayers, or any evidence or rational underpinning to support how the Ayers/Frenier combination is relevant to the claimed invention *as a whole*. The Petition also fails to explain any differences between claim 1 and the alleged combination, or how a POSA would have been motivated to achieve these differences with a reasonable expectation of success. *Graham*, 383 U.S. at 17-18; *KSR*, 127 S.Ct at 1731; Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11. In particular, the Petition does not address how the references are combinable to meet the requisite steps of the method, each of

which apply specifically to the metal-polymer complex agent and its components or the subterranean shale formation to improve hydrocarbon production in the well.

Instead, the Petition makes baseless and conclusory assertions that the Ayers/Frenier combination, as informed by the knowledge of a POSA, discloses the claim element (*see e.g.*, Petition at 31 (Preamble), 33 (Element 1[a]), 34 (Element 1[b]), 37 (Element 1[c]), 44 (Element 1[d])), or how a POSA would recognize an “optimal contact time by experimentation and trial and error” (*id.* at 35-36 (Element 1[d])). And while the Petition cites to portions of Harwell Declaration in an attempt to support Petitioner’s insufficient assertions, Dr. Harwell repeats those same assertions essentially *verbatim* without providing any further evidence or explanation. *See* Petition at 30-31 (citing Ex. 1003 at ¶¶ 148, 150-153 for preamble), 31-33 (citing Ex. 1003 at ¶¶ 164, 169-170 for Element 1[a]), 34-36 (citing Ex. 1003 at ¶¶ 189 for Element 1[c]); *see also id.* 33-34 (no citations to Ex. 1003 for Element), 36-37 (no citations to Ex. 1003 for Elements 1[b] and [d]); *Xerox*, IPR2022-00624, Paper 9 at 14.

Neither the obviousness analysis provided in the Petition nor that from the Harwell Declaration explain why a POSA would have been motivated to achieve any element of claim 1 with a reasonable expectation of success, even though the Petition acknowledges such an analysis is required. *See* Petition at 27 citing

Apotex, IPR2014-00115, Paper 94 at 11. Even worse, the Petition never once uses the word “motivation” in combination with “reasonable expectation of success” when making conclusory assertions on any element of claim 1, and therefore cannot establish that claim 1 is obvious *as a whole*. At best, the Petitioner’s obviousness analysis is a hindsight reconstruction based upon the inventions described in the ’282 patent, including missing claim limitations not properly addressed in the Petition or the Harwell Declaration. Such a treatment, if even presented in the Petition, is entirely improper by statute. *See* 35 U.S.C. § 103.

In sum, the Petition fails to offer any evidence or explanation related to a POSA’s requisite motivation to remediate a subterranean formed metal-polymer complex in a pre-existing well in a subterranean shale formation according to the steps of claim 1 with a reasonable expectation of success. Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11. This is not surprising. As discussed above, neither Ayers nor Frenier disclose or suggest any treatment fluids, compositions or mixtures for methods directed specifically to remediating metal-polymers complex in the claimed pre-existing well in a shale formation, or even wells in rock formations generally. *See* Sections III.A-B (*supra*).

For at least these reasons, the Petition fails to establish (both factually and legally) that claim 1 is obvious over the Ayers/Frenier combination, and therefore

the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to claim 1 on this ground.

2) Claim 21

As explained above, independent claim 21 is similar to claim 1 but includes the additional step of “observing a well production decrease” (Element 21[a]), with the remaining elements being essentially the same as the claim 1 preamble and its Elements 1[a], [b], [c] and [d]. As such, the Petition incorporates the arguments provided for the claim 1 preamble and its Elements 1[a], [b], [c] and [d], and relies on the same to support obviousness of the claim 21 preamble and Elements 21[b], [c], [d]. and [e]. Petition at 60-61 (preamble), 61-62 (Element 21[b]), 62 (Element 21[c]), 62-63 (Element 21[e]).

The Petition fails to establish (both factually and legally) that claim 21 is obvious the Ayers/Frenier combination for the same reasons as claim 1 and, therefore, the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to claim 21 in view the combination.

3) The Dependent Claims

Because the Petition fails to establish a reasonable likelihood that Petitioner would prevail with respect to obviousness of claim 1 or claim 21 over the

Ayers/Frenier combination, it also fails to meet Petitioner's burden with respect to obviousness of claims 2-20 and 22 on this ground.

Moreover, for each dependent claim, the Petition merely cites to alleged disclosures from Frenier and then summarily alleges that the Ayer/Frenier combination discloses the claim limitations or renders them obvious. Petition at 37-65 *passim*. These conclusory statements, which are either not supported with citations to the Harwell Declaration or are repeated by Dr. Harwell essentially *verbatim* (see Ex. 1003, ¶¶ 122, 208-210, 214, 218, 237, 245, 258-259, 263, 265, 267, 285, 290, 295, 300, 309, 311, 315, 319, 376, 381, 329, 332-333), cannot cure the deficiencies of the Petition regarding obviousness over the asserted combination. As for claims 1 and 21, the Petition's analysis of each dependent claim fails to apply the proper standard for obviousness under *Graham*, which includes an explanation of the differences between the Ayers/Frenier combination and the dependent claims. *Graham*, 383 U.S. at 17-18; *KSR*, 127 S.Ct at 1731. It also fails to properly explain how a POSA would have been motivated to arrive at these claims *as a whole* with a reasonable expectation of success, even though Petitioner acknowledges this as a legal requirement. Petition at 27 citing *Apotex*, IPR2014-00115, Paper 94 at 11.

For at least these reasons, the Petition fails to establish (both factually and legally) that any of claims 2-20 and 22 is obvious over the Ayers/Frenier combination, and therefore the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to any of claims 2-22 on this ground.

VIII. THE BOARD SHOULD EXERCISE ITS DISCRETION AND DENY INSTITUTION UNDER *FINTIV*.

Petitioner asks this Board and Patent Owner to waste time and resources addressing an unpatentability challenge to the '282 patent that is the same as the invalidity positions taken by Petitioner in the Parallel Litigation. That litigation is well underway, and trial is scheduled to occur long before any FWD by this Board will issue. Here, the *Fintiv* Factors weigh in favor of discretionary denial. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper No. 11 (P.T.A.B. March 20, 2020) (identifying six non-exclusive factors relevant to denying petitions based on parallel litigation) (hereinafter, "*Fintiv*").

A. *Fintiv* Factor 1—The district court has not granted a stay.

Fintiv Factor 1 asks whether the district court in a parallel litigation has granted a stay or evidence exists that one may be granted if a proceeding is instituted. *Fintiv*, Paper No. 11 at 6. Here, this factor is neutral because neither Petitioner nor Patent Owner has filed a motion to stay with the district court. *Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC*, IPR2019-

01393, Paper No. 24 at 7 (P.T.A.B. June 16, 2020) (explaining Board will not predict how the district court will proceed were a motion to be filed).

B. Fintiv Factor 2—Trial is scheduled to occur nine months before the statutory deadline for a FWD.

Fintiv Factor 2 considers the proximity of the district court’s trial date to the Board’s projected statutory deadline for a FWD. *Fintiv*, Paper No. 11 at 6. This factor weighs heavily in favor of denial.

The district court has scheduled trial to occur on January 14, 2025. (Ex. 2003 at ¶ 8.)³ The statutory deadline for issuance of a FWD is October 18, 2025. *See* Paper No. 3. This is over nine months after the district court trial will occur. *See* Katherine K. Vidal, *Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation* (June 21, 2022) (Ex. 2004; “Vidal Memo”) (explaining this factor favors denial if the trial date is scheduled before the projected statutory deadline for FWD). This nine-month differential is much greater than differentials the Board has previously found support denial. *E.g.*, *EClinicalWorks, LLC v. Decapolis LLC*, IPR2022-00229,

³ Although the parties have sought and received extensions in the litigation, none of those extensions have resulted in modification of the trial date.

Paper No. 10 at 9 (P.T.A.B. Apr. 13, 2022) (finding *Fintiv* Factor 2 weighed in favor of denial with one-to-two-month differential between trial and issuance of FWD); *Fintiv*, Paper No. 15 at 13 (P.T.A.B. May 13, 2020) (two month differential).

The Board may also consider the median time-to-trial statistics for civil actions in the district court in which the parallel litigation resides. Vidal Memo at 3, 8-9. The most recent statistics available for the Western District of Oklahoma show a median time to trial of 26.9 months. Ex. 2005 at 2. Although these statistics do not perfectly align with the scheduled trial date of January 14, 2025, the statistics still result in an expected trial date (approximately July 17, 2025) that is months before the statutory deadline for a FWD (October 18, 2025). This supports denial.

Further, the amount of work that the parties will incur in preparation for trial and which will occur prior to the statutory deadline for a FWD is extensive and includes, e.g., preparation of witness and exhibits lists, jury instructions, motions in limine, proposed findings of fact and conclusions of law, deposition designations, and objections to various pretrial filings. Exs. 2003 at ¶¶ 9-16; 2006 at ¶¶ 3-4. There is no reason to have the parties spend time and money in both the Parallel Litigation and this proceeding when the Parallel Litigation will resolve the very

same issues nine months before the Board. *See, infra*, Section VIII.D (describing overlap of issues).

C. Fintiv Factor 3—The parties have expended significant effort in the litigation.

The parties' litigation was initiated in April of 2023. Ex. 2007. Since that time, the parties have engaged in extensive fact and expert discovery and will continue to invest significant time and money in the litigation prior to an institution decision. *Fintiv*, Paper No. 11 at 9-12 (this factor assesses "the amount and type of work already completed in the parallel litigation by the court and the parties at the time of the institution decision"). To date, Patent Owner has:

- Served interrogatories and document requests;
- Substantially completed production, producing approximately 54,000 documents to Petitioner;
- Engaged in a targeted review of approximately 7,000 documents from Petitioner;
- Prepared responses to Petitioner's document requests and interrogatories, including preparing claim charts in response to Petitioner's interrogatory;
- Prepared and filed responsive and sur-reply Markman briefs;
- Prepared for and taken three fact depositions;
- Prepared for and defended one fact deposition (with two additional fact depositions to occur shortly after the filing of this preliminary response);
- Prepared and served its opening expert reports on infringement and on damages.

Exs. 2011 at ¶¶ 3, 5; Ex. 2006 at ¶ 1. Similarly, Petitioner has produced documents, responded to discovery requests, prepared opening and reply Markman briefs, and taken and defended depositions. Ex. 2011 at ¶ 4. Petitioner has also provided invalidity claim charts in response to Patent Owner’s interrogatory and has prepared and served its opening expert report on invalidity. *Id.*; Ex. 2006 at ¶ 1.

The parties will also expend further and substantial efforts before the statutory deadline for an institution decision by the Board:

Activity	Deadline Set by Scheduling Order
Prepare and serve responsive expert reports ⁴	August 13, 2024
Complete all fact and expert discovery, including taking and defending all fact depositions and all expert depositions associated with infringement, invalidity, and damages	September 9, 2024
Prepare and file <i>Daubert</i> and dispositive motions	October 9, 2024

Exs. 2003 at ¶ 6; 2006 at ¶¶ 2, 5; 2011, ¶ 4 These above-described efforts—with respect to already completed fact and expert discovery efforts and with respect to

⁴ Patent Owner will file a responsive report addressing invalidity, and Petitioner, presumably, will file responsive reports addressing infringement and damages.

upcoming expert discovery efforts and dispositive and *Daubert* briefing—are undisputedly extensive. To allow the IPR proceeding to continue in the face of such extensive investment in the Parallel Litigation would be inefficient and result in a waste of resources and in duplicative efforts. *See Zhuhai Cosmx Batter Co., Ltd. v. Ningde Amperex Technology Limited*, IPR2023-00587, Paper 12 (P.T.A.B. Sept. 12, 2023) (finding this factor “heavily favors denial” where the parallel litigation had advanced beyond fact discovery to the completion of initial reports).

D. Fintiv Factor 4—There is a complete overlap of issues.

Fintiv Factor 4 assesses the overlap between the issues raised in the petition and in the Parallel Litigation. *Fintiv*, Paper No. 11 at 12. The Parallel Litigation and this IPR proceeding reflect a complete overlap of issues, fully supporting denial.

In the Parallel Litigation, Petitioner has sought a declaratory judgment of invalidity of the '282 patent, and it has put forth invalidity contentions asserting all claims of the '282 are invalid. Ex. 2008 at 28; Ex. 2009. The grounds that Petitioner asserts to support invalidity of the '282 patent in this IPR proceeding are the same grounds that Petitioner has asserted in the litigation. In both this IPR proceeding and the litigation, Petitioner asserts all claims of the '282 patent are unpatentable/invalid under Section 102 based on *Ayers* and under Section 103

based on Ayers alone and/or in view of Frenier. *Compare* Ex. 2009 with IPR2024-00822 at Paper 2 at 4.⁵ This complete overlap of issues strongly weighs in favor of denial. *Fintiv*, Paper 11 at 12; *Resmed Corp. v. Cleveland Medical Devices Inc.*, IPR2023-00565, Paper 13 at 14-15 (P.T.A.B. Nov. 20, 2023).

Petitioner has ***not*** entered into any type of stipulation, *Sotera*-style or otherwise, that would minimize inefficiencies. The complete overlap of issues alone supports denial, and the lack of any stipulation further confirms the propriety of a discretionary denial.

E. *Fintiv* Factor 5—The Petitioner and defendant in the litigation are the same party.

The defendant in the Parallel Litigation and the Petitioner here are the same—Pharaoh Energy Services, LLC. Exs. 2007 at ¶ 2; 2010 at ¶ 2; IPR2024-00815, Paper No. 2 at 1. This weighs in favor of denial. *Fintiv*, Paper 15 at 15.

F. *Fintiv* Factor 6—No other circumstances, including the merits, warrant institution.

As Director Katherine Vidal recently explained:

Where the information presented at the institution stage is merely sufficient to meet the statutory institution threshold, the PTAB has the authority, where warranted, to exercise discretion to deny institution in

⁵ In the litigation Petitioner also asserts additional grounds for invalidity.

view of the other *Fintiv* factors. In contrast, where the PTAB determines that the information presented at the institution stage presents a compelling unpatentability challenge, that determination alone demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.

Ex. 2004 at 4-5.⁶ The compelling merits standard is, accordingly, a higher standard than the standard for institution. *Commscope Technologies LLC*, Paper 23 at 3. A petitioner must show its challenge “would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence.” *Id.* at 3-4; *see also*, Vidal Memo at 4. And a petitioner cannot meet the compelling merits standard by merely pointing to its analysis under the lower institution standard. *Commscope Technologies, LLC*, Paper 23 at 5.

Here, for the reasons described in Section VII, Petitioner has not met its burden under the lower institution standard. It certainly has not and cannot meet the even higher compelling merits standard. In whole, the *Fintiv* Factors favor discretionary denial.

⁶ The compelling merits analysis is only to be considered after a finding that the first five *Fintiv* Factors weigh in favor of denial. *Commscope Technologies LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 at 4-5 (P.T.A.B. Feb. 27, 2023).

IX. CONCLUSION

For the foregoing reasons, the Board should deny institution of this IPR against the '282 Patent.

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Respectfully submitted,

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CERTIFICATE OF WORD COUNT

The undersigned hereby certifies that the portions of the above-captioned Patent Owner's Preliminary response has 13,500 words in compliance with the 14,000 word limit set forth in 37 C.F.R. § 42.24. This word count was prepared using Microsoft Word for Office 365.

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CERTIFICATE OF SERVICE

The undersigned certifies, in accordance with 37 C.F.R. §42.6(e), that service was made on Counsel for Petitioner as detailed below.

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