

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. IPR2024-00815
Patent No. 9,944,843

PATENT OWNER'S PRELIMINARY RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	OVERVIEW OF THE '843 PATENT	4
A.	Specification.....	4
III.	OVERVIEW OF THE REFERENCES IN THE GROUNDS	6
A.	Frenier.....	6
B.	Reyes	8
IV.	LEVEL OF ORDINARY SKILL IN THE ART	10
V.	CLAIM CONSTRUCTION	10
VI.	The Board Should Exercise its Discretion Pursuant to § 325(d) and Deny Institution	11
A.	Frenier.....	12
B.	Reyes	17
VII.	CLAIMS 1-13 ARE NOT UNPATENTABLE OVER EITHER OF PETITIONERS ALLEGED GROUNDS	21
A.	Ground 1: Anticipation by Frenier	24
1.	The Petition fails to show that Frenier discloses the preamble of claim 1.....	26
2.	The Petition fails to show that Frenier discloses Element 1[b].....	31
3.	The Petition fails to show that Frenier discloses Element 1[c]	33
4.	The Petition fails to show that Frenier discloses Element 1[d].....	33

5.	The Petition fails to meet Petitioner’s burden as to the dependent claims.....	35
6.	Dependent Claim 2	35
7.	Dependent Claim 4	37
B.	Ground 2: Obviousness over Frenier Alone or in Combination with Reyes	37
1.	The Petition Fails to Establish Obviousness over Frenier Alone	39
a)	Claim 1	39
b)	The Dependent Claims	42
2.	The Petition Fails to Establish Obviousness over Frenier in view of Reyes	44
a)	Failure to explain any differences between Frenier and Reyes, or between the Frenier/Reyes combination and the challenged claims	44
b)	Failure to explain why Claim 1 is obvious in view the Frenier/Reyes combination.....	48
1)	Claim 1	48
2)	The Dependent Claims	52
VIII.	THE BOARD SHOULD EXERCISE ITS DISCRETION AND DENY INSTITUTION UNDER <i>FINTIV</i>	53
A.	<i>Fintiv</i> Factor 1—The district court has not granted a stay.....	54
B.	<i>Fintiv</i> Factor 2—Trial is scheduled to occur nine months before the statutory deadline for a FWD.	55

C.	Fintiv Factor 3—The parties have expended significant effort in the litigation.....	57
D.	<i>Fintiv</i> Factor 4—There is a complete overlap of issues.....	60
E.	<i>Fintiv</i> Factor 5—The Petitioner and defendant in the litigation are the same party.....	61
F.	<i>Fintiv</i> Factor 6—No other circumstances, including the merits, warrant institution.....	62
IX.	CONCLUSION.....	63

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Advance Medical Designs, Inc. v. Corbin Clinical Resources, LLC</i> , PGR2023-00041, Paper 12 (P.T.A.B. Jan. 23, 2024).....	17
<i>Advanced Bionics, LLC v. MED-EL Electromedizinische Geräte GmbH</i> , IPR2019-01469, Paper 6 (P.T.A.B. Feb. 13, 2020).....	<i>passim</i>
<i>Apotex Inc. v. Wyeth LLC</i> , IPR2014-00115, Paper 94, slip op. (Apr. 20, 2015).....	<i>passim</i>
<i>Apple Inc. v. Fintiv, Inc.</i> , IPR2020-00019, Paper No. 11 (P.T.A.B. March 20, 2020)	<i>passim</i>
<i>Astra Zeneca LP v. Apotex, Inc.</i> , 633 F.3d 1042 (Fed.Cir. 2010)	25
<i>AstraZeneca LP v. Breath Ltd.</i> , 603 Fed. App'x 999 (Fed.Cir. 2015)	39
<i>Atofina v. Great Lakes Chemical Corp.</i> , 441 F. 3d 991 (Fed.Cir. 2006)	25, 26, 36
<i>Autel Intelligent Tech. Corp., Ltd. v. Orange Elec. Co., Ltd.</i> , IPR2021-01545, Paper 12 (P.T.A.B. Apr. 8, 2022)	17
<i>In re Baird</i> , 16 F.3d 380 (Fed.Cir.1994)	25, 36
<i>Becton, Dickinson & Co. v. Braun Melsungen AG</i> , IPR2017-01586, Paper 8 (P.T.A.B. Dec. 15, 2015)	12, 13
<i>Bell Communications Research, Inc. v. Vitalink Communications Corp.</i> , 55 F.3d 615 (Fed.Cir. 1995)	26

<i>Bettcher Indus., Inc. v. Bunzl USA, Inc.</i> , 661 F.3d 629 (Fed. Cir. 2011)	26
<i>Commscope Technologies LLC v. Dali Wireless, Inc.</i> , IPR2022-01242, Paper 23 (Feb. 27, 2023)	62
<i>DeSilva v. DiLeonardi</i> , 181 F.3d 865 (7th Cir. 1999)	11
<i>Draft Kings Inc v. Interactive Games LLC</i> , IPR 2020-01107	13
<i>EClinicalWorks, LLC v. Decapolis LLC</i> , IPR2022-00229, Paper No. 10 (P.T.A.B. Apr. 13, 2022)	56
<i>Eli Lilly and Company v. Zenith Goldline Pharmaceuticals, Inc.</i> , 471 F. 3d 1369 (Fed.Cir. 2006)	24
<i>Eli Lilly v. Los Angeles Biomedical Res. Inst.</i> , 849 F.3d 1073 (Fed. Cir. 2017)	24
<i>Google LLC v. Ikorongo Tech. LLC</i> , IPR2021-00204, Paper No. 13 (P.T.A.B. June 7, 2021)	56
<i>Graham v. John Deere Co.</i> , 383 U.S. 1 (1966).....	<i>passim</i>
<i>Harmonic Inc. v. Avid Tech.</i> , 815 F.3d 1356 (Fed. Cir. 2016)	54
<i>Kennametal, Inc. v. Ingersoll Cutting Tool Co.</i> , 780 F.3d 1376 (Fed. Cir. 2015)	25
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 127 S.Ct 1721 (2007).....	38, 40, 43, 45
<i>Lake Cable</i> IPR2013-00528, Paper 11 (P.T.A.B. February 19, 2014)	23
<i>Net MoneyIN, Inc. v. Verisign, Inc.</i> , 545 F.3d 1359 (Fed. Cir. 2008)	24

<i>Novartis Pharmaceuticals Corporation v. West-Ward Pharmaceuticals Int’l Ltd.,</i> 923 F.3d at 1051, 1059	39
<i>In re Oelrich,</i> 666 F.2d 578 (CCPA 1981)	26
<i>Opensky Indus., LLC v. VLSI Tech. LLC,</i> IPR2021-01064, Paper 102	62
<i>Ortho-McNeil Pharm. v. Mylan Labs, Inc.,</i> 520 F.3d 1358 (Fed. Cir. 2008)	38
<i>Palo Alto Networks, Inc. v. Centripetal Networks, Inc.,</i> IPR2021-01155, Paper 12 (P.T.A.B Jan. 20, 2022)	17
<i>Phillips v. AWH Corp.,</i> 415 F.3d 1303, Fed. Cir. 2005	10
<i>Pitney Bowes, Inc. v. Hewlett-Packard Co.,</i> 182 F.3d 1298 (Fed.Cir. 1999)	26
<i>In re Preda,</i> 401 F.2d 825 (CCPA 1968)	24
<i>Printing Industries of America v. CTP Innovations, LLC,</i> IPR2013-00474, Paper 16 (P.T.A.B. December 13, 2013)	22
<i>Procter & Gamble Co. v. Teva Pharms. USA, Inc.,</i> 566 F.3d 989 (Fed. Cir. 2009)	39
<i>Resmed Corp. v. Cleveland Medical Devices Inc.,</i> IPR2023-00565, Paper 13	61
<i>Samsung Electronics Co., Ltd. V. Poer2B Inc.,</i> IPR2022-01378, Paper 12 (P.T.A.B March 15, 2023)	39
<i>Sand Revolution II LLC v. Continental Intermodal Group – Trucking LLC,</i> IPR2019-01393, Paper No. 24 (P.T.A.B. June 16, 2020)	54

<i>In re Schreiber</i> , 128 F.3d 1473 (Fed.Cir. 1997)	24
<i>Securus Techs., Inc. v. Global Tel*Link Corp.</i> , IPR2015-00153, Paper 12 (P.T.A.B. May 1, 2015)	11
<i>Unic. Of Strathclyde v. Clear-Vu Lighting LLC</i> , 17 4 th 155, 160 (Fed.Cir. 2021).....	39
<i>Upjohn Co. v. Mova Pharm. Corp.</i> , 225 F.3d 1306 (Fed. Cir. 2000)	23
<i>Xerox Corp. v Bytemark, Inc.</i> , IPR2022-00624, Paper 12 (Director Vidal February 10, 2023)	23
<i>Xerox Corp. v Bytemark, Inc.</i> , IPR2022-00624, Paper 9 (P.T.A.B. August 23, 2022)	<i>passim</i>
<i>Zetec, Inc. v. Westinghouse Electric Company. LLC</i> , IPR2014-00384, Paper 10 (P.T.A.B. July 23, 2014)	22
<i>Zhuhai Cosmox Batter Co., Ltd. v. Ningde Amperex Technology Limited</i> , IPR2023-00587, Paper 12 (Sept. 12, 2023)	60
Statutes	
35 U.S.C. § 102	24, 60
35 U.S.C. § 103	<i>passim</i>
35 U.S.C. § 112(d)	35, 42, 52
35 U.S.C. § 312(a)(3)	21
35 U.S.C. § 314(a)	21, 22, 35, 37
35 U.S.C. § 325(d)	2, 11, 12, 16, 17, 21

Other Authorities

37 C.F.R. §§ 42.22(a)(2).....22

83 Fed. Reg. 51340 (October 11, 2018) 10

MPEP § 2131.02 26

MPEP § 2131.03 25, 26, 31

EXHIBIT LIST

Exhibit No.	Description of Document
2001	Defendant Pharaoh Energy Service, LLC's Reply Claim Construction Brief dated 1/11/2024 from US District Court Case No. 23-cv-316 Doc. No.49
2002	US Patent Application Publication 2014/0116696 A1 Reyes
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 9,944,843 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. 9,944,843
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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. 9,944,843 (“the ’843 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 ’843 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 assertions to the contrary, both of the references relied upon to support its unpatentability grounds, i.e., Frenier (Ex. 1004) and Reyes (Ex. 1005), are the same or substantially the same as art considered by the Office during prosecution. The Petition alleges that the Examiner erred by not considering Frenier’s disclosures after accepting Patent Owner’s amendments and granting allowance. However, the Petition fails to explain with appropriate facts and evidence how Frenier discloses or suggests the amended claims in a manner material to patentability. Instead, the Petition only addresses the language added by the amendments themselves combined with unsupported conclusory assertions regarding the subject matter claimed after amendment. The Petition further fails to

address how the Examiner erred in view of Reyes, given other cumulative disclosures considered by the Examiner during prosecution. Patent Owner's own factual analysis applying the *Advanced Bionics* test herein warrants discretionary denial under 35 USC § 325(d).

Second, the Petition should be denied on the merits because it fails to establish a reasonable likelihood that Petitioner would prevail with respect to at least 1 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 '843 patent claims is found in the art and to explain any differences between the prior art and 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 at issue are disclosed or even suggested in the asserted art or the proposed combination of art. In particular, Petitioner fails to establish that the asserted art or combination of art discloses the use of treatment mixtures in existing wells in nano-darcy 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 in 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 asserted art simply does not anticipate or render obvious any of 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 therefore 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 '843 patent and three related patents. Petitioner here challenges the patentability of the same claims in the district court action in view of alleged prior art and invalidity challenges that Petitioner has already identified in that action. Moreover, the parties in the district court litigation have already completed significant discovery, including opening expert reports, and the district court trial is currently scheduled for January 2025, which is approximately nine months prior to any potential issuance of a FWD in this proceeding on or around October 17, 2025. Simply put, Petitioner's factually and legally insufficient challenge here is a duplicative offshoot of much larger proceedings in district court, which will be completed well before any FWD. Discretionary denial in view of *Fintiv* is the more efficient outcome.

In light of the substantial reasons for discretionary denial and Petitioner's failure to show a likelihood of success on the merits, the Board should deny institution of *inter partes* review.

II. OVERVIEW OF THE '843 PATENT

A. Specification

The '843 patent is directed to formulations and methods for stimulating the production of wells in nano-darcy shale formations. Ex. 1001 at Abstract, 2:12-14.

Methods described in the specification include the following:

[I]njecting a treatment mixture containing a metal complexing agent such as citric acid or EDTA into a nano-darcy shale formation adjacent to a well at a pressure below the fracture pressure of the formation[, after which] [a] sufficient contact time is allowed and then the treatment mixture is pumped from the subsurface. This has been shown to stimulate well production in nano-darcy shale formations.

Ex. 1001 at 3:63-4:12; *see also id.* at 4:52-54 (“[i]ntroduction and maintenance of a metal-complexing agent into the [nano-darcy] formation allows for the metals to be bound and subsequently removed”).

The specification concludes with examples in which a treatment mixture contains 10% w/w citric acid, 2000 ppm of quaternary amine, 5000 ppm of TTPC; 1000 ppm of GEOGARD SX colloidal silica dispersion, 20 gpt of the mutual solvent 2-butoxy ethanol, and optionally 10% w/w of hydrochloric acid in an aqueous mixture. Ex. 1001 at 14:5-13 (Example 1), 14:51-57 (Example 2), 15:17-24 (Example 3), 17:26-28 (Example 4). In each example, this treatment mixture was applied to a nano-darcy shale material, whether obtained from well cuttings taken from nano-darcy shale formations, or via wells located in the nano-darcy shale formations themselves. *Id.* In each example, the above treatment mixture was found to be effective at binding metals in the nano-darcy shale formation. *Id.* at 14:14-21 (Example 1), 14:58-67 (Example 2), 17:11-16 (Example 3), 17:29-39 (Example 4) (pointing to Figures 2-4 and the removal of metals vs. pH and time).

According to Example 3, the treatment mixture also provided an 11 to 1 improvement in gas production rates and a 5 to 1 improvement in liquid hydrocarbon production from the treated nano-darcy shale well compared to the same well prior to stimulation. *Id.* at 17:11-22.

Patent Owner disagrees with Petitioner’s unsupported and conclusory statements, including that: (1) “chelating and sequestering agents ... have been used (and described for use) for the methods claimed in the ’843 Patent prior to its earliest effective filing date” (Petition at 12); and (2) the chemical additives described in the specification “were used and described for use for the claimed methods of the ’843 Patent prior to April 14, 2014.” As explained in more detail below, the Petition only offers conclusory arguments on these and other points, arrived at through hindsight and a misguided analysis of appropriate legal standards, and so the Petition fails to meet Petitioner’s burden in showing that the above statements are factually and legally supported.

III. OVERVIEW OF THE REFERENCES IN THE GROUNDS

A. Frenier

U.S. Patent No. 6,436,880 to Frenier (Ex. 1004; “Frenier”) 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.” Ex. 1004, Abstract. The acid fluid is said to comprise “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. 1004 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 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. 1004 at 4:44-47. The method is primarily directed to enhancing the productivity of hydrocarbon wells by creating alternate flow paths by removing portions of a well bore coating, dissolving small portions of the

formation, or removing near well-bore formation damage. The only formation types that Frenier specifically discloses and claims are methods for matrix-acidizing are sandstone or carbonate subterranean formations which results in wormholes due to minerals natural occurring in those formations. Ex. 1004 at 13:3-19.

Frenier is not directed to any shale formations and does not disclose stimulation of wells in nano-darcy shale formations as required by each claim of the '843 patent. In terms of permeability measured in darcies, Frenier discloses limestone cores having permeabilities in the millidarcy range. Ex. 1004 at 10:51-67 (Example 4, where “limestone cores having an initial permeability of 27-77 md” were treated). These permeability measurement are several orders of magnitude higher than the nano-darcy permeability of the claimed shale formations.

B. Reyes

Reyes is directed methods for treating subterranean formations with a treatment fluid comprising an aqueous carrier fluid, an acid, and a chelating agent comprising an aminopolycarboxylic acid. Ex. 1005 at Abstract. Specifically, Reyes is directed to “acidizing subterranean formations, and, more specifically, to methods for acidizing subterranean formations in the presence of a chelating agent that is initially unable to complex a metal ion.” *Id.* at 3:44-48.

According to Reyes, the present inventors discovered that by employing aminopolycarboxylic acid chelating agents in acidizing operations at pH values below those over which metal ion complexations usually takes place, the rate of carbonate dissolution could desirably be decreased. Ex. 1005 at 4:34-43 (noting that “when the acidizing operation’s goal is to generate wormholes, a decreased rate of dissolution may be more desirable). Reyes also states that “although the embodiments described herein are believed to be most beneficial in conjunction with acidizing a carbonate formation, related benefits may also be realized when removing a carbonate material from a predominantly siliceous [i.e., silicon containing] formation.” *Id.* at 5:11-27 (further disclosing the removal of calcium ions from a siliceous material to reduce the risk of calcium fluoride precipitation).

Reyes is not directed to any shale formations and does not disclose stimulation of wells in nano-darcy shale formations as required by each claim of the '843 patent. In terms of permeability measured in darcies, Reyes only discloses the use of treatment fluids on calcite and chalk cores having permeabilities in the milli-darcy range. Ex. 1005 at 15:60-16:52 (Example 2 “calcite core having an initial permeability of about 75 mD”), 16:53-17:25 (Example 3 - permeability increases were realized in the milli-darcy range); *See also id.* at FIGS. 2, 4-6.

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 ’843 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

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

Flex Chem’s responsive claim construction brief in the Parallel Litigation. Petition at 14-15 (citing Ex. 1009). 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. *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 that no construction is necessary for any claim terms from the ’843 patent presented in the Parallel Litigation, i.e., “metal(s),” “pH modifier,” “fracture pressure,” “shale formation,” and “nano-darcy shale formation.” This is because each of these terms is being used according to its well-known and ordinary meaning in the art. Ex. 1009 at 5, 10, 15, 17, 20.

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, those 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*”); *see also* Petition, 5-6 citing *Advanced Bionics* at 8-10 (identifying factors the Board considers when assessing part one, i.e., factors (i)-(iii), and part two, i.e., factors (iv)-(vi), of the *Advanced Bionics* test); *see also id.* citing *Becton, Dickinson & Co. v. Braun Melsungen AG*, IPR2017-01586, Paper 8 at 17–18 (P.T.A.B. Dec. 15, 2015) (“*Beckton Dickinson*”) (providing the same factors). Both parts of the test support discretionary denial in view of both *Frenier* and *Reyes*.

A. Frenier

The Petition alleges that “only *Frenier* was ‘considered’ during prosecution of the ’843 Patent” based on its inclusion in an information disclosure statement

(IDS)” and that “the Examiner noted she ‘considered’ Frenier by not lining through it on the Examiner-signed copy of the IDS” Petition at 6-7. This meets step 1[a] of the *Advanced Bionics* test. See *Draft Kings Inc v. Interactive Games LLC*, IPR 2020-01107, Paper 10 at 13 (P.T.A.B January 6, 2021) citing *Advanced Bionics*, Paper 6 at 7-8 (“[p]reviously presented art includes ... art provided to the Office by an applicant ... on an [IDS]” during prosecution). All that is required is “presentation to the Office.” *Id.* The Petition provides no further analysis of Frenier under *Advanced Bionics* (*Becton Dickinson*) factors (i)-(iii) to support any alternative conclusion.

Regarding part two of *Advanced Bionics*, the Petition alleges that “the Examiner erred in a manner material to patentability ... by not ascertaining that Frenier included the very limitations the Examiner believed put the challenged claims in shape for allowance.” Petition, 7. Petitioner’s argument is based on amendments made to claim 1 to call for “an existing well in a nano-darcy shale formation” (claim 1 preamble), and a treatment mixture that “exits the well and contacts the nano-darcy formation” (claim 1, step (b)). as shown below:

1. (Currently Amended) A method for stimulating an existing well in a nano-darcy shale formation comprising:
 - providing a treatment mixture containing between about 0.1% and 95% by weight metal complexing agent at a pH of between about 0 and 10;
 - injecting the treatment mixture into the well at a pressure less than a fracture pressure of the nano-darcy shale formation until at least some of the treatment mixture exits the well and contacts the nano-darcy shale formation;
 - maintaining the treatment mixture in contact with the nano-darcy shale formation for a contact time of between about 1 minute to 100 days, thereby allowing the metal complexing agent to bind with at least some naturally-occurring metals contained within the nano-darcy shale formation; and
 - removing the treatment mixture from the well after the contact time, thereby removing the bound naturally-occurring metals from the non-darcy shale formation and thereby improving the hydrocarbon production of the well relative to the hydrocarbon production immediately prior to performance of the method.

Ex. 1002 at 87. Though the Petition alleges that “if properly ‘considered’ by the Examiner, [Frenier] would have precluded the Challenged Claims from issuance” (Petition, 7), Petitioner’s analysis under *Advanced Bionics* fails to establish that this is so.

When the above amendments were made to claim 1 de, Patent Owner presented the following important arguments regarding the Horton reference (WO 2009/091652; “Horton”) used to reject the Challenged Claims:

- Horton does not teach injecting a treatment mixture until at least some of the treatment mixture exits the well *and contacts the nano-darcy shale formation*, as recited in claim 1 (Ex. 1002 at 11 (referring to claim 1, step (b)));
- “Horton does not teach a well stimulation treatment mixture as recited in claim 1 that improves the hydrocarbon production of the well [*in the nano-*

darcy shale formation] relative to the production prior to performance of the method.” (*Id.* at 11-12 (referring to claim 1, step (d) (revised to further define “the well” in view of claim 1 preamble)).

See also id. at 126-141 (providing the complete disclosure of Horton), 191 (10-23-2017 Interview Summary) (important for the treatment to penetrate the [nano-darcy] shale formation to change the characteristics of the formation).

The Petition does not consider the full scope of the distinction made between the claimed invention and the Horton reference before the Examiner. Indeed, despite the Petition acknowledging that claim 1 requires that “the treatment mixture exists the well and contacts the nano-darcy shale formation” (Petition at 8 (emphasis omitted)), the Petition points only to Frenier’s purported disclosures to a treatment mixture “exit[ing] the well” to contact a formation generally. *Id.* It only cites to Frenier for a proposition that “matrix acidizing methods generally involve pumping the acid-containing well treatment composition down the wellbore and out through perforations into *the target formation.*” *Id.* (emphasis added). The Harwell Declaration is cited in support of the same general statements from Frenier about injecting matrix acidizing treatments into subterranean formations and target formations *generally.* *Id.* (citing Ex. 1003, ¶¶ 106-109).

None of these citations to Frenier relate to the claimed *nano-darcy shale* formations or methods for stimulating wells in *nano-darcy shale* formations. The

Petition’s only allegation related to nano-darcy shale in the context of Section 325(d) comes from an unsupported and conclusory statement from Dr. Harwell that simply repeats the claim language. Petition at 8 (citing Ex. 1003, ¶ 110) (based on this general disclosure in Frenier, a POSA would have understood to “inject[] the treatment mixture into the well ... until at least some of treatment mixture exists the well and contacts the nano-darcy shale formation”); *cf.* Ex. 1001 at 18:66-19:3 (Claim 1, Element 1[b]).

The general passages from Frenier cited in the Petition, along with the unsupported conclusory assertion by Dr. Harwell that mirrors the claim language, do not support that the Examiner “would have precluded the Challenged Claims from issuance” as Petitioner contends. Petition at 7-8. The Petition’s 325(d) section makes no attempt to explain how Frenier discloses methods directed to nano-darcy shale formations specifically. *Id.* As such, Petitioner’s 325(d) analysis fails to show that the Examiner erred in any way material to the patentability of the specifically claimed methods. *Advanced Bionics*, Paper 6 at 9 (“[i]f reasonable minds can disagree regarding the purported treatment of the art or arguments, it cannot be said that the Office erred in a manner material to patentability”).

Nor do the cited paragraphs from the Harwell Declaration *per se* constitute “additional evidence and facts [that] warrant reconsideration of prior art or

documents.” *Advance Medical Designs, Inc. v. Corbin Clinical Resources, LLC*, PGR2023-00041, Paper 12 at 31 (P.T.A.B. Jan. 23, 2024) (325(d) denial because expert testimony on 325(d) was “essentially a verbatim repetition of Petitioner’s argument without a discussion of *how* [the prior art] provided [the limitation]”); *Autel Intelligent Tech. Corp., Ltd. v. Orange Elec. Co., Ltd.*, IPR2021-01545, Paper 12 at 22, 26-27 (P.T.A.B. Apr. 8, 2022) (325(d) denial because highlighted testimony of expert was unavailing for failure to provide objective support that would give his testimony persuasive weight); *see also Palo Alto Networks, Inc. v. Centripetal Networks, Inc.*, IPR2021-01155, Paper 12 at 18-19 (P.T.A.B. Jan. 20, 2022) (similar holding).

B. Reyes

Reyes did not appear in an IDS during prosecution as it issued after the ’843 patent. (Ex. 1001 at 1 (April 17, 2018 issuance); *cf.* Ex. 1005 at 1 (September 11, 2018 issuance). But the Petition admits that Frenier and “several other ‘Reyes’ references were included in IDSs during prosecution of the ’843 patent.” Petition at 6 (citing Ex. 1002 at 330-331). However, it does not explain how Reyes itself is substantially different from Frenier or the other Reyes references. *Id.* at 7-8. This is not surprising. The disclosures that Petitioner relies upon in Reyes support that

it is similar to (and not materially different from) Frenier or at least one of the cited Reyes references.

The Petition notes that “Reyes discloses ‘[a]cidizing operations [that] may be used to stimulate a subterranean formation to increase production of a hydrocarbon resource therefrom.’” Petition, 33; *see also id.* at 37 (noting similar disclosures). Such operations are alleged to involve the introduction of acidizing treatment fluids “to the subterranean formation ... at matrix flow rates without fracturing the formation matrix” *Id.* at 32-33; *see also id.* at 40 (noting similar disclosures). They are also alleged to dissolve an acid-soluble material in the formation “to expand existing flow pathways ... , to create new flow pathways, and/or remove acid-soluble precipitation damage in the ... formation.” *Id.* at 33; *see also id.* at 42 (noting similar disclosures). The Petition then states “[s]imilarly to Frenier, Reyes also covers the formulation of treatment fluids with various additives commonly used in downhole operations to optimize the acidizing process.” *Id.*

The Petition then points to a number of other similarities between Frenier and Reyes, including improving “generally known stimulation, matrix-acidizing, or acid treatment operations on subterranean formations using treatment mixtures that include chelating and/or sequestering agents (e.g., EDTA or HEDTA) (Petition at

34-35; 39 (supporting the same)), and “increasing the permeability of subterranean formations of presently low permeability” to “allow[] more hydrocarbons to be recovered from the well.” *Id.* at 35; 37 (supporting the same), 44 (same); *see also id.* at 35 (acknowledging that both references “propose using acids and chelating agents, albeit with potentially different formulations or specific functionalities[,]” and recognize “the risk of precipitation damage resulting from interactions with the treatment fluid and metal ions in the formation”). But the Petition does not point to anything unique to Reyes, e.g., any potentially different formulations or specific functionalities in Reyes, that would provide any substantial distinction over Frenier. Instead, it states only that their “shared problem recognition, complementary solutions, potential for synergistic effects, and common technological foundation strongly suggest that a [POSA] would have been motivated to combine them” *Id.* at 36.

Accordingly, the Petition essentially admits that Reyes’s disclosure is substantially the same as Frenier, without pointing to any relevant, material differences. For this reason alone, step 1[a] from *Advanced Bionics* is also met by Reyes under Factor (i). Though the Petition fails to analyze Reyes under other *Advanced Bionics* factors, it should also be considered cumulative to Frenier under

Factor (ii) given that Frenier was admittedly evaluated (i.e., “considered”) by the Examiner. Petition at 6-7.

The Petition does not address part two of *Advanced Bionics* with regard to Reyes. It also cannot be said that the Examiner erred in view of the Reyes disclosure (having the same or substantially the same disclosure as Frenier), because Petitioner fails to make a proper showing of the same with regard to Frenier.

Reyes is also substantially the same as Reyes 2014/0116696 (“Reyes ’696;” Ex. 2002) presented to the Office and considered by the Examiner. Ex. 1003 at 331 (IDS citing Reyes ’696), 272 (Examiner considered Reyes ’696 by not lining through the reference). Reyes ’696 discloses acidizing operations with an aqueous acidizing fluid containing an acid source and a “trivalent-ion chelating agent” and its introduction into a wellbore penetrating a subterranean formation. Ex. 2002, Abstract; *see also id.* at [0013] (acidizing fluids of invention “advantageously enable longer in-formation residence times with minimal to no precipitate formation); [0023]-[0024] (acidizing fluid may also contain a traditional chelating agent for chelating monovalent and divalent ions such as EDTA and HEITA), [0027] (introduction below the fracture gradient pressure during matrix acidizing); claims 1-7, 12, 15-17 (disclosing the same).

As such, Reyes also meets step 1[a] of the *Advanced Bionics* test in view of Reyes ‘696. And because the Petitioner neglects to explain how the Examiner erred in view of Reyes ‘696 (or the combination of Frenier and Reyes ‘696) in a manner material to patentability, the Petition cannot prevent a 325(d) denial based on part two of the *Advanced Bionics* test.

The Petition’s 325(d) analysis fails to support that Frenier or Reyes, or their combination, warrant reconsideration by the Office for any of the Challenged Claims. The Board should deny institution on this basis alone.

VII. CLAIMS 1-13 ARE NOT UNPATENTABLE OVER EITHER OF PETITIONERS 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. December 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 reference to meet a claim limitation).

More recently, Director Vidal affirmed and made precedential the Board's 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) ("Lack

of factual support for expert opinion to factual determinations, however, may render the testimony of little probative value in a validity determination.”)

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 deficient on several fronts. The Petition therefore fails to show a reasonable likelihood that any claim of the ’843 patent is unpatentable.

A. Ground 1: Anticipation by Frenier

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 id.* citing 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 emblemed in the prior art reference.” Petition at 17. However, Patent Owner notes that “[i]nherency ... 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.” *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. The Petition fails to show that Frenier discloses the preamble of claim 1

The preamble of claim 1 calls for a “method for stimulating an existing well in a nano-darcy 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 an “existing well in a nano-darcy 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., “maintaining the treatment mixture in contact with *the nano-darcy shale formation*,” The claim also requires “improving the hydrocarbon production of the well [in *the nano-darcy shale formation*] relative to the hydrocarbon production immediately prior to performance of *the method*[.]” Ex. 1001 at 18:61-19:16 (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.

Petitioner has failed to establish that Frenier discloses a method for stimulating an existing well *in a nano-darcy shale formation*. With regard to the term “nano-darcy,” the patent specification explains that “the darcy is a unit of permeability for fluids in a porous material.” Ex. 1001 at 1:13-14. There are different levels of permeability falling below darcy permeability, including **milli**-darcy (1×10^{-3} darcy) permeability, **micro**-darcy (1×10^{-6} darcy) permeability, and **nano**-darcy (1×10^{-9} darcy) permeability. These classifications are well-known metric prefixes for values falling below darcy permeability (1×10^1 darcy) where milli- > micro- > nano- and each prefix is separated by 3 orders-of-magnitude. As

such, nano-darcy refers to a range of permeabilities below 1 micro-darcy (less than 1×10^{-6} darcy or, expressed differently, $\leq 999 \times 10^{-9}$ darcy) . This is consistent with the patent specification. Ex. 1001 at 1:13-17 (referring to nano-darcy as a range less than 1 microdarcy or less than 1×10^{-6} darcy).

The Petition refers to the “Technical Field of the Invention” disclosed in Frenier, which states that “[t]his invention relates to the stimulation of hydrocarbon wells and in particular to acid fluids and methods of using such fluids in treating a subterranean formation having low permeability.” Petition at 18 (citing Ex. 1004 at 1:6-9). This is the only citation from Frenier that Petitioner relies upon to allege that Frenier discloses the preamble of claim 1. However, nowhere does the Petitioner point to language in Frenier referring to nano-darcy shale. Furthermore, the Petition does not explain the scope or meaning of the term “low permeability” in the context of Frenier, including whether it relates to a range of permeabilities or otherwise. Instead, the Petition cites to the Harwell Declaration in an attempt to support its conclusory assertion that “[a POSA] would have known and understood Frenier to apply to ‘subterranean formation[s] having low permeability,’ including nano-darcy shale formations.” Petition at 18 (citing Ex. 1003 at ¶¶ 167–69). The Harwell Declaration repeats the same conclusory arguments presented in the

petition without further evidence or explanation. *Xerox*, IPR2022-00624, Paper 9 at 14.

Neither the Petition nor the Harwell declaration provide any explanation as to how or why the “subterranean formation[s] having low permeability” disclosed in a single passage from Frenier must include nano-darcy shale formations. This failure of evidence is particularly pertinent in view of Pharoah’s admission in district court that “the claim language itself indicates the claimed method’s success in enhancing hydrocarbon production depends on the permeability of the nano-darcy shale formation.” Ex. 2001 at 9.

The Petition points to a general disclosure from Frenier’s Background section that “one can perform a stimulation technique by ... injecting chemicals through the wellbore and into the formation to react with and dissolve small portions of the formation to create alternative flowpaths for the hydrocarbon.” Petition at 18. However, neither the Petition nor the Harwell declaration identify any passages from Frenier related to the “stimulation” of wells in shale formations, much less the stimulation of wells *in a nano-darcy shale formation* as claimed. They also fail to explain through other evidence how Frenier discloses the claimed method of stimulation with the specificity required for anticipation. The only rock formations that Frenier’s matrix-acidizing operations should be applied to with any

specificity are sandstone and carbonate subterranean formations. Ex. 1004 at 13:3-19.

For these reasons alone, the Petition cannot support disclosure of the claim 1 preamble in Frenier, which requires stimulating an existing well in a nano-darcy shale formation, i.e., a shale formation having a permeability less than 1 micro-darcy, in other words, $<1 \times 10^{-6}$ darcy or $\leq 999 \times 10^{-9}$ darcy.

At best, and a point which Patent Owner does not concede, Frenier might be interpreted as disclosing an undefined range of permeabilities that may be considered “low permeability.” But even if *arguendo* this interpretation were accurate, the Petition does not support that such a range would include nano-darcy permeability as construed above. Frenier’s only explicit disclosure of improving darcy permeability comes from a single example where limestone cores having an initial permeability of 27-77 milli-darcies (i.e., 10^{-2} darcy) were treated with hydroxyethylamino carboxylic acid aqueous solutions to provide enhanced permeabilities from 101-403 millidarcies (i.e., 10^{-1} darcy). Ex. 1004 at 10:32-19 (Example 4); *see also* Section III.A (*supra*). However, these permeabilities are orders of magnitude higher than the nano-darcy permeability (i.e., less than 1×10^{-6} darcies) of the shale formations being stimulated according to claim 1.

The Petition does not (and cannot be read to) disclose how the claim 1 preamble is specifically disclosed by Frenier. To the extent that the Petition's discussion of the term "low permeability" relates to any range of permeabilities, the Petition fails to abide by its own cited law on of the anticipation of ranges, which establishes that a range purportedly overlapping with a claimed range is anticipatory *only if* the claimed range is disclosed in the prior art with "sufficient specificity." *See* Petition at 17 (citing MPEP § 2131.03). Neither the Petition nor the Harwell Declaration conduct this requisite legal analysis nor could anyone reasonably suggest that the vague reference in Frenier to "low permeability" constitutes "sufficient specificity" to disclose the permeability of nano-darcy shale as described in the '843 patent. *Id.*

2. The Petition fails to show that Frenier discloses Element 1[b]

Element 1[b] requires *inter alia* "injecting the treatment mixture into the well ... until at least some of the treatment mixture exits the well and contacts the nano-darcy shale formation." Ex. 1001, 18:66-19:3 (emphasis added). The Petition completely fails to account for these specific limitations.

Instead, the Petition relies on Frenier's alleged disclosure of a method of treating a subterranean formation *generally* that includes "injecting a well

treatment fluid composition via a wellbore into a subterranean formation.” Petition at 21 citing Ex. 1004 at 4:44-47. The Petition also contends that claims 9 and 28 of Frenier are directed to these same “acid treatment” and “matrix acidizing” methods that penetrate a “target formation.” *Id.* citing Ex. 1004 at 4:44-47, 11:54-62 (claim 9 - acid treating subterranean formations generally); *see also* Ex. 1004 at 13:3-19 (claim 28 - matrix acidizing sandstone or carbonate formations). But these cited passages do not relate to the claimed existing well in a “nano-darcy shale formation,” and the Petition fails to explain how these limitations of Element 1[b] are specifically disclosed by Frenier . Indeed, the Petition does not explain how Frenier relates to any shale formations, much less the nano-darcy shale formation required in Element 1[b].

Notably also, the Petition is silent on as to a POSA’s understanding of Element 1[b] and how Frenier discloses the element. No citations to the Harwell Declaration are provided for this element.²

² To be fair, the Harwell Declaration does state that “a POSITA would have known and understood how to practice [Element 1[b]]” in light of Frenier. Ex. 1003, ¶ 110. But again Dr. Harwell’s opinion is conclusory and not supported by further evidence or explanation. *Xerox*, IPR2022-00624, Paper 9 at 14.

3. The Petition fails to show that Frenier discloses Element 1[c]

Element 1[c] requires *inter alia* “maintaining the treatment mixture in contact with the nano-darcy shale formation” Ex. 1001 at 19:4-10 (emphasis added). Again, the Petition completely fails to account for this specific limitation.

Instead, the Petition relies on a generic statement in Frenier that “[a]fter the composition has been injected into *the formation*, optionally the well can be shut in for a period of time to allow more complete reaction between the acid and *the formation material*.” Petition at 22 (citing Ex. 1004 at 7:30–34) (emphasis added). As above, the Petition fails to explain how Frenier relates to any shale formations, much less the nano-darcy shale formation required in Element 1[c]. Cited paragraphs to the Harwell Declaration repeat the same conclusory assertions from the Petition, without any factual explanation as to how Element 1[c] is met. Petition at 23 (citing Ex. 1003 at ¶ 115); 24 (citing Ex. 1003 ¶¶ 121, 123); *Xerox*, IPR2022-00624, Paper 9 at 14.

4. The Petition fails to show that Frenier discloses Element 1[d]

Element 1[d] requires *inter alia* “removing the treatment mixture from the well [in *the nano-darcy shale formation*] after the contact time” and “thereby improving the hydrocarbon production of the well relative to the hydrocarbon

production immediately prior to performance of *the method*.” Ex. 1001 at 19:11-16 (emphasis added). The Petition completely fails to account for these specific limitations.

As above, the Petition fails to explain how Frenier (or any cited references incorporated into Frenier) relate to shale formations, much less to *the method of stimulating* an existing well in a *nano-darcy shale formation* for the comparison required in Element 1[d]. See Petition at 24 (citing Ex. 1004 at 1:55–60).

Cited paragraphs to the Harwell Declaration repeat the same conclusory assertions from the Petition, without any factual explanation as to how Element 1[d] is met. Petition at 27 (citing Ex. 1003 at ¶¶ 134, 136); *Xerox*, IPR2022-00624, Paper 9 at 14.

Moreover, the citations to Grebe refer to treatment of “limestone formations” and “calciferous rock forms” and not nano-darcy shale formations (Petition at 25), the citations to Vandergrift relate to the action of hydrofluoric acid upon formations adjacent to a well cavity generally, not to nano-darcy shale formations (*id.* at 26), and the citations to Kubala are clearly directed to the use of an acid gelling agents during carbonate rock gelling processes (*id.* at 26-7), and thus do not relate to “*the method*” recited in Element 1[d].

In sum, the Petition fails to properly address multiple limitations of claim 1 with the sufficiency required for anticipation. Petitioner has not met its burden under 35 U.S.C. § 314(a) to show a reasonable likelihood of anticipation by Frenier.

5. 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 stimulating an existing well in a nano-darcy 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, it also fails to meet Petitioner’s burden with respect to anticipation of dependent claims 2, 4, 5, 7 and 13.

Patent Owner provides the following additional responses to the Petition regarding certain dependent claims.

6. Dependent Claim 2

Claim 2 depends from claim 1 and limits the metal complexing agent to citric acid.

One of Petitioner’s arguments for anticipation of claim 2 is based on U.S. 4,888,121 to Dill, a reference cited in the Background section of Frenier. Petition

at 27. While the Petition alleges that Dill discloses an acidizing composition containing an iron sequestering agent such as citric acid (*id.*), Petitioner's analysis is based on the conclusory assertion that a "[POSA] would have known and understood, or at a minimum it would have been obvious, to use citric acid as the metal complexing/sequestering agent prior to April 2014." *Id.* at 28. Petitioner's assertion, however, does not address "providing a treatment mixture" comprising citric acid as a metal complexing agent in a method for stimulating an existing well in a nano-darcy shale formation as required by claim 2 (depending from claim 1). The same is true for the additional allegation for claim 2, i.e., Frenier's alleged disclosure of "organic acids" which a "POSITA [allegedly] would have known and understood ... to include citric acid," and Crowe's (Ex. 1013) general statement that the "most common iron sequestering agents in commercial practice are citric acid, [EDTA], [NTA], acetic acid, lactic acid, and citric acid/acetic acid mixtures." Petition at 28.

The Petition also fails to explain why a POSA would understand citric acid to be a member of the large genus of "organic acids" disclosed in Frenier, or why Frenier discloses citric acid as a species to be used in the methods described in the reference. *Atofina*, 441 F. 3d at 999 citing *In re Baird*, 16 F.3d at 382.

While the Petition cites to the Harwell Declaration to support arguments related to a POSA (Petition at 28-29 citing Ex. 1003 at ¶¶ 139, 145), the cited paragraphs repeat the same conclusory assertions in the Petition without providing further analysis or detail. *Xerox*, IPR2022-00624, Paper 9 at 14.

7. Dependent Claim 4

Claim 4 depends from claim 1 and limits the metal complexing agent to acetic acid.

The Petition relies solely on a Frenier's alleged disclosure of examples of first acids that include acetic acid to support anticipation of claim 4. Petition at 29. Petitioner's assertion, however, does not address "providing a treatment mixture comprising acetic acid as a metal complexing agent" in a method for stimulating an existing well in a nano-darcy shale formation as required by claim 4 (depending from claim 1).

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

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

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. *Id.*

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). While the court in *KSR* held that a teaching/suggestion/motivation (TSM) test can no longer be applied rigidly, 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 also 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 (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 at 1051, 1059; *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”).

1. The Petition Fails to Establish Obviousness over Frenier Alone

a) Claim 1

As explained above in Sections VII.A.1-10, the Petition and accompanying Hartwell Declaration fail to meet Petitioner’s burden for instituting IPR based on anticipation of claims 1, 4-5, 7, and 13, because it fails to establish that Frenier

discloses *inter alia* “a method for stimulating an *existing well in a nano-darcy formation*” (Claim 1 preamble), where the steps of the claimed method are applied specifically to the method (Element 1[d]), the existing well (Elements 1[b],[d]) and the nanodarcy shale formation (Element 1[b], [c], [d]). These deficiencies of Frenier are not cured by Petitioner’s obviousness analysis, as the Petition fails to provide an adequate and independent basis to support obviousness under *Graham*.

The conclusory obviousness analysis in the Petition fails to identify any differences between Frenier and the challenged claims, and does not even 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 34 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 Frenier. The Petition 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 Frenier, and so it neglects the requisite analysis of Section 103 under *Graham* to support obviousness.

Petitioner's obviousness assertion over Frenier is an incomplete and patchwork analysis contained within a single ground directed to both Frenier alone and Frenier in view of Reyes. 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 Reyes. Even if that were possible from the Petition, the Petitioner clearly has not met its burden to institute IPR on any of the challenged claims for obviousness over Frenier. To be sure, a search of the Petition and the Harwell Declaration will show that "reasonable expectation of success" appears once in Petitioner's obvious analysis. And this single recitation relates a conclusory motivation to combine of Frenier and Reyes, and not how POSA would have *achieved the inventions of the challenged claims* with a reasonable expectation of success in view of Frenier alone. Petition at 36-37; *see also id.* at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11; Ex. 1003, ¶¶ 66-72. Likewise, references to "motivation" or "motivated" are sparse and only appear in a few conclusory statements. Petition at 34, 36, 43; *See also e.g.*, Ex. 1003, ¶¶ 8, 66, 71 228.

In general, the Petition incorporates statements and assertions from its flawed anticipation analysis combined with unsupported conclusory arguments about a POSA that Dr. Harwell repeats essentially *verbatim*. For example, the

Petition asserts without evidence or explanation that “[it] would have been obvious to a [POSA] to apply the disclosures of Frenier to stimulating existing wells in addition to new wells” (Petition at 37), “it at least would have been obvious to a [POSA] prior to the effective filing date of the ‘843 Patent to ‘[practice Element 1[b]]’” (Petition at 40), and “it would have been obvious to a [POSA] in light of Frenier to [practice Element 1[c]]” (Petition at 42). *See also* Petition at 43-44 (failing to even address obviousness in view of Frenier alone for Element 1[d]); Ex. 1003 at ¶¶ 16, 93, 110, 112, 191, 201, 216, 227 (each repeating the conclusory obviousness assertions of the Petition without more); *Xerox*, IPR2022-00624, Paper 9 at 14.

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

b) The Dependent Claims

Again, dependent claims include all of the limitations of the independent claim from which they depend, here the “method for stimulating an existing well in a nano-darcy 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 over Frenier, it also fails to meet Petitioner's burden with respect to obviousness of claims 2-13 with respect to this obviousness ground.

With respect to dependent claims 2, 4-5, 7, and 13, the Petition rehashes Frenier's insufficient disclosures from Ground 1 (anticipation) and then summarily alleges that Frenier either discloses the dependent claim limitations or renders such limitations obvious to a POSA. Petition at 44-45 (claim 2), 46-48 (claims 4-5), 52-53 (claim 7), 61-62 (claim 13). 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, ¶¶ 235-236, 249, 253, 260, 290-291, 332-333), do not cure the deficiencies of the Petition as to obviousness of claim 1. The Petition's analyses of claims 2, 4-5, 7, and 13 also fail to apply the proper standard for obviousness under *Graham* and fail to properly explain how a POSA would have been motivated to arrive at these claims *as a whole* with a reasonable expectation of success. *Graham*, 383 U.S. at 17-18; *KSR*, 127 St. at 1731; Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11.

The same is true for dependent claims 3, 6, and 8-12. For each of these claims, the Petition points to citations from Frenier and then summarily concludes, without further evidence or explanation, that the dependent claim limitations would

have been obvious to a POSA. Petition at 45-46 (claim 3), 48-52 (claim 6), 53-54 (claim 8), 54-57 (claim 9), 57-58 (claim 10), 58-59 (claim 11), 59-60 (claim 12).

The Petition makes no attempt at explaining how a POSA would have been motivated to arrive at these claims as a whole with a reasonable expectation of success, and the Harwell Declaration parrots the same insufficient and conclusory allegations from the Petition essentially *verbatim*. *Id.*; *see also* Ex. 1003, ¶¶ 253, 260, 263, 271, 274, 276, 278, 280, 282-284, 287, 299, 290-291, 332-333, 306, 309, 313, 315-317, 320-322, 326-327, 329.

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

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

The Petition includes a section on the “motivation to combine Frenier and Reyes.” *See* Petition at Section VII.B.iii. In that section, the Petition generally states that “a POSITA would have been motivated to combine the teachings of Frenier and Reyes to produce obvious, beneficial, and predictable results.” *Id.* at 34. The Petition then attempts to support this general assertion with a number conclusory statements such as “both [Frenier and Reyes] seek to improve generally known stimulation, matrix acidizing, or acid-treating operations on subterranean formations using treatment mixtures that include chelating and/or sequestering

agents” (*id.*), “[b]oth Frenier and Reyes identify significant limitations of traditional acid stimulation treatments” (*id.*) and “[b]oth patents acknowledge the risk of precipitation damage resulting from interactions with the treatment fluid and metal ions within the formation” (*id.*).

While these conclusory assertions provide some general reasoning on why Frenier and Reyes are allegedly analogous to one another, Section VII.B.iii fails to address how Reyes discloses or suggests any claim elements missing from Frenier, any differences between these references 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. *Graham*, 383 U.S. at 17-18; *KSR*, 127 S.Ct at 1731; Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11.

Instead, the Petition provides cursory assertions related to a POSA’s alleged recognition of the “potential benefits of combining these disclosures to address them simultaneously.” Petition at 35. These include, for example, the POSA’s alleged recognition that the combination of Frenier and Reyes offers “enhanced effectiveness” in mitigating precipitation and corrosion damage, a “potential synergistic effect” when combining the acid formulations and chelating agents of the references, that “particular acid formulations could potentially” enhance the

overall effectiveness of chelating agents and minimize unwanted reactions or interactions within the formation, and that “combining these disclosures aligns with the trend [in the oil and gas industry] to provide more targeted and effective well bore treatments.” None of these purportedly *potential benefits* are discussed in the context of “a method for stimulating an existing well in a nano-darcy shale formation” as required by each of the challenged claims. Nor does the Petition explain how such *potential benefits* would motivate a POSA to arrive at the differences between Frenier and Reyes themselves, or differences in the challenged claims. *Graham*, 383 U.S. at 17-18. The Petition also fails to cite to the Harwell Declaration in support any of its conclusory statements about a POSA’s recognitions or motivations in view of the Frenier/Reyes combination.³

The Petition makes a general and conclusory assertion that “for any treatment mixture compositions or methods of using those compositions not

³ To be fair, however, the Harwell Declaration includes a section on the motivation to combine Frenier and Reyes. *See* Ex. 1003, Section VI.C. But each of the paragraphs in that section repeat Section VII.B.iii of the Petition essentially *verbatim*, and lack evidence or any further explanation as to how a POSA would have combined the references *to arrive at the challenged claims* with a reasonable expectation of success. Ex. 1003 at ¶¶66-72; Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11

disclosed or rendered obvious by Frenier alone, a POSITA would have wanted to include the more-explicit teachings of Reyes ... to improve the treatment operation, thus improving hydrocarbon production, and would have had a reasonable expectation of doing so.” Petition at 37 This is insufficient to establish a *prima facie* case obviousness under *Graham*, i.e., an analysis that the Petition admits must be done to fulfill Petitioner’s initial burden here. Petition at 34 (citing *Graham*, 383 U.S. at 17).

As discussed below, the obviousness analyses provided in Sections VII.B.1-13 of the Petition fail to address obviousness under a proper *Graham* analysis, including a failure to explain the differences between the alleged prior art and the challenged claims. *Graham*, 383 U.S. at 17-18. They also fail to provide any factual basis or rational underpinning to support how a POSA would have been motivated to *achieve the inventions of the challenged claims* with a reasonable expectation of success. Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11. 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 Frenier/Reyes combination, and how the challenged claims are obvious as a whole without any hindsight, as required by statute. *See* 35 USC § 103.

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

1) Claim 1

Though the Petition cites to passages from Reyes allegedly relating to each element of claim 1, it does not explain how such excerpts cure the deficiencies of Frenier alone (*see* Sections VI.A.1-6 and VI.B.1), including how the Frenier/Reyes combination discloses or suggests, e.g., “a method for stimulating an existing well in a nano-darcy formation” (Preamble), “injecting the treatment mixture into the well ... until at least some of treatment mixture ... contacts the nano-darcy shale formation” (Element 1[b]), “maintaining the treatment in contact with the nano-darcy shale formation” (Element 1[c]), or “removing the treatment mixture from the well, ... thereby improving the hydrocarbon production of the well relative to the hydrocarbon production immediately prior to performance of the method” (Element 1[d]). *See generally* Petition at 37-42.

Petitioner’s obvious analysis in Section VII.B.1 only attempts to explain how Frenier and Reyes may be compatible with some but not all limitations from claim 1. This insufficient treatment of obviousness under *Graham* includes Reyes’s alleged disclosure of similar treatment fluids and similar pH ranges as Frenier (Petition at 39), introducing (or conveying) such treatment fluids into the same

subterranean formations as Frenier (*id.* at 39) which are not nano-darcy shale formations, maintaining the treatment fluid in contact with the same subterranean formations as Frenier (*id.* at 42) which are not nano-darcy shale formations, and removing metals from the same subterranean formations as Frenier, which are not nano-darcy shale, to avoid metal precipitation (*id.* at 42). *Graham*, 383 U.S. at 17-18.

None of these allegations, however, address or explain how Reyes teaches or suggests claim elements missing from Frenier, or any evidence or rational underpinning to support how Frenier/Reyes combination achieve 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. Petition at 34 citing *Apotex*, IPR2014-00115, Paper 94 at 11. In particular, the Petition fails to address how the references are combinable to meet the requisite steps of the method, each of which apply specifically to the claimed well and the claimed *nano-darcy formation* to improve hydrocarbon production relative to the hydrocarbon production immediately prior to performance of the claimed method.

Instead, the Petition makes baseless and conclusory assertions that a POSA would have found each claim element obvious over the Frenier/Reyes

combination. *See e.g.*, Petition at 38 (Preamble), 39 (Element 1[a]), 41 (Element 1[b]), 42 (Element 1[c]), 44 (Element 1[c]). And while the Petition cites to portions of Harwell Declaration in an attempt support Petitioner's insufficient assertions, Dr. Harwell repeats those same assertions essentially *verbatim* without providing any further evidence or explanation. *Xerox*, IPR2022-00624, Paper 9 at 14; *see* Petition at 38 (citing Ex. 1003 at ¶ 175), 39 (citing Ex. 1003 at ¶¶ 196-197), 41 (citing Ex. 1003 at ¶¶ 204-205), 42-43 (citing Ex. 1003 at ¶¶ 216-218), 43-44 (citing Ex. 1003 at ¶¶ 227-229, 232).

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 34 *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 stimulate an existing well in a *nano-darcy shale formation* according to the steps of claim 1 with a reasonable expectation of success. This is not surprising. As discussed above, neither Frenier nor Reyes disclose any treatment mixtures or methods directed specifically to the stimulation of wells in nano-darcy shale formations, or even wells in shale formations generally. *See* Sections III.A-B (*supra*). Outside of their alleged disclosures of treating rock formations, the references only speak to treatments applied to calcium formations having permeabilities greater than 1 milli-darcy (1×10^{-3}), and specifically on the order of tens (10^{-2}) to hundreds (10^{-1}) of milli-darcies. *Id.*; *See also e.g.*, Ex. 1004, 10:51-67 (Example 4 of Frenier disclosing treatment of “limestone cores having an initial permeability of 27-77 md”); Ex. 1005 at 15:60-16:52 (Example 2 of Reyes directed to the treatment of a “calcite core having an initial permeability of about 75 mD”), 16:53-17:25, 17:27-67, FIG. 4 (showing permeability increase in chalk from ~400 milli-darcies (initially) to ~1300 milli-darcies (during treatment)). These formations are not nano-darcy shale formations and are orders of magnitude more permeable than the nano-darcy shale formations

required by claim 1, i.e., shale formations having a permeability less than 1 micro-darcy, in other words $<1 \times 10^{-6}$ darcy or $\leq 999 \times 10^{-9}$ darcy.

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

2) *The Dependent Claims*

Dependent claims include all limitations of the independent claim from which they depend. 35 USC § 112(d). Because the Petition fails to establish a reasonable likelihood that Petitioner would prevail with respect to obviousness of claim 1 over the Frenier/Reyes combination, it also fails to meet Petitioner's burden with respect to obviousness of claims 2-13 on this ground.

Moreover, for each dependent claim, the Petition merely cites to alleged disclosures from Reyes and then summarily alleges that the Frenier/Reyes combination renders the dependent claim limitations obvious to a POSA. Petition at 45 (claim 2), 45-46 (claim 3), 46 (claim 4), 47-48 (claim 5), 48-52 (claim 6), 52-53 (claim 7), 53-54 (claim 8), 55-56 (claim 9), 57-58 (claim 10), 58-59 (claim 11), 60-61 (claim 12), 61-62 (claim 13). 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, ¶¶ 251, 253, 260, 266, 271, 276, 280, 282-284, 287, 290-291, 299, 306, 309, 313, 315, 318, 320, 321-323, 329, 332-333), cannot cure the deficiencies of the Petition as to obviousness over asserted combination. *Xerox*, IPR2022-00624, Paper 9 at 14. As for claim 1, the Petition's analysis of each dependent claim fails to apply the proper standard for obviousness under *Graham*, which requires an explanation of the differences between the Frenier/Reyes combination and the dependent claims. 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 34 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 2-13 is obvious over the Frenier/Reyes combination, and therefore the Petitioner cannot establish a reasonable likelihood that it would prevail with respect to any of claims 2-13 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 '843 patent that is the same as the

invalidity positions taken by Petitioner in a parallel litigation. That litigation is well underway. The complaint was filed in April of 2023 and, since that time, both parties have engaged in substantial fact discovery, including taking five fact depositions, and having submitted opening expert reports on infringement, invalidity, and damages. And trial is scheduled to occur long before any FWD by this Board will issue. The Board has identified six non-exclusive factors (the “*Fintiv* Factors”) to assess whether to deny a petition for efficiency purposes based on parallel litigation. *See Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper No. 11 (P.T.A.B. March 20, 2020); *see also, e.g., Harmonic Inc. v. Avid Tech.*, 815 F.3d 1356, 1367 (Fed. Cir. 2016) (“[T]he PTO is permitted, but never compelled, to institute an IPR proceeding.”). Here, the *Fintiv* Factors weigh in favor of the Board exercising its discretion and denying institution.

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

Fintiv Factor 1 asks whether the district court in the parallel litigation has granted a stay or evidence exists that one may be granted if a proceeding is instituted. *Apple Inc. v. Fintiv, Inc.*, Paper No. 11 at 6. Here, neither Petitioner nor Patent Owner has filed a motion to stay with the district court. Accordingly, this factor is neutral as the Board will not attempt to predict how the district court will proceed were a motion to be filed. *Sand Revolution II LLC v. Continental*

Intermodal Group – Trucking LLC, IPR2019-01393, Paper No. 24 at 7 (P.T.A.B. June 16, 2020).

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. *Apple Inc. v. Fintiv, Inc.*, 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 ¶ 8.⁴ The statutory deadline for issuance of a FWD is October 17, 2025. (*See* Paper No. 3.) This is over nine months after the district court trial will occur. 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 Board has “generally weighed this factor in favor of exercising discretion to deny institution if the trial date is scheduled before the projected statutory deadline for a final written decision”). This nine-month differential is much greater than differentials the Board has previously found

⁴ Although the parties have sought and received extensions in the litigation, none of those extensions have resulted in modification of the trial date.

support discretionary denial. *E.g., EClinicalWorks, LLC v. Decapolis LLC*, IPR2022-00229, 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); *Apple Inc. v. Fintiv, Inc.*, Paper No. 15 at 13 (P.T.A.B. May 13, 2020) (two month differential); *Google LLC v. Ikorongo Tech. LLC*, IPR2021-00204, Paper No. 13 at 7 (P.T.A.B. June 7, 2021) (three month differential).

The Vidal Memo clarifies that the Board may also consider the median time-to-trial statistics for civil actions in the district court in which the parallel litigation resides. Ex. 2004 at 3, 8-9. Those statistics also weigh in favor of denial. The most recent statistics available for the Western District of Oklahoma, where the parallel litigation resides, shows 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 17, 2025).

Further, the amount of work that the parties will incur in preparation for trial and which will all occur prior to the statutory deadline for a FWD is extensive:

Activity	Deadline Set by Scheduling Order
Filed final witness list	November 15, 2024

Filed final exhibit list	November 15, 2024
Filed joint jury instructions	November 29, 2024
Filed objections to exhibit lists	December 4, 2024
Filed deposition designations	December 9, 2024
Filed motions in limine	December 9, 2024
Filed requested voir dire	December 9, 2024
File requested jury instructions	December 9, 2024
File proposed findings of fact and conclusions of law	December 9, 2024
File trial briefs (optional)	December 9, 2024
File final pretrial report	December 9, 2024
Filed objections and counter-designations to deposition designations	December 16, 2024
Filed objections to counter-designations	December 23, 2024
File objections/responses to motions in limine, voir dire, trial brief, jury instructions, and proposed findings of fact and conclusions of law	December 23, 2024
Trial	January 14, 2025

Exs. 2003 at ¶¶ 8-16; 2006 at ¶¶ 3-4. As described below in Section VII.D, the issues raised in the parallel litigation are the very issues facing the Board in this proceeding. There is no reason to have the parties spend time and money in both the district court litigation and in this proceeding when the district court proceeding will resolve those same issues but nine months before the Board.

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

The parties' litigation was initiated on April of 2023. Ex. 2007. Since that time, the parties have engaged in extensive fact discovery and expert discovery and

will continue to invest significant time, energy, and money in the litigation prior to an institution decision. *Apple Inc. v. Fintiv, Inc.*, Paper No. 11 at 9-12 (describing this factor as assessing “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 three sets of interrogatories on Petitioner;
- Served two sets of requests for production on Petitioner;
- Substantially completed production and produced approximately 54,000 documents to Petitioner;
- Engaged in a targeted review of approximately 7,000 documents from Petitioner;
- Prepared responses to Petitioner’s first set of requests for production and first set of 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 report on infringement and its opening expert report on damages.

Exs. 2011 at ¶¶ 3, 5; 2006 at ¶ 1. Similarly, Petitioner has produced documents, responded to discovery requests, prepared opening and reply Markman briefs, and taken and defended depositions as described above. 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 above work reflects a significant investment of resources.

Not only have the parties already spent significant time and money in the parallel litigation, the parties will expend further and substantial efforts before the Board’s institution decision. In particular, prior to the statutory deadline for an institution decision by the Board, the parties will have:

Activity	Deadline Set by Scheduling Order
Prepared and served responsive expert reports ⁵	August 13, 2024
Completed all fact and expert discovery, including taking and defending expert depositions associated with infringement, invalidity, and damages	September 9, 2024
Prepared and filed <i>Daubert</i> motions	October 9, 2024
Prepared and filed dispositive motions	October 9, 2024

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

⁵ Patent Owner will file a responsive report addressing Petitioner’s opening report on invalidity, and Petitioner, presumably, will file responsive reports addressing Patent Owner’s opening reports on infringement and damages.

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 makes no sense and would be inefficient and result in a waste of resources and in duplicative efforts. *See Zhuhai Cosmx Batter Co., Ltd. v. Ningde Ampere Technology Limited*, IPR2023-00587, Paper 12 (Sept. 12, 2023) (denying institution and 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 the issues raised in the parallel litigation. *Apple Inc. v. Fintiv, Inc.*, Paper No. 11 at 12. The parallel litigation and this IPR proceeding reflect a complete overlap of issues, fully supporting the Board’s exercise of discretionary denial.

In the parallel litigation Petitioner has sought a declaratory judgment of invalidity of the ’843 patent, and it has put forth invalidity contentions asserting all claims of the ’843 are invalid. Ex. 2008 at 27; Ex. 2009. The grounds that Petitioner asserts to support invalidity of the ’843 patent in this IPR proceeding are the same grounds that Petitioner has asserted in the litigation. In both the litigation and this IPR proceeding, Petitioner asserts all claims of the ’843 patent are

unpatentable/invalid under Section 102 based on Frenier and under Section 103 based on Frenier alone and/or in view of Reyes. (*Compare* Ex. 2009 with IPR2024-00815, Paper 2 at 4).⁶ This complete overlap of issues strongly weighs in favor of denial. *Apple Inc. v. Fintiv*, Paper 11 at 12; *Resmed Corp. v. Cleveland Medical Devices Inc.*, IPR2023-00565, Paper 13 at 14-15.

Furthermore, 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 only further confirms the propriety of a discretionary denial to avoid inefficiencies.

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

Fintiv Factor 5—whether the Petitioner and the defendant in the litigation are the same party—is easily satisfied. The defendant in the parallel litigation is Pharaoh Energy Services, LLC. Exs. 2007 at ¶ 2; 2010 at ¶ 2. That is the same entity as the Petitioner. (IPR2024-00815, Paper No. 2 at 1.) This weighs in favor of denial. *Apple Inc. v. Fintiv, Inc.*, Paper 15 at 15.

⁶ In the litigation Petitioner also asserts additional grounds for invalidity.

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

Director of the USPTO Katherine Vidal recently explained that

Fintiv factor six reflects that the PTAB considers the merits of a petitioner’s challenge when determining whether to institute a post-grant proceeding in view of parallel district court litigation. 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 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 4-5.⁷ The compelling merits standard is, accordingly, a higher standard than the standard for institution. *Commscope Technologies LLC*, Paper 23 at 3. It requires a showing that the Petitioner’s challenge “would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence” such that “it is highly likely that the petitioner would prevail with respect to at least one challenged claim.” *Id.* at 4 (*citing Opensky Indus., LLC v. VLSI Tech. LLC*, IPR2021-01064, Paper 102 at 49); *see also* Ex. 2004 at 4. And, a

⁷ 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 (Feb. 27, 2023).

petitioner cannot meet the compelling merits standard by merely pointing to its analysis under the lower institution standard. *Id.* A petitioner must do more to show compelling merits. *Id.*

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.

IX. CONCLUSION

For the foregoing reasons, the Board should deny institution of this IPR against the '843 Patent.

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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 13,392 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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